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Sleep Disturbances, Unusual Experiences, and Suicidal Ideation in First Episode Psychosis: An Exploratory Mixed-Methods Study

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Portfolio Abstract

Background

It is well-established that sleep disturbances are highly prevalent in Schizophrenia Spectrum Disorders (SSD) and are implicated in the maintenance and severity of psychosis experiences. In recent years, paradigmatic shifts have witnessed a shift in understandings, and researchers have started to considerable the contributory role of sleep in the development of psychosis. Despite emerging research in those at risk of psychosis, there is little research exploring sleep disturbances in First Episode Psychosis (FEP).

In the general population, there is a large body of evidence documenting strong associations between sleep disturbances and suicidality. This relationship is also evident in SSDs yet is relatively unexplored in FEP. This is notable given FEP is considered a 'high risk' period for suicide. In the very few studies exploring the relationship between sleep and suicidality in FEP, there are some limitations. Much of the research explores insomnia and does not employ methods that may capture discrete or specific aspects of sleep. Further, there is limited qualitative research in this area, thus, lived experience and the meaning attached to this proposed relationship remains unexplored.

Method

An exploratory mixed-methods design was adopted. 10 individuals aged between 18 and 65 years who were currently receiving care from Early Intervention Psychosis services participated in this study. Participants were asked to wear a wrist worn actigraph for 7 consecutive days and nights, complete 3 psychometric measures on sleep, psychosis symptoms, and suicidal ideation, and participate in a semi-structured interview. Inductive Reflexive Thematic Analysis was conducted on qualitative Data. Motionware software and the Statistical Package for the Social Sciences was used to analyse quantitative data.

Findings

Considerable variation between participant sleep parameters was shown, with short sleep duration, longer sleep latency, increased wake after sleep onset, and high sleep variability evident. No statistically significant relationships between sleep

disturbances, psychotic symptoms, and suicidal ideation were found. However, this was expected due to the small sample size, as the strength and direction of relationships indicate relationships are present. Qualitatively, four themes, with corresponding sub-themes, were constructed inductively: ‘Losing sleep and losing myself;’ ‘Meaning making experiences of sleep loss and psychosis’; ‘Coping with, and the emotional consequences of, poor sleep’; and ‘Feeling trapped: suicide as an escape’.

Discussion

To the best of the authors knowledge, this is the first study to use a mixed methods design to explore relationships between sleep disturbances, psychosis symptoms, and suicidal ideation in FEP. Sleep disturbances are common in FEP and may be implicated in experiences of suicidal thinking and non-suicidal self-injury (NSSI). The psychological processes involved in this relationship warrant further exploration.

Impact on Clinical Psychology

Frequent and standardised assessment of sleep disturbances as an independent difficulty, and incorporated into suicide risk assessments, is warranted in Early Intervention Psychosis services. Understanding the contributory and/or maintaining role of sleep disturbances may contribute to enhanced participant understanding and identify targets for intervention, highlighting a potential role for formulation within EIP care surrounding sleep, psychosis experiences, and suicidal risk and/or NSSI. Beyond this, it may be impactful for clinical psychologists to consider training staff on the impact of sleep disturbances on clinical presentations such as psychosis.

Statement of Contribution

An overview of the contributions to the research study conducted are presented in the table below:

Domain	Contributor
Project Design	Eva Rogers with supervision from Dr Mark Gresswell and Dr Simon Durrant
Ethics Application	Eva Rogers with supervision from Dr Mark Gresswell
Writing the literature review	Eva Rogers with supervision from Dr Mark Gresswell
Recruiting Participants	Eva Rogers, with support from the team lead and staff members in the Early Intervention Psychosis team
Data Collection	Eva Rogers
Transcription	Eva Rogers
Data analysis	Eva Rogers, with supervision from Dr Mark Gresswell and Dr Simon Durrant
Write Up	Eva Rogers, with supervision from Dr Mark Gresswell and Dr Simon Durrant

Journal Paper

Sleep Disturbances, Psychosis Symptoms, and Suicidal Ideation in First Episode Psychosis: An Exploratory Mixed-methods Study

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As requested by the journal, this study uses people-centred language for sleep research communication (the guidelines can be found here: https://academic.oup.com/sleep/article/40/4/zsx039/3062257) and recommendations from the AASM Style Guide for Sleep Medicine Terminology.

Note: In-text footnotes are provided in bold to allow them to be distinguishable from references

Abstract

Introduction. Sleep disturbances are a risk factor for suicidal ideation and are commonly reported amongst individuals experiencing psychosis. Given elevated suicide risk in First Episode Psychosis (FEP), understanding associations between sleep and suicidality is imperative for informing risk management and intervention. This study explored associations between sleep, psychosis symptoms, and suicidal ideation and explored the perceptions of those with FEP regarding these experiences.

Methods. 10 participants experiencing FEP were recruited from Early Intervention services. Participants wore an actigraph for 7 days, completed 3 measures (Insomnia Severity Index [ISI], Prodromal Questionnaire Brief [PQB], and Beck Scale for Suicidal Ideation [BSS]), and participated in a semi-structured interview.

Results. No significant associations were found between variables, which was expected in this exploratory study. Descriptive statistics indicated variation in sleep duration, sleep timing, wake after sleep onset, and onset latency. Qualitatively, participants described an extended process of loss, from losing sleep to 'losing themselves' and the ability to make safe decisions. Sleep disturbances were considered central to the meaning making of psychosis experiences prior to an acute episode, and as a 'trigger' for subsequent experience. Participants discussed reduced emotional control and heightened self-harm or non-suicidal self-injury following sleep disturbances. Participants described a sense of entrapment in their experiences of poor sleep and described suicide as an escape from their current reality.

Conclusions. The relationship between sleep and suicidality in FEP warrants further exploration, including understanding of how specific aspects of sleep relate to suicidality, and exploration of the psychological processes in this complex relationship.

Key words; First Episode Psychosis, Sleep, Suicidal Ideation, Suicidality

Introduction

Suicide is the leading cause of mortality amongst those with Schizophrenia Spectrum Disorders (SSDs) [1]. Contributing factors to suicide amongst those with SSDs are well explored, and research on risk-factors in earlier phases such as First Episode Psychosis (FEP), is increasing [2–4]. FEP is considered a high-risk period[5], as suicide related mortality is highest in the first five years of symptom onset[6]. FEP suicidal ideation rates range from 26.2-56.5% [7,8], and suicide risk is elevated by ~60% compared to those with SSDs[9]. [1]

Researchers have endorsed the need to distinguish between aspects of suicidality (ideation, planning, attempt, and completion) for research specificity, monitoring, and prevention implications[10]. Much of the current research in FEP includes 'suicide risk' as an all-encompassing term, limiting the potential to identify implicated factors. Suicidal ideation offers an important research focus, given it is a consistently reported antecedent of suicide attempts and completion [3,11]. To date, much of the literature focuses on suicidal ideation in those with a longer illness duration[12], or broader suicide-risk factors in early psychosis[4]

Sleep disturbances are a known risk factor for suicidal ideation in both clinical[13] and non-clinical groups[14]. Sleep disorders, such as insomnia, are associated with 2-fold increased odds of suicidal behaviour in those with mental health difficulties[15]. This association is particularly pertinent for those with SSDs given the greater prevalence of sleep disorders amongst those with SSDs than the general population[16–19]. [2]

[1] Please see Extended Introduction (1.6) for further background on suicide in FEP
[2] Please see Extended Introduction (1.5) for further background on sleep disturbance in psychosis

Paradigmatic understandings have shifted from disturbed sleep as a consequence of poor mental health towards recognising that sleep difficulties may play a causal role in the onset and maintenance of psychosis [20,21]. Disturbed aspects of sleep (notably timing, variability, duration, and quality) and insomnia are associated with increased positive symptoms, such as delusions, hallucinations, and increased paranoia in SSD's [17,22–24], and in At Risk Mental State (ARMS) populations[25,26], which evidenced suggesting sleep disturbance can predict symptom severity at 12 month follow-up in ARMS groups[27,28] [3]

Despite associations between sleep and positive symptoms across the psychosis spectrum[26,29,30], and positive symptoms and suicide in SSDS [3,31,32], it is unclear whether this association is existent in FEP. Recent longitudinal work found that those experiencing FEP with insomnia were almost 14 times more likely to experience suicidal ideation over the follow-up period than those without, and sleep problems were dose-dependently associated with positive symptoms[33]. Given that early intervention in FEP is associated with improved prognosis[34,35], this dearth of information regarding sleep as a potential risk factor to symptom exacerbation and functional outcomes such as suicidal ideation is noteworthy.

There are several theories that consider how sleep may be implicated in suicidal processes. Diathesis-stress models are well-cited in understanding psychosis onset [36,37]and are theoretically key to established models of suicide [38] whereby sleep deprivation poses a precipitating factor to both ideation and attempt. Additionally, some theories such as the 'mind after midnight' hypotheses [39] consider sleep an explicit contributor to suicidal processes, and proposes excessive nocturnal wakefulness

[3] Please see Extended Introduction (1.5) for further background on sleep in early psychosis

facilitates a period of vulnerability to mechanisms of suicidal behaviour in which individuals are more likely to engage in risk-related behaviour. Given that when adjusting for the number of people awake in the population at a given time, the risk for suicide is highest at night [40], such theories are important to consider for those already holding an elevated risk.

Though preliminary evidence in FEP suggests a similar relationship between sleep, symptoms and suicidal ideation as shown in SSDs or ARMS, there are limitations in the current evidence. Much of the research has focused on insomnia [41–44], often dichotomised by categorically identifying the presence or absence of the disorder rather than exploring distinct sleep parameters; a limitation noted in previous reviews of general population studies[14]. There is considerable heterogeneity in sleep and suicidality measures, with measures encompassing a singular or binary measure[12], which limits exploration of whether specific aspects of sleep relate to suicidality. The current literature is lacking in studies employing actigraphy to explore aspects of sleep, and participant perspectives on this relationship.

The lack of actigraphy in those with SSD's and longer-term psychosis is limited [45], with even less work in early psychosis, which has been highlighted as a long-standing limitation of the literature base [26,30]. Actigraphy provides a robust 24-hour picture of sleep and explores how rest-activity patterns may relate to phases of psychosis and other outcomes, such as suicidality [46]. Further, sleep and suicide are complex [14], and qualitative research offers an appropriate method to begin to explore such intertwined processes. However, qualitative methods have been employed sparingly in SSD [47,48] and ARMS [49] groups to explore the sleep-psychosis relationship, with no studies using such methods in FEP. Qualitative work in the broader sleep-suicide relationship is also

limited [50].[4], yet there is considerable scope for such methods to explore the complex processes implicated in the sleep-suicide relationship in psychosis.

Relationships between sleep disturbances and suicidality are well-established in the general population [14,51], and longer-term SSD's [52], and evidence for such relationships in FEP is growing [33,42]. If sleep disturbances are to be considered beyond being simply a secondary issue or consequence, and instead play a contributory role in the onset and maintenance of psychosis with a proposed relationship to suicidality, further effort is needed to understand such relationships in the early stages of illness to inform screening, prediction, and intervention.

Acknowledging the complexities of this relationship, multi-method approaches would allow identification of how sleep is disturbed, how this disturbance is perceived, and facilitate insight into the psychological processes involved in this relationship. Given limited evidence in this area and the lack of both actigraphy and qualitative measures, this preliminary study aims to contribute to a developing area. Thus, the aims of this study are descriptive. Our primary aim is to descriptively explore actigraphy measured sleep disturbances and the subjective experiences of sleep, psychosis experiences, and suicidal ideation in those with FEP. Secondary aims include:

i) To explore if insomnia or actigraphy-measured sleep disturbances (duration, efficiency, WASO and onset latency) are related to psychotic symptoms and suicidal ideation in FEP

ii) To explore if insomnia is related to psychotic symptoms and suicidal ideation in FEP

[4] Please see Extended Introduction (1.7) for limitations of previous work and study rationale

Methods

Study method and results are reported following appropriate guidelines for cross-sectional [53] and qualitative studies [54].

Participant

Due to the preliminary and descriptive nature of the study, power calculations were not appropriate to determine sample size. Sample size aimed to be reflective of qualitative recommendations such as 'data adequacy' [55] to ensure the data provides 'meaning-richness' across participant accounts. Recruitment challenges in psychosis services were considered such as low interest, high attrition, risk-related restrictions, and capacity to consent[56]. Consequently, 10 participants were recruited from Early Intervention in Psychosis (EIP) services in an NHS Trust.[5] All participants self-reported difficulties with sleep. Inclusion criteria are shown in Table 1.[6] Participants were identified by their responsible clinician and provided consent to participate.

[5] Please see Extended Methods (2.5) for further information on participants
[6] Please see Extended Methods (2.5.2) for further information on eligibility criteria

Table 1. Inclusion and Exclusion Criteria

Inclusion	*Exclusion*
Aged 18-65 years	History of traumatic brain injury or neurological disorders due to altered sleep or sleep disorders[57,58]
Experiencing FEP (diagnosed by service Psychiatrist)	Substance dependent in the recruitment and/or data collection phase. Alcohol and drug use are associated with altered sleep parameters[59,60]
Attend EIP services and remain under the care of a responsible clinician	Over 18 years of age. Those <18 may be part of a different participant group (ARMS) with different sleep parameters [25,26,61]
Have sufficient command of English to undertake interview	Display significant harm to themselves or others, as judged by the responsible clinician
Capacity to provide informed consent, assessed by the responsible clinician and researcher	Experiencing acute episodes whereby they lack capacity to consent

Procedure

Ethical approval was obtained from an NHS research ethics committee (23/WM/0103) and the research department in the recruiting NHS Trust.[7] A cross-sectional mixed method approach[8] was used combining actigraphy, psychometrics, and semi-structured interviews.

Participants completed three paper copies of psychometric measures[9] and then participated in a semi-structured interview. Participants then wore a wrist-worn Actigraph on their non-dominant wrist for 24 hours a day for 7 days; the length of observation meets actigraphy requirements of >72 hours for a valid measure, and extended monitoring of >5 days reduces measurement error [62]. Participants were asked to identity their intended sleep time and time of awakening by pressing the event button on the watch face. If not pressed, sleep onset and awakening were identified using the software's automatic identification algorithm and visually assessed.

Measures

Actigraphy[10]

Sleep disturbances were measured by the Comtech MotionWatch 8, a wrist-worn triaxial accelerometer, which has been used with individuals experiencing psychosis[19]. Data were sampled at 30 second epochs. Sleep variables collected include total sleep time (TST), wake after sleep onset (WASO), sleep efficiency (SE), and sleep onset latency (SL) in line with commonly reported variables in ARMS and FEP sleep[26,30] and sleep-suicide[14,63] research.

Psychometrics

Age, gender, and time in service were collected. Participants completed the following measures.

Insomnia Severity Index (ISI)[64]

[7] Please see Extended Methods (2.4) for further information on ethical considerations
[8] Please see Extended Methods (2.1.1) for further information on mixed methods research
[9] Please see Extended Methods (2.6.2) for further information on psychometric measures
[10] Please see Extended Methids (2.6.2) for further information on actigraphy

The ISI is a seven-item self-report measure to assess the severity and impact of insomnia symptoms over the last two weeks. Items are rated on a Likert scale from none (0) to very severe (4) and are summed for a total score. Scores indicate: 0-7 no clinically significant insomnia; 8-14 subthreshold insomnia; 15-21 moderate insomnia; and 22-28 severe insomnia.

Prodromal Questionnaire Brief (PQB)[65]

The PQB is a 21 item self-report measure to assess the presence of psychotic symptoms in early psychosis over the past month. The PQB is scored by the number of items endorsed to provide a total score (0-21). The PQB shows good internal consistency[65–67]and has been used in studies targeting FEP referrals[68].

Beck Suicidal Ideation Scale (BSS)[69]

The BSS is a 21-item measure of suicidal ideation over the past week. Responses are rated on a 3-point Likert scale and items are summed for a total score. Higher scores indicate higher suicidal ideation. The BSS shows high internal consistency and high inter-rater reliability in those with FEP[70,71], and accurately and sensitively detects low and high levels of suicidal ideation[72]

Interviews

Ten individual semi-structured interviews[11] were conducted by the first author (duration range 42-78 minutes) in-person or via telephone at the preference of the participant. The interview explored experiences of sleep, psychosis, and suicidal ideation. An interview guide was developed using previous qualitative literature regarding sleep and suicide[50] and sleep and psychosis[49,73]. The interview schedule was used flexibly with verbal and non-verbal cues to encourage elaboration.

Statistical Analysis

Actigraphy data was processed via MotionWare software (version 1.4.20, CamNtech, Ltd), and exported into SPSS (version 29) for analysis. Descriptive and frequency statistics were conducted for demographic, ActiGraph, and psychometric variables. Normality assumptions were explored. Histogram boxplots and the Kolmogorov-Smirnov indicated BSS scores $D(10) = 0.482$, $p < .001$ were significantly non-normal.

[11] Please see Extended Methods (2.6.3) for further information on semi-structured interviews

A two-tailed Spearman's Rho correlation ($p < 0.05$) was used to explore bivariate associations between variables.

Qualitative Analysis

Interviews were audio recorded and transcribed verbatim. Data analysis was guided by Reflexive Thematic Analysis (RTA)[55] and the six-steps of Thematic Analysis[74] were flexibly and recursively followed throughout the process[12]. Both semantic and latent codes were constructed to develop analysis. A Critical Realist epistemological position was adopted to integrate both observable and experiential realities, and each individuals' 'meaning making' of reality exists within and alongside the wider context in which it occurred[75]. Analysis was primarily inductive and grounded in participants accounts to reflect the latent underlying meaning in the data, however, aspects of analysis were deductive in that knowledge of the broad existing literature (e.g., the 'mind after midnight hypothesis, and existing research evidencing sleep-suicide relationships) implicitly provided an 'interpretive lens' to orientate data [76]. The 'four R' criterion[77] and Critical Appraisal Skills Programme (CASP)[78] checklist were used to establish rigour.[13]

Reflexivity[14]

Reflexivity in mixed methods research is considered critical self-awareness, in which researchers attempt to understand how their preconceptions can impact and influence data collection and analysis[79]. The lead researcher worked as a trainee clinical psychologist, and the research team consisted of two clinical psychologists and an academic with a clinical research focus. It was acknowledged that the research team held a psychological perspective of the development and maintenance of psychosis and considered the contribution of sleep in this context. Supervision and research meetings were used to discuss interviews and subsequent themes, with the goal not to reach consensus but offer challenge in interpretation[77].

[12] Please see Extended Methods (2.8.2) for further information on Reflexive Thematic Analysis
[13] Please see Extended Methods (2.8.3) for further information on quality appraisal and rigour
[14] Please see Extended Methods for further information on Epistemological Stance (2.2), Researcher Position (2.3) and (2.8.3) for further information on reflexivity

Results

Participant average age was 38.5 years (range 24-62). The average time spent in EIP was 18 months (range 10 - 29). See Table 2 for participant demographics.

Table 2. Participant Demographics

Variable	**Mean (range)**
Age (years)	38.5 (24-62)
Gender	
Male	3
Female	7
Currently Using Sleep Aids	10
Zopiclone	9
Promethazine	1
Time in Service (months)	18.9 (10-29)

Quantitative

There were no statistically significant relationships between actigraphy-measured sleep disturbances (TST, SE, WASO, and SL) and psychotic symptoms and suicidal ideation. There were also no significant relationships between insomnia and psychotic symptoms ($r = .43$, $p<.22$) or insomnia and suicidal ideation ($r = -.62$, $p<.06$), although the high correlation coefficients are strongly indicative. Descriptive statistics and correlation coefficients between sleep, symptom and suicide are presented in Table 3.

7/7 nights data were collected for all participants. Mean total sleep time was 6.32 hours and minutes (range 3.57 -8.02, SD = 1.04), mean sleep efficiency was 80.72(%) (range 49.79 - 97.28, SD = 14.16%), mean WASO was 65.15 minutes (range 11.14 - 162.69, SD = 42.73) and mean sleep latency was 27.12 minutes (range 0-88, SD = 28.40). The mean ISI score was 15.1 (range 11-23, SD = 3.87). The mean PQB was 8.8 (range 0-20, SD = 7.29), and the mean BSS 1.3 (range 0-7, SD = 2.75).

There was considerable variation in sleep onset time over the 7 day period ranging between 22:25 and 05:05. Given the small sample size, there was considerable variation between participant sleep and psychometric variables. Individual Actigraphic sleep variables and psychometrics are presented in Table 4.

Table 3. Descriptive Statistics and Correlation Coefficients for Sleep, Symptom, and Suicide Measures

	M	SD	Range	1	2	3	4	5	6	7
1.ISI total	15.1	3.87	11-23	-	.425	-.621	.541	.379	-.242	.342
2.PQB total	8.8	7.29	0-20	.425	-	.035	-.091	-.323	.598	.280
3.BSS total	1.3	2.75	0-7	-.621	0.35	-	-.528	-.130	.112	.147
4.Avg TST	6.32	1.04	3.57-8.02	.541	-.091	-.528	-	.733	-.418	-.770
5.Avg SE	80.72	14.16	49.79-97.28	-.242	-.323	-.130	.733	-	-.758*	-.976**
6.Avg SL	27.12	28.40	0-88	-.242	.598	.112	-.418	-.758*	-	.685
7.Avg WASO	65.15	42.73	11.14-162.69	.342	.280	.147	-.770	-.976**	.685	-

*significant at p<0.05; **significant p<0.01

(TST) Average Total Sleep Time in Hours and Minutes; (SE) Average Sleep Efficiency Percentage (%); (SL) Average Sleep Onset Latency in Minutes; (WASO) Average Wake After Sleep Onset in Minutes

Table 4. Average Individual Participant Scores for Actigraphy and Psychometric Variables

Variable	Participant	1	2	3	4	5	6	7	8	9	10
Sleep Onset Range		23:34	22:38	22:03	01:34	22:25	22:26	00:52	02:36	23:06	21:11
		01:53	02:53	00:46	05:05	23:19	00:53	03:47	04:02	02:48	00:50
Wake Time Range		06:15	06:20	06:59	07:34	05:50	06:51	08:03	08:55	07:06	07:13
		09:32	12:01	09:11	02:09	08:40	07:38	11:38	10:54	08:50	08:06
ISI total		19	11	16	11	15	16	13	11	16	23
PQB total		12	0	14	16	3	0	7	2	14	20
BSS total		0	0	0	6	0	0	0	7	0	0
Avg TST		6.48	6.33	8.03	5.54	6.22	7.04	3.56	5.51	6.13	6.24
Avg SE		97.28	84.69	90.87	64.22	78.27	93.02	49.79	85.79	81.94	81.36
Avg SL		0	10.19	37.50	88.00	11.33	5.00	61.08	6.20	32.78	6.5
Avg WASO		11.14	45.33	42.57	87.33	92.11	25.50	163.09	52.20	58.42	75.55

Qualitative Analysis[15]

Theme one: Meaning making experiences of sleep and psychosis

Subtheme 1) Sleep loss and falling off the cliff-edge.

All participants discussed gradual and then acute sleep loss before their first episode of psychosis. In most cases, sleep loss accumulated to several days with no sleep:

> *Before I went to hospital, I was hardly sleeping … I was struggling to get to sleep at night, but I was struggling to stay asleep as well, that was every day, every night … that went on for a few months – P4.*

> *[Before admission] I wasn't sleeping at all. I wasn't sleeping for days, sometimes even a week. When I did sleep, I'd sleep for 2-3 hours and then it would be another few days before I slept again – P7.*

Participants discussed a 'tipping point' in which they described accumulating sleep loss extended to losing themselves and 'detaching' from the shared reality:

> *I had this period where I didn't sleep at all, I couldn't close my eyes for one minute … it wasn't gradual, it was explosive, the next day everything changed … I lost myself in so many ways and I would be asking my family, am I real? Am I here? Can you see me? – P5*

> *I wasn't sleeping, and it was definitely more of a manic sensation … it was a slow burn that quickly and exponentially came to a head … it spiralled quickly, it was like a switch had been flipped – P8.*

[15] Please see Extended Results (3.1) for further exploration of findings

Participants discussed reasons they struggled to initiate sleep. Some participants described how the voices they hear can interfere with sleep onset and engaging in conversation with them can delay or prevent sleep:

> *Sometimes it's like a recording [the voices] that plays back really, really fast, it could be of one person saying one thing over and over and over again and faster than you could actually talk … I find myself talking back to them so I don't get to sleep, or I just lay with my eyes closed talking to them. It can go on all night, sometimes from the minute I get into bed and then I just won't sleep – P4*

For others, an ongoing process of night-time rumination was common in delaying sleep onset, and was considered to influence the 'emotional tone' of thought processes, whereby negative thinking was common:

> *I start overthinking things, like your brain wakes up and it starts thinking … past stuff, future stuff, just a lot of thoughts. I'd probably go to bed a bit later because I tend to sit up and worry about things sometimes, or I would be waking up in the small hours of the morning just worrying about it and going over it, replaying it again and again and again – P1*

> *because you're not sleeping your mind just flips to the other side and all the negative thoughts would keep me awake at night, I couldn't switch off and everything I'd think about was negative … worries about the past, worries about the future – P5*

Subtheme 2) A sleep loss-mania-psychosis 'pathway'

All participants described a 'pathway' of how the sleep disturbances they experienced contributed to periods of mania. Participants constructed their experiences similarly,

in that a blurring of hypervigilance and unusual beliefs became intertwined during periods of mania:

> *I wasn't sleeping well … and then things really escalated and then I wasn't sleeping at all. My mind was very, very hard to switch off … this went on for several days ... on the go, racing thoughts, being on the move. I couldn't sit down; I was all over the place … some of my memories are a bit vague from that time but I remember feeling unsafe generally, and then that spiralled– p6*

> *I wasn't sleeping at all, and then I had the manic stage … in my manic state I can find it really hard to sleep because my brain is really active and grandiose … when I went back to sleeping, I got better, but then I stopped sleeping again and it got worse, and I was back to being delusional – P7*

Detachment from reality was discussed as a common sensation in the construction of experience following sleep disturbance prior to psychosis.

> *the next morning [after not sleeping all night] I became very suspicious of everybody, everything, even myself. I didn't even think I was real. I remember saying to my other half that I believe my corpse is somewhere else and you're going to pull it out one day because I don't feel real. That was when I couldn't sleep, I didn't feel myself at all – P5*

> *When I was in hospital, it felt like out of body … I ended up being completely out of it. I wasn't aware of myself at all, and I felt completely lost like I wasn't in reality, I felt separate, and I was not in reality at all – P7*

> *I feel like I've been transformed and I'm another person. And it's bad because I couldn't sleep, my body feels weird … it's like I don't feel my body on earth … But this happens more if I go for two days without sleeping. On the first day the*

body doesn't feel so bad but by the second night I am not sleeping, my mental health is getting worse – P3

Subtheme 3: Sleep loss and psychosis; a cycle

In the construction of each participant's experience, poor sleep was considered pivotal in how they 'made sense' of psychosis and was considered the 'trigger' for all that followed:

Before I got sectioned, it was nearly two weeks that I didn't sleep for … I was sleeping less and less and then I wasn't sleeping. I was getting flashing in my eyes, hearing things, thinking people were in my house – P10

I wasn't sleeping, that's what started it, the lack of sleep … then all of a sudden, they [unusual experiences] started. I wasn't sleeping so my mind was not processing things properly. Little things … they became bigger in my head, and it felt like there was no rescue, and yeah, one thing lead to another – P5

Sleep felt pivotal for how vulnerable participants felt regarding the continuation of unusual experiences following their acute episode. Whilst sleep is not discussed as the sole explanation for their experiences, following FEP, participants continued to attribute changes in their unusual experiences to sleep difficulties:

When I don't sleep, that's one of my triggers for psychosis … when I'm tired, I get hallucinations and stuff … I feel like the more tired my body got, the worse my beliefs. They got stronger but I believed them more too. Sometimes I could shake them off, but the more tired you get, the more vulnerable you get – P10

If I don't sleep well, I hear the voices more and feel the sensations more regularly ... there's definitely a link between when I am tired and the voices are more active,

so if I could get some sleep, they'd die down … when I started not sleeping well, they started to ramp back up again and were much more frequent – P1

The voices are worse when I don't sleep … [when I've not slept] the voices will try and make me feel bad, like they want me to retaliate … they accuse me of things, they're louder and they don't stop …I feel way better if I've slept the next day, but I can tell they're a lot different when I don't sleep – P4

Theme 2: Losing sleep, losing control, losing myself

Participants discussed experiencing extended periods of time where they were losing control of their ability to internally regulate their emotions and their ability to make safe choices as a perceived consequence of disrupted sleep.

Subtheme 1) Losing and attempting to regain internal control: a cycle

Participants described an absence of control with their sleep which increased emotional distress. In some cases, emotions escalated to an unfamiliar intensity which they struggled to control:

If I don't sleep through the night it's almost like I've had cocaine and I'm rushing and I'm desperate to hurt the people who are in my head … I have a lot more feelings about stuff when I don't sleep. It's pretty bad, its mainly anger. I get a lot of energy [when I don't sleep] it's like a rush – P4

Alongside sleep loss, some participants described that the dreams they experienced contributed to a reduced sense of emotional control that impacted their ability to differentiate between dreams and the shared reality:

Sometimes my dreams can be more like nightmares, they can be more fear based, or I can see things that are a projection of my fears and things that I think may happen. At one time, some of those dreams appeared to be too real to just

be a dream and I started to believe that those things were factual and carry that with me … there was a time when I couldn't distinguish between is this a dream, or is this a gut feeling – P9

The use of external agents in an attempt to regain control of sleep was commonly described, whereby 'whatever works' was used in desperate attempts to regain control, often leading to cycles of poor sleep, substance use, and emotional distress. Distress centred around an inability to fall asleep, thus, participants sought agents to reduce time spent awake:

When my sleeping problems started, I know it's bad, but I was drinking to the point of passing out and I'd have eight hours sleep, so I thought, oh! One night I got drunk, passed out, and slept for eight hours and I woke up and looked at the time and thought wow I feel great! And that's how that started – P10

For some participants, the reliance on external agents to bring about sleep onset was distressing, and created a cycle of sleep, distress, and dependency:

That was the main reason I took cannabis, to help me sleep … I relied on these external things to help me sleep and wake me up, it felt completely out of my control … I'd go to sleep distressed at the fact I had to self-medicate to sleep and I'd wake up in the same amount of distress … now I can see it, but at the time those things seemed to be helping with sleep – P8

Other participants discussed the role of prescribed sleep medication as providing a physical 'switch off' from the reality they were experiencing:

Sleep played a big part in getting me back to me … if I didn't take those [sleeping] pills, I would have continued on that path of not sleeping … it provided a break. I wasn't in control of my own mind, my thoughts, what I said, what I did. Having

a pill controlling one aspect of me helped me regain control of myself eventually … it plugged me back in to what's going on around me – P9

My quality of sleep had just diminished, and that tiredness got to a fever pitch during my episode … I think that was what was so restorative about staying in hospital, to sleep in a completely different space was really, yeah, restorative. Those acute medications were key … It really helped me put myself back together – P8

However, participants often held a double-edged view towards sleep medication. They felt it was necessary to help with acute experiences, but felt the sleep gained was unnatural, and expressed concern about becoming reliant on their use:

[medication] isn't something I want to be on for a long time … that sleep is a different type of sleep. It knocks you out, but you know you aren't sleeping. It's almost like a machine that has been shut down. They just turn you off and when it is time [to wake up] they just turn you back on – P5

[medication] is helping me sleep but they make me anxious … the idea that I need pills to fall asleep and I don't know what will happen in the future if I take less dosage … I feel like if I am taking pills, I will be dependent on them and I don't like that – P3

Subtheme 2) Loss of sleep and loss of safety

Participants discussed that following periods of not sleeping, they displayed out of character or dangerous behaviour. Participants discussed how themes of loss, inclusive of sleep and self-control, lead to a loss of safety for themselves and others.

I burnt some papers in my bathroom. I'd started to see things on the paper like a helicopter and a police car opposite my house when I wasn't sleeping well. And

later, when I was sleeping better, I haven't seen this. I burnt a lot of paper and stuff in my bathtub in that period when I couldn't sleep well – P3

When discussing these incidents, participants often reflected a negative judgement on their behaviour, and expressed such incidents were hugely 'out of character':

I went out and was behaving bizarrely. I got stopped by the police because I was trying to walk in the middle of the street, and I thought the drivers were going to stop for me … I've walked out in front of traffic, jumped out of moving cars … I wasn't scared at all, I was still so delusional, but now I think I could have been run over. I could have died – P7

Before I got sectioned I was acting out of character, loads of risky things. One night I was just walking around the streets in my pyjamas on my own … another time I wanted my friends' keys to drive home drunk, I would never do that – P10

In participants' accounts of such incidents, it was constructed that their ability to 'make sense' of their surroundings and make safe decisions was impaired. In some cases, the positive feelings of disinhibition came at a cost, whereby they felt unable to identify the risks of decisions. Participants commonly used language that reflected that this experience was facilitated by a different, or another person:

It feels good. I know it's bad [to do these things], but it feels good to be on top of the world and feel like you can do anything. But it's also terrible because I'm delusional, I'm not taking care of myself, I can't keep myself safe – P7

It accumulated in intensity and escalated into something more noticeable … I wasn't sleeping at all because I felt so energised … lack of sleep distorted my idea of reality; it made me think I was invincible. I felt like I wasn't human, I didn't need human things like sleep and food, we were no longer tired – p9

Subtheme 3) Losing control; sleep-related self-harm and self-injury

Participants discussed feeling distressed when unable to sleep and described accumulating frustration when sleep deprivation persisted over several nights, which often lead to self-injurious behaviour. However, the meaning attached to subsequent self-harm was located in reduced sleep, rather than an increase in the intensity of emotions:

> *Once I didn't sleep for 3 days and I ended up hitting my head on the wall because I tried and tried [to sleep] … I punched the wardrobe too and broke my fingers. I was really anxious because I couldn't sleep – P3*

In other examples, participants understood their engagement in self-harm or aggressive behaviour as a response to an increase in hearing voices or unusual beliefs at night. Participants discussed experiencing reduced emotional control following periods of sleep deprivation, and feeling more unable to cope with their distress at night:

> *When the voices are really loud and I can't sleep I get so agitated. I think [hitting myself] is just a release of that tension, or headbutting doors and punching walls and things like that … or I burn myself. The voices, they'll go "burn it" and I'll go and burn it [skin] … it makes me feel good, it makes me feel better. I'm agitated and they make me burn myself and I feel calmer – P4*

> *When I wasn't sleeping, I broke my mirror. I punched it and broke it … I was very aggressive. In my head, I thought I was a panda, so I was very aggressive- P7*

Some participants also reflected on feeling less in control of themselves and their decisions following periods of sleep disturbance, which contributed to the use of substances as self-harm, or at other times suicide attempt:

That one was serious [overdose]. That was when I was going through my bad sleeping stage and my mood was everywhere. That's why I did it, I was getting fed up … when I don't sleep, I just feel less on control of myself, like you're scared of yourself … just scared of what I was capable of doing – P10

Theme three: Feeling trapped: suicide as an escape.

Subtheme 1) Sleep and suicidal thoughts: losing hope

An ambivalence towards living was discussed as a common experience. Whilst many did not feel actively suicidal when not sleeping, there was a collective sense of not wanting to end their life, but wanting life as it was to end:

There was a time that I wrote a suicide note and I put it away … but after I slept, I woke up and ripped it to pieces. It wasn't like I wanted my life to end, it was just in that moment I was so fed up and had enough and was like maybe I don't want to wake up after all. I don't want to end my life, but I don't want to carry on living like this. I want it to end – P5

If I'm trying to sleep and they're continually talking [voices], repeating my name again and again. I just get to the point where I'm like, not that I don't feel like living, but I don't want to have to cope with it anymore – P4

However, some participants discussed feeling actively suicidal when experiencing acute sleep disturbances, and attributed these feelings to the reduction of sleep:

I have felt suicidal because I couldn't sleep … I was fed up with this problem, not sleeping … [when I hadn't slept for 3 days] then I wanted to die. I was so tired; I didn't know what to do – P3

Participants reflected that the experience of having suicidal thoughts was worse at night with little distraction and the night ahead of them. They described a loss of hope, and a reduction in their ability to think about an alternative future:

> *There is something worse about experiencing intrusive thoughts [of suicide] at night. If I do get embroiled in it I think well, it's going to be a long night, you know, its long hours when you're disturbed at night – P6*

> *You don't see that there are better days ahead because when you aren't sleeping your days become so much longer, and you worry that you can't see the future. People will tell you there is light at the end of the tunnel, but you can't see that. You're frightened it might be like that for a very long time – P5*

Subtheme two: 'Fearful is a little word': distress and entrapment

Participants reflected that sleep can offer an escape, and provide a 'switch off' from the shared reality. Being unable to sleep, thus unable to escape, facilitated a sense of entrapment in a cycle of negative thinking:

> *[after a period of not sleeping] it was scary because it got to the point where I didn't want to be here anymore, that's as bad as it got … what used to be, what I used to be in control of, what used to be positive turned negative. That was my thoughts. Everything just flipped to the negative – P5*

In some cases, participants described a 'blurring' of sleep and wakefulness, whereby they felt trapped within the unusual experiences they were having. This blending at times contributed to heightened awareness of danger and death that extended to daytime hours:

I was seeing things that weren't there, I was somewhere else. When I did fall asleep as it was only for an hour or something, it didn't feel like a break from delusions because then I was just dreaming about whatever I am delusional about. And when I'd wake up, I would just carry on in that delusion – P7

All my dreams are about dying or danger … I wake up all confused, like I don't know if it's real or not and I'll say that's my dream telling me the future… my dreams blended together and it made me more paranoid when I was out because I felt like those things [in my dream] were going to happen to me – P10

Participants also discussed experiences of feeling trapped within feelings of paranoia after disrupted or absent sleep:

> *I was paranoid. Fearful is a little word, I was paranoid. I was paranoid about everything around me, I felt like nothing was real. When I'd not slept, it was 10x worse. I felt like I was being spied on – P5*

> *I'd never had beliefs like that before [my first episode] I felt like people were out to get me, very paranoid, very unsafe. I had to sleep with my bedroom light on but I couldn't switch off and sleep because I was so scared – P10*

For some participants, they viewed suicide as the only option to escape what they were experiencing:

> *The word that stuck out to me was escape … suicide felt like the only way out for me at the time. Terror was a really prominent part of my episode and feeling like I was a target … I was obsessive about suicide. It was like two sides of the same coin, like one was suicide and the other was I'm going to be killed in some horrific way … I may as well kill myself to prevent someone else from hurting me – P8*

Discussion

The primary aim of this study was to offer initial descriptive insights into actigraphy measured sleep disturbances, and explore the subjective experiences of sleep, psychosis experiences, and suicidal ideation in FEP. Both the descriptive actigraphy data and qualitative findings indicated areas that may warrant further exploration. The use of actigraphy enabled exploration of distinct sleep parameters. All participants wore the watch for the study duration, indicating that actigraphy is feasible to explore sleep parameters in this population. Whilst non-significant associations were anticipated due to the descriptive nature of this study, there was high variability in participant sleep measures that warrant attention.

Average sleep duration ranged from 3 hours 56 minutes to 8 hours 3 minutes. Shorter sleep duration is associated with suicidal ideation in non-clinical groups[80–83]. However, much of the work in FEP explores 'sleep problems,' often measured as a binary yes/no outcome, or categorised by the presence or absence of insomnia. Research has indicated that sleep problems at baseline are associated with increased odds of suicidal ideation at 24 month follow up (with a dose-dependent relationship) and were a predictor of higher symptomology in FEP. Given associations between sleep disturbance and suicidal ideation in FEP when measured by single-item measures, larger-scale studies exploring objectively measured sleep duration and its relationship to suicidal ideation in FEP are warranted[16].

Although qualitatively participants noted that short sleep duration was common, longer sleep latency or the inability to initiate sleep onset was considered more distressing.

[16] Please see Extended Discussion (4.1.1) for further discussion of sleep parameters in FEP

In this study, average sleep latency was 27.12 minutes (range 0-88), whilst average WASO was 65.15 minutes (range 11.14-162.29). Increased WASO and sleep latency is shown in those with long-term psychosis[84], FEP[85] and ARMS[27]. Research exploring sleep latency, WASO, and suicidal ideation is limited, but there is some evidence for associations between longer sleep latency and elevated active suicidal ideation in adults[51]. There is also evidence that the timing of nocturnal wakefulness is significant[86]. Wakefulness in the early morning hours[87], with some research specifying between 4 and 5am[88], has been associated with next day suicidal ideation in those with depression. However, recent research has suggested that WASO may not uniquely characterise those who experience suicidal ideation from those that do not[89]. Thus, WASO may only be significant for suicidal ideation prediction if it occurs at specific times, but this warrants further exploration both generally and in FEP.

There was considerable variation in the timing of sleep onset both individually and across participants[17]**.** This mirrored qualitative data, in which participants discussed inconsistency in their ability to initiate a consistent sleep onset time. Sleep variability may be relevant to the relationship with suicidal ideation for several reasons. Firstly, given considerable night-to-night variability, deriving an average sleep onset time across study measurement periods may not be appropriate to explore nuanced insights. Secondly, our findings indicate high variability of sleep timing. It is important to also consider variability and fluctuations in suicidal ideation in this relationship. Suicidal ideation has been shown to emerge and fluctuate across days, hours, and minutes[90], thus prompting a more recent interest into proximal predictors of suicidal ideation. Studies using Ecological Momentary Assessment (EMA) (repeated real-time sampling of variables in participants natural environments) to sample daily variability

[17] Please see Extended Discussion for further discussion of nocturnal wakefulness in FEP

have shown decreased sleep duration and quality predicted next day suicidal ideation, but not efficiency[91], whereas a recent study indicated that sleep latency and WASO predicted next day passive and active suicidal ideation, but duration did not[89]. These inconsistencies in the EMA literature base are expected given it is an emerging method; however, EMA may be particularly useful to explore the sleep-suicide relationship in FEP given day-to-day fluctuations in sleep timing, and increased risk of suicide in this group. Finally, the absence of a consistent sleep schedule may warrant exploration. Variability of sleep timing is a noted longitudinal predictor of suicidal ideation[92], alongside the aforementioned research indicating wakefulness in specific time-periods may increase suicidal risk. When adjusting for the number of people awake in the population at a given time, the risk for suicide is highest at night[40], particularly between the hours of 2 and 4am[93]. Given the notability of circadian drift in long-term psychosis[84,94], and delayed sleep onset and WASO in FEP and ARMS groups, being awake at this time may confer additional vulnerability in an already vulnerable group. [18]

Much of the preceding discussion may be understood within the context of the "mind after midnight" hypothesis [39], which proposes disrupted sleep and excessive nocturnal wakefulness facilitates a period of vulnerability for risky behaviour, such as suicide. The hypothesis proposes within this timeframe, individuals may be more vulnerable to mechanisms of suicidal behaviour, such as attentional bias and negative affect. Participants construction of their experiences regarding prolonged latency and increased WASO were not directly explored in our study, however, participants discussed an increase in suicidal ideation and self-injurious behaviours when awake

[18] Please see Extended Discussion (4.1.2) for further discussion of nocturnal wakefulness and suicidal ideation in FEP

at night. The experience of night-time wakefulness is considered distressing and related to suicidal ideation[95]; factors contributing to this relationship have been suggested, such as hopelessness[96] and rumination[97], but are yet to be explored qualitatively.[19] Qualitative work exploring perceptions and experiences of delayed sleep and nocturnal wakefulness in FEP would offer important insights into the psychological processes in this complex relationship.

Despite studies endorsing the need for qualitative work in sleep-suicide research [98], sleep-related qualitative work in those with psychosis is limited [48,99]. In this study, qualitative accounts facilitated exploration of concepts that were not explored in actigraphy analysis. For example, whilst our secondary aims sought to explore the proposed relationship between sleep and suicidal ideation, qualitative data indicated that non-suicidal self-injury (NSSI) following periods of sleep disturbance was more commonly experienced. Sleep plays an adaptive role in emotional processing [100], and both short sleep duration and diagnosed sleep disorders such as insomnia are associated with NSSI [101]. What is noteworthy, is that NSSI and risk-taking were commonly discussed in relation to periods of sleep deprivation, but also periods in which sleep was considered irregular or non-restorative. Little attention has been afforded to sleep variability as a risk factor for NSSI, despite the high prevalence of NSSI amongst those experiencing FEP or SSDs [102–104]. A recent EMA study indicated that sleep irregularity predicted more intense urges to engage in NSSI than sleep duration [105]; this finding is particularly pertinent in this context, given that NSSI is a common risk factor for future suicidal behaviour in those with mental health difficulties

[19] Please see Extended Discussion for further discussion on rumination (4.3.1) and entrapment (4.4.2)

[106]. Thus, assessment of NSSI in EIP services may be warranted, alongside further research in this area[20].

In addition to NSSI, in the construction of their experience participants discussed periods of self-reported mania following periods of sleep deprivation[21]. Pervasive sleep disturbance is a well-established feature of presentations characterised by mania as disturbed sleep can contribute to periods of relapse given its role in affect regulation[107]. Risk-taking (often characterised by impulsivity and impaired decision making) is a noted feature of both mania and sleep deprivation in acute and long-term presentations[108]. It is estimated that 5-20% of EIP caseloads consist of individuals experiencing mania[109], and whilst neglected in the literature ~30% of those experiencing FEP experience affective symptoms[110]. Though research is sparse, evidence indicates that those with FEP and mania symptoms experience more positive psychosis symptoms, and mania can delay remission by over a year in comparison to those experiencing FEP without mania[111]. Notably, those with longer-term affective psychosis are more likely to be women, and less likely to attempt suicide[112,113]. In this study, given the high self-reported experience of mania, and a larger proportion of female participants, this may offer some insight into why suicidality was centred around ideation and self-injurious behaviour in this participant group. The experience of mania was considered important in participants construction of their experience of sleep and psychosis, and it may be useful to consider mania as a potential mediator or moderator of the sleep-psychosis relationship in FEP. Or, given a percentage of FEP patients report subsyndromal mania symptoms, considering that some individuals are more vulnerable to mania or psychosis[114] and sleep disturbance may 'trigger' such

[20] Please see Extended Discussion (4.5.2) for further discussion of suicide risk assessment in FEP
[21] Please see Extended Discussion (4.3.4) for further discussion of mania in FEP

experiences. Qualitative work could explore construction of participants experiences of mania and other psychological processes in the sleep-psychosis relationship.

Actigraphy data indicated that despite short, all participants gained at least several hours of sleep per night in the present study, However, in the qualitative analysis participants described periods of acute sleep deprivation prior to FEP, which warrant exploration in the context of psychosis and suicidality. The duration of complete sleep deprivation was considered important, which reflects experimental literature showing that the severity of psychosis experiences increases with each night of total deprivation [20]. However, in much of the sleep deprivation literature, once sleep debt is restored, participants have reported full 'recovery' [20]. What is less clear is why some individuals, such as those participating in this study, continue to experience persistent psychosis symptoms following a period of sleep restoration.
Epidemiological studies have evidenced a multitude of factors in the aetiology of psychosis vulnerability[35], and it may be plausible that sleep deprivation may partially contribute to psychosis onset in individuals with an already increased vulnerability, supporting diathesis models of mental health difficulties [36]. Sleep restriction research may further endorse this point, given the largest effect sizes for increased paranoia and hallucinations were found in those with more psychotic experiences at baseline [37]. Diathesis-stress models[115] are theoretically implicated in well-established models of suicide, for example the Motivational-Volitional model[38], in which acute sleep disturbance may be considered a precipitating factor in the volitional stage, though this warrants further exploration.[22]

[22] Please see Extended Discussion (4.4.2) for further information on entrapment and suicide

Secondary aims of this study sought to explore if insomnia (as measured by the ISI) was related to experiences of suicidal ideation or psychosis symptoms. Whilst relationships were not significant, correlation coefficients are strongly indicative of a relationship, which aligns with meta-analyses evidencing insomnia as the strongest predictor of suicidal ideation [14], All participants met criteria for subthreshold insomnia on the ISI, with 6 participants meeting criteria for clinical insomnia. In this context, another potential explanation for persistent experiences following sleep restoration is that sleep remains only partially restored in some individuals. Much of the sleep restriction literature employs a total deprivation design[116], rather than mimicking insufficient sleep over extended periods as in insomnia. Insomnia has been associated with 3-to-4-fold increased odds of suicidal ideation over three month[42], and 1-8 year periods[52] in those with SSD's. Such relationships in FEP are less clear however, recent research has shown that those with persistent sleep difficulties were 13x more likely to experience suicidal ideation at least once over a 24-month period than those without[33].

The above discussion indicates that FEP research exploring sleep as both a proximal and distal predictor of suicidal ideation is warranted. While the next-day or proximal impact of sleep disturbances has started to be considered by EMA research, there is also a need to consider longitudinal risk of suicidal ideation through the accumulative impact of chronic and persistent sleep disturbance in this group. Clinically, it may be appropriate for EIP services to include sleep assessment in routine outcomes and risk assessments given their relationship to both symptom progression and suicidality[23]. Further, reduction in sleep difficulties may be achieved

[23] Please see Extended Discussion (4.5.1) for further discussion on sleep assessment in Early Intervention Services

through psychological treatments, e.g., Cognitive Behavioural Therapy for insomnia has shown efficacy in non-affective psychosis[117] and ongoing feasibility trials in ARMS groups indicate promise[118].

Study findings should be considered in light of limitations[24]**.** Whilst the small number of participants was appropriate for this mixed-methods exploratory study, work aiming to identify robust associations between actigraphy-measured sleep variables, psychosis symptoms and suicidal ideation must be adequately powered. Participants in this study were demographically diverse; research indicating higher risk age groups for suicide[119], may explain the heterogeneity of quantitative findings. All participants were regularly taking sleep medication, which has been found to decrease REM sleep[120]. Actigraphy cannot provide insight into sleep stages and given associations between reduced REM sleep and emotional control[121], and emotional control and suicidal ideation[122], it is important to acknowledge that this variable was unexplored.

All psychometric measures were self-report. Whilst the PQB indicated the presence of symptoms, measures such as the CGI may be appropriate in future studies to provide a clinically robust measure of symptomology in this population, or the PANSS due to its interviewer administration. Additionally, considerable participant diversity likely contributed to the high variation in BSS measures. Due to the structure and wording of the BSS[123], many participants scored 0 which may not reflect of passive or fluctuating ideation. Measures such as the Suicidal Ideation Attributes Scale may be more appropriate in future work to assess attributes of suicidal thoughts rather than quantify their presence. However, it is acknowledged

[24] Please see Extended Limitations (4.9)

that there is a need for brief and psychologically robust measures of suicidal ideation developed and validated in populations of those with psychosis.

Due to the cross-sectional design, associations were limited to one point in time and the qualitative aspect retrospective. Longitudinal research, including those employing qualitative methodologies, may be useful in this group. Further, given developments in EMA capturing momentary shifts in suicidality in response to sleep disturbance, future research may employ such methods to explore proximal risk in FEP, as this holds important implications for services. Finally, it is acknowledged that this study will not reflect sleep-suicide associations in acute FEP given participants had capacity to consent, and the responsible clinician deeming risk as low was a participation requirement.

In conclusion, this is the first mixed-methods study to explore actigraphy-measured sleep disturbances associations with psychosis symptoms and suicidal ideation in FEP. Notwithstanding limitations, findings indicated important insights to consider and inform future research. The inclusion of actigraphy was both pragmatic and effective to explore distinct sleep parameters in FEP groups, in an attempt to negate difficulties with single item or binary measures of sleep employed in previous studies[12,33]. Further, qualitative methods facilitated insight into the construction of participants' experiences and the complex psychological processes in the sleep-suicide relationship, and thus, provides rationale for the inclusion of qualitative research in FEP and SSD populations in this field.[25]

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[25] Please see Extended Future Research (4.9)

References

1. Correll CU, Solmi M, Croatto G, et al. Mortality in people with schizophrenia: a systematic review and meta-analysis of relative risk and aggravating or attenuating factors. *World Psychiatry*. 2022;21(2):248-271. doi:10.1002/wps.20994
2. Ventriglio A, Gentile A, Bonfitto I, et al. Suicide in the early stage of schizophrenia. *Front Psychiatry*. 2016;7(JUN). doi:10.3389/fpsyt.2016.00116
3. Bornheimer LA, Wojtalik JA, Li J, Cobia D, Smith MJ. Suicidal ideation in first-episode psychosis: Considerations for depression, positive symptoms, clinical insight, and cognition. *Schizophr Res*. 2021;228:298-304. doi:10.1016/j.schres.2020.12.025
4. Pelizza L, Pompili M, Azzali S, et al. Suicidal thinking and behaviours in First Episode Psychosis: Findings from a 3-year longitudinal study. *Early Interv Psychiatry*. 2021;15(3):624-633. doi:10.1111/eip.12994
5. Austad G, Joa I, Johannessen JO, Larsen TK. Gender differences in suicidal behaviour in patients with first-episode psychosis. *Early Interv Psychiatry*. 2015;9(4):300-307. doi:10.1111/eip.12113
6. Iyer SN, Mustafa SS, Moro L, et al. Suicidality Over the First 5 Years of Psychosis: Does Extending Early Intervention Have Benefits? *Canadian Journal of Psychiatry*. 2021;66(5):468-476. doi:10.1177/0706743720961714
7. Pelizza L, Pellegrini C, Quattrone E, et al. Suicidal Ideation in Patients Experiencing a First-episode Psychosis: Findings From the 2-Year Follow-up of the “Parma Early Psychosis” Program. *Suicide Life Threat Behav*. 2020;50(4):838-855. doi:10.1111/sltb.12625
8. Kit S, Chan W, Wing S, et al. Association of an Early Intervention Service for Psychosis With Suicide Rate Among Patients With First-Episode Schizophrenia-Spectrum Disorders. 2018. doi:10.1001/jamapsychiatry.2018.0185
9. Nordentoft M, Laursen TM, Agerbo E, Qin P, Høyer EH, Mortensen PB. Change in suicide rates for patients with schizophrenia in Denmark, 1981-97: Nested case-control study. *Br Med J*. 2004;329(7460):261-264. doi:10.1136/bmj.38133.622488.63
10. Klonsky ED, May AM, Saffer BY. The critical distinction between suicidal ideation and suicide attempts. *Annu Rev Clin Psychol*. 2016;12:307-330. doi:10.1002/wps.20907
11. Bornheimer LA, Cobia DJ, Li Verdugo J, Holzworth J, Smith MJ. Clinical insight and cognitive functioning as mediators in the relationships between symptoms of psychosis, depression, and suicide ideation in first-episode psychosis. *J Psychiatr Res*. 2022;147:85-93. doi:10.1016/j.jpsychires.2022.01.006
12. Rogers E, Gresswell M, Durrant S. The relationship between sleep and suicidality in schizophrenia spectrum and other psychotic disorders: A systematic review. *Schizophr Res*. 2023;261:291-303. doi:10.1016/j.schres.2023.10.010

13. Simmons Z, Burlingame G, Korbanka J, et al. Insomnia symptom severity is associated with increased suicidality and death by suicide in a sample of patients with psychiatric disorders. *Sleep*. 2021;44(7). doi:10.1093/sleep/zsab032

14. Harris LM, Huang X, Linthicum KP, Bryen CP, Ribeiro JD. Sleep disturbances as risk factors for suicidal thoughts and behaviours: a meta-analysis of longitudinal studies. *Sci Rep*. 2020;10(1). doi:10.1038/s41598-020-70866-6

15. Malik S, Kanwar A, Sim LA, et al. The association between sleep disturbances and suicidal behaviors in patients with psychiatric diagnoses: a systematic review and meta-analysis. *Syst Rev*. 2014;3(1):18. doi:10.1186/2046-4053-3-18

16. Freeman D, Taylor KM, Molodynski A, Waite F. Treatable clinical intervention targets for patients with schizophrenia. *Schizophr Res*. 2019;211:44-50. doi:10.1016/j.schres.2019.07.016

17. Waite F, Sheaves B, Isham L, Reeve S, Freeman D. Sleep, and schizophrenia: From epiphenomenon to treatable causal target. *Schizophr Res*. 2020;221:44-56. doi:10.1016/j.schres.2019.11.014

18. Freeman D, Sheaves B, Waite F, Harvey AG, Harrison PJ. Sleep disturbance and psychiatric disorders. *Lancet Psychiatry*. 2020;7(7):628-637. doi:10.1016/S2215-0366(20)30136-X

19. Reeve S, Sheaves B, Freeman D. Sleep Disorders in Early Psychosis: Incidence, Severity, and Association with Clinical Symptoms. *Schizophr Bull*. 2019;45(2):287-295. doi:10.1093/schbul/sby129

20. Waters F, Chiu V, Atkinson A, Blom JD. Severe Sleep Deprivation Causes Hallucinations and a Gradual Progression Toward Psychosis With Increasing Time Awake. *Front Psychiatry*. 2018;9. doi:10.3389/fpsyt.2018.00303

21. Freeman D, Fowler D. Routes to psychotic symptoms: trauma, anxiety, and psychosis-like experiences. *Psychiatry Res*. 2009;169(2):107-112.

22. Blanchard JJ, Andrea A, Orth RD, Savage C, Bennett ME. Sleep disturbance and sleep-related impairment in psychotic disorders are related to both positive and negative symptoms. *Psychiatry Res*. 2020;286:112857. doi:10.1016/j.psychres.2020.112857

23. Chung KF, Poon YPYP, Ng TK, Kan CK. Correlates of sleep irregularity in schizophrenia. *Psychiatry Res*. 2018;270:705-714. doi:10.1016/j.psychres.2018.10.064

24. Kaskie RE, Graziano B, Ferrarelli F. Schizophrenia, and sleep disorders: Links, risks, and management challenges. *Nat Sci Sleep*. 2017;9:227-239. doi:10.2147/NSS.S121076

25. Clarke S, Hanna D, Davidson S, Shannon C, Mulholland C. The association between sleep quality and attenuated psychotic symptoms. *Early Interv Psychiatry*. 2021;15(4):837-848. doi:10.1111/eip.13020

26. Clarke L, Chisholm K, Cappuccio FP, et al. Sleep disturbances and the At Risk Mental State: A systematic review and meta-analysis. *Schizophr Res*. 2021;227:81-91. doi:10.1016/j.schres.2020.06.027

27. Lunsford-Avery JR, LeBourgeois MK, Gupta T, Mittal VA. Actigraphic-measured sleep disturbance predicts increased positive symptoms in adolescents at ultra high-risk for psychosis: A longitudinal study. *Schizophr Res*. 2015;164(1-3):15-20. doi:10.1016/j.schres.2015.03.013

28. Lunsford-Avery JR, Gonçalves B da SB, Brietzke E, et al. Adolescents at clinical-high risk for psychosis: Circadian rhythm disturbances predict worsened prognosis at 1-year follow-up. *Schizophr Res*. 2017;189:37-42. doi:10.1016/j.schres.2017.01.051

29. Waite F, Myers E, Harvey AG, et al. Treating Sleep Problems in Patients with Schizophrenia. *Behavioural and Cognitive Psychotherapy*. 2016;44(3):273-287. doi:10.1017/S1352465815000430

30. Davies G, Haddock G, Yung AR, Mulligan LD, Kyle SD. A systematic review of the nature and correlates of sleep disturbance in early psychosis. *Sleep Med Rev*. 2017;31:25-38. doi:10.1016/j.smrv.2016.01.001

31. Bornheimer LA. Suicidal Ideation in First-Episode Psychosis (FEP): Examination of Symptoms of Depression and Psychosis Among Individuals in an Early Phase of Treatment. *Suicide Life Threat Behav*. 2019;49(2):423-431. doi:10.1111/sltb.12440

32. Cassidy RM, Yang F, Kapczinski F, Passos IC. Risk Factors for Suicidality in Patients with Schizophrenia: A Systematic Review, Meta-analysis, and Meta-regression of 96 StuDies. *Schizophr Bull*. 2018;44(4):787-797. doi:10.1093/schbul/sbx131

33. Ayers N, McCall W V, Miller BJ. Sleep Problems, Suicidal Ideation, and Psychopathology in First-Episode Psychosis. *Schizophr Bull*. 2024;50(2):286-294. doi:10.1093/schbul/sbad045

34. Fusar-Poli P, De Micheli A, Patel R, et al. Real-World Clinical Outcomes Two Years After Transition to Psychosis in Individuals at Clinical High Risk: Electronic Health Record Cohort Study. *Schizophr Bull*. 2020;46(5):1114-1125. doi:10.1093/schbul/sbaa040

35. Fusar-Poli P, Tantardini M, De Simone S, et al. Deconstructing Vulnerability for Psychosis: Meta-Analysis of Environmental Risk Factors for Psychosis in Subjects at Ultra High-Risk. *European Psychiatry*. 2017;40:65-75. doi:10.1016/j.eurpsy.2016.09.003

36. Drake CL, Pillai V, Roth T. Stress, and sleep reactivity: a prospective investigation of the stress-diathesis model of insomnia. *Sleep*. 2014;37(8):1295-1304. doi:10.5665/sleep.3916

37. Reeve S, Emsley R, Sheaves B, Freeman D. Disrupting Sleep: The Effects of Sleep Loss on Psychotic Experiences Tested in an Experimental Study With Mediation Analysis. *Schizophr Bull*. 2018;44(3):662-671. doi:10.1093/schbul/sbx103

38. O'Connor RC, Kirtley OJ. The integrated motivational-volitional model of suicidal behaviour. *Philos Trans R Soc Lond B Biol Sci*. 2018;373(1754). doi:10.1098/rstb.2017.0268

39. Tubbs AS, Fernandez FX, Grandner MA, Perlis ML, Klerman EB. The Mind After Midnight: Nocturnal Wakefulness, Behavioral Dysregulation, and Psychopathology. *Frontiers in Network Physiology*. 2022;1. doi:10.3389/fnetp.2021.830338

40. Perlis ML, Grandner MA, Chakravorty S, Bernert RA, Brown GK, Thase ME. Suicide, and sleep: Is it a bad thing to be awake when reason sleeps? *Sleep Med Rev*. 2016;29:101-107. doi:10.1016/j.smrv.2015.10.003

41. Miller BJ, McEvoy JP, McCall W V. Insomnia, Suicidal Ideation, and Suicide Attempts in the Clinical Antipsychotic Trials of Intervention Effectiveness. *J Clin Psychiatry*. 2021;82(3). doi:10.4088/jcp.20m13338

42. Ketcham E, Schooler NR, Severe JB, Buckley PF, Miller BJ. Longitudinal study of insomnia, suicidal ideation, and psychopathology in schizophrenia. *Schizophr Res*. 2024;267:34-38. doi:10.1016/j.schres.2024.03.030

43. Miller BJ, McCall W V., Xia L, et al. Insomnia, suicidal ideation, and psychopathology in Chinese patients with chronic schizophrenia. *Prog Neuropsychopharmacol Biol Psychiatry*. 2021;111. doi:10.1016/j.pnpbp.2020.110202

44. Miller BJ, Parker CB, Rapaport MH, Buckley PF, McCall W V. Insomnia, and suicidal ideation in nonaffective psychosis. *Sleep*. 2019;42(2). doi:10.1093/sleep/zsy215

45. Rogers E, Gresswell M, Durrant S. The relationship between sleep and suicidality in schizophrenia spectrum and other psychotic disorders: A systematic review. *Schizophr Res*. 2023;261:291-303. doi:10.1016/j.schres.2023.10.010

46. Zanini M, Castro J, Coelho FM, et al. Do sleep abnormalities and misaligned sleep/circadian rhythm patterns represent early clinical characteristics for developing psychosis in high risk populations? *Neurosci Biobehav Rev*. 2013;37(10):2631-2637. doi:10.1016/j.neubiorev.2013.08.012

47. Waite F, Evans N, Myers E, et al. The patient experience of sleep problems and their treatment in the context of current delusions and hallucinations. *Psychology and Psychotherapy: Theory, Research and Practice*. 2016;89:181-193. doi:10.1111/papt.12073

48. Faulkner S, Bee P. Experiences, perspectives, and priorities of people with schizophrenia spectrum disorders regarding sleep disturbance and its treatment: A qualitative study. *BMC Psychiatry*. 2017;17(1). doi:10.1186/s12888-017-1329-8

49. Waite F, Bradley J, Chadwick E, Reeve S, Bird JC, Freeman D. The experience of sleep problems and their treatment in young people at ultra-high risk of psychosis: A thematic analysis. *Front Psychiatry*. 2018;9(AUG). doi:10.3389/fpsyt.2018.00375

50. Littlewood DL, Gooding P, Kyle SD, Pratt D, Peters S. Understanding the role of sleep in suicide risk: qualitative interview study. *BMJ Open*. 2016;6:12113. doi:10.1136/bmjopen-2016

51. Batterham PJ, Werner-Seidler A, Calear AL, McCallum S, Gulliver A. Specific aspects of sleep disturbance associated with suicidal thoughts and attempts. *J Affect Disord*. 2021;282:574-579. doi:10.1016/j.jad.2020.12.150

52. Li SX, Lam SP, Zhang J, et al. Sleep disturbances and suicide risk in an 8-year longitudinal study of schizophrenia-spectrum disorders. *Sleep*. 2016;39(6):1275-1282. doi:10.5665/sleep.5852

53. von Elm E, Altman DG, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Lancet*. 2007;370(9596):1453-1457. doi:10.1016/S0140-6736(07)61602-X

54. O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for Reporting Qualitative Research. *Academic Medicine*. 2014;89(9):1245-1251. doi:10.1097/ACM.0000000000000388

55. Homman LE, Smart SE, O'Neill F, MacCabe JH. Attrition in longitudinal studies among patients with schizophrenia and other psychoses; findings from the STRATA collaboration. *Psychiatry Res*. 2021;305:114211. doi:10.1016/j.psychres.2021.114211

56. Wickwire EM, Albrecht JS, Capaldi VF, et al. Trajectories of Insomnia in Adults After Traumatic Brain Injury. *JAMA Netw Open*. 2022;5(1):e2145310. doi:10.1001/jamanetworkopen.2021.45310

57. Sabouri M, Mirhashemi M, Shafiei M, Mahmoodkhani M, Tehrani DS. Mild traumatic brain injury: Insomnia or sleepiness. *Interdisciplinary Neurosurgery*. 2023;34:101814. doi:10.1016/j.inat.2023.101814

58. Angarita GA, Emadi N, Hodges S, Morgan PT. Sleep abnormalities associated with alcohol, cannabis, cocaine, and opiate use: a comprehensive review. *Addiction Science & Clinical Practice*. 2016;11(1):9. doi:10.1186/s13722-016-0056-7

59. Ebrahim IO, Shapiro CM, Williams AJ, Fenwick PB. Alcohol and Sleep I: Effects on Normal Sleep. *Alcohol Clin Exp Res*. 2013;37(4). doi:10.1111/acer.12006

60. Scott J, Kallestad H, Vedaa O, Sivertsen B, Etain B. Sleep disturbances and first onset of major mental disorders in adolescence and early adulthood: A systematic review and meta-analysis. *Sleep Med Rev*. 2021;57. doi:10.1016/j.smrv.2021.101429

61. Ancoli-Israel S, Martin JL, Blackwell T, et al. The SBSM Guide to Actigraphy Monitoring: Clinical and Research Applications. *Behavioral Sleep Medicine*. 2015;13(sup1):S4-S38. doi:10.1080/15402002.2015.1046356

62. Liu RT, Steele SJ, Hamilton JL, et al. Sleep and suicide: A systematic review and meta-analysis of longitudinal studies. *Clin Psychol Rev*. 2020;81. doi:10.1016/j.cpr.2020.101895

63. Morin CM, Belleville G, Bélanger L, Ivers H. The Insomnia Severity Index: Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response. *Sleep*. 2011;34(5):601-608. doi:10.1093/sleep/34.5.601

64. Loewy RL, Pearson R, Vinogradov S, Bearden CE, Cannon TD. Psychosis risk screening with the Prodromal Questionnaire — Brief Version (PQ-B). *Schizophr Res*. 2011;129(1):42-46. doi:10.1016/j.schres.2011.03.029

65. Savill M, D'Ambrosio J, Cannon TD, Loewy RL. Psychosis risk screening in different populations using the Prodromal Questionnaire: A systematic review. *Early Interv Psychiatry*. 2018;12(1):3-14. doi:10.1111/eip.12446

66. Xu L, Zhang T, Zheng L, et al. Psychometric Properties of Prodromal Questionnaire-Brief Version among Chinese Help-Seeking Individuals. *PLoS One*. 2016;11(2):e0148935. doi:10.1371/journal.pone.0148935

67. Kline E, Schiffman J. Psychosis risk screening: A systematic review. *Schizophr Res*. 2014;158(1-3):11-18. doi:10.1016/j.schres.2014.06.036

68. Beck AT, Steer RA. *Beck Scale For Suicide Ideation Manual*. 1993 ed. Pearson; 1991.

69. Prakash J, Chatterjee K, Srivastava K, Chauhan V. First-episode psychosis: How long does it last? A review of evolution and trajectory. *Ind Psychiatry J*. 2021;30(2):198. doi:10.4103/ipj.ipj_38_21

70. Prakash J, Saini RK, Srivastava K, Chatterjee K, Basannar DR, Mohan P. Longitudinal study of the course and outcome of first-episode psychosis. *Med J Armed Forces India*. 2021. doi:10.1016/j.mjafi.2021.04.013

71. McCall W V., Porter B, Pate AR, et al. Examining suicide assessment measures for research use: Using item response theory to optimize psychometric assessment for research on suicidal ideation in major depressive disorder. *Suicide Life Threat Behav*. 2021;51(6):1086-1094. doi:10.1111/sltb.12791

72. Faulkner S, Bee P. Experiences, perspectives, and priorities of people with schizophrenia spectrum disorders regarding sleep disturbance and its treatment: a qualitative study. *BMC Psychiatry*. 2017;17(1):158. doi:10.1186/s12888-017-1329-8

73. Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qual Res Sport Exerc Health*. 2019;11(4):589-597. doi:10.1080/2159676X.2019.1628806

74. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa

75. Sturgiss EA, Clark AM. Using critical realism in primary care research: an overview of methods. *Fam Pract*. 2020;37(1):143-145. doi:10.1093/fampra/cmz084

76. Spencer HM, Dudley R, Johnston L, Freeston MH, Turkington D, Tully S. Case formulation—A vehicle for change? Exploring the impact of cognitive behavioural therapy formulation in first episode psychosis: A reflexive thematic analysis.

Psychology and Psychotherapy: Theory, Research and Practice. 2023;96(2):328-346. doi:10.1111/papt.12442

77. Finlay L. Thematic analysis: The 'good,' the 'bad' and the 'ugly. *Journal for Qualitative Research in Psychotherapy*. 2021;11:103-116.

78. Critical Appraisal Skills Programme. *CASP (Qualitative) Checklist*.; 2018.

79. Finlay L. Championing "reflexivities." *Qualitative Psychology*. 2017;4(2):120-125. doi:10.1037/qup0000075

80. Pigeon WR, Pinquart M, Connor K. Meta-Analysis of Sleep Disturbance and Suicidal Thoughts and Behaviors. *Journal of Clinical Psychiatry*. 2012;73(9):1160-1167.

81. Dolsen EA, Prather AA, Lamers F, Penninx BWJH. Suicidal ideation and suicide attempts: associations with sleep duration, insomnia, and inflammation. *Psychol Med*. 2021;51(12):2094-2103. doi:10.1017/S0033291720000860

82. Chaput JP, Dutil C, Featherstone R, et al. Sleep duration and health in adults: an overview of systematic reviews. *Applied Physiology, Nutrition, and Metabolism*. 2020;45(10 (Suppl. 2)):S218-S231. doi:10.1139/apnm-2020-0034

83. Nadorff MR, Nazem S, Fiske A. Insomnia Symptoms, Nightmares and Suicide Risk: Duration of Sleep Disturbance Matters. 2005. doi:10.1111/sltb.12003

84. Meyer N, Faulkner SM, McCutcheon RA, Pillinger T, Dijk DJ, MacCabe JH. Sleep and Circadian Rhythm Disturbance in Remitted Schizophrenia and Bipolar Disorder: A Systematic Review and Meta-analysis. *Schizophr Bull*. 2020;46(5):1126-1143. doi:10.1093/schbul/sbaa024

85. Bagautdinova J, Mayeli A, Wilson JD, et al. Sleep Abnormalities in Different Clinical Stages of Psychosis: A Systematic Review and Meta-analysis. *JAMA Psychiatry*. 2023;80(3):202-210. doi:10.1001/jamapsychiatry.2022.4599

86. Tubbs AS, Fernandez FX, Perlis ML, et al. Suicidal ideation is associated with nighttime wakefulness in a community sample. *Sleep*. 2021;44(1). doi:10.1093/sleep/zsaa128

87. Gerner J, Ballard E, Farmer C, Duncan WC, Zarate C. Wakefulness After Sleep Onset as Predicting Suicidal Ideation. *Biol Psychiatry*. 2020;87(9):S240. doi:10.1016/j.biopsych.2020.02.1189

88. Ballard ED, Vande Voort JL, Bernert RA, et al. Nocturnal Wakefulness Is Associated With Next-Day Suicidal Ideation in Major Depressive Disorder and Bipolar Disorder. *J Clin Psychiatry*. 2016;77(6):825-831. doi:10.4088/JCP.15m09943

89. Cox RC, Brown SL, Chalmers BN, Scott LN. Examining sleep disturbance components as near-term predictors of suicide ideation in daily life. *Psychiatry Res*. 2023;326:115323. doi:10.1016/j.psychres.2023.115323

90. Coppersmith DDL, Ryan O, Fortgang RG, Millner AJ, Kleiman EM, Nock MK. Mapping the timescale of suicidal thinking. *Proceedings of the National Academy of Sciences*. 2023;120(17). doi:10.1073/pnas.2215434120

91. Littlewood DL, Kyle SD, Carter LA, Peters S, Pratt D, Gooding P. Short sleep duration and poor sleep quality predict next-day suicidal ideation: an ecological momentary assessment study. *Psychol Med*. 2019;49(3):403-411. doi:10.1017/S0033291718001009

92. Bernert RA, Hom MA, Iwata NG, Joiner TE. Objectively Assessed Sleep Variability as an Acute Warning Sign of Suicidal Ideation in a Longitudinal Evaluation of Young Adults at High Suicide Risk. *J Clin Psychiatry*. 2017;78(06):e678-e687. doi:10.4088/JCP.16m11193

93. Ballard ED, Vande Voort JL, Bernert RA, et al. Nocturnal Wakefulness Is Associated With Next-Day Suicidal Ideation in Major Depressive Disorder and Bipolar Disorder. *J Clin Psychiatry*. 2016;77(06):825-831. doi:10.4088/JCP.15m09943

94. Wulff K, Dijk DJ, Middleton B, Foster RG, Joyce EM. Sleep and circadian rhythm disruption in schizophrenia. *British Journal of Psychiatry*. 2012;200(4):308-316. doi:10.1192/bjp.bp.111.096321

95. Littlewood DL. *UNDERSTANDING THE ROLE OF SYMPTOMS OF SLEEP DISTURBANCE IN SUICIDAL PATHWAYS*.; 2018.

96. Woosley JA, Lichstein KL, Taylor DJ, Riedel BW, Bush AJ. Hopelessness mediates the relation between insomnia and suicidal ideation. *J Clin Sleep Med*. 2014;10(11):1223-1230. doi:10.5664/jcsm.4208

97. Holdaway AS, Luebbe AM, Becker SP. Rumination in relation to suicide risk, ideation, and attempts: Exacerbation by poor sleep quality? *J Affect Disord*. 2018;236:6-13. doi:10.1016/j.jad.2018.04.087

98. Littlewood DL, Gooding P, Kyle SD, Pratt D, Peters S. Understanding the role of sleep in suicide risk: qualitative interview study. *BMJ Open*. 2016;6:12113. doi:10.1136/bmjopen-2016

99. Faulkner S, Sidey-Gibbons C. Use of the Pittsburgh Sleep quality index in people with schizophrenia spectrum disorders: A mixed methods study. *Front Psychiatry*. 2019;10(MAY). doi:10.3389/fpsyt.2019.00284

100. Vandekerckhove M, Wang YL. Emotion, emotion regulation and sleep: An intimate relationship. *AIMS Neurosci*. 2018;5(1):1-17. doi:10.3934/Neuroscience.2018.1.1

101. Khazaie H, Zakiei A, McCall WV, et al. Relationship between Sleep Problems and Self-Injury: A Systematic Review. *Behavioral Sleep Medicine*. 2021;19(5):689-704. doi:10.1080/15402002.2020.1822360

102. Taylor PJ, Hutton P, Wood L. Are people at risk of psychosis also at risk of suicide and self-harm? A systematic review and meta-analysis. *Psychol Med*. 2015;45:911-926.

103. Challis S, Nielssen O, Harris A, Large M. Systematic meta-analysis of the risk factors for deliberate self-harm before and after treatment for first-episode psychosis. *Acta Psychiatr Scand*. 2013;127(6):442-454. doi:10.1111/acps.12074

104. Lorentzen EA, Mors O, Kjær JN. The Prevalence of Self-injurious Behavior in Patients With Schizophrenia Spectrum Disorders: A Systematic Review and Meta-analysis. *Schizophr Bull Open*. 2022;3(1). doi:10.1093/schizbullopen/sgac069

105. Burke T, Thompson A, Mifsud N, et al. Proportion and characteristics of young people in a first-episode psychosis clinic who first attended an at-risk mental state service or other specialist youth mental health service. *Schizophr Res*. 2022;241:94-101. doi:10.1016/j.schres.2021.12.035

106. Andover MS, Gibb BE. Non-suicidal self-injury, attempted suicide, and suicidal intent among psychiatric inpatients. *Psychiatry Res*. 2010;178(1):101-105. doi:10.1016/j.psychres.2010.03.019

107. Harvey AG, Talbot LS, Gershon A. Sleep Disturbance in Bipolar Disorder Across the Lifespan. *Clin Psychol (New York)*. 2009;16(2):256-277. doi:10.1111/j.1468-2850.2009.01164.x

108. Ramírez-Martín A, Ramos-Martín J, Mayoral-Cleries F, Moreno-Küstner B, Guzman-Parra J. Impulsivity, decision-making and risk-taking behaviour in bipolar disorder: a systematic review and meta-analysis. *Psychol Med*. 2020;50(13):2141-2153. doi:10.1017/S0033291720003086

109. Marwaha S, Beirne T, Broome M, Upthegrove R, Rowland T, Thompson A. The views of early intervention service staff on the treatment of first episode bipolar disorder. *Int J Psychiatry Clin Pract*. 2018;22(3):225-231. doi:10.1080/13651501.2017.1401640

110. Proctor SE, Mitford E, Paxton R. First episode psychosis: a novel methodology reveals higher than expected incidence; a reality-based population profile in Northumberland, UK. *J Eval Clin Pract*. 2004;10(4):539-547. doi:10.1111/j.1365-2753.2003.00474.x

111. Marwaha S, Hett D, Johnson S, et al. The impact of manic symptoms in first-episode psychosis: Findings from the UK National EDEN study. *Acta Psychiatr Scand*. 2021;144(4):358-367. doi:10.1111/acps.13307

112. Kapila A, Fisher HL, Johnson S, et al. Clinical and demographic differences between patients with manic, depressive, and schizophrenia-spectrum psychoses presenting to Early Intervention Services in London. *Early Interv Psychiatry*. 2019;13(3):509-516. doi:10.1111/eip.12511

113. Ramain J, Conus P, Golay P. A narrative review of intervention in first-episode affective psychoses. *J Psychiatr Res*. 2021;143:123-137. doi:10.1016/j.jpsychires.2021.09.023

114. Fiorillo A. The complexity of vulnerability to psychosis. *Epidemiol Psychiatr Sci*. 2019;28(2):138-139. doi:10.1017/S2045796018000690

115. van Heeringen K. *Stress–Diathesis Model of Suicidal Behavior*.; 2012.

116. Kahn-Greene ET, Killgore DB, Kamimori GH, Balkin TJ, Killgore WDS. The effects of sleep deprivation on symptoms of psychopathology in healthy adults. *Sleep Med*. 2007;8(3):215-221. doi:10.1016/j.sleep.2006.08.007

117. Freeman D, Waite F, Startup H, et al. Efficacy of cognitive behavioural therapy for sleep improvement in patients with persistent delusions and hallucinations (BEST): a prospective, assessor-blind, randomised controlled pilot trial. *Lancet Psychiatry*. 2015;2(11):975-983. doi:10.1016/S2215-0366(15)00314-4

118. Waite F, Černis E, Kabir T, et al. A targeted psychological treatment for sleep problems in young people at ultra-high risk of psychosis in England (SleepWell): a parallel group, single-blind, randomised controlled feasibility trial. *Lancet Psychiatry*. 2023;10(9):706-718. doi:10.1016/S2215-0366(23)00203-1

119. Sivertsen B, Omvik S, Pallesen S, Nordhus IH, Bjorvatn B. Sleep, and sleep disorders in chronic users of zopiclone and drug-free insomniacs. *J Clin Sleep Med*. 2009;5(4):349-354.

120. Galbiati A, Sforza M, Fasiello E, et al. The association between emotional dysregulation and REM sleep features in insomnia disorder. *Brain Cogn*. 2020;146:105642. doi:10.1016/j.bandc.2020.105642

121. Colmenero-Navarrete L, García-Sancho E, Salguero JM. Relationship Between Emotion Regulation and Suicide Ideation and Attempt in Adults and Adolescents: A Systematic Review. *Archives of Suicide Research*. 2022;26(4):1702-1735. doi:10.1080/13811118.2021.1999872

122. Podlogar, M, Gutierrez, P, Osman, A. Optimizing the Beck Scale for Suicide Ideation: An Item Response Theory Approach Among U.S. Military Personnel. Assessment. 2023; 30(4): 1321-1333

Extended Paper

1. Extended introduction

1.1. Psychosis

Psychosis is a complex phenomenon and is a common feature of many mental health, neurodevelopmental, acquired, or degenerative neurological or medical conditions (Arciniegas, 2015). Due to its complexity, defining psychosis is difficult. Broadly, the term psychosis encompasses a number of characteristics associated with significant alterations to an individual's thoughts, perception, mood, and behaviour (National Institute for Health and Care Excellence (NICE), 2021).

Psychotic experiences are largely understood as encompassing hallucinations and delusions (Linscott & van Os, 2013) both with or without insight into their pathological nature (Varghese et al., 2011). Hallucinations are sensory or perceptual abnormalities occurring in the absence of external or somatic stimuli and include auditory, visual, tactile, olfactory, and proprioceptive domains. For example, common hallucinations include hearing voices and visual disturbances such as seeing people or objects (Arciniegas, 2015). Delusions, by definition, are considered fixed 'false' beliefs that are considered evidence of the individual experiencing an alternative to the shared external reality. Delusional beliefs are those that are maintained with conviction even when presented with undisputable contradictory evidence. Delusions can be considered 'ordinary' in that they are plausible but not accepted by the given culture (e.g., being persecuted by government agencies), or 'bizarre' in that they are physically impossible (e.g., a stranger having removed something from the individual's body without leaving wounds or scars).

Traditionally, psychosis has been viewed as a categorical diagnosis whereby the individual is given a diagnosis for a psychotic disorder based on the presence of criteria within a diagnostic manual (Bentall et al., 2014). Understandings of psychosis have evolved over recent decades from a categorical approach towards a phenomenologically and temporally diverse experience across the general population, ranging from sub-clinical and transient psychotic-like experiences (PLEs) to diagnosable psychotic 'disorders' (DeRosse & Karlsgodt, 2015). The continuum model suggests that milder psychotic experiences can be considered at one end of the continuum amongst people in the general population experiencing mild distress without a diagnosis, whilst psychotic illness lies at the extreme end of the continuum.

There is considerable evidence for the utility of this model in conceptualising and understanding psychosis as a broad spectrum of experience (Unterrassner et al., 2017; van Os et al., 2009).

Median lifetime prevalence data indicates 5.8% of the general population experience a PLE at least once in their lifetime, with hallucinations much more common than delusional experiences (McGrath et al., 2015). Psychotic experiences are generally transient (Staines et al., 2022), however, evidence has accumulated to suggest that psychotic experiences are associated with the onset of mental health difficulties (e.g., anxiety or mood difficulties), alongside indicating risk of conversion to full psychosis (McGrath et al., 2015). However, such experiences in the general population refer to 'subthreshold' psychotic symptoms, such as delusion-like thoughts or perceptual abnormalities that contribute to distress or impairment (Giocondo et al., 2021). Amongst those who experience psychotic-like experiences, far fewer transition to a psychotic disorder, with the prevalence rates of a diagnosed psychotic disorder estimated as a 0.7% lifetime median risk (Calkins et al., 2017).

1.1.2. Psychotic Disorders

The International Classification of Disease (ICD-11) (ICD) is considered the most widely used classification of mental health difficulties in the world and is commonly used in the UK (Reed et al., 2019). The ICD-11 refers to schizophrenia and 'other psychotic disorders' including, but not limited to, schizoaffective disorder, delusional disorder, schizotypal disorder. Broadly, disorders are characterised by significant impairments in 'reality testing' and behavioural alterations. Symptoms are classified as positive (e.g. persistent delusions, hallucinations and disorganised thinking and behaviour) and negative (e.g., blunted of flat affect and psychomotor disturbance). Whilst it is acknowledged that such experiences exist on a continuum within the population, symptoms are considered to occur at a frequency, intensity, and duration that deviate from social or cultural norms (ICD-11), and have a considerable impact on both distress and social impairment (Yung & Lin, 2016). The ICD-11 includes an option of specifying severity across six symptom domains: positive, negative, depressed mood, manic mood, psychomotor, and cognitive. The contributor of each symptom domain can be rated across four categories (none, mild, moderate, or severe) and contributes to accurate description of the current clinical presentation.

Debate regarding the categorisation of psychological distress has been longstanding (Szasz, 1960). However, the medical model (in which diagnosis is ubiquitous) remains dominant in mental health care (Huda, 2021) . Within National Health Service (NHS) mental health services, diagnostic labels often provide access or referral to specific services (Bhugra & Flick, 2007) and research studies often rely on diagnostic grouping to ensure appropriate participant recruitment (Macneil et al., 2012). Scepticism of diagnostic markers are well-evidenced, with some well-cited criticisms including the arbitrary nature of cut-off points to determine 'clinical disorder' and absence of testable mental health 'markers' (Reed et al., 2019). Diagnoses are presented as binary classifications with clear boundaries to separate one disorder from another, which has prompted a shift towards a dimensional approach to mental illness whereby symptoms are graded continuously on a spectrum of severity (Cuthbert & Morris, 2021); such as the psychosis continuum.

Within this thesis, diagnosis of 'psychotic disorder' is used as a broad description of experience to aid recruitment. This study is seeking the experiences of individuals towards the extreme end of the psychosis continuum, where experiences are distinguishable from PLE's due to their frequency, severity, associated distress, and impact on the participants life. Consequently, diagnostic labels are used within this study to facilitate recruitment from appropriate services. However, throughout this thesis other language will be used interchangeably, such as 'unusual experiences' in line with the preference of participants and reflective of my own views of psychosis. Individuals experiencing psychosis often experience external and internalised stigma (Brohan et al., 2010), of which language can often be a significant contributor (Bowen et al., 2019). In an attempt to balance the requirements of operationalising phenomena and using universally recognised language for an academic journal, and use language that reflects my own views (see Section 2.3 for Researcher Position), I will use language interchangeably where possible, with less-stigmatising language such as 'unusual experiences', both at the preference of participants and reflective of my own views on psychosis (see Section 5 for Critical Reflection).

1.2. Psychological conceptualisations of psychosis

Given the individual complexity of psychosis, it is considered challenging to inclusively conceptualise it at a theoretical level (Kroll, 2007), thus, psychological theories of

psychosis are both numerous and diverse. In this section, a brief summary of a variety of psychological explanations will be introduced to provide a broad overview of psychological conceptualisations of psychosis.

1.2.1 Stress-vulnerability

Stress-vulnerability models (Zubin & Spring, 1977) have been considered one of the most influential models of psychosis, whereby trait (e.g., biological) and state (e.g., psychological, and societal) aspects are integrated into a diathesis stress model. The overarching concept posits that predisposing biological factors increase psychosis vulnerability under stressful circumstances (Demke, 2022). The proclaimed interactions between biological, societal, and psychological aspects are one of the most longstanding and influential models to understand psychosis, and the model suggests that psychosis symptoms emerge when an individual's stress threshold exceeds their vulnerability levels. Stress-vulnerability models have been adapted and elaborated in recent years, and whilst criticism of the model still remains (e.g., with its concordance to the medical model of mental health difficulties), the suggestion that psychosis may emerge from a complex interaction of biological, psychological, and societal factors is considered likely in much of the evidence base.

1.2.2 Psychodynamic considerations

Early psychological work by Sigmund Freud considered disintegration of the ego or pre-ego regression to explain 'psychotic states' (Freud, 1894), whereas later psychodynamically informed explanations also included ego-defence mechanisms such as splitting (Klein, 1946) can inform later psychotic illness. Some psychodynamic understandings can consider psychotic experiences as rich, meaningful expressions of the individuals inner world, with hallucinations and delusions offering representations of internal wishes or conflicts. However, other psychodynamic understandings can include psychotic expressions as defences against an intolerable internal emotional experience. For example, denial, projection, fragmentation, and projective identification have been considered active defences in psychodynamic therapy that contribute to psychotic presentations (Martindale & Summers, 2013).

1.2.3 Cognitive theories

Cognitive theorists have proposed the influential role of cognitive appraisals in psychosis onset and maintenance. Garety's model is arguably the most influential cognitive model of psychosis and proposes that biopsychosocial vulnerabilities interact with cognitive and emotional processes that in turn lead to biased appraisal of otherwise anomalous experiences, which develop into psychotic experience (Garety et al., 2001). Cognitive factors such as reasoning bias, lower belief flexibility, and an external attributional style have been considered to contribute to psychosis (Kuipers et al., 2006). Cognitive explanations suggest that psychosis 'symptoms' are understandable ways of making sense of experiences in the context of the individuals past (Kingdon & Mander, 2015). For example, beliefs, hallucinations, and delusions in psychosis often reflect personal histories (Johns et al., 2004), thus, interpreting anomalous experiences as threatening, yet in line with previous past experience, is understandable and can offer opportunity for modification.

The efficacy of Cognitive Behavioural Therapy for Psychosis (CBT-P) in prevention (Hutton & Taylor, 2014) and current presentations has been evidenced (Mehl et al., 2015; Sitko et al., 2020). Such evidence offers some validity in cognitive explanations for psychosis, though there is acknowledgement that in some CBTP therapies, the associated distress is targeted rather than the strength of beliefs or other experiences. It is also important to note that there are some limitations with effectiveness evidence including therapist experience, severity of presentation, format of intervention, and pooling of outcomes (Thomas, 2015), which have prompted theorists to consider cognitive processes as 'some but not all' of the explanation (O'Keeffe et al., 2017).

1.2.4 Psychological and social processes

It is also widely accepted that there a number of psychological and social processes that may play a significant role in psychosis vulnerability. Trauma is considered the most important factor associated with the development of psychotic disorders (Inyang et al., 2022), with meta-analyses showing that those with psychotic disorders have a three-fold increased likelihood of having experienced childhood trauma (Loewy et al., 2019), and childhood trauma is associated with delusion and hallucination severity (Bailey et al., 2018). Childhood trauma can encompass physical, sexual, emotional abuse, neglect, living in a house with domestic violence, and interpersonal loss (Devi

et al., 2019). There is a huge body of research implicating childhood trauma as causal in the development of psychosis (Kelleher, 2023; Trauelsen et al., 2015), with several suggested mediating processes in this relationship, such as dissociation (Varese, Barkus, et al., 2012), disrupted attachment (Berry et al., 2017), and sleep disturbances (Laskemoen et al., 2021). It is also widely accepted that social experiences contribute to increased vulnerability of psychosis, including poverty (Topor et al., 2014), racial and/or sexuality discrimination (Colizzi et al., 2020; Pearce et al., 2019), and substance use (Setién-Suero et al., 2020).

At this point it is important to note that psychosis can be considered an 'intertwining' of genetic, environmental, and psychological factors that in their aetiology are diverse, complex, and idiosyncratic. At a broad level, certain risk factors are generic to a number of mental health difficulties, whilst other factors may contribute to a greater or lesser extent in each individual presentation (Morgan & Gayer-Anderson, 2016). The complexity and nuance of this argument extends beyond the scope of this thesis, however, the overarching conclusion indicates that there are a considerable number of psychological models and risk-factors that may contribute to an individual's risk of psychosis onset, and whilst some may be shared, each person's experience is inherently individual.

1.3. First Episode Psychosis

The complexity and individuality of First Episode Psychosis (FEP) can also make it challenging to define. However, common definitions operationalise FEP as an episode in which an individual's experiences meet criteria for psychosis, and there has not been a psychotic episode prior to this (Prakash et al., 2021). FEP is commonly experienced between the ages of 16-35 (Clay et al., 2018), though it is not uncommon for individuals to experience FEP later in life (Simon et al., 2017).

FEP is often (but importantly, not always) preceded by a 'prodromal period' in which the individual experiences elevated states of depression, anxiety, social withdrawal, suspiciousness, and disturbed sleep (Yung & Mcgorry, 1996). Individuals in the prodromal period are often referred to as At Risk Mental State (ARMS) or Ultra High Risk (UHR) based on criteria developed by Yung et al., (2005). ARMS/UHR is defined as low-grade 'psychotic-like' symptoms that cause distress. ARMS individuals experience ≥1 of the following symptoms: brief limited intermittent psychotic symptoms

(BLIPS), attenuated psychotic symptoms (APS), and/or a genetic risk for psychosis combined with a significant reduction in functioning (Yung et al., 2005). The Comprehensive Assessment of At-Risk Mental States (CAARMS) is considered the gold-standard tool to assess psychopathology indicative of imminent development of FEP and whether an individual meets ARMS criterion (Yung et al., 2005). The CAARMS is organised into seven domains: positive symptoms, cognitive change, emotional disturbance, negative symptoms, behavioural change, physical change, and general psychopathology. Studies exploring transition from ARMS to FEP is limited, though one study has suggested that 20-45% of ARMS individuals will transition to FEP within the next 2 years (Fusar-Poli et al., 2013; Oliver et al., 2020).

The trajectory of FEP is highly variable and embodies a multidimensional and transdiagnostic construct with multiple areas of 'recovery.' For example, 'recovery' from FEP is traditionally viewed in the context of symptom remission and improvement in function (Peralta et al., 2022), whilst emerging research indicates that despite minor overlap, personal, functional, and symptomatic recovery from FEP are considered distinct from the perspective of the individual experiencing FEP (O'Keeffe et al., 2017; Van Eck et al., 2018). The incidence of transition from FEP to a diagnosis of a psychotic disorder has been evidenced at ~50% in multiple retrospective and meta-analytic studies (Inchausti et al., 2023), mainly within the first three to five years since FEP onset (Fusar-Poli et al., 2016, 2022)

The high number of individuals transitioning from FEP to a psychotic disorder emphasises the need for both early identification of risk factors and pathways for intervention to prevent transition. Early Intervention Psychosis (EIP) services are targeted to provide care in the first 3-5 years of onset, given this is termed a critical period to improve short- and long-term prognosis (Malla et al., 2005). EIP incorporates a holistic pathway, including focus on reduction of symptoms, maintaining intervention and preventing relapse, and offering psychosocial, pharmacological, vocational, trauma-related and family support (Perkins et al., 2005). Many EIP services devote significant resource on reducing the duration of untreated psychosis (DUP); DUP is defined as the amount of time between the manifestation of the first symptom to initiation of antipsychotic intervention. The notion that DUP is significantly implicated in the onset and maintenance of FEP is well-evidenced in multiple meta-analyses (Howes et al., 2021) across symptom (Boonstra et al., 2012; Perkins et al., 2005) and

functional outcome domains (Watson et al., 2018). The clinical significance of DUP to prevent transition from FEP to 'psychotic disorders' emphasises both a need for early intervention, but also further exploration of the risk factors that contribute to the onset and maintenance of FEP in the first instance.

Identifying ARMS individuals is a unique and important opportunity to prevent individuals transitioning to psychosis (Fusar-Poli et al., 2013). Though ARMS presentations are considered 'high risk' for subsequent or later transition to FEP, there are a large number of individuals who are or have experienced FEP who have not been involved with prodromal services as an adolescent or adult (Ajnakina et al., 2019). A retrospective study in the UK found that only 4.4% of individuals presenting to secondary services with FEP had been referred via prodromal services (Ajnakina et al., 2019). There are several reasons for such a low number of those experiencing FEP not being previously involved in prodromal services. Firstly, prodromal periods may be misunderstood or not identified by healthcare services (Naughton et al., 2024; O'Connell et al., 2021). ARMS services and older pathways into secondary services such as the GP require patients to demonstrate active help seeking (Naughton et al., 2024), which may (i) exclude individuals who are unable or unwilling to do this, and (ii) provide an unrepresentative demographic of those in ARMS services. Help-seeking intent is often influenced by specific symptoms in early psychosis, as those with less acute positive symptoms are more likely to seek help (Platz et al., 2006).

Though identifying individuals with an ARMS has a modest predictive value for psychosis (Fusar-Poli et al., 2015) it has been suggested that ARMS criteria only identify a narrow group of individuals at risk of experiencing psychosis (Ajnakina et al., 2017, 2019). Further, a considerable number of individuals experiencing FEP would not meet ARMS criteria for several reasons, such as increased age, lack of genetic vulnerability, or not experiencing psychosis-like symptoms until acute onset. Due to the relatively low incidence of psychotic disorders in the general population, defining 'high risk' groups has been considered one of the most efficient strategies for clinical care. However, studies have indicated that up to 44% of individuals experiencing FEP had an acute onset of psychotic symptoms (Ajnakina et al., 2017) so it may be more appropriate to consider risk factors for psychosis, rather than identifying individuals who are already experiencing subthreshold symptoms of psychosis. In the general population, prior psychopathology such as mood disorders and anxiety accounted for

85% of the outcome of developing psychosis (Naughton et al., 2024). Other demographic markers such as ethnicity (Kirkbride et al., 2012), socio-economic status (T. Burke et al., 2022) have been considered models considering psychosis conversion (Kelleher, 2023).

Additionally, in recent years it has been suggested that although the 'critical period' for development of psychosis is considered to be 35 years of age, an emerging number of individuals older than 35 years and with differing presentations are presenting to services (Suetani & Wang, 2023). Epidemiological literature has noted an increase in psychosis incidence following the Covid-19 pandemic (Moccia et al., 2023), with extreme psychosocial stressors, such as social isolation, bereavement, and safety fears considered an influential contributor (Casanovas et al., 2022). Further, participant data from EIP services is evidencing a broader range of socio-demographic characteristics, including older age, whereby up to 33% of referrals consisted of individuals over 35 years (Lappin et al., 2016). In 2016, The National Institute of Clinical Excellence extended the age to which individuals could access EIP from 35 to 65 years of age to reflect service need. Demographically, individuals presenting to EIP over 35 years of age are more likely to be female (Thakrar et al., 2023), and have existing mental health difficulties, particularly presentations characterised by low mood and/or mania (Clay et al., 2018). In this thesis, to encompass a broad client group, participants between the ages of 18-65 were eligible for inclusion.

1.4. Sleep Overview

1.4.1. Functions, aspects, and organisation of sleep

Research studies have broadly included definitions such as (i) individuals showing no or little evidence of sleep disruption, (ii) sleep broadly considered restorative, and (iii) sleep to be of regular and conventional timing (Beattie et al., 2015). Sleep is a complex, episodic, and reversible state of both mind and body characterised by closed eyes, limited behavioural activity, and perceptual disengagement from one's surrounding environment (Carskadon & Dement, 2005). Whilst there is no universally accepted theory for the purpose of sleep (Brinkman et al., 2024), sleep is considered both physically and mentally restorative and contributes to the natural rest-activity cycle (Waterhouse et al., 2012). Adequate sleep is vital for the health and well-being of individuals across the lifespan, and heavily contributes to the functioning of physical

health (Che et al., 2021) and psychological (e.g., cognitive and emotional) processes (Palmer & Alfano, 2017; Qin et al., 2023). Sleep is considered much more restorative of waking functions when it is consolidated rather than fragmented (Worley, 2018), and essential nature of sleep is evidenced by an individuals need to compensate for lost sleep (Waters et al., 2018).

Sleep architecture refers to the structural organisation of normal sleep. There are two main distinguishable stages of sleep; rapid eye movement sleep (REM) and non-rapid eye movement sleep (NREM) (Carskadon & Dement, 2005). Sleep is divided into five stages; (i) wake, (ii) N1 (very light sleep, serves a transitional role in sleep-stage cycling, and usually lasts 1-7 minutes in the initial cycle), (iii) N2 (deeper sleep, constituting between 45-55% of the total sleep episode) (iiii), N3 ('deep' sleep, often referred to as slow wave sleep contributing to 3-8% of sleep) and (v) R (REM sleep) (Le Bon, 2020). It is noteworthy to mention that previous descriptions of sleep architecture presented stages 3 and 4 of NREM sleep as distinct, whilst newer definitions include N3 as a summation of stage 3 and 4, often called 'slow wave sleep' (Ancoli-Israel et al., 2015). NREM sleep roughly parallels a continuum, whereby arousal thresholds are lowest in stage 1 and highest in stage 4. By contrast, REM sleep is usually not presented in stages, though for research purposes, distinction of 'tonic' and 'phasic' REM sleep are occasionally used. The most commonly used marker of REM sleep is bursts of rapid eye movements, and dreaming commonly occurs in this stage. The onset of sleep under normal circumstance is through NREM sleep, and healthy adults cycle through each stage (from N1, to R, to wake) four to six times per night, with each cycle approximately lasting 90 minutes on average. All sleep stages are essential for restorative sleep, with each stage serving a specific function. Broadly, REM sleep is frequently associated with memory consolidation (Boyce et al., 2017) and emotional regulation (Vandekerckhove & Wang, 2018), whilst NREM is essential for homeostatic regulation, immune system regulation, and physical restoration (Le Bon, 2020).

Sleep can be polyphasic (sleeping repeatedly for short periods in 24 hours), monophasic (one prolonged nocturnal episode) or biphasic (prolonged periods but engaging in daytime naps) (Le Bon, 2020). A single nighttime monophasic episode of consolidated sleep has become the normative human sleep pattern (Ekirch, 2016) though across the lifespan it is noted that it is common for very young infants and older

adults to occupy a more biphasic sleep pattern, due to commonalities in napping behaviour (Jones & Spencer, 2020). Whilst definitions of 'normal' sleep patterns can be inherently individual, consensus within the literature defines a duration of 7-9 hours per 24 hours as sufficient for working age adults (Chaput et al., 2020). Traditionally, public health messages surrounding sleep have focused on duration, however, discussions have started to consider sleep quality as a broader marker of sufficient sleep (Glozier, 2012). Good sleep quality can be comprised of a multitude of variables, including: subjective satisfaction with sleep, alertness during waking hours, sleep timing, sleep latency (time to fall asleep of less than 15 minutes), sleep efficiency (percentage of time spent asleep whilst in bed upwards of 85%), and sleep duration (Buysse, 2014). Both short (<6.5 hours) and long (>9 hours) are significant predictors of all-cause mortality in prospective population studies (Cappuccio et al., 2010), whilst broadly poor sleep quality has been shown to have a negative impact on self-rated physical and mental health (Amiri, 2023). Notably, studies jointly assessing sleep quantity and quality have indicated that the most pronounced health risks exist for those with poor sleep quality and short sleep duration (Baglioni et al., 2016), though evidence for poor health outcomes is extant at both ends of the continuum (short and long duration sleepers) (Kerkhof, 2017).

1.4.2. Sleep Regulation

The most widely accepted explanatory conceptual model of human sleep regulation is the Two Process Model (Borbély et al., 2016) (see Figure 1). The Two Process Model suggests an interaction between sleep-wake dependant homeostatic and sleep-wake independent circadian processes determines sleep regulation. Homeostatic processes (process S) represent accumulating 'sleep debt' which increases during wakeful periods and decreases with sleep, due to a sleep inducing biochemical system operating in the brain. Process S induces 'sleep pressure,' whereby the longer the period of wakefulness, the greater the sleep need. Consequently, Process S can determine sleep intensity. Circadian processes (process C) offers and internal regulation of biological processes over a 24-hour period. Process C controls sleep timing in line with entrained rhythms congruent with external dark-light cycles of day and nighttime, and consequently dictates the daily rhythm of sleep. The two processes continually interact, whereby sleep occurs when Process S approaches the upper threshold of C, and waking is triggered when Process S reaches the lower threshold

under standard monophasic or polyphasic sleep (Dijk & Archer, 2010). Generically, in adults the two processes work concurrently to create one period of consolidated rest, and one period of consolidated wakefulness equalling approximately 24 hours. Endogenous circadian rhythms are entrained, in that they persist in the absence of external time cues on a continual period of 24 hours (Golombek & Rosenstein, 2010).

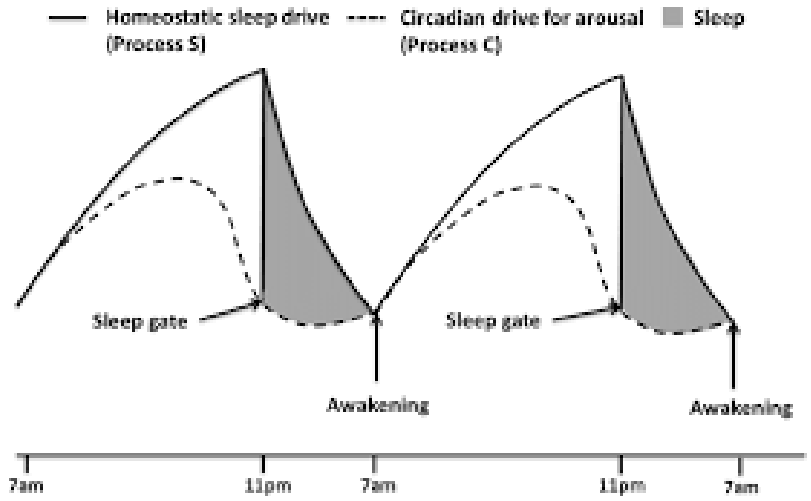

Figure 1. Two Process Model of Sleep (Borbély et al., 2016)

Disruptions to circadian rhythm entrainment can include shift work (often due to working during the 'rest' phase for humans), physical activity timing, air travel across time zones, and day time napping (Chaput et al., 2023) and misaligned circadian rhythms are associated with a variety of physical and mental health complications (Potter et al., 2016). Disruptions to, or delineations of, circadian rhythms are also bidirectionally implicated in the onset of several neurological (e.g., Alzheimer's disease) (Musiek et al., 2015) and complex mental health conditions (e.g., schizophrenia or spectrum disorders) (Delorme et al., 2020) alongside becoming a characteristic of the presentation (Sharma et al., 2020; Wulff et al., 2012). Although disruptions in circadian rhythms can be harmful to health and all-cause mortality (Montaruli et al., 2021), it is important to note that intra-individual differences in the timing of rhythm can be observed amongst individuals, a trait termed sleep chronotypes (Adan et al., 2012). Chronotypes can be expressed as 'morningness', 'eveningness', or 'neither' types, characterised by an individuals preferred timing of sleep and activity (Montaruli et al., 2017); this behavioural preference can be

understood as a spectrum, with ~60% of the population holding a 'neither' type (B. J. Taylor & Hasler, 2018). Morningness types typically go to bed and wake earlier, achieving peak mental and physical performance earlier in the day, whilst eveningness types wake, sleep, and reach peak performance later in the day (Adan et al., 2012; Montaruli et al., 2017). Differences in 'morning' and 'eveningness' types are well-documented (Zajenkowski et al., 2019) and research has indicated that 'eveningness' types are often associated with an increased likelihood of developing a mental health difficulty (Kivelä et al., 2018; B. J. Taylor & Hasler, 2018).

1.4.3. Sleep Deprivation

Long periods without adequate sleep are associated with a range of psychological difficulties and reduced cognitive function (Zimmerman et al., 2024). Societally, there are reports of individuals sleeping less (Bixler, 2009)and as a consequence there is an accumulating body of sleep deprivation literature, outlining the psychopathological effects of sleep deprivation. A longstanding known consequence of sleep loss is psychotic experiences, with previous research showing that sleep problems are correlated with an increased frequency of hallucinations and delusional beliefs (Koyanagi & Stickley, 2015). Sleep deprivation studies, whereby participants are key continuously awake for long periods of time (Petrovsky et al., 2014) are a useful tool to assess the causality of sleep disturbances in different psychological presentations and assess dose-dependent relationships.

Waters et al., (2018) provided a comprehensive review of the effects of sleep loss on psychosis experiences ranging from one to 11 nights. The review is inclusive of historical studies to examine the effects of sleep loss beyond a 2-day period (as much of this research is now not conducted due to ethical considerations). The findings of the review showed a wide range of symptom experiences; they noted that visual hallucinations were apparent after 30-48 hours (alongside disordered thoughts). Symptoms gradually and consistently increased in frequency until the fifth day, whereby complex visual and auditory hallucinations were common along with a notable deterioration in mental health of participants.

Alongside sleep deprivation studies, sleep restriction studies whereby participants are asked to sleep, but for a restricted duration indicate similar findings, though such studies are relatively rare in this context. For example, studies have restricted

participants sleep for 4 hours per night for a three night period and found significant increases in paranoia, hallucinations, and cognitive disorganisation, with the largest effect sizes evident in those who had higher psychotic experiences at baseline (Reeve et al., 2017, 2018). Findings of this study indicate that individual with a vulnerability to psychosis experiences may be particularly sensitive to changes in sleep, and the subsequent increase in symptoms. This research is noteworthy in the context of insomnia, in that sleep restriction studies more accurately mimic chronic sleep disturbances over an extended period, which is relevant in FEP.

1.4.4. Sleep Disorders

There are a range of sleep disorders, including circadian rhythm misalignment (resulting in sleep/wake disorders) (Baron & Reid, 2014), obstructive sleep apnoea (narrowing or collapsing of airway during sleep, resulting in oxygen desaturation and a consequence of overall sleepiness (Gottlieb & Punjabi, 2020) and insomnia. Sleep disorders can have a significant impact on an individual's mental and physical health (Freeman et al., 2020a; Mogavero et al., 2021), social functioning, and quality of life (Streatfeild et al., 2021). An overview of the above sleep disorders is beyond the scope of this thesis; however, a brief summary of insomnia will be provided due to its high prevalence in psychosis.

Insomnia is one of the most common sleep disorders amongst adults worldwide (Morin & Jarrin, 2022), and is also highly prevalent in individuals presenting with experiences along the psychosis continuum (Ferrarelli, 2020; Waite et al., 2020a). Insomnia may be diagnosed in primary or secondary care services via diagnostic manuals such as the DSM-5-TR (American Psychiatric Association, 2022) or the ICD-11(World Health Organization, 2021). The broad diagnostic features of insomnia include an individual's self-reported night-time sleep and daytime functioning symptoms and are inclusive of; (i) difficulties initiating or maintaining sleep, or non-restorative sleep; (ii) sleep difficulty occurs >3 times a week with a resulting complaint of daytime fatigue; (iii) disturbances causes clinically significant distress or impairments in multiple domains, including social, educational or other important areas, (iiii) present for a period to time >3 months despite adequate sleep opportunity, (v) and the predominant symptoms not better explained by substance use, co-existing mental health conditions, or another sleep-wake disorder. Despite the recognition that insomnia is heterogeneous in its

presentation, current nosology has adopted a single diagnostic approach (Nyhuis & Fernandez-Mendoza, 2023), whilst more recent research has considered the utility and specificity of clustering insomnia symptoms or patterns, using the term phenotypes to identify distinct physiological or clinical features (Perlis et al., 2022).

1.5. Sleep Disturbances and Disorders in Schizophrenia Spectrum Disorders and First Episode Psychosis

Over the last decade, evidence supporting the role of sleep in the contribution and maintenance of both common and complex mental health difficulties has increased exponentially (Scott et al., 2021). Prior work considered disrupted sleep to be a consequence of poor or deteriorating mental health (A. G. Harvey, 2002; A. G. Harvey & Tang, 2012) however, it is now also suggested that poor sleep contributes to the onset, maintenance and often reoccurrence of mental health difficulties (Freeman et al., 2020b). The association between poor sleep and psychotic experiences across the psychosis continuum is well-established, with evidence suggesting that disruptions in sleep duration and quality are associated with PLEs in the general population (Ered et al., 2018), ARMS (Lunsford-Avery et al., 2013), FEP (Marin et al., 2023), and in long-term SSDs (Waite et al., 2020b).

In longer-term psychosis, such as SSD presentations, paradigmatic shifts over the last decade have implicated sleep disturbances as a causal mechanism in the onset, maintenance, and exacerbation of psychotic experiences (Waite et al., 2020b). Recent research has explored the role of sleep disruption in several aspects of psychosis presentations, such as more severe paranoia in SSDs (Blanchard et al., 2020) and ‘positive symptoms’ such hallucinations and delusions more generally across the spectrum of ARMS (Lunsford-Avery et al., 2015), FEP (Davies et al., 2017)and longer-term psychosis (Mulligan et al., 2016a). Sleep disorders are very common in individuals presenting with psychosis and are considered a ‘normal’ comorbidity (Reeve et al., 2019). Studies have estimated that around half of patients in NHS mental health services presenting with SSDs have clinically significant insomnia (Freeman, Morrison, et al., 2019) and it is a common experience for those with SSDs to describe sleep disturbances prior to more severe paranoia and hallucinations (Kasanova et al., 2020). Insomnia has been shown to be related to increased paranoia in longer term

SSDs (Freeman & Fowler, 2009) whilst parasomnias, such as nightmares are also common amongst those with psychosis (Freeman, Morrison, et al., 2019).

More recent research has started to disentangle nuanced or discrete aspects of sleep disturbance with aspects of psychosis, though more of this work has been undertaken in long-term SSDs (E. Rogers et al., 2023) or in ARMS (L. Clarke et al., 2021) populations, rather than FEP. For example, reduced sleep efficiency and quality have been shown to predict next day symptom severity, particularly auditory hallucinations, and delusions (Mulligan et al., 2016b). Despite advancements in studies exploring discrete or specific aspects of sleep, there are still very few studies in SSD, FEP or ARMS populations employing the use of ActiGraph to provide continual sleep measurement (Clarke et al., 2021; Davies et al., 2017).Actigraph measurement provides an opportunity to further explore the complexity of sleep disturbance in this population, by providing a robust period of 24-hour measurement over a pre-defined length of time, which reduces the possibility of retrospective or subjective bias, measures specific sleep parameters, and may improve accuracy of sleep estimations. Several studies have used actigraphs in populations of longer-term psychosis (Reeve et al., 2019) and in ARMS studies (Hennig et al., 2020; Nordholm et al., 2023). However, Actigraph use in the FEP period is particularly limited (Davies et al., 2017). This limited understanding of sleep disturbance in FEP is notable for several reasons; (i) retrospective research indicates that sleep disruption is often notable prior to FEP and in the ‘prodrome’ prior to an acute episode (Marin et al., 2023), and (ii) sleep disruption is a common presentation prior to relapse (Benson, 2006).

Further, there are very few qualitative accounts exploring the perspectives of those with SSD’s or FEP and their experiences of sleep. However, of the available studies, qualitative accounts have evidenced patients experience a bi-directional relationship between sleep disturbances and psychotic symptoms. Patients note that distressing voices and fears of persecution can reduce willingness to sleep, however, reduced sleep can also increase emotional distress, reduce capacity to cope with voices during the day, and increase paranoia (Faulkner & Bee, 2016; Waite, Evans, et al., 2016). Qualitative accounts in early psychosis are in their infancy, with only one study exploring perspectives of those in the At Risk Mental State, though this was following sleep intervention (Waite et al., 2018). Qualitative research provides an opportunity to gain a lived experience perspective of a complex phenomenon, yet also allows for

sharing of retrospective accounts that may otherwise be missed in quantitative research. Further, given the direction of the sleep-psychosis relationship is difficult to disentangle, qualitative research provides an avenue to explore perceptions and participant construction of such experiences that may be important in considering the direction or 'causality' of sleep disturbances in psychosis presentations.

Such expansions in the sleep-psychosis literature base have prompted exploration into sleep disruption as a novel treatment target for psychosis. Cognitive Behavioural Therapy for Insomnia (CBT-I) has been adapted for those with psychosis and shown large treatment effects on sleep problems (Sheaves et al., 2019) and some impact on psychosis experiences (Freeman et al., 2015b) though further trials are warranted. Although it is recognised by clinicians that sleep disruption is a common complaint amongst those with psychosis and patients show a clear desire for intervention to improve their sleep (Faulkner & Bee, 2017; Reeve et al., 2019), formal assessment and appropriate intervention is both sporadic and limited (Rehman et al., 2017).

Research noting that improving sleep can decrease the severity and frequency of psychosis experiences provides rationale for the implication of sleep disturbances in psychosis onset, amongst other factors. Ongoing research in ARMS groups is pivotal in understanding this relationship further, by exploring whether CBT-I is effective in reducing unusual experiences in those at risk and in the early stages of such presentations. Sleep problems in ARMS groups are widespread (Poe et al., 2017) and show high rates of comorbidity between sleep disorders (Reeve et al., 2019) alongside qualitative accounts describing disruptions in sleep timing, sleep variability, and nighttime worry (Bradley et al., 2018). Given that both longitudinal (Zaks et al., 2022) and experimental (Reeve et al., 2017) studies have identified sleep as contributory to experiences such as paranoia and hallucinations (Waite et al., 2020b) and sleep problems may be predictive of those at risk transitioning to psychosis (Ruhrmann et al., 2010) intervention in sleep problems is imperative in this group to improve patient outcomes, but also to provide evidence for sleep as pivotal in the onset of psychosis experiences. CBT-I for those at risk for psychosis have shown large improvements in sleep and smaller benefits on psychosis experiences (Sheaves et al., 2018). Further, a recent RCT in ARMS young people showed CBT-I is an intervention target for this population group and preliminary indication for clinical benefit (Waite et al., 2023). The

RCT showed large reductions in sleep difficulties alongside reductions in anxiety and paranoia at follow up.

1.6. Suicidal Ideation and Risk Factors

The identification and prevention of individuals at high risk of suicidal behaviour is an important public health priority, as around 700,000 people die by suicide each year globally (Bostwick, Pabbati, Geske, & Mckean, 2016). Suicide is complex with an interplay of multiple psychological, social, biological, and protective factors (O'Connor & Nock, 2014) however, despite knowledge of risk factors increasing in recent years, suicide prediction models have historically been 'static' and not recognised the dynamics and interactions of suicidal risk (Franklin et al., 2017). Suicidality can be considered a spectrum, ranging from ideation, planning, attempt, and completion (Klonsky et al., 2016). Whilst ideation is the focus of this thesis (defined broadly as thoughts ranging from contemplating ending life towards planning for such an event), some discussion of attempt and completion will be included.

An important debate in suicide research is considering suicide as a 'trait' or 'state,' with scholar suggesting suicide as a state (e.g., an experience related to a time in someone's life) given many of those who attempt suicide only do so once (Kessler et al., 2012). However, it is important to note that there are a number of individuals who attempt to end their life multiple times (O'Connor & Nock, 2014), and experience persistent ideation (Nock et al., 2008). Suicidal ideation provides a promising research target as it is known as a crucial precursor to suicide (Bostwick, Pabbati, Geske, & McKean, 2016), and is closely related to subsequent attempts and completions (Park et al., 2020). Thus, many studies have evidenced that suicidal ideation is an important risk factor and predictor of suicide related mortality (Batterham et al., 2021; Chapman et al., 2015). To prevent suicide, efforts can be made to reduce suicidal ideation and thus, investigate of the mechanisms and contributory factors underlying the development and maintenance of suicidal ideation is imperative (R. T. Liu et al., 2020a).

There are a number of models of suicidal behaviour that attempt to explain suicidal ideation and attempt such as the Diathesis-Stress model which proposed individuals have inherent or acquired vulnerability that can be 'activated' by internal or external stressors (van Heeringen, 2012). The Biopsychosocial model (Turecki et al., 2019)

considers developmental, distal, and proximal factors in the development of suicidal ideation and subsequent attempt. The Interpersonal Theory of Suicide (Van Orden et al., 2010) notes how individuals engage in suicidal behaviour as a result of interpersonal psychological states, such as 'thwarted belonginess' and 'perceived burdensomeness', which contribute to a desire to die. The Integrated Motivational-Volitional Model (O'Connor & Kirtley, 2018) is considered one of the most influential models in the field, and describes a pre-motivational, a motivational (emergence and maintenance of suicidal ideation) and volitional phase (suicidal behaviour). There is debate surrounding the clinical utility of linear models that assume a trajectory from ideation to attempt, given the complex individuality in suicidality. Models such as the Fluid Vulnerability Theory (Rudd, 2006) consider varied long-term baseline risk and the elevation of short-time risk in response to 'aggravating; current and time-limited contextual factors.

There is a large body of work identifying risk factors for suicidal ideation across the population. Loss of meaning (Steger, 2022), negative affect (Yalvaç & Gaynor, 2021), experiencing mental health difficulties (Mishara & Chagnon, 2016), and a previous suicide attempt (Bostwick, Pabbati, Geske, & McKean, 2016) are well-noted risk factors for suicidality. Meta-analysis findings have shown that mental health problems predict a 10-fold increase in suicide-risk, however, there was considerable variation in effect size between presentations. For example, those with diagnoses characterised by emotional instability and depression were of considerably higher risk (Favril et al., 2022). Involvement in the criminal justice system, interpersonal conflict, and stressful life events were also significant contributors; notably, findings indicated a dose-response relationship between the number of events experienced and suicide risk (Fjeldsted et al., 2017). It is well established that experiencing developmental trauma (particularly childhood abuse) holds an increased odds of suicidal risk, particularly emotional abuse (J. Liu et al., 2017). Recent research attempting to identify risk factors across those who experience ideation, who have attempted suicide once, and who have attempted suicide multiple times (Park et al., 2020) though findings in this field are preliminary and ongoing.

1.6.1. Suicidal Ideation in FEP

Suicide is the leading cause of mortality amongst those with schizophrenia (Malda et al., 2019) and studies have noted that 40-79% of those with schizophrenia experience suicidal ideation more than once over the course of their difficulties (Bornheimer & Jaccard, 2017). Meta-analytic findings have shown that individuals with SSD's and a history of suicidal ideation are over 6 times more likely to end their life (Chapman et al., 2015) with high levels of distress at unusual experiences and comorbid depression some of the explanations for this increased risk.

Though suicide risk remains elevated in comparison to the general population amongst those experiencing psychosis (Bolton et al., 2007), risk is considered highest in the early stages of the presentation (Pelizza et al., 2020a; P. J. Taylor et al., 2015). Those experiencing FEP have been estimated to have a 60% increased risk of suicide in the first year of diagnosis in comparison to those in subsequent phases (Nordentoft et al., 2004). The prevalence of suicidal ideation in FEP ranged from 26 to 56% of individuals in FEP (Chang et al., 2014), with risk factors including previous history of suicide attempt, depression and hopelessness (Chang et al., 2014), increase in distress at unusual experiences (Challis et al., 2013a), and longer duration of untreated psychosis (O'Donoghue et al., 2016).

Given suicidal ideation is a known antecedent for attempt, ideation screening and identification of risk factors is a crucial first step to connect individuals to appropriate care (Hor & Taylor, 2010; Park et al., 2020). Though suicide is difficult to predict, research in FEP has shown that individuals aged 15-30 years may be of higher risk, in part due to an increased duration of untreated psychosis (Pelizza et al., 2019), and perceived social and personal stigma (Pelizza et al., 2020a).

This increased vulnerability to suicidal ideation and subsequent attempt in FEP and noteworthy and indicates a need to further identification risk factors contributing to this increased risk, in order to improve risk assessment and intervention. Scholars have called for validated and standardised measures of suicidality in risk assessment to inform clinical decisions (Challis et al., 2013b) alongside providing a stable baseline measure to compare over time. However, there are considerable challenges with suicidal ideation measurement (see section 2.6.2).

1.6.2. Sleep, Suicidal Ideation and FEP

Researchers have sought to continue to identify potentially modifiable drivers of suicidal thoughts and behaviour (T. A. Burke et al., 2022)and sleep disturbances have emerged as both pivotal in predicting suicidal thoughts and attempts, and critical in that they are modifiable, making them an important candidate in suicide prevention strategies. The relationship between sleep disturbances and suicidal ideation is well-established (D. L. Littlewood & Russell, 2020) , and though much of the research has historically focused on those with mental health difficulties (Bernert et al., 2015; Malik et al., 2014), meta-analyses have shown this association to be prevalent in the general population (L. M. Harris et al., 2020; Pigeon et al., 2012), independent of mental health difficulties (Geoffroy et al., 2020).

Much of the research exploring sleep disturbances in SSD's has focused on insomnia (E. Rogers et al., 2023) given its high prevalence in SSD's (Reeve et al., 2019). Studies have shown cross-sectional (B. J. Miller et al., 2019, 2021) and longitudinal relationships (Li et al., 2016) between insomnia and subsequent suicidal ideation and attempt. Until recently, much of the research regarding sleep, suicide, and psychosis focused on individuals with long-standing and entrenched presentations, with diagnoses such as SSD's. More recently, analyses have shown that associations between insomnia and suicidality may also be prevalent in FEP. For example, (Ketcham et al., 2024) found that worsening insomnia was associated with over 3-fold increased odds of worsening suicidal ideation over a three-month period. However, much of the research exploring this association in FEP and SSD populations includes insomnia as a binary or categorical measure, or use measures that may not accurately assess the presence of insomnia in this group (E. Rogers et al., 2023). For example, studies asking participants if they struggle with sleep (B. J. Miller et al., 2019) or using 'adverse event scales' (Ketcham et al., 2024) to identify insomnia are common. Furthermore, using single-item measures or past medical records used to capture suicidal ideation are also common (Batterham et al., 2015). Although studies employing such measures are important to indicate associations between insomnia and suicidality, the limited scope of such measures is a limitation in this work.

A further limitation of the current general evidence base, but particularly in FEP is the exploration of particular aspects of sleep disturbances and their association with

suicidal ideation. Broader literature has noted extant stronger associations between nightmares (Nadorff et al., 2005) and problems staying asleep (Gerner et al., 2020) with suicidal thoughts than disturbances such as sleep quality or onset latency. Further exploration of discrete and specific aspects of sleep is warranted in FEP, particularly given problems such as increased onset latency may impact suicidal ideation and behaviours differently (Davies et al., 2017). Emerging evidence in the general population suggests that short sleep duration (Bernert & Nadorff, 2015; Chakravorty et al., 2015) is associated with suicidal ideation and attempt. Notably, research has considered that short sleep typically results in nocturnal wakefulness, which may contribute to suicidal behaviour at night (Perlis, Grandner, Chakravorty, et al., 2016).

Research exploring such specific parameters of sleep disturbance and their relationship to suicidality in FEP is sparse, which may be a consequence of limited use of methods such as actigraphy (Davies et al., 2017) that help identify specific sleep parameters over 24-hour periods. Recently, (Ayers et al., 2024) showed that baseline sleep problems were associated with increased odds of suicidal ideation at a 24-month follow-up, with a dose-dependent relationship. In addition, sleep problems were also a predictor of higher symptomology, which has also been associated with suicidal ideation. It may that in FEP the relationship between insomnia and suicidality is evident and may be exaggerated by the exacerbation of psychotic symptoms, but this relationship is unclear and warrants further exploration. However, insomnia in this work was operationalised using a categorical measure of a single-item scale, alongside ‘sleep problems’ were dichotomised as yes/no by asking if they had experienced difficulties sleeping too little over the past week. Studies employing actigraphy to assess specific sleep disturbances are warranted in FEP, alongside further large-scale longitudinal studies to assess whether sleep disturbances are a stable and/or accumulative predictor of suicidal ideation over longer time periods in FEP.

1.7. Study Rationale

FEP constitutes a high-risk period in which suicidal ideation and future attempt is common (Pelizza et al., 2020a), thus, the assessment of risk factors that influence prediction of this relationship are necessary. In recent years, researchers have continually evidenced a link between sleep disturbances and suicidality in the general population (Batterham et al., 2021; L. M. Harris et al., 2020),and longer-term SSD’s

(Li et al., 2016). However, whilst existing research suggests similar associations in FEP (Ayers et al., 2024; Ketcham et al., 2024), there is considerably less research exploring disrupted sleep parameters and their relationship to symptoms and other functional outcomes, such as suicidality, in FEP (Davies et al., 2017; Marin et al., 2023). If sleep disturbances are now started to be considered beyond being simply a secondary issue or consequence, and instead play a contributory role in the onset and maintenance of mental health difficulties, further effort is needed to understand such relationships in the early stages of illness to inform screening, prediction, and intervention. However, to date, there are a number of limitations with the current literature base including a distinct lack of actigraphy to assess sleep parameters (Davies et al., 2017), heterogeneity of both sleep and suicidality measures (E. Rogers et al., 2023) and very limited qualitative research (Faulkner & Bee, 2016).

Actigraphy would help identify specific aspects of sleep that may be disturbed, and using validated measures of suicidality would provide opportunity to develop exploration of associations beyond singular or binary measures that may not capture the nuance of this complex relationship. Further, qualitative research provides opportunity to explore individual perceptions or constructions of this relationship and facilitates insight into the complex psychological processes in the sleep-suicide relationship in FEP. Thus, the development of multi or mixed-methods research in FEP is warranted to explore associations between specific sleep parameters and suicidality, and also explore in-depth perceptions and meaning-making experiences of those with FEP.

2. Extended Method

2.1. Study Design

2.1.1. Mixed methods research

Mixed methods research aims to combine quantitative and qualitative data to contribute to further breadth, depth, and meaning to a study's findings (Battista & Torre, 2023). A classification for mixed methods research was first introduced in the 1980s, and iterations of classifications are still in use. Greene (2012) suggests that there are five key purposes for undertaking mixed methods research: triangulation, complementarity, development, discovery of paradox or contradiction, and expansion of findings. Other classifications, such as (Bryman et al., 2008) suggest further

rationale, inclusive of; credibility, context, illustration, utility, confirm and discover, and diversity of views. Whilst it is assumed that the rationale for using mixed methods may be inclusive of all of the proposed category, there are several proposed aspects that are particularly important for this study, such as context, illustration, and utility (Bryman et al., 2008). It is well acknowledged that sleep, psychosis, and suicide are complex phenomena with individual variation (Freeman et al., 2020a; L. M. Harris et al., 2020). Thus, whilst quantitative research is necessary to explore robust relationships between variables, the addition of qualitative data allows for further elaboration on the context and meaning of quantitative findings. This additional meaning can considerably enhance the utility or usefulness of findings, particularly those with an applied focus (Schoonenboom & Johnson, 2017).

By employing both qualitative and quantitative methods, mixed methods approaches can facilitate rich and valuable insights by answering research questions more comprehensively (Tariq & Woodman, 2013). Employing quantitative and qualitative methods can be done concurrently or sequentially (Antwi & Hamza, 2015); in this study, mixed methods were applied concurrently to address the research question. The core assumptions of mixed methods research allows the researcher to gain a unified understanding of the research problem (Cresswell & Plano Cark, 2011), whereby it is acknowledged that in some circumstances, sole use of quantitative or qualitative methods may result in an incomplete understanding of certain questions (Palinkas et al., 2015).

2.1.2. Rationale for methodology

Quantitative research aims to identify objective and robust relationships between variables, whereby predictions, and interactions between variables can be established and compared across groups. However, the reasons *why,* and meaning attached to experiences are often missed in quantitative work (Brown et al., 2015), and qualitative research can provide an insight into personal experience, context, and nuance (Busetto et al., 2020). Further, epistemological understandings of mixed-methods research are evolving, with the ‘objectivity versus subjectivity’ debate now considered less relevant (Kaur, 2016). In health research for example, ‘suffering’ is both a subjective feeling as it be experienced differently for each individual, but it is ‘objectively real’ for the person experiencing it. Both the sleep-suicide relationship (W.

V. McCall & Black, 2013) and psychosis (Noiriel et al., 2020) are considered theoretically complex and inherently individual thus, warrant an approach that can capture the associated intricacies of each concept.

There is a considerable lack of objective sleep measures employed in FEP populations (Davies et al., 2017), that would offer identification and exploration of specific or nuanced aspects of sleep and how they relate to suicidal ideation. Further, aspects of suicidality have sparingly been explored in FEP populations in relation to sleep and are often encompassed as 'suicidal risk', which although helpful, does little to disentangle the complex processes in the relationship. Thus, both sleep and suicidal measures in this population group are often too broad, or are single item, categorical variables that limit the exploration of more specific parameters. There is a need to incorporate actigraphy into sleep-suicide (Romier et al., 2023) and sleep research in FEP more broadly (E. Rogers et al., 2023). Particularly as previous research in ARMS groups has shown actigraphy to be useful in identifying sleep difficulties that individuals may not observe subjectively and identify specific sleep parameters linked to symptomology and other functional outcomes (Lunsford-Avery et al., 2015).

However, despite sleep-suicide research in individuals with mental health difficulties growing substantially (Romier et al., 2023), there is a distinct lack of qualitative research in the field of sleep-suicide (D. L. Littlewood et al., 2016a) and sleep and psychosis (Faulkner & Bee, 2017). Qualitative research can offer a strategy to capture the complexities attached to the experience of sleep disturbances, and the perceptions of individuals as to how, and why, suicidal ideation may become intertwined in this process. Thus, the cross-sectional mixed methods design used in the present study was considered most appropriate to allow identification of how sleep is disturbed, but how this disturbance is perceived, and facilitate insight into the psychological processes involved in the sleep-suicide relationship in FEP.

2.2 Epistemological Stance

Traditionally, much of the mixed-methods research has embedded pragmatism as an epistemological stance, which is less concerned with epistemological coherence, and more concerned with what is 'useful' (Kaushik & Walsh, 2019). More recently, Critical Realist perspectives have started to be integrated into mixed methods work to provide the integration of qualitative and quantitative ontologies within a

theoretically coherent paradigm (Mukumbang, 2023); theoretical coherence is also considered an integral component of a 'good' reflexive thematic analysis (Braun & Clarke, 2023) (see section 2.9.2).

Critical Realism is situated within a post-positivist epistemological paradigm (Bhaskar, 1989), and offers an 'integration' of both positivist and constructivist positions. Critical Realism assumes that whilst there is an observable and objective 'reality' that exists independent from social context, it is acknowledged that personal perspectives on reality are complex, and are shaped by individual, social and cultural frames (Sinead Ryan, 2019). Thus, whilst positivist data can objectively consider the world and social phenomenon existing regardless of human interpretation, it cannot address the 'why's' and alternative and complex explanatory processes (Sinead Ryan, 2019) and it is not necessarily a universal portrayal of reality (Harper, 2011).

Critical Realist perspectives acknowledge that reality is heavily influenced by the context in which it is placed (Sturgiss & Clark, 2020), in that each individual holds an account of reality, but an independent reality exists alongside this. This understanding aligns with the complexity of psychosis, in that there is an independent and objective reality to all psychological phenomena, but there is not always a 'direct route of access' to observe such phenomena (Marriott et al., 2019). Thus, it is accepted that partial explanation of reality is derived from the 'meaning making' of the individual. Diagnoses such as 'schizophrenia' are congruent with positivist views of mental health. Whilst Critical Realist positions would not consider 'schizophrenia' to objectively exist, it would recognise that the deviations from social norms that may worry others (e.g. unusual beliefs or behaviours) have a *real* impact on the individual and their significant others (Pilgrim, 2014). For example, in this research, experiences associated with psychosis (such as voice hearing, or bizarre beliefs) are considered to deviate from the shared reality, thus, the individual's involvement in NHS mental health services. However, whilst psychosis can be observed in a structural context of NHS EIP services, Critical Realist perspectives acknowledge that the individual reality of psychosis experiences are constructed in both intra and interpersonal processes that exist outside of this structured realty.

Further, recent evidence has highlighted the complexity of the sleep-suicide relationship (L. M. Harris et al., 2020) and noted that despite associations with some

objectively measured sleep parameters, no individual sleep disturbance has been identified as a strong predictor of suicidal ideation, leading researchers to acknowledge the complex interactions between biological, psychological, social factors and the individual (Franklin et al., 2017). Adopting a Critical Realist epistemology enabled consideration of how an individual's experiences of psychosis and suicidal thoughts will be influenced by their own personal experiences, alongside broader phenomena relating to these concepts (e.g., sleep). Thus, the integration of observable and experiential realities in Critical Realism offers an appropriate epistemological position for this research.

2.3. Researcher Position

(Bhaskar, 1989) suggests that our empirical work is mediated by the limits of our own knowledge, assumptions, experiences, and norms within the social setting of which the research is conducted. Thus, it is appropriate to consider my own position in the research, and my experiences and beliefs regarding the study phenomenon.

My interest in complex mental health and lifestyle factors developed during my undergraduate degree but was shaped and influenced by my perceptions of mental health as a younger person. In my A level psychology classes, we learnt about 'Schizophrenia' as a biological condition of the mind, an increase in dopamine, and a mostly classic case of 'bad luck' if you developed this condition. However, when detailing my learnings to my Grandparents, I was introduced to stories of their old friend who had 'schizophrenia' and had died by suicide several decades previously. My nan particularly talked of him as a 'troubled man' in a difficult time - sometimes frightening, but mostly quiet and caring with some odd beliefs and behaviours that made him vulnerable. I remember feeling conflicted, in that the information I had learned at college of 'madness' was hugely at odds with the tale of sadness, vulnerability, and human fragility in which my Nan had disclosed. In my current position, I am able to reflect on the thought that social structures (of education, and broader societal narratives) can dictate and shape what and how we think, and that the interaction between what we 'know' and what we experience may often be at odds. This reflection likely contributed to my leaning towards a Critical Realist ontology.

Towards the end of my Psychology BSc, I undertook my final year dissertation with a professor of sleep research. From here, I was introduced to the complexity of sleep as

a fundamental experience, individual differences, and the consequential impact of when it all goes wrong. I became fascinated with the interaction of mental health and lifestyle factors such as sleep and physical activity and pursued a PhD that sought to explore lifestyle and severe mental health difficulties in a secure hospital, which included spending a significant amount of time on the wards for data collection.

Many of the individuals on the wards were experiencing psychosis, and I was struck by the stark differences between each individual's experience. My role as a PhD student in this environment was fundamental to my learning, in that the absence of a defined clinical role allowed me to develop relationships with patients that were not characterised by treatment or restriction. I heard stories of loss, rejection, harm, and isolation, which exposed me to the reality of the 'thin line' between the shared and individual reality, given appropriate circumstances.

Throughout clinical training, I have maintained a strong interest in severe mental health difficulties, including psychosis, and the complexities that often accompany such difficulties, such as self-harm and suicidality. I believe these experiences have significantly contributed to my world view that people are inherently complex and are a product of the interaction of their personal, societal, familial, and cultural experiences. I hold the view that whilst psychosis is 'observable' and objective, in that it can be recognised that someone's beliefs are differing from the shared reality, or they are experiencing auditory or visual phenomena that are not recognised by others, all experiences 'make sense' at the individual and relational level. Thus, I hold a strong interest in the psychological, and ultimately human processes involved with psychosis, lifestyle factors such as sleep, and suicidality.

In summary, I recognise that I have a range of experiences that have driven my interest in the area of study, which will influence my beliefs, position, and consequent approach towards the undertaking of this research. For example, I believe that although I am interested in 'causal' relationships involved in the sleep-psychosis-suicide area, I have felt it imperative to not neglect the individual experiences within such processes to add both depth and meaning to such an emotional area, which perhaps influenced my leaning towards a mixed methods project. I have been able to discuss these reflections in supervision and consider them further in Section 5.

2.4. Ethical Considerations

Ethical approval was granted by NHS Health Research Authority Research (IRAS application 23/WM/0103) on 1st June 2023 (Appendix A). One small amendment was made to the application during this project in January 2024, to gain an extension to the data collection period due the writer taking a period of extended leave. The extension was granted without ethical review. The Code of Human Research Ethics (The British Psychological Society, 2021) was adhered to throughout this study. In addition to NHS REC approval, approval was sought from Nottinghamshire Healthcare NHS Trust Research and Development Department for collection of research data within the Trust.

2.4.1. Confidentiality

Prior to gaining informed consent and partaking in the research study, all participants were provided with an overview of confidentiality. This was detailed in the participant information sheet (Appendix B) and consent forms (Appendix C) but was also discussed verbally with the participant to ensure understanding. Given the sensitive and emotive nature of the topic area, the doctoral researcher sought to treat all participants with understanding, care, and respect. All participants were provided with a unique ID number to ensure that their data could be identified and deleted should they wish to withdraw from the study. Participants were informed that they would be assigned a number so that their data was kept confidential.

When transcribing interviews, participant quotes were anonymised (and provided with the same ID number as their quantitative data) and the researcher removed any identifiable information (such as names, service identities, and geographical location). Participants were informed that all identifiable features were changed, and the audio recording of the interview was deleted following transcription.

2.4.2. Data Protection and Storage

A data management plan at the University of Nottingham (UoN) was completed before submitting the study for ethical approval. The research complied with UoN Research Code of Conduct and Research Ethics, and the Data Protection Act (2018), and the General Data Protection Regulations (GDPR). Electronic data (Actiwatch data, questionnaire responses, and transcripts) were stored in a password protected file on the researchers OneDrive. OneDrive is a secure, cloud storage technology and is the preferred location for storing sensitive data. Only the lead researcher has access to

the OneDrive. Following the completion of the research component of the DClinPsy, anonymised research data will be deposited in the UoN research archive and will be stored electronically by the researcher's primary supervisor. All paper copies of participant documentation (informed consent, and psychometric questionnaires) will be stored in a locked cabinet at UoN. All remaining data, in accordance with UoN and GDPR guidance, will be retained for a seven-year period and then destroyed. The table below shows the arrangements made to ensure privacy and confidentiality.

Type of information	Length of storage after study completion	Storage location	Additional information
Consent forms	7 years	Locked filling cabinet in a secure office at UoN	Contact details for the participant were kept for 3 months after data collection to ask the participant if they wished to receive a summary of their sleep data.
Psychometrics	7 years	Locked filing cabinet in secure office at UoN	
Actiwatch data	7 years	Password protected file on UoN Onedrive	
Data analysis database and outputs	7 years	Password protected file on UoN Onedrive	
Interview transcripts	7 years	Password protected file on UoN Onedrive	Interviews will be audio recorded so they can be transcribed – the recording will be deleted following transcription.

2.4.3. Participant Information and Informed Consent

When considering appropriate participants, care co-ordinators were asked to inform appropriate clients of the study and were given an information sheet to provide to the participant (Appendix B). After the care co-ordinator gained verbal consent for the researcher to contact them, the researcher called the participant to discuss the researcher and answer any questions the participant may have. Contact details of the researcher was provided should they have any further questions. Individuals were

reminded on the phone that their participant was entirely voluntary, and they could withdraw at any time.

Before starting the study, the researcher, and the participant both signed and dated the Consent Form. The participants care co-ordinator was made aware of the participants engagement with the study and appropriate notes were completed by the care co-ordinator if required by the team. Participants must have had the capacity to consent as defined by the Mental Health Capacity Act (Department of Health, 2005), and identification and recruitment of participants was conducted collaboratively with the EIP Team Leader and CCO's who remained in contact with participants during the study. Consent was considered fluid throughout the study given there were multiple parts, so verbal consent was obtained before each part of the study (e.g., following questionnaire completion, but before the interview). Verbal consent was also gained throughout interview regarding certain questions if the topic area was of an emotive or sensitive nature. Participants were told that they could withdraw from the study at any point in data collection without explanation. They were reminded that their care with EIP will not be impacted by participating or withdrawing from the study.

2.4.4. Participant Withdrawal

The right to withdraw was explained verbally to the participant in the initial phone call, and on the day of study participation. Details of this were also provided in the information sheet and consent form. Prior to the interview, participants were reminded that their participation was voluntary, and they were reminded to only share information that they are comfortable with sharing and can ask to move along from a question or stop at any point. Following the return of the Actigraph, participants were reminded that they would need to inform the researcher if they wished to withdraw within the subsequent 24 hours (this was also stated in the participant information sheet). No participants withdrew from the study.

2.4.5. Adverse Effects

The occurrence of an adverse event as a result of participation within this study was not expected and no adverse event data was collected. However, FEP can be a challenging and distressing period for individuals, and discussions around psychotic symptoms and suicidal ideation may cause distress. However, distress is expected in the treatment of psychological difficulties and was be managed in the same way as

distress in clinical care. The participants care co-ordinator was informed of the data collection period and contacted the participant on behalf of the researcher before gaining informed consent. The researcher maintained contact with the Team Leader in EIP and relevant care co-ordinators throughout the project to respond to any potential distress, however, no contact in this respect was made.

The information sheet explained to participants that it may be possible, and normal, for them to experience distress when discussing psychotic symptoms or suicidal ideation. Research has shown that acknowledging and talking about suicide may reduce, rather than increase suicidal ideation (Dazzi et al., 2014). However, the researcher explained that if they experienced distress at any point that feels unmanageable, the research can be stopped. The researcher was observant for signs of distress throughout the interview, and no significant signs of distress were noted. Several participants became tearful when discussing their experiences of their first episode. For some, this was related to difficult experiences and the researcher paused to conduct a wellbeing check where the participant was asked if they were okay to continue, or if a break was needed.

Further, it was agreed if the participant reported any distress during the interview, the interview will be halted, and the participant was be encouraged to contact their care co-ordinator who will be aware of their participation in the study. The participant was reminded of the crisis number for EIP described in the participant information sheet. Should the researcher have had any concerns about the participants imminent safety, they were able to inform the participants care co-ordinator at EIP, so the appropriate procedures were followed in the service. For the researcher, supervision was provided throughout the study and the researcher was aware that they could contact their primary supervisor if any personal stress arose during the interview. Further, the researcher maintained regular contact with their personal tutor throughout this period. Whilst the researcher noted that some topics were emotive, this did not lead to distress.

Some participants chose to be seen at home, which involved lone working on the part of the researcher. The lone working policy of the University of Nottingham was followed, and (in line with this) only people who did not pose a risk to the researcher were seen at home.

2.4.6. Debriefing

Following completion of the interview and at the end of the study, the researcher checked-in with participants (e.g., asking how they found taking part in the interview, and how they are currently feeling) to ensure participants left the research appropriately supported. Participants CCO's were aware of their participation and could be contacted by the participant at any time during the study. If the researcher felt that the individual was a risk to themselves or others, they would contact the participants CCO in line with service policy. After collection of the Actiwatch, participants were verbally asked if they had any problems wearing the watch. No participants reported any difficulties with the watch, and several asked to receive a printout of their sleep data when analysed. Contact details of the researcher and the primary supervisor were made available on the participant information sheet alongside information on how to make a complaint if they wished to; no complaints were raised during the study or following completion.

2.4.7. Participant Reimbursement

Reward or reimbursement for taking part in research is considered both an ethical and practical challenge (Zutlevics, 2016). Lack of reward has been identified as a factor contributing to reduced participation rates, whereas a recent meta-analysis indicated even small monetary incentives increase recruitment and retention rates in research studies (Abdelazeem et al., 2022). Participants were provided with a £10 amazon voucher for their participation in the study. Travel costs were not necessary as participants were able to meet in their own home, or in their place of usual care. After consultation with the research team, it was decided that this amount was appropriate to act as a token of appreciation for their time during the study without being too large an among to be considered coercive. All vouchers were provided electronically and were sent to participants following the completion of the study.

2.5. Participants

2.5.1. Sample size

For mixed methods research, the sample size required is considered the minimum to satisfy both quantitative and qualitative research requirements, however flexibility is suggested in such requirements, dependant on the study aims (Onwuegbuzie & Collins, 2007). Sample sizes for quantitative research are often decided by a power

calculation to ensure there are enough participants to detect a significant variation from the null hypothesis should such a deviation exist. Due to the exploratory nature of the study, a power calculation was not appropriate. However, it is acknowledged that to conduct inferential statistical analysis, the study needs to be adequately powered, thus, a power calculation is included for description. An A priori statistical power analysis was performed to determine a sample size estimation for a cross-sectional design. With an alpha = .05 and power = 0.90, the projected sample size needed to detect a large effect (f=0.4; η_p^2=0.14) is approximately N=15 (GPower 3.1).

In qualitative research, there are no set guidelines for determining sample size, with the focus requiring balance between needing to gain a rich, in-depth understanding of the study phenomena, and having a manageable amount of data (Braun & Clarke, 2019). Considering the analytical approach taken in this study (Reflexive Thematic Analysis) (Braun & Clarke, 2019), the sample size should be large enough to conceptualise significant patterns of shared meaning yet capturing diversity and nuance of experience (Braun & Clarke, 2022). There is rich discussion surrounding 'sample size' in qualitative research generally, and positivist logic cannot be applied (Braun & Clarke, 2016). They continue to discuss the importance of acknowledging the active construction of themes, rather than them 'waiting' for discovery (Braun & Clarke, 2016, 2023); thus, the logic for a large sample size to ensure a truth is not 'missed' is inappropriate, and the risk of gaining a large sample size on this logic may come at the cost of not doing justice to the complexity and nuance of the data.

A recent systematic review noted that justification of sample size in qualitative research is not contingent on the *number* of interviews, but on data sufficiency and pragmatism (Vasileiou et al., 2018). Limited participant interest and attrition are a noted challenge of recruitment in long-term psychosis (Homman et al., 2021) and First Episode groups (Farris et al., 2020). Further, research acknowledges that recruiting from psychosis services can be challenging due to the complexity of patients, high staff workloads, and reluctancy due to previous negative experience (Berry & Bucci, 2016).

Thus, whilst aiming to recruit a participant number close to the required power calculation, it was noted that data adequacy gained through qualitative interviews, and realistic expectations of an available participant number were important considerations

in this process. Given the scarcity of both qualitative and Actigraphy research in FEP, it was important that the sample size was adequate to explore the research question, but was also inclusive of recruitment difficulties, service pressures, and the time constraints of a DClinPsy project. Recommendations in qualitative research have evolved to consider 'data adequacy' (Braun & Clarke, 2022), which describes the point at which the collected data provides enough "meaning-richness" across participant accounts. So, when considering the power calculations, the challenges associated with recruitment of those with psychosis, and recommendations proposed by (Braun & Clarke, 2019) it was anticipated that the final sample size of the study would be inclusive of 10 participants.

2.5.2. Eligibility criteria

Inclusion and exclusion criteria are outlined briefly in the journal paper. This section will provide an overview and justification for each criterion.

1. *The participant is aged between 18 and 65 years and experiencing First Episode Psychosis*

Individuals had to be aged over 18 years to be able to give individual informed consent, thus, young people who may have required consent of a parent or other responsible adult were outside the scope of this study. Individuals having unusual experiences, or those considered 'At Risk' of psychosis due to experiencing intermittent or 'subthreshold' psychotic symptoms likely fall into a different participant group, termed ARMS or UHR (see section 1.3), thus were not included. It also noted that those aged under 18 years can experience different sleep parameters (L. Clarke et al., 2021) which may impact objective analysis, or provide differing subjective accounts to the population of interest. Thus, anyone aged <18 years were not included.

The study recruited from Early Intervention Psychosis services in Nottinghamshire, who are only commissioned to work with individuals aged between 18 and 65 years. It is acknowledged that not everyone experiencing First Episode Psychosis receives care under early intervention teams. For example, there are noted ethnic inequalities in FEP care (Oluwoye et al., 2018), and not all individuals experiencing acute or prolonged psychotic experiences engage with services (Dixon et al., 2016). However, in an attempt to ensure a homogenous group of individuals (in reference to service

engagement and care), recruitment was undertaken only through Early Intervention services.

2. *Currently engage with EIP services and remain under the care of a designated Care Co-ordinator*

At the time of recruitment, individuals must be engaging in sufficient contact with Early Intervention services to ensure the team had enough information about the individual to refer them to the study. Participants involved in care relationships that were reflective of Assertive Outreach procedures were not involved due to such criteria. It was imperative that the individual remained under the care of a designated Care Co-ordinator (CCO) throughout the study. Previous research indicates that recruiting eligible patients into research often involves engagement of the CCO (Mason et al., 2004), due to them holding sufficient knowledge of the patient and having a working relationship that enables them to ask for their participation. It was also necessary that a CCO was involved given the sensitive nature of the study. If any difficulties for the participant arose in data collection, the researcher could contact the CCO, and the patient's distress could be acknowledged safely under the procedures of usual care.

3. *Have sufficient command of English language to undertake interview*

It was essential that participants were able to provide informed consent and communicate with the researcher who was only fluent in English. This is explored within the limitations of the study (see Section 4.8).

4. *Have capacity and capability to give informed consent, as assessed by the Care Co-ordinator and researcher*

Informed consent should be an ongoing process throughout the study, and not a solitary discrete event (O' Sullivan et al., 2021), to ensure that vulnerable individuals (such as those with psychosis) are provided with choice and autonomy throughout the process. There are a number of features associated with psychosis which may prevent the individual from having capacity and capability to give informed consent, and these were considered in the process of research design, recruitment, and data collection. Psychosis is characterised by unusual experiences and beliefs that may fluctuate over time, and due to this, capacity may also fluctuate. These experiences did not prevent

individuals experiencing more active experiences from taking part in the study, however, discussion with the participants CCO and psychiatrist was undertaken alongside gaining consent from the participant. Further, given paranoia and suspicion are a well-known characteristic of psychosis presentations, adaptations to gaining consent were made to ensure the individual understood the information sharing aspect of consent (e.g., providing verbal and written communication, alongside checking consent throughout data collection). Another consideration was that of 'negative symptoms' associated with psychosis, such as flat affect and disorganised speech, can be associated with decisional capacity in some instances (Weissinger & Ulrich, 2019). However, it is noted that many individuals with psychosis may be compromised in one aspect of decisional functioning (e.g., engaging in dangerous activity or taking illegal substances), but are capable of making informed decisions in other capacities (Carpenter et al. 2000). In this context, the ability to make informed decisions in the context of the research (as deemed by the CCO and researcher) was considered appropriate.

Individuals experiencing acute episodes in which their lucidity and ability to engage in the shared reality was compromised (e.g., those in acute admissions or a ward-based environment) were not included in this study for the reasons discussed above. In line with recommendations (Gupta & Kharawala, 2012), capacity was discussed in the ethics proposal.

Exclusion criteria

1. *History of traumatic brain injury or neurological disorder*

Meta-analyses have indicated that objective and subjective sleep disturbances are evident in those that have experienced a traumatic brain injury (Grima et al., 2016). Further, differences in usual sleep such as daytime sleepiness (Sabouri et al., 2023) and increasing trajectories of sleep disorders such as insomnia have been observed following brain injury (Wickwire et al., 2022). Due to the present study seeking to explore relationships between psychosis and sleep disturbances, individuals with history of brain injury or other neurological disorders were excluded due to the potential for confounding variables. From discussion with the service lead, very few individuals were unable to participate in the study based on this criterion.

2. *Actively substance dependant in the recruitment and/or data collection phase*

Firstly, it was considered that individuals actively using substances may have been unable to make rational decisions (such as giving informed consent) or participate in the interview part of the study appropriately. Secondly, it is well documented that the use of alcohol and drugs are associated with significantly altered sleep parameters (Angarita et al., 2016), that may have influenced the findings of the study. For example, alcohol is known to reduce sleep latency and enhance the quality of non-REM sleep, however, commonly disrupts REM sleep in the second half of the night(Ebrahim et al., 2013).

Further, substance use is common amongst individuals experience FEP (Weibell et al., 2017). Common recreational drugs such as cannabis and cocaine are associated with altered sleep parameters. For example, frequent cannabis use is associated with reduced sleep quality, more nighttime awakenings, and shorter sleep duration (Winiger et al., 2021), whilst frequent cocaine use can increase sleep latency, and reduce sleep duration and slow wave sleep (Angarita et al., 2016). Due to the above considerations, it was decided that those who were frequently using substances were unable to participate.

3. *Display significant harm to themselves or others, as judged by the participants Responsible Clinician*

It was judged that those engaging in frequent and significant harm to themselves (e.g., suicide attempts, or self-harm with suicidal intent) were not eligible for inclusion. Despite research indicating that talking about suicide can facilitate disclosure and access to help (Calear et al., 2014) given the high percentage of those who have experienced trauma in psychosis services (Varese, Smeets, et al., 2012), it was considered unsafe to the participant to engage in conversation about possible traumatic events, if they were currently engaging in behaviour to severely harm themselves or attempt to end their life.

Although many of the narratives surrounding psychosis and interpersonal violence are both stigmatising and untrue (Ahonen et al., 2019), it was important to consider the risk to the researcher during the study. Although most people experiencing psychosis will never commit a violent offence, it is noted that a significant proportion of violent incidents amongst those with psychosis happen during the first episode, particularly

at first contact with services (Youn et al., 2024). The factors implicated with this are complex and individual, but the most common reasons for violence in FEP include hearing voices telling them to harm others, and persecutory beliefs where the individual falsely believes someone intends to harm them so act in response to this (Keers et al., 2014; McNiel et al., 2000). Consequently, any individuals currently displaying risk to others (e.g., through acts of violence in or outside care), or individuals with historic risk to women or those who are not recommended to be seen alone (as dictated by their care plan) were not identified as eligible for the study.

2.5.3. Medication Considerations

It is important to note that the research team debated the exclusion of those using sleep medication. However, given the number of participants that use sleep medication in psychosis services (Waters et al., 2015), it was unlikely that a sufficient number of participants would be recruited if these criteria were applied. Discussion with the service psychiatrist also informed this decision, in which it was noted that a very high number of patients were described sleep medication and recruitment may be difficult if this was provided as an exclusion criterion.

2.5.4. Recruitment

Participants were recruited from Nottinghamshire Early Intervention Psychosis services. Prior to recruitment, I attended several multidisciplinary team (MDT) meetings in the service to introduce myself and my research. Information about the study continued to be disseminated in each monthly team meeting to ensure study visibility. Presence at MDTs, staff reminders, and engagement with participant CCO's have been noted as facilitators to effective recruitment in psychosis services (Bucci et al., 2015). I also attended several medication clinics with the supporting psychiatrist to facilitate recruitment. Thus, following discussion with the MDT, staff members were asked to approach any of their patients who may be eligible for the study and provide them with an information sheet. If they consented to be contacted by the researcher, I called them to discuss the project over the phone and gain verbal consent to meet to take part in data collection (subsequent written consent was gained prior to participation). I remained in contact with the service team managers to update them on the recruitment process.

Purposive sampling was used in this study to recruit participants with the appropriate experiences to meet study aims (Palinkas et al., 2015). When using this type of sampling, the researcher selects participants who are most likely to offer relevant information. Purposive sampling is commonly used in qualitative and mixed methods research to ensure appropriate recruitment and provides a time-effective use of resources (Palinkas et al., 2015) which was appropriate given the small population of interest and time demands of the project.

2.6. Data collection

2.6.1. Demographic Data

Participant demographics were collected from the participant in the initial meeting, and from the participants CCO following consent. Individuals were asked to provide their gender, age, and ethnicity. With consent from the participant, the researcher asked the CCO for the participants time in the EIP service in months, and the participants primary diagnosis.

2.6.2. Measures

When designing the study, it was intended that the most relevant and appropriate measures were used to aim to answer the questions this study aimed to address. However, the pragmatic utility of measures was also discussed in such decisions, given considerations of the participant group. For example, research has consistently indicated that attrition rates for research in those experiencing FEP are high (Homman et al., 2021), and mild cognitive difficulties with attention and working memory are common (Tschentscher et al., 2023). Thus, when considering measures for the study, pragmatic considerations were made to incorporate measures of a shorter length of fewer number to limit participant burden as much as possible. An overview of each measure, justification, and considerations for each measure are provided below. Please note that appendices of measures are not included for copyright reasons.

The Insomnia Severity Index (ISI) (Morin, 1993)

The ISI assesses perceived severity of insomnia symptoms, sleep satisfaction, recognition of impairment and daytime functioning, and concern regarding insomnia symptoms over the previous two-week period. Items are scored on a Likert Scale; whereby greater scores are indicative of more severe symptoms. Total scores range from 0-7 indicating ‘no clinically significant insomnia’, 8-14 indicating ‘subthreshold

insomnia', 15-21 indicating 'moderate clinical insomnia', and 22-28 indicating 'severe clinical insomnia'. The ISI can be scored to reflect night and day-time symptoms (Clemente et al., 2021), however, in this thesis was used to suggest the presence of insomnia and the severity of symptoms in line with the research question.

The ISI discriminates between clinical and non-clinical insomnia with high sensitivity and good accuracy in those with mental health difficulties (Seow et al., 2018), and has shown high internal consistency (Morin et al., 2011) and test-retest reliability (Clemente et al., 2021). The ISI is one of the most widely used measures in sleep research and has been used in populations of those with SSD's (B. J. Miller et al., 2019) and FEP (Subramaniam et al., 2018). In a recent systematic review, the ISI was one of the most commonly used measures in sleep-suicide related research in SSDs (E. Rogers et al., 2023) and was used as both a continuous (i.e., indicating symptom severity) or categorical (binary yes/no indicator of insomnia presence) in studies.

Beck Suicidal Ideation Scale (BSS) (Beck et al., 1979)

The BSS (Beck et al., 1979) was chosen in this study because it is one of the most widely used standardised measures of assessing suicidal ideation (Batterham et al., 2015). The BSS is considered a sensitive measure of both ideation and attempt (Haney, 2012) and comprehensively assesses both active and passive suicidal desire (Beck & Steer, 1991). Correlations between the self-reported BSS score and clinician rated suicidal ideations are 0.90 and 0.94, so is considered an efficient self-report tool for screening for suicidal ideation in those known to be of high suicide risk (Beck et al., 1997). The BSS has high internal consistency (Cronbachs α=.84) and high inter-rater reliability (0.83-0.98) in FEP populations (Prakash et al., 2021) and shows good validity (Büsselmann et al., 2020) with the ability to accurately detect low and very high levels of suicidal ideation (W. V. McCall et al., 2021). The BSS has been used in populations of those with SSD's (Fialko et al., 2006; Pinninti et al., 2002) at risk of psychosis (Gill et al., 2015), and is well validated in populations of individuals with mental health difficulties (de Beurs et al., 2015); thus, the BSS was the most well-validated measure in similar groups to the population of interest

Notwithstanding the rationale for the measure, there are some limitations to consider. The BSS is a relatively lengthy measure with 19 scored items that can take over 10 minutes to complete (Beck & Steer, 1991). A noted limitation of suicide research is

often that suicidal ideation or suicidality generally is included as a binary yes/no measure indicating the ‘presence or absence’ of suicidal thoughts. Given the more recent acknowledgement of momentary shifts in suicidal ideation or intention (Kivelä et al., 2022), a more comprehensive measure was sought for this study, in an attempt to acknowledge and capture some of the complexity in suicidal thoughts.

However, alongside the length of the measure, the phrasing of questions in the BSS have been considered outdated and stigmatising (Podlogar et al., 2023). For example, ‘my reasons for wanting to commit suicide are’ (item 11) could be considered stigmatising, given recent discussion surrounding language preferences of those who have tried to end their life, or those bereaved by suicide (Padmanathan et al., 2019). Research has indicated that items 1, 2, 4, 6, and 15 are the most informative (De Beurs et al., 2014) and a 5-item BSS has been proposed as a new measure; the proposed BSS-5 may offer a nuanced yet pragmatic measure of suicidal ideation. Other measures were considered in the study design, which are briefly outlined below.

In practice, clinical items such as the Patient Health Questionnaire (PHQ9) are often used as they are faster to administer but have been shown to be less accurate comparatively for predicting suicide risk (Louzon et al., 2016). In research, (Batterham et al., 2015) noted there are other psychometrically adequate measures of suicide risk that are shorter in length, such as the Suicidal Behaviours Questionnaire-Revised (SBQR) (Osman et al., 2001) or The Suicidal Ideation Attributes Scale (SIDAS) (van Spijker et al., 2014). However, it has been noted that both the SBQR and SIDAS require further exploration of their predictive validity and test-retest validity. In (Batterham et al., 2015) review, the SIDAS showed the greatest potential for research, however, had not been validated in groups of those with mental health difficulties, or psychosis, at the time of ethics application. The SIDAS has since been validated in a group of individuals with non-affective psychosis (K. Harris et al., 2021) though that still may not be appropriate for the diverse range of participants in this study. More recent research into suicide in FEP (Pelizza et al., 2020) used item 4 of the Brief Psychiatric Rating Scale (BPRS) (T. J. Miller et al., 2003) to assess suicidal ideation. The item is comprised of a 7-point component assessing overall suicidality, yet a cutoff score of >3 has been used to dichotomise the presence or absence of suicidal ideation (P. J. Taylor et al., 2015) which was pragmatic for its use in the study. However, it is acknowledged in the limitations of the paper that the BPRS is not intended to be used

as a standalone measure, and only offers limited 'coverage' of suicidality. Considering the limitations of the previously described measures, the BSS was the most appropriate measure of suicidal ideation in this study. However, it is acknowledged that there are still limitations of this measure, and there is a need for brief and psychologically robust measures of suicidal ideation developed and validated in populations of those with mental health difficulties.

Prodromal Questionnaire Brief (PQB) (Loewy et al., 2011)

The Prodromal Questionnaire Brief (PQB) is shorter iteration of the Prodromal Questionnaire that was developed to assess individuals in the ARMS or UHR period (Ising et al., 2012). The PQB was developed to improve the efficiency and accuracy of the measure and only included items related to the number, frequency, and distress associated with positive symptom items, such as unusual perceptual experiences (pertaining to visual, auditory, olfactory, or sensory experiences), paranoid ideation, and magical thinking. The PQB has sensitivity, specificity, and convergent validity associated with other psychosis screening measures and clinical interviews (Fonseca-Pedrero et al., 2016) and has good internal consistency and temporal stability (Kline & Schiffman, 2014).

The PQB was used pragmatically in this study and offered a brief measure to indicate the presence or absence of symptoms, and is sensitive to recognise a range of symptoms, including perceptual abnormalities, unusual thought content, and paranoia. However, although the PQB has been employed in a number of studies of those with early psychosis, such as FEP (Kline & Schiffman, 2014; Savill et al., 2018) the Prodromal Questionnaire, from which the PQB was derived, was developed to improve the efficiency of identification of individuals at risk of psychosis (e.g. ARMS, or UHR).

FEP is classified as an episode whereby the symptoms qualify at both duration and severity as a psychotic episode, whereby there had not been a previous episode of similar severity (Malla et al., 2005). Thus, measures primarily used in ARMS groups, whereby symptoms are considered sub-threshold to a psychosis diagnosis, may not as accurately capture symptoms in FEP. The prodromal questionnaire was pragmatic for this study as it was short, easy to administer, and gave a measure on the number and severity of psychotic symptoms. However, there are other measures that may have been more appropriate. For example, The Scale for the Assessment of Positive

Symptoms (SAPS) (Andreasen, 2005), Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962), Clinical Global Impression Scale (CGI) (Haro et al., 2003) and the Positive and Negative Symptom Scale (PANSS) (Giesbrecht et al., 2016) may have been more appropriate for an FEP population. The BPRS and PANSS are widely used to monitor psychotic symptoms in SSD's (Buizza et al., 2022), however require the measure to be administered in an interview style, with the interviewer trained to a standardised level (Opler et al., 2017). Similarly, although brief, the CGI requires administration by an experienced clinician (Busner & Targum, 2007). Due to the funding and training required to administer these measures, it was not possible for a DClinPsy project but may be more appropriate if further research seeks to replicate or expand his work. For example, due to the specificity of each measurement domain to FEP and SSD symptoms, these measures would be appropriate to explore which positive symptoms (e.g., hallucinations, delusions etc) are related to aspects of sleep.

Actigraphy

Actigraphy is used extensively in sleep research in the general population, and research using wearable devices has substantially contributed to understanding of sleep for overall health (Patterson et al., 2023). Whilst polysomnography is considered the gold standard for sleep research, it is costly, burdensome, and is usually unsuitable for larger projects, or for participants who may struggle with travel given it is often administered in a laboratory environment. Actigraphy has offered a solution for more objective sleep assessments over multiple nights in the participants own home. Although waist worn Actigraphy is used, small watch-like devices worn on the wrist are more common (Aili et al., 2017; Sadeh, 2011). Actigraphy captures an individual's sleep/wake patterns over continuous 24-hour periods through the detection of movement and acceleration that can be averaged across the measurement period to derive a stable measure of sleep variables per participant.

In populations of those with mental health difficulties, sleep difficulties are often derived from self-report measures (Wainberg et al., 2021). However, research has indicated that participants can over (Lauderdale et al., 2008) or underestimate (A. G. Harvey et al., 2005) (Harvey et al., 2005) their sleep by up to 75 minutes in comparison to by direct measurement. Given such a high proportion of those with SSD's experience sleep disorders such as insomnia (Waite et al., 2020a), whereby sleep onset latency

is overestimated and total sleep time underestimated (A. G. Harvey & Tang, 2012), such estimation difficulties may be particularly prevalent in the population in this study. Actigraphy has been used to explore sleep parameters in those with long-term SSDs such as schizophrenia (Tahmasian et al., 2013), however, very few studies have employed actigraphy in early psychosis, such as FEP (Reeve et al., 2019). A recent systematic review identified some difficulties with the current sleep-suicide literature in SSD populations, including a variation of self-report sleep measures (including some single item or invalidated measures), and a lack of actigraphy used in such studies. Thus, the use of actigraphy in populations of those with early psychosis is warranted to provide a more robust 24-hour picture of sleep and explore how rest-activity patterns may relate to phases of psychosis and other outcomes, such as suicidality (Zanini et al., 2013).

The wrist worn ActiGraph used in this study was the Motionwatch 8 (CamNtech, Cambridgeshire, UK) (see Figure 2). The Motionwatch 8 contains a tri-axial accelerometer than is validated for measurement sleep in clinical and non-clinical populations (Migueles et al., 2017) and has been used in populations of those with psychosis (Pieters et al., 2023). Participants were asked to wear the device on their non-dominant wrist continuously for 7 days and nights and could take this off to shower if they wished. The length of this observation period was chosen to reduce the inherent measurement errors associated with actigraphy to increase reliability (Sadeh, 2011), and is consistent with actigraphy guidance for clinical purposes (minimum 72-hour measurement, and extended monitoring of >5 days) (Ancoli-Israel et al., 2015). Also, the measurement period spanned both weekend and weekdays to gain a more complete clinical picture (Kelly et al., 2022), and the length of observation period is also consistent with previous research in SSD populations (Pieters et al., 2023). Participants were asked to press the event button when intending to fall asleep and on awakening. If not pressed, sleep periods were identified using the software's automatic algorithm detection and visually assessed. Actigraphy were sampled in Mode 1, at 30 second epochs, analysed using MotionWare software (version 1.4.2, CamNtech, Ltd).

Figure 2. Motionwatch 8 (CamnTech)

Actigraphic sleep variables collected for this study include Total Sleep Time (TST), Wake After Sleep Onset (WASO), Sleep Efficiency, and Sleep Onset Latency in line with the most commonly reported variables in sleep research (Fekedulegn et al., 2020). Total Sleep Time is defined as the overall duration of sleep (e.g., the time elapsed between sleep onset and final wake time). Sleep Efficiency is the percentage time spent asleep whilst in bed. Sleep Onset latency is the amount of time between bedtime and sleep onset (e.g., how long it takes someone to fall asleep) Finally, WASO is the amount of time the individual is awake after having initially fallen asleep.

Paranoia is a very common experience in early psychosis (Monsonet et al., 2020) so it was considered that participants may be concerned about the monitoring of their sleep. In a feasibility study, 3 out of 57 participants expressed feeling paranoid about monitoring when wearing the Actiwatch, indicating it is not as common issue as expected (Chapman et al., 2015). In this study, they found that meeting with participants prior to giving them the monitor eased their concerns. This knowledge was used in the present study, in which the researcher spoke with participants on the phone before meeting them in person, and any concerns regarding the monitor were discussed. In the subsequent meeting with the participants before the study commenced, the monitor was shown to the participant, an example printout of anonymised data from the monitor was shown, and participants asked any questions that they had.

2.6.3. Semi-structured interviews

Semi-structured interviews were considered the most appropriate method of qualitative data collection in this study as they provide an opportunity for participants to explore and reflect on their lived experience of the subject area, whilst allowing the interviewer to prompt and query discussed material beyond the pre-determined questions on the interview guide. Interviews provide an opportunity to gain rich data beyond the scope of open-ended questions on a survey, given it is unclear to the extent to which individuals would feel comfortable to discuss their experiences in-depth. Further, it was noted that the topic areas of the current study can be emotionally sensitive, thus it was deemed that one-to-one semi-structured interviews were the most appropriate method to gather qualitative data.

The interview schedule (Appendix D) was developed following consideration of the existing qualitative literature in sleep and suicide (D. L. Littlewood et al., 2016b), and sleep and psychosis studies (Faulkner & Bee, 2017; Waite et al., 2018). Open questions were used throughout the schedule to promote participant led reflection with the aim to gain a deeper understanding of their lived experiences (Charmaz, 2012). The interview schedule was used flexibly, and the interview was guided by the participants conversation. In some cases, in which some participants initially found the interview experience unfamiliar and were consequently less talkative, additional verbal and non-verbal cues were given to encourage elaboration. Whilst a semi structured approach was taken, the schedule was used loosely and was mostly guided by the participants answers, with the schedule used as a topic guide to ensure all aspects of the question was addressed. The participants own language was used regarding their experiences of psychosis, as in previous research (Waite et al., 2018). For example, some clients preferred the use of ‘unusual experiences’ or ‘their episode’ whilst others used more medical language such as ‘symptoms’.

Recent work has started to develop trauma informed guidelines to qualitative work (Alessi & Kahn, 2023). I attempted to incorporate these guidelines in my interviews, given the high prevalence of trauma in those that experience psychosis. For example, I considered that many of the participants had experienced being involuntary sectioned when in crisis, which will have involved unfamiliar rooms and people when they received care. To attempt to establish external safety, met with clients either on the phone, in their own home, or at their place of usual care so familiarity was established. I aimed to be predictable, consistent, and accepting to establish trust with the

participant. To attempt to establish psychological safety, initial questions focused solely on their sleep experiences (e.g., how is their sleep currently) before discussing more potentially emotive topics (Appendix D).

I acknowledged the potential for a power imbalance throughout the interview. Due to my position as a trainee clinical psychologist, I acknowledged that there could be the potential for 'blurring' of interview boundaries, where the interview may progress to disclosures or processing of events. To attempt to negate this, I aimed to empower participants by allowing them to set their own boundaries surrounding questions they wanted to skip, and redirected participants if the material was deviating from the interview. For example, one participant disclosed sleep difficulties surrounding childhood sexual abuse. I validated the participant and showed empathy but reminded them that they did not need to share this during the interview, and redirected focus to ask, 'how have you managed those feelings since then?' to avoid re-living the event, as recommended in the guidance (Alessi & Kahn, 2023).

Interviews were recorded using a Dictaphone and transcribed verbatim by the primary researcher. Participants were reminded of this again following the interview and verbal consent was obtained again.

2.7. Quantitative Data Analysis

Motionware software (version 1.4.2, CamnTech LTD) was used to analyse the Motionwatch 8 data. Data is stored internally on the monitor and is downloaded via a secure cable to the software on a laptop, in which it is processed. The software's algorithm detects sleep/wake windows and uses the 'event marker' pushed by the participant to note the intended initiation of sleep onset and wake time. If the participant had not pressed the event button, visually identification of periods of sleep is required by the research to start the algorithm. Data is processed and imported to a Microsoft excel spreadsheet. Data is then inputted into the Statistical Package for the Social Sciences (SPSS) (version 29) for analysis. Psychometric data (ISI, BSS and PQB) were completed on paper copies, and inputted into SPSS by hand by the researcher.

A predetermined analysis plan had been implemented, however, due to a smaller sample size than accounted for in the power calculation, tests of normality were conducted to ensure assumptions for parametric data were met. Subsequent normality

tests indicated that data were heterogeneous in variation, and thus non-normal, so non-parametric tests were used in analysis to explore bivariate associations.

2.8. Qualitative Data Analysis

2.8.1. Ensuring Methodological Coherence

Thematic Analysis (TA) is considered a diverse and theoretically flexible method (Braun & Clarke, 2019), which supports the rationale for its application in this study. (Braun & Clarke, 2022) emphasise there is not 'one way' to do TA, and analyses can vary from straightforward descriptive accounts towards complex, theoretically embedded constructs of meaning. Important concepts to consider in this instance are that of 'conceptual coherence' (Braun & Clarke, 2016) and 'methodological integrity' (Levitt et al., 2016) which discuss the importance of congruence between the research aims, design, epistemological position, and subsequent analysis. Finlay, (2021)asserts that qualitative research can be divided into two overlapping camps: 'scientifically descriptive' and 'artfully interpretive'. These distinctions are endorsed in a recent paper (Braun & Clarke, 2023) and align with earlier descriptions of qualitative research as small Q (aligning with a more post-positivist, realist epistemological stance) and big Q (reflexive and/or interpretivist) (Kidder & Fine, 1987). Finlay, (2021) emphasises the importance of the research making their position specific, in order to reduce methodological incoherence and 'theoretical mash-up' (Braun & Clarke, 2022).

The epistemological position of the researcher will dictate the content and form of the thematic analysis (Finlay, 2021). Small Q, or scientifically descriptive analysis, is common in mixed methods research (Finlay, 2017), often aligning with a post-positivist epistemology. However, it is common in psychotherapy research for thematic analysis to fall into the middle of both description and interpretation (Mitchell, 2020). In this instance, it is important for the researcher to make their position explicit (Finlay, 2021).The analysis discussed in the below section is an example of this overlap. The epistemological position of Critical Realism is reflected in the subsequent analysis, in that a position of ontological realism is maintained (there is a 'real world' that exists independent of our constructions, as attempted to evidence in the quantitative data), whilst it is accepted that understanding of this world is constructed from our own perception. The analysis subsequently embraces both 'science and art' (Finlay, 2021) in that it ensured that each theme is justified and well-evidenced with participant voice,

yet it is acknowledged that meaning is co-created between the researcher and the subjective experiences of participants.

2.8.2. Reflexive Thematic Analysis

TA is described as a “family of methods” (Braun & Clarke, 2016) in which to ensure theoretical flexibility there is no standardised practice. TA is a particularly useful approach when exploring topic areas in which there is limited literature (Braun & Clarke, 2006). Approach to TA can be deductive or inductive. Deductive analysis takes a ‘top-down’ approach, whereby the researcher develops a coding framework based on previously established literature and theory to guide analysis. Conversely, inductive analysis is ‘bottom-up’ in that themes are constructed from the data and not informed by existing theory (Fereday & Muir-Cochrane, 2006). Despite some existing literature in the area of sleep, suicide, and psychosis, much of the data is in its infancy (E. Rogers et al., 2023), thus, an inductive approach was applied for a data-driven process.

TA methods can fall into three broad approaches: coding reliability, reflexive approaches, codebook approaches (Braun & Clarke, 2021). The methods used in this analysis fall into reflexive approaches (Braun & Clarke, 2019) whereby themes are generated by the researcher, and unite implicit or latent meaning. TA does not offer rigid rules or steps to be followed, but principles and process to guide analysis (Braun & Clarke, 2016). However, given the epistemological stance dictates the process of analysis, procedural differences should be transparently documented as they reflect underlying research values (Braun & Clarke, 2022). RTA broadly involved six iterative and recursive phases of analysis which will be outlined in the subsequent section.

Data Familiarisation

Following the interviews, data were transcribed verbatim by the researcher, including non-verbal utterances such as laughter and pauses. Participant or staff identifiers were removed from transcripts to maintain anonymity. As considered in previous literature, transcription facilitated a starting point to data familiarisation (Riessman, 1993). On completion, recordings were listened to alongside transcripts to ensure accuracy. Transcripts were then read several times to ensure critical engagement with the data, to increase familiarity and ‘active engagement’ with the data.

Generating initial codes

An inductive approach to data analysis was taken, thus, coding was 'data driven' and done by hand. Sentence by sentence coding was completed for each transcript, with both semantic and latent codes. Semantic codes are descriptive reflecting the surface meaning of each participant's experience, whereas, latent codes attempt to reflect underlying meaning in the data (C. O'Connor & Joffe, 2020) (See Appendix E for an example transcript excerpt). The researcher aimed to provide meaningful labels to all sections of data to ensure participant voice remained at the forefront of analysis. Given multiple coders to ensure consensus and reduce bias aligns with purely small Q qualitative data (Braun & Clarke, 2023), supervisors did not review codes. Although it is recognised that researchers will approach data with preconceived ideas due to prior experience and/or knowledge, coding was aimed to be inductive with the data as the analytical starting point (Vasileiou et al., 2018). Finlay, (2021) guidance on the importance of methodological coherence with the epistemological position was considered here. Aligning with a CR position, analysis is not primarily descriptive, and some interpretation was embraced. Thus, whilst multiple coders were not used as 'consensus' was not considered relevant, the researcher noted any initial thoughts or observations in the coded data, which were taken to supervision for discussion. This process facilitated reflexivity and offered alternative perspectives on the data.

Generation of initial themes

Once all transcripts were coded, initial themes were developed by organising and collating codes by those that were most common and shared similar meaning. At this point, themes were constructed in Microsoft word, and brief summaries of each transcript were created to facilitate this process (Appendix F). For example, individuals spoke about medication as crucial to initiate sleep, particularly in periods of acute sleep deprivation. These accounts were constructed into a candidate theme such as 'barriers to sufficient sleep' and 'medication: regaining control of sleep'. As this example indicates, theme construction at this stage was mainly descriptive.

Theme development

Ideas from initial candidate themes were presented to, and discussed with, the research team during supervision. The researcher presented a word document of initial themes with codes and example quotes. Each theme was reviewed individually,

and the research team asked questions to develop each theme (for example, “does this fit here?”). The quotes were used to guide whether the overarching theme accurately captured the data and broader meaning of participant experience. In this process, the focus was not to capture all perspectives or those that were the most frequent, but those that seemingly held the most gravity to contribute to the research question. When discussing the candidate themes, discussion with the research team was helpful to discuss the breadth of a theme, and it was noted that in some cases the effort to fit too much into the theme detracted from its clarity and saliency. For example, supervisors noted that in some themes were too broad, whilst others did not accurately capture how participants had constructed their experience. For example, participants noted that their sleep had dramatically reduce prior to their first episode, but following supervision the theme was re-constructed to capture how the participants created meaning in this process, rather than just presenting the content.

Refining, defining and naming themes

Using the thematic map and word documents used developed in the previous stage, the research continued to refine themes until sufficient themes are subthemes were established that reflected both participant meaning and patterns across the dataset. When constructing the themes, the researcher aimed to reduce overlap to present the core meanings of participant experience reflected in distinct themes. To align with the epistemological position of Critical Realism, and to ensure interpretation in the data beyond description, the researcher aimed to avoid ‘topic summaries’ whereby shared participant observations are summarised and reflected in themes; this has been termed the ‘positivism creep’ (Braun & Clarke, 2022). Whilst reviewing themes, guidance on avoiding ‘weak’ (Braun & Clarke, 2014) and ‘ugly’ (Finlay, 2021) themes were considered. For example, presenting distinction between themes, and ensuring themes did not paraphrase participant voice.

Themes were assigned names that intended to provide clear and concise representations of each theme, whilst reflecting participant meaning. In some cases, this included participant quotes to develop the theme name to keep participant voice at the forefront of the data. Coding and theme generation requires a continual querying and questioning of coding and interpretation, and themes reflect active analytic ‘creations’ of the researcher (Braun & Clarke, 2019). It is important to discuss the

contributing ‘story’ of each theme individually, and in relation to the broader research question (Braun & Clarke, 2006), thus, continual revision of themes was an iterative process in this stage. Aligning with a CR position, the researcher undertook a systematic approach to coding and theme development, and whilst ‘consensus’ was not an aim of the data analysis process due to an interpretivist learning, themes were ‘validated’ by co-researchers (Finlay, 2021) to ensure coherence.

Writing up

Findings were presented in distinct themes, with sub-themes also developed for clarity. Quotes were used for each theme to support the researchers’ interpretations, and participant numbers were used to maintain anonymity. The researcher considered using pseudonyms for participants, given discussion surrounding using participant numbers or initials as depersonalising (Saunders et al., 2015). However, researchers have also emphasised the psychological importance of pseudonyms for participants if they are used (Allen & Wiles, 2016) and the need for participants to choose their own pseudonyms (Lahman et al., 2015). Participants were not asked to provide pseudonyms during data collection, thus it was considered inappropriate to assign them without discussion, given emphasising choice in qualitative work is important to reflect self-identity (Itzik & Walsh, 2023). The researcher aimed to remain ‘active’ within the process whereby earlier coding notes were revisited to ensure final themes remained close to the data.

2.8.3. Methodological Quality and Rigour

In recent years there has been a significant increase in the synthesis of criteria and checklists to assess quality in qualitative research (Johnson et al., 2020). In some cases, such criteria have been debated due to the lack of flexibility to accommodate diverse approaches in qualitative studies (Dixon-Woods, 2004), which was an important consideration in this mixed methods study. There are a number of well-cited existing frameworks (Kitto et al., 2008; Tracy, 2010) to evaluate the qualitative work. Some frameworks seek to establish trustworthiness (Y. S. Lincoln et al., 1985)whilst others seek quality more broadly (Yardley, 2000). Rigour in mixed methods research is an ongoing challenge and a discussion that has not yet reached consensus (Brown et al., 2015). A broad marker of rigour in mixed methods research is the justification of how the method is best placed to answer the research question, and the researcher

to evidence transparency in the research process so readers can judge the quality (Wisdom et al., 2012). Thus, in this section I will seek to deliver transparency when justifying my use of framework to evaluate the qualitative methods.

Despite well-validated frameworks, one of the difficulties of assessing rigour in mixed-methods research is that the epistemological position may not align with the paradigm in which some solely qualitative evaluative frameworks were developed. Thus, I have sought to use a range of frameworks to evaluate the quality of the qualitative research conducted in this thesis. (Finlay, 2021) notes that each criterion that qualitative research is evaluated by should hold more less 'weight' based on the type of research involved. Accordingly, the 4 R's (rigour, relevance, resonance, and reflexivity) (Finlay, 2021) offer a pragmatic framework to evaluate the quality of qualitative work in this thesis, given their flexible emphasis on certain aspects of the framework to ensure alignment with the epistemological position. For example, a more scientifically driven, or 'small q' qualitative question may emphasise rigour, whilst more interpretive analysis may warrant a higher focus on resonance. Each 'R' will be outlined and discussed below.

Rigour

Rigour is ensured by the evidencing of a systematic and comprehensive analysis whereby each theme should be illustrated by appropriate participant quotes (Finlay, 2021). For example, avoiding 'domain summaries' (Braun & Clarke, 2006) as discussed in Section 5.4, and highlighting themes with the most meaning, rather than attempting to present all evidence. The researcher aimed to offer an accurate and descriptive account of the study process, including recruitment, data collection, analysis and write up. Considerations surrounding informed consent, recruitment, and the structure of the interviews were outlined, alongside the overarching rationale for the qualitative component of this study. Data storage, management, and other ethical considerations have also been outlined. To promote further rigour in the present study, the 15-point checklist of TA (Braun & Clarke, 2006) (Figure 3) was used when conducting the six-staged analytical process. Resultantly, the researcher has aimed to include sufficient detail to provide procedural rigour within section 2.8.

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed - interpreted, made sense of - rather than just paraphrased or described.
	8	Analysis and data match each other - the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organised story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done - i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as *active* in the research process; themes do not just 'emerge'.

Figure 3. Braun and Clarke (2006) 15-point Checklist for Rigorous Thematic Analysis

Relevance

Relevance is concerned with the research value, regarding its contribution to the knowledge, our understanding of the studied phenomena, and an improvement in practice (Finlay, 2021).The research in this thesis seeks to explore relationships between sleep disturbances and suicidal ideation in First Episode Psychosis, to develop knowledge in an under-explored study area of early psychosis. A rationale for the area of study alongside a justification of how and why a mixed-methods approach would appropriately address the research question was provided. Discussion of how the findings of the present study relate to the existing literature and broader theory is outlined in Section 4. Further, the work offers future implications and directions for future research to offer specific suggestions on how to continue advancing this research area.

Resonance

Resonance refers to the 'emotional and artistic dimensions' of the research (Finlay, 2021), alluding to whether the RTA is powerful and sophisticated. Finlay, (2021) discusses the importance of evocative theme names to illustrate complexity in analysis; examples of theme names using participant quotes can be seen in the journal paper. The use of participants own language in theme development can be evidenced as vivid and resonant writing, for example, participants described "losing their mind" when discussing the gradual impact of sleep disturbance, and using the metaphor of machinery to describe their experiences of sleep medication (e.g., being switched 'on and off'). The Critical Appraisal Skills Programme checklist (Critical Appraisal Skills Programme, 2018) was also used to assess resonance of the qualitative component (alongside contributing to assessing the overall rigour of the work). For example, questions 2, 8, and 9 contribute to assessing the resonance of this work.

Reflexivity

Reflexivity can be termed a researcher's critical self-awareness, in which they aim to understand the self and consider how these preconceptions influence and impact the research (Finlay, 2016). Braun & Clarke, (2023) emphasise the process of becoming a 'knowing researcher', in that they acknowledge how their epistemological position, and own perspectives have influenced the research. Consequently, reflexivity is considered an important contributor to qualitative rigour (Braun & Clarke, 2019). RTA endorses 'transparent' knowledge production, by ensuring theoretical assumptions and personal influence are consistently considered.

Reflective diaries are a common strategy to facilitate reflexivity in qualitative research. Whilst a formal reflexive diary was not kept in this study, written notes after each interview were taken to record the researchers' thoughts on the topic area and emotions of the experience (L. Harvey, 2011). There are a wide range of tools considered 'diary methods' (Hewitt, 2017) that can be more or less formal dependant on the study aims. The notes following each session helped to promote transparency between the researcher and the process, consider analytical bias, and align with the CR epistemological underpinning the research. Reflections from the interviews were discussed in supervision to consider the researchers personal position and alternative perspectives on the data. Evidence of reflexivity also encompasses the researcher processing the limitations of the study, both methodologically and due to the confinements of their own role (A. Barrett et al., 2020). Limitations of the research are discussed in Section 4.8, alongside reflections on the challenges of conducting the research more broadly in Section 5. To ensure the research held a reflexive position throughout, the researcher has included a detailed account of their epistemological stance (Section 2.2) and position towards the research (Section 2.3). Further reflections on the research process are detailed in Section 5.

3. Extended Results

This section offers supplementary analysis to the findings presented in the journal paper. Quantitative findings are presented in full in the journal paper, however, additional qualitative findings that are relevant to the wider research question but not developed in sufficient depth for the journal paper are provided below. It is important to note that the below themes are presented are partial themes and are not intended to be considered as fully developed.

3.1 Theme 2: Meaning making experiences of sleep loss and psychosis

Proposed sub-theme – meaning-making of delayed sleep onset.

The processes behind sleep difficulties were not directly explored in this research, however, this proposed sub-theme offers some initial indication into why participants were struggling to initiate sleep.

The process of engaging with the voices can result in elevated emotion, particularly frustration or anger, which elongates the process of interaction and delays sleep onset:

> *it's really annoying because you're awake and there's just always someone sat there talking to you the whole time. Or you wake up and they're saying silly things or taking the piss out of you … it makes me quite angry because they accuse me of doing things, they accuse me of rape and things like that – P4.*

Other participants described an ongoing process of rumination at night-time, and how overthinking the day's events or considering future problems can delay sleep onset:

> *I start overthinking things, like your brain wakes up and it starts thinking, just about all sorts of things, what I've got to get done that day, something that's happened the day previously, what I've got coming up at work, all of that sort of stuff. Like past stuff, future stuff, just a lot of thoughts. I'd probably go to bed a bit later because I tend to sit up and worry about things sometimes, or I would be waking up in the small hours of the morning just worrying about it and going over it, replaying it again and again and you know just going over what it is that had upset me – P1*

if there is a lot on my mind and I can't settle, that can change things a lot … I guess it's just your minds going over things and it's not ready to settle down to sleep yet so your minds looking for answers to whatever the problem is … if you're worried about something it can affect your sleep because your mind's not settled and you're thinking about the situation and all the problems or whatever has occurred– P2

The process of night-time rumination was considered important in the delaying of sleep onset described by participants and was considered influential into the 'emotional tone' of thought processes, whereby negative thinking was common.

Sometimes my fears, my doubts, past trauma, my worries can keep me up, seeing them in a more negative light than I probably would in the daytime. When it's something more permanent to my past that will be something that stops me going to sleep because those are things that I can't answer, or I can't wrap my brain around – P9

Participants also discussed how the process of rumination and subsequent negative thinking can contribute to a heightened awareness of wakefulness in nocturnal hours. Participants then described a process whereby being awake becomes stressing, and a focus of rumination:

I'll just lie there and think about it [being awake], I'll try and stay in bed for half an hour to try and force myself back to sleep before I do get up and go downstairs. It's hard to say [how long that goes on for] because it feels like my brain just gives up on trying to get back to sleep and I can't really put a time on how long it is, I just feel wide awake – P1.

I had quite a few nights where I would just be awake all night with this going round and round. And I would try sleep hygiene but with a limited amount of time it was hard. And I think you start thinking I'm not going to be able to sleep and I'm only going to get 5 hours even if I get to sleep now, so that went through my mind – P6.

4. Extended Discussion

4.1 Sleep Disturbances and Mental Health Difficulties

The notion that poor sleep has a detrimental impact on mental health seems relatively uncontroversial, however, this assertion contrasts with how disrupted or poor sleep is still understood in mental health care. Despite the increasing insomnia levels in the general population (Amiri, 2023), insomnia or sleep disturbances are still typically viewed as secondary consequences of mental health difficulties (A. G. Harvey et al., 2009). The ubiquitous nature of sleep disturbances across the spectrum of mental health difficulties has often led to the assumption that poor sleep is either a consequence or 'symptom' of broader difficulties. However, scholars have started to argue for a partially causal role of sleep disturbance in the onset and maintenance of some mental health difficulties (Freeman, Taylor, et al., 2019). In a recent review, Freeman et al., (2020a)considered that if sleep disturbances play a contributory role in the multifactorial causation of mental health difficulties, then sleep disturbances should be i) apparent before the onset of other 'symptoms', ii) common amongst many presentations, and iii) when treated, reduce other mental difficulties. This area of research is emerging and ongoing to understand if and how sleep contributes to the multifactored onset of some mental health difficulties (Worley, 2018). Psychosis presentations are one of the most well researched in this association with sleep. It is hoped that the research in this thesis can contribute (if even on a very small scale), to the ongoing conversation surrounding sleep disturbances amongst those in mental health services. This section offers some wider discussion of relevant issues that were not explored in the journal paper.

4.1.1. Sleep Parameters in First Episode Psychosis

Much of the research in FEP to date has surrounded insomnia (Ayers et al., 2024; Ketcham et al., 2024) and less attention has been afforded to specific or discrete sleep parameters. Actigraphy provides a pragmatic method to explore such aspects of sleep and their associations with mental health symptomology and wider outcomes such as suicidality. Their use in FEP is generally quite rare despite previous endorsement of the need for such methods in early psychosis (Davies et al., 2017). Research shows that abnormal sleep patterns are common prior to psychosis (S. Clarke et al., 2021b;

Lunsford-Avery et al., 2015), however, there still remains little evidence regarding which aspects of sleep relate to psychosis development.

In this research, there were large variations in participants sleep efficiency. The average sleep efficiency of the participant group was 80.72%, however, sleep efficiency varied amongst participants with some over 90%, whilst others were below 50%. Research into people with insomnia in the general population has shown sleep efficiency means to be ~60% (Wassing et al., 2019), with reduced aspects of sleep contributing to worsening emotional distress. Research in ARMS individuals has indicated lower sleep efficiency is common and is related to increased psychosis symptoms at longitudinal 1 and 12 month follow up (Lunsford-Avery et al., 2015). There is very little research exploring sleep efficiency in relation to clinical outcomes in psychosis, however, lower sleep efficiency indicates more time awake at night, and there is considerable research linking reduced sleep duration to mental health difficulties, particularly in psychosis presentations. For example, short sleep duration has been associated with increased delusional ideas, hallucinations, and distress in individuals at risk of psychosis (Reeve et al., 2018). This study also found that this relationship was significant longitudinally, with shorter sleep at baseline predicting more severe hallucinations at follow up. Whether sleep efficiency is an important avenue of research exploration in relation to suicidality remains undetermined. But by logic, if reduced sleep efficiency means more time awake at night, research exploring nocturnal wakefulness and suicidality (as discussed in the journal paper) may be relevant to this discussion.

4.1.2. Nocturnal Wakefulness and Suicidality

One of the consequences of sleep disturbances is nocturnal wakefulness (being awake at night), and research has started to indicate that this variable may confer some proportion of the contribution of sleep disturbances to suicidal risk (Perlis, Grandner, Chakravorty, et al., 2016). Aspects of sleep such as prolonged latency and increased WASO are potentially implicated in this relationship; both of which the findings of this thesis show are commonly experienced in FEP. Disrupted sleep and wake cycles are evident in long term psychosis presentations and are have been linked to the severity of psychosis experiences (Afonso et al., 2014) and suggested to precede relapse of psychotic episodes (Benson, 2006). Polysomnography research

has shown longer sleep latency in ARMS groups than controls (Marin et al., 2023)indicating such disturbances in sleep are evident prior to FEP, thus, potentially implicated in psychosis onset.

Research has suggested that suicide, alike sleep, may exhibit a circadian pattern in that suicide may occur disproportionately in individuals that are awake in the night (Perlis et al., 2022). Studies investigating the temporal pattern of suicide has shown that although the frequency of suicides are reduced at night, the risk (given the proportion of people expected to be awake) is considerably higher. These findings were consistent across age groups, sex, ethnicities, and between those with and without a depression diagnosis (Tubbs et al., 2022). Future research weighting the number of suicides by the percentage of people awake at each hour may be helpful to continue to explore this association, and the role of sleep disturbances within this proposed relationship. These findings may indicate that sleep disturbances may moderate the association between nocturnal wakefulness and death by suicide (Bernert et al., 2015), however, further research is needed to explore this relationship both generally and in FEP.

Despite research indicating a multitude of sleep parameters may be associated with aspects of suicidality (Tubbs et al., 2021), nocturnal wakefulness and the factors implicated in this experience may be an important avenue to explore. Sleep latency, given its associations with depression (Supartini et al., 2016) and WASO (Gerner et al., 2020) may both be important aspects to consider in the sleep-suicide relationship. Qualitative research found that participants found the experience of being awake at night as distressing and isolating (D. L. Littlewood et al., 2016a), though there is limited in research in FEP exploring participants construction of why they experience sleep disruption. Exploring participants construction of nocturnal wakefulness whilst acknowledging the wider context of emerging evidence surrounding a higher proportion of night-time suicides would provide insight into this complex relationship.

4.2. Insomnia and Suicidality in First Episode Psychosis

All participants met criteria for sub-threshold insomnia (as measured by the ISI), with 6 participants indicating the presence of clinical insomnia. This is unsurprising, given considerable evidence has noted sleep disorders are highly prevalent in early psychosis (Reeve et al., 2019), and exploration of the relationship between insomnia

and suicidality in FEP has been discussed in the journal paper and Section 1.5. Although statistical significance was not reached in this paper, it is important to consider the small sample size and heterogeneity of participants (e.g., some reported no suicidal ideation, whilst others was much higher) (explanations for such diversities such as limitations of the measure are discussed in Section 2.6.2. In contrast to previous studies (Reeve et al., 2019) most participants had discussed their sleep difficulties with their care team. However, most discussion had been verbal and standardised measures had not been used (e.g., the ISI to screen for the possible presence of sleep disorders). Sleep difficulties in mental health services often remain untreated (Ter Heege et al., 2020) and given associations between insomnia and suicide, this may be problematic in this vulnerable group.

In the general population, only 4 of every 10 people with insomnia seek help for their difficulties, and help-seeking is often not reported to primary care until participants experience this as chronic (Torrens Darder et al., 2021). A qualitative study indicated that those with psychosis were often more accepting of their sleep difficulties, even though they had received minimal help regarding them (Faulkner & Bee, 2016) in this qualitative study, it was noted that sleep disturbances and/or disorders are often not prioritised in comparison to other aspects of care, particularly in psychosis services. However, the consequences of poor sleep (e.g., daytime fatigue, and exaggerated symptoms) reduced the ability of participants to engage in meaningful activities that would connect to aspects of recovery, such as connectedness and contribution to society (Leamy et al., 2011). Thus, it is important to consider not just the impact of insomnia or sleep disturbances on symptom exacerbation, but to consider sleeps contribution to suicidality in the context of how it impacts an individual's ability to engage in things that will make their life feel meaningful. Given a lack of perceived connectedness and meaning have been noted as contributors to suicidality (Zareian & Klonsky, 2020), the consequence of insomnia on an individual's ability to engage in activities to enhance such meaningful feelings warrants further attention.

A further reason sleep disorders may go undetected in psychosis may be due to the speed of acute onset. For example, participants described in acute FEP, sleep disruption lasted under a month, whilst insomnia diagnosis stipulates such disruption lasts over 3 months prior to diagnostic consideration). Notwithstanding explanation, clinically standardised sleep assessment may have considerable utility in psychosis

services. Associations between insomnia and suicidal ideation (Simmons et al., 2020) and attempt (Lin et al., 2018) are robust in the general population, independent of mental health difficulties. Thus, in a group that already show a heightened prevalence of suicidality, modifiable factors that contribute to this risk should be appropriately assessed.

Further, phenotypes of insomnia may be relevant to consider, given their relationship with aspects of sleep that are disturbed in this group. Developments in insomnia diagnosis have long recognised the heterogeneity of this diagnosis and noted two phenotypes: Insomnia with normal sleep duration (categorised by elongated sleep latency and/or increased WASO), and Insomnia with short sleep duration (Nyhuis & Fernandez-Mendoza, 2023). Whilst both phenotypes are associated with increased vulnerability to psychological difficulties and mental health difficulties, there are considerable health consequences associated with Insomnia with short sleep duration (Nyhuis & Fernandez-Mendoza, 2023). Exploring insomnia phenotypes in this group would not only help to guide tailored intervention but may indicate the aspects of sleep that are most vulnerable to disturbance in this population.

4.3. Psychological Processes Implicated in Sleep Disturbances

Sleep is critical for waking cognition, impacts our ability to think clearly, and plays a key role in emotional regulation (Worley, 2018). In this thesis, the psychological processes underpinning sleep disruption were not explored explicitly. However, findings indicated three key processes that warrant exploration in the context of delaying sleep onset in FEP: rumination, voice hearing, and meta-worry.

4.3.1 Rumination

Rumination is defined as a repetitive or perseverative thinking style that generally focuses on negative content (Sansone & Sansone, 2012), and is a common process in the context of sleep disruption and insomnia (A. G. Harvey & Tang, 2012). As presented in Section 3, participants described a process of rumination that inhibits sleep onset. A review of rumination research has proposed how rumination can exacerbate symptomology: i) by magnifying and prolonged negative thinking and mood states, ii) interfering with problem solving, iii) interfering with active instrumental behaviour, and iii) reducing sensitivity to changing context (Watkins & Roberts, 2020). In this thesis, participants described the process of rumination

interfering with sleep by increasing arousal at nighttime and prolonging negative thinking or mood states.

A considerable body of research has implicated rumination as a fundamental process in the exacerbation of negative mood states, such as sadness, anger and anxiety (Ludwig et al., 2020). Meta-analyses (M. L. Rogers & Joiner, 2017) and prospective studies (Hartley et al., 2014) have shown that rumination can predict psychotic symptoms, which is in line with models implicating the role of cognitive factors in the onset and maintenance of psychosis (Garety et al., 2001). Similarly, rumination is a fundamental process in insomnia aetiology (A. G. Harvey, 2002). Harvey's model suggests excessive rumination is a key aspect of pre-sleep cognitive activity in those with sleep difficulties, and similar characteristics are observed during wakefulness, accompanied by emotional distress. Rumination is thought to contribute to further emotional arousal and induces a cycle that perpetuates insomnia. Rumination has been robustly implicated in those with poor sleep, with increased rumination associated with increased sleep latency, poorer sleep quality and efficiency and more daytime rumination (Woznica et al., 2015).Poor sleep and rumination are considered to be linked in a transactional cycle whereby rumination delays sleep onset and reduces sleep quality (Drake et al., 2014), while lack of sleep contributes to impaired cognitive functioning, making it harder to avoid rumination (Cox et al., 2023a; Holdaway et al., 2018). Worry and rumination have been described by participants with schizophrenia and schizoaffective disorders in relation to being unable to sleep in previous qualitative work (Waite, Evans, et al., 2016) however, the role of rumination in the sleep-psychosis relationship in FEP is unclear.

Research into rumination as a risk factor for insomnia and suicidal ideation has gained momentum (Holdaway et al., 2018) and is associated with suicidal ideation in those with and without mental health difficulties (M. L. Rogers & Joiner, 2017). Conceptually, rumination is thought to keep negative cognitive appraisals associated with emotional arousal activated for longer (Holdaway et al., 2018). In the context of this research, it is important to consider how cycles of rumination and increased negative affect may trigger responses to escape aversive states, such as NSSI (Selby et al., 2015). Over-arousal is a process commonly noted as a consequence of rumination and has started to be considered within suicide-specific rumination models (M. L. Rogers et al., 2021). Given high levels of NSSI in psychosis

(Lorentzen et al., 2022), and participants describing NSSI following periods of sleep deprivation, the role of rumination in interaction between sleep and NSSI in FEP warrants exploration.

Finally, the role of rumination has been documented in relation to suicide risk (M. L. Rogers et al., 2021). For example, (Wenzel & Beck, 2008) proposed a model of suicidal behaviour, in which rumination may activate suicide-specific cognitive processes, such as attentional bias towards suicide. Others have proposed that rumination about suicide can facilitate a process of habituation towards suicide and related cues, thus, increasing capability for suicide through mental rehearsal (Van Orden et al., 2010). Further work is needed to better understand rumination both in relation to delaying sleep onset and maintaining wakefulness, as well as recognising rumination in the process of suicidal ideation in FEP.

4.3.2 Voice Hearing

Some participants described how unusual experiences at night can prevent sleep onset and induce a cycle of conversation with voices further preventing sleep. A qualitative study noted that participants with a diagnosis of schizophrenia described feelings of fear and paranoia preventing sleep onset (Chiu et al., 2016), which is a commonly described experience in other qualitative studies (Waite, Evans, et al., 2016). There is very little work exploring the experience of hearing voices at night, or on considering why sleep is disrupted in psychosis generally. However, one qualitative study found that hearing voices at night was reported amongst a few participants, leading to frustration and hyperarousal, and consequently delaying sleep onset (Chiu et al., 2016). Findings of the present study are consistent with (Waite, Evans, et al., 2016) work, whereby participants noted that voices were heard in more intense frequency the day after a poor night's sleep, indicating a bi-directional relationship between sleep and psychotic experiences. There is no current research exploring the presence of psychosis experiences at night, however, this remains an avenue of exploration that warrants attention.

4.3.3 Meta-worry; worrying about not sleeping.

Another explanation participants discussed surrounding difficulties initiating sleep onset in the present study was the process of meta-worry about sleep, defined as 'worrying about worry' (Flavell, 1976). A. G. Harvey, (2002) proposed a model of

insomnia, in which repetitive and excessive negatively toned cognitive activity surrounding not sleeping is a central aspect of the model. Excessive worry and rumination are implicated in this process whereby ruminating about sleep initiation can increase pre-sleep arousal, leading to further difficulties with sleep onset, duration and quality. Subsequently, cycles of increased rumination, heightened arousal, and delayed sleep onset are initiated, maintaining insomnia.

In this context, two types of cognitive arousal are at play (Galbiati et al., 2020b). Primary arousal, referring to cognitive activity that directly interferes with sleep (such as worries about the previous or next day's events), and secondary arousal, considered how individuals react to such thoughts and the emotional response. It is noted that secondary arousal magnifies negative emotional evaluation and biases the cognitive system towards sleep-related thoughts (e.g., the consequences of not sleeping).

4.3.4. Experiences of Mania

Self-reported experiences of mania were common amongst participants, which does contrast with some of the evidence base in this area. Reduced need for sleep, and subsyndromal manic symptoms are more commonly associated with prodromal periods for bipolar disorder, rather than FEP (Verdolini et al., 2022). However, in the aforementioned study a small percentage of FEP patients did report subsyndromal mania symptoms prior to FEP onset. What is notable in the research is that those FEP and mania symptoms also had greater severity of psychosis symptoms, and the presence of mania delayed 'remission' of symptoms to over one year (Marwaha et al., 2021). In this thesis, the self-reported reflections of mania may be important to consider in the context of unresolved psychosis experiences for this group. Further, research has indicated that the duration of untreated psychosis is longer in those with comorbid mania symptoms than without (Marwaha et al., 2021). One explanation for this is that at the time, people experiencing hypomania do not consider their symptoms distressing or problematic (Regeer et al., 2015) so may not come into contact with services until later.

Those with FEP alongside mood disturbance are often at high risk of suicidal behaviour (Berk, 2007). Although recent reviews of affective psychosis and FEP have been conducted with recommendations, it remains a sparsely explored area (Ramain

et al., 2021). What is notable, is that researchers have found that individuals with affective psychosis are more likely to be women, and are less likely to attempt suicide (Kapila et al., 2019; Ramain et al., 2021); given the higher number of women in the present study and lower suicidal ideation, mania may be an important implicated process in this group. Sleep disturbances remain relatively unexplored in the context of mania and psychosis, and further exploration of a proposed sleep disturbance-mania-psychosis pathway may be warranted.

4.4. Psychological Processes in the Sleep-Suicide Relationship in FEP

4.4.1. Hopelessness and Depression

Although not explored in the present study, the influence of depression on both sleep and suicidality in FEP and psychosis presentations generally is important to consider. Several studies exploring sleep and suicidality in SSD's found that suicidal participants also had higher depression scores (Kiwan et al., 2019; B. J. Miller et al., 2021). Studies have indicated that more negative symptoms (such as anhedonia or flat affect) in psychosis relate to an increase in suicidal ideation and/or behaviour (Gill et al., 2015), however, other studies have not found significant associations (Ventriglio et al., 2016). It is challenging to disentangle negative symptoms such as limited emotional expression from depression, as presentations likely overlap making assessment in both research and practice challenging. Despite such difficulties, depression prevalence is very high in FEP, with studies indicating that around 70% of those with FEP are also experiencing depression when engaging in first contact with services (Bashir et al., 2022). Depression is an important longitudinal predictor of suicidal behaviour in FEP (McGinty et al., 2018), and research has indicated those experiencing greater depression and more positive symptoms at baseline had greater odds of experiencing suicidal ideation at follow up (Bornheimer et al., 2021)

A neglected process in the sleep-suicide relationship in FEP, yet closely related to depression, is the psychological process of hopelessness. In the present study, participants discussed the experience of feeling trapped in the process of not sleeping, which reduced hope towards future change. Hopelessness (negative thoughts of the future and helplessness to enact change) has been shown as a stronger predictor of suicidal ideation that depression (David Klonsky et al., 2012), and indicating a role in maintaining suicidal ideation processes (Smith et al., 2006).

Hopelessness has been found to be a significant mediator of the insomnia-suicidal ideation relationship (Woosley et al., 2014), and is a moderate predictor of attempted suicide amongst those experiencing FEP in the first two years since admission (David Klonsky et al., 2012). Further qualitative research to explore participant perceptions of the processes contributing to delayed sleep, and exploration of hopelessness within this relationship may be useful. Given strong associations between sleep disturbances and depression (Malik et al., 2014), depression and suicide in both the general population (Holma et al., 2014) and in SSD's (Hor & Taylor, 2010) the role of depression in the sleep-suicide relationship must be considered. In studies of those with SSD's, several studies have shown that when depression was considered, the relationship between sleep and suicidal ideation became non-significant (Carruthers et al., 2021). Thus, it may be important to consider depression as both a potential mediator or moderator of the sleep-suicidal relationship in FEP and SSD's.

4.4.2. Feelings of Entrapment

Participants described a process of feeling trapped in their experiences of being unable to sleep, and in some cases described suicidal ideation, or the thought of completing suicide, as an escape. The Integrated Motivational-Volitional Model (IMV) of suicide (R. C. O'Connor & Portzky, 2018) is based on early work on defeat and entrapment, and described a common pathway to suicidal behaviour. The model posits the experience of defeat, in which it is perceived there is no escape, is the key driver of suicidal ideation (O'Connor & Kirtley, 2018) (see Figure 4).

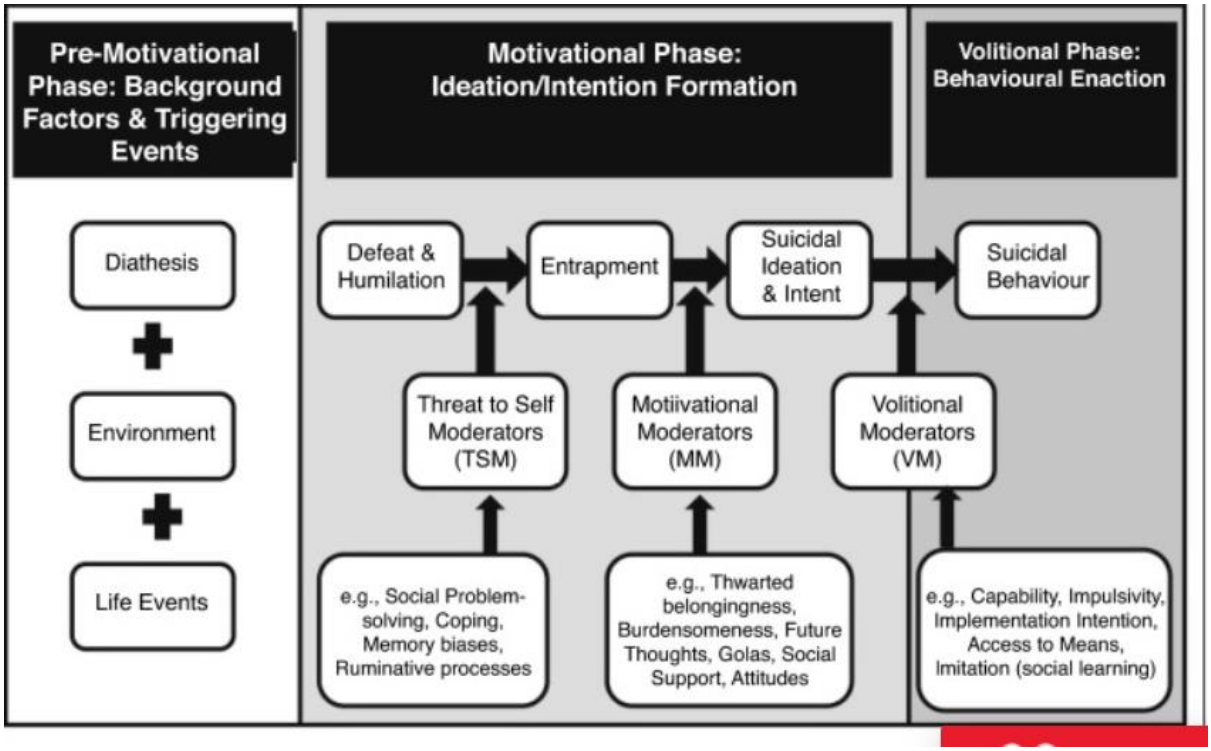

Figure 4. Integrated Motivational-Volitional Model of Suicidal Behaviour (O'Connor et al., 2018)

Entrapment is important in the aetiology of mental health difficulties and suicide, and has been discussed in systematic reviews (P. J. Taylor et al., 2011) and meta-analyses (Siddaway et al., 2015) The contribution of sleep deprivation to suicidal behaviour has started to receive significant attention (Díaz-Oliván et al., 2021) with entrapment considered a potential explanatory mechanism (D. Littlewood et al., 2017). Although sleep problems are not included explicitly in the IMV model, sleep disturbances may pose as a vulnerability factor affecting defeat (D. L. Littlewood & Russell, 2020); this may tie into literature as sleep disturbances as a distal predictor of suicidal ideation and attempt but warrants further exploration. As a proximal predictor, suicidal ideation or behaviour following acute sleep disturbances may be understood in the context of the IMV model whereby sleep disruption could be considered a precipitating factor in the volitional stage of the model, but this also warrants exploration.

4.5. Assessment and Intervention in Early Intervention Services

4.5.1. Sleep Assessment

Appropriate assessment of sleep disorders in psychosis services may have important benefits for patient outcomes (Reeve et al., 2019). Given experimentalist studies demonstrating that insomnia can increase psychosis experiences (Reeve et al., 2018), and improving sleep can reduce such experiences (Freeman et al., 2017), treating sleep disorders as an independent presentation offers a novel and approachable intervention target. Despite such a rationale, formal and/or standardised sleep assessment is rare in psychosis services, as is evidence-based treatment (other than medication) (Rehman et al., 2017). Reeve et al., (2019) found 80% of individuals with early psychosis had at least one sleep disorder, with most rated as severe in frequency and distress.

The DSM-5 recommends that sleep disorders should be assessed and treated independently of other mental health difficulties (American Psychiatric Association, 2022). However, a study surveying a multi-disciplinary group of clinicians found that structured sleep assessment is delivered infrequently in inpatient and community psychosis services (E. A. Barrett et al., 2020). The knowledge that professionals are only asking infrequently about sleep disturbances compounds already prevalent barriers to sleep assessment in psychosis services, such as patient disclosures. Only 38% of individuals with psychosis are likely to initiate conversation around their sleep difficulties with a medical professional (Reeve et al., 2019), indicating that patients are unlikely to report such difficulties unless asked. These experiences mean that sleep problems or disorders are likely to go underestimated, or undetected, in services, despite there being a considerable amount of research knowledge noting their high prevalence.

In psychosis services, sleep hygiene (optimising the sleep environment) and medication are the most common interventions for sleep related difficulties (E. A. Barrett et al., 2020). Qualitative research has shown that individuals with schizophrenia feel their sleep difficulties are out of their control, and nearly half of include participants felt pessimistic about being able to improve their sleep (Chiu et al., 2016). This parallels views of clinicians, who have stated that sleep treatment is demanding on both time and resource and too difficult to deliver in outpatient services (E. A. Barrett et al., 2020). Notably, in the aforementioned study many clinicians believed that sleep medication was the only sufficient treatment of sleep disorders, and that sleep is secondary to psychosis symptomology in patient recovery.

4.5.2. Suicide Risk Assessment

Recent research shows that suicidal thinking is a common process in FEP at their initial assessment, or first contact with services (Pelizza et al., 2020b). Notably, those of a younger age (particularly 15-30 years) were higher risk of experiencing suicidal ideation, likely due the duration of untreated psychosis (Robinson et al., 2010). In the present study, only two participants indicated current suicidal ideation, however, most participants reflected in their interview that they had experienced suicidal ideation or attempt in the past. Despite decades of research, the ability to predict and prevent suicide risk remains less than adequate (Franklin et al., 2017). Recent evidence indicates that suicidal behaviour can emerge and fluctuate over days, hours, and even minutes (Coppersmith et al., 2023). Despite research on distal (indirect or further away in time) risk factors for suicide increasing, there is little research on which factors can prevent acute increases in suicide risk, when an individual holds an elevated distal risk (such as FEP) (Cox et al., 2023a).

Robust associations show that sleep disturbances are a well-established distal risk factor for suicidal ideation and behaviours both cross-sectionally (Batterham et al., 2021) and longitudinally (R. T. Liu et al., 2020b). Short sleep duration and low sleep quality have been shown to predict elevated risk for suicidal ideation and attempt at 1- and 2-year periods (Itani et al., 2017). Conversely, much less is known about sleep as an acute and proximal risk for suicide (R. T. Liu et al., 2020a). Studies using Ecological Momentary Assessment (EMA) have shown associations between sleep parameters and suicidality. For example, (D. L. Littlewood et al., 2019) showed that self-reported short sleep duration and low sleep quality predicted increased next day suicidal ideation in adults, but EMA research is still emerging, and research is ongoing. There is no research using EMA to assess short-term sleep disturbances and suicidal risk in FEP, and given associations between sleep disturbances and suicide generally, and high prevalence of both disrupted sleep and suicidality in FEP, this method of research in FEP is warranted.

What is also important to acknowledge is the impact of sleep disturbance on active and passive suicide risk, as these are theoretically distinct (Klonsky et al., 2016), and indicate different levels of necessary care based on severity (Victor & Klonsky, 2014a). Cox et al., (2023b) explored sleep parameters and their relation to both

active and passive suicidal risk. They found that nightmares, poor sleep quality, more wake after sleep onset, and longer sleep latency predicted next day passive suicidal ideation, Longer sleep latency has been robustly established with elevated active suicidal ideation in other studies (Batterham et al., 2021; Tubbs et al., 2021), indicating problems with sleep initiation may be implicated as a proximal risk factor, but this warrants further exploration. Notably, short sleep duration was not associated with next day active or passive suicidal ideation (Cox et al., 2023b) which is consistent with other EMA literature (Brüdern et al., 2022; Kivelä et al., 2022). What is noteworthy, is that this finding contrasts with the non-EMA literature, which shows a link between short sleep duration and suicidal behaviours (Geoffroy et al., 2020; Itani et al., 2017) over a longer time period. Such differences in findings warrant both further research on proximal and distal risk for suicide in FEP, but also for such considerations to be included in risk assessments (see Section 4.7.1 for clinical implications).

4.6. Sleep Aids

4.6.1. Prescribed Sleep Medication

As previously mentioned, sleep medication is a common treatment for sleep disorders in mental health services (Zee et al., 2023). Whilst participants in this thesis expressed that sleep medication during acute FEP was essential to restore lost sleep, there was both scepticism and reluctance regarding their long-term use. Hypnotic medication, such as zopiclone, is recommended in insomnia treatment guidelines, but only in instances of acute insomnia phases, and despite efficacy in acute treatment, long-term safety profiles of this medication are not favourable (De Crescenzo et al., 2022) (De Crescenzo et al., 2022) Further discussion of hypnotic medication is available (De Crescenzo et al., 2022) however, it is important to acknowledge the worry of patients surrounding the psychological reliance on sleep medication (Zee et al., 2023) whereby people feel unable to sleep without it.

4.6.2. Substance Use

A survey study of clinicians noted that a barrier to treating sleep problems in those with psychosis was drug and alcohol dependence, which they considered was more common amongst those with sleep disturbances (Rehman et al., 2017) However, findings in this thesis indicated that participants used alcohol or substances to aid

sleep initiation in the absence of alternative strategies to reduce sleep onset latency. Participants also disclosed knowing that such strategies were not optimal and potentially had difficult consequences but felt that this choice was better than struggling to initiate sleep.

The use of substances and alcohol to aid sleep onset in those with psychosis is problematic particularly given that the use of substances such as cocaine and cannabis can induce or exaggerate psychosis experiences (Fiorentini et al., 2021). The two commonly reported substances used amongst participants in this study were alcohol and cannabis, which have different effects on sleep. Both alcohol and cannabis can reduce sleep onset latency (Sznitman et al., 2023), thus are effective in their function as described by study participants. However, consequences of alcohol use are disruptions in REM sleep (Colrain et al., 2014) whilst cannabis reduces the amount of slow wave sleep (Vaillancourt et al., 2022). Given participants still experienced psychosis symptoms, it is possible that despite reducing latency, the quality of sleep gained was low, so sleep deprivation was continuing to accumulate. Further, given noted associations between reduced REM sleep and emotional dysregulation (Galbiati et al., 2020b) it may be that the suppression of REM sleep partially contributed to experiences non-suicidal self-injury characterised by emotional instability, as described by participants.

4.6.3. Cognitive Behavioural Therapy for Insomnia (CBT-I)

Sleep hygiene interventions have been considered amongst those with psychosis as they are cheap, easy to administer, and require minimal training amongst staff (Waite, Myers, et al., 2016). However, patients report that their sleep difficulties are related to psychosis and not lifestyle factors (Chiu et al., 2016), thus sleep hygiene is likely not helpful to this group with cases of chronic insomnia. There is emerging evidence that CBT-I interventions adapted for those with psychosis (e.g., focus on circadian disruption and interaction with psychosis experiences) (Freeman et al., 2015a) can be effective to both improve sleep and reduce delusions and hallucinations (Myers et al., 2011). (Freeman et al., 2015b) found that an 8 session CBT-I intervention showed large improvements in sleep, whilst a more recent study showed indications of reduced insomnia and paranoia following CBT-I protocol in those At Risk of Psychosis (Waite et al., 2023). There are several other trials indicating promise (Hwang et al., 2019),

though it is noted that although international guidance recommends cognitive behavioural intervention for insomnia (Riemann et al., 2017) lack of training amongst clinical staff limits the use of non-pharmacological intervention.

Notably, an important consideration when discussing the outcomes of CBT-I trials in psychosis is on the bi-directionality of the sleep-psychosis relationship. Although bi-directionality is assumed and likely, CBT-I interventions have shown improvements in both sleep and psychosis symptoms, whereas improvement in psychosis symptoms has not shown improvement in sleep difficulties. Whilst there are a multitude of compounding and interacting variables involved in this assumption, it is important to note the contribution sleep disruptions may have to the onset and maintenance of psychosis and consider how appropriate sleep assessment and intervention are utilised in psychosis services.

4.7. Non-Suicidal Self-Injury

As discussed in the journal paper, participants discussed reduced emotional control following periods of sleep disturbance, which they describing contributing to non-suicidal self-injury (NSSI). NSSI terminology is used interchangeably and there has been debate around its conceptualisation, which has likely limited understanding of such behaviours (Andover & Gibb, 2010). However, the most common definition includes ‘self-inflicted damage of the body without suicidal intent’ and commonly includes behaviours such as cutting the skin, head banging or hitting, and burning (Selby et al., 2015); all of which were described by participants in this thesis.

Self-injurious behaviour is a serious public health concern, with 16-18% of adolescents (Muehlenkamp et al., 2012) and 6% of the general adult population engaging in such behaviours (Klonsky, 2011). The prevalence of NSSI in those engaging with mental health services is estimated to be between 40-80% (Kerr et al., 2010). Around 1 in 5 patients with FEP have a history of NSSI, and there is persistent risk of NSSI in the period after initial treatment in early intervention services (Challis et al., 2013a). The link between NSSI and increased risk of suicidal ideation (Kiekens et al., 2018) and attempt (Victor & Klonsky, 2014b) is well-established, and recent research has shown NSSI is both highly prevalent and likely overlooked in SSD, FEP and ARMS groups (Lorentzen et al., 2022).

NSSI has been proposed to serve a number of functions in the literature, such as to regulate emotions, act as self-punishment, communicate distress, or to gain interpersonal affiliation (Edmondson et al., 2016). Similar to other concepts in suicidality research, there is a lack of qualitative research in this area despite qualitative research offering opportunity to gain an in-depth, contextualised understanding of the processes involved in NSSI (Peel-Wainwright et al., 2021). The functions of NSSI in SSD and FEP populations is less explored. In addition to already established functions, research has acknowledged the potential role of command hallucinations and NSSI (as noted by participant 4 in this research) which has been considered a potentially overlooked cause of NSSI in SSDs (Lorentzen et al., 2022).

Given associations between disturbed sleep and NSSI in adult populations (Zheng et al., 2023) and the mediating role of sleep disturbances in the relationship between trauma and self-injury (Short et al., 2015), NSSI in the context of sleep disturbances warrants further exploration in FEP. Notably, research has found that both lower age of self-harm onset and longer duration of self-harm are associated with increased frequency of NSSI and a risk of a first suicide attempt in adolescents (Brager-Larsen et al., 2022) Given younger age is a noted predictor for suicidal ideation and attempt in FEP (Vila-Badia et al., 2022) screening and prevention strategies for NSSI in FEP are necessary. Studies have evidenced an elevated risk of NSSI during initial contact with early intervention services, which often persists, and thus should remain an early focus of care (Moe et al., 2022). Further, research has noted that childhood trauma is a significant contributor to NSSI in those with psychosis (Grattan et al., 2019), thus, thorough assessment of trauma history would allow clinicians to avoid retraumatising patients where possible and reducing NSSI.

4.8. The Role of Clinical Psychology in Early Intervention Services

National Institute for Health and Clinical Excellence (NICE) (2014) guidance states that a combination of antipsychotic medication and psychological therapy is the recommended treatment for FEP. The need for clinical psychologists in psychosis services has long been discussed (BPS, 2005), however, changes in funding and service structure over recent decades has limited the consistent integration of psychologists in Early Intervention services. The role of clinical psychologists in the development, delivery, and evaluation of EIP services is critical, in order to assist

service managers and commissioners with service development, team functioning, and offer psychological intervention.

There is considerable evidence that psychological therapies are effective for those with psychosis, both in Early Intervention and at later stages (T. M. Lincoln & Pedersen, 2019). Despite the noted efficacy of Cognitive-Behavioural interventions in reducing transition to psychosis (Hutton & Taylor, 2014) and in reducing distress and symptomology in longer term psychosis (Sitko et al., 2020), access to psychological therapies for people with psychosis remains challenging (Burgess-Barr et al., 2023) Other psychological therapies such as attachment or trauma informed therapies have shown efficacy for people who are experiencing psychosis (Longden et al., 2020), with evidence for further therapies ongoing (Hardy et al., 2024).

Given the rise of referral rates to EIP following the Covid-19 pandemic (Moccia et al., 2023), psychologically informed or specific psychological work offers a key opportunity to enhance the intervention offer for those accessing services. The role of the psychologist in EIP goes beyond delivering one-to-one therapy, for example, qualitative studies have noted the role of the clinical psychologist in helping to formulate risk behaviours in psychosis services (Wood et al., 2019a). Given the role of attachment in psychosis experiences (Berry et al., 2017), psychologists offer an appropriate professional to help the individual consider the role of attachment trauma in their experiences, alongside supporting staff within the service with relational difficulties.

Clinical psychologists may also be appropriately placed to consider the contribution of lifestyle factors (such as sleep) on functional and quality of life outcomes (such as suicidal ideation) in psychosis services through formulation. Formulation offers a strategy to restore meaning to people's experiences (Johnstone, 2018), which given the high rates of societal (Eliasson et al., 2021) and self-stigma (Arboleya-Faedo et al., 2023) in psychosis, is a necessary endeavour. Despite similarity in the characteristics and goals of EIP services, not all EIP services are structured the same (O'Connell et al., 2022). Psychologists are considered a fundamental part of the team in the NHS policy regarding EIP access and waiting time standard (NHS, 2022), thus, it is hoped that the number of psychologists in EIP services in all geographical areas continues to grow.

4.8.1. Implications for Clinical Practice

There are several proposed implications for future clinical practice, including the consideration of sleep as a contributing factor to psychosis experiences and suicidal ideation in FEP, and how the role of clinical psychology may be applied in this setting. A number of recommendations for clinical practice are integrated within this thesis, however this section will attempt to offer broader implications relevant to EIP.

Given research has started to explore sleep disturbances as both distal and proximal suicide risk factors, it would be clinically useful to incorporate measures of sleep within suicide risk assessments in EIP services. Given the elevated risk of suicide in FEP and increasing knowledge of individuals with higher risk within this population (e.g., younger age, drug use, previous attempts), regular and thorough suicide risk assessment is of considerable importance in early intervention services (Hawton et al., 2005). Research suggests 80% patients who completed suicide in Early Intervention Services over a 5-year period, had had contact with the service within the previous either days (Javed & Das, 2022), indicating the critical role services could play in suicide prevention. Modifiable risk factors for suicide, such as sleep disturbances, should be routinely assessed amongst suicide risk and safety plans could also be reflective of the role of sleep disturbances in suicide risk. For example, making safety plans for nights or days characterised by lower than normal sleep quality, or higher than normal difficulty staying asleep. Alongside risk assessment and safety planning, there is a need for more specially targeted suicide prevention strategies in EIP; considering sleep improvement interventions may be part of this.

To improve service awareness of the role of sleep disturbance in psychosis onset and maintenance and its likely relationship with suicidal ideation, there is scope for professional development and training delivered by a clinical psychologist in EIP teams. The role of clinical psychologists in teams extends beyond a therapeutic role and includes supervision, consultation and training (Wood et al., 2019b). Despite this assertion, it is noted that clinical psychologists working in MDTs often detail their experience of extending psychological knowledge to staff is through ‘chipping in’ in MDT meetings rather than specific training (Christofides et al., 2012). Though, findings of the aforementioned study noted that clinical psychologists may need more support to develop explicit training for staff within their roles.

This research emphasises the importance of the role of the clinical psychologist in EIP services through formulation. Participants in the present study described and reflected on the meaning attached to sleep disturbances in the context of psychosis and had constructed explanations for their experiences. The incorporation of lifestyle factors such as sleep and the implicated psychological processes (e.g., rumination and entrapment) into formulations may offer new routes into intervention for individuals in EIP care. Further, the role of team formulation facilitated by a psychologist may be helpful to extended understanding of the role of lifestyle factors such as sleep in 'risk behaviours' (such as NSSI and substance use) to team professionals, in order to reduce reactive and risk averse strategies, and encourage therapeutic conversation.

Finally, this research emphasises the need for i) targeted suicide prevention strategies in FEP, inclusive of lifestyle factors and relevant demographics, ii) the standardised assessment of sleep disturbances and disorders in EIP, and iii) the treatment of sleep disturbances as a modifiable risk factor in psychosis experiences. Assessment and diagnosis of comorbid sleep disorders that are considered treatable in their own right are needed. Further, standardised assessment of sleep disturbances when raised by patients is needed. A tool such as the ISI is accessible and standardised for this use as a screening tool.

Given the contributory role of sleep in the onset and maintenance of psychosis (notwithstanding other relevant factors), there is a need for specific sleep intervention that is not solely reliant on hypnotic medication. Psychologically informed strategies such as 'worry management in the night' and sleep hygiene strategies should be made available to all staff to introduce the role of sleep in mental health difficulties to individuals in EIP care. Beyond this, there is a need for dedicated time, resource, and funding towards cognitive-behavioural interventions such as CBT-I (such as training nurses, psychologists, or other members of staff in this therapy) to improve the disruption that sleep disturbances and disorders cause to an individual's mental health and quality of life.

Clinicians should be mindful that assessing and targeting entrapment beliefs (whether surrounding sleep difficulty, or beliefs towards psychosis experiences more generally) could be helpful to modify risk (P. J. Taylor et al., 2011). Further, the role of entrapment as a potential explanatory mechanism of the sleep-suicide relationship holds clinical

implications; given the potential role of cognitive mechanisms contributing to both insomnia (A. G. Harvey & Tang, 2012) and entrapment, these could be targeted in psychological intervention.

4.9. Limitations

As noted in the journal paper, there are several limitations in the present study that are important to consider when interpreting the findings. This section will offer further limitations that were not explored in the journal paper. The context of the present study was conducted within one NHS Trust in the midlands of England. The funding and organisational structure of Early Intervention Services differ across NHS Trusts and thus geographical areas of the UK (O'Connell et al., 2022), so it may be that the findings in this thesis are in some places reflective of the care in this singular Trust. However, despite disparity in service structure (and subsequent availability of certain professionals), all services must adhere to the National Clinical Audit for Psychosis, which is designed to help improve the care individuals receive in Early Intervention Psychosis Services across England and Wales, so the majority of aspects of care should be standardised.

Given research has noted higher risk age groups for suicide (Pelizza et al., 2021), and other risk factors for suicide in FEP, it is important to note that participants in this study were demographically diverse, which may have impacted findings. However, the diversity of experience in reference to the qualitative work was insightful, given despite diversity, there was much commonality in experience regarding disrupted sleep. Due to the resource of this thesis only English-speaking participants were able to be recruited, thus, it is possible that the experiences of some individuals may have been missed. Further, the diversity of participants was also evident in measures of suicidal ideation and symptomology. For example, the range of PBQ scores was 0-20, and BSS from 0-7. Whilst there are limitations of the included measures (see Section 2), it is also fair to state there was considerably heterogeneity in participants current psychological wellbeing and 'recovery' stage.

All participants disclosed having self-reported sleep difficulties, so in some respects in can be assumed that the individuals recruited had an interest in sleep disturbances and their relationship to other functional outcomes. However, all participants noted previous experiences where they had considered sleep as

influential in their experiences of psychosis prior to meeting with the researcher, so the perceived temporal order of events (e.g., sleep disturbed prior to psychosis) was already established.

Given all participants were currently able to consent to participating and were not experiencing acute psychotic symptoms, they were able to reflect on previous periods of acute difficulties. It is important to consider that in this context some of the qualitative content was retrospective, whereby participants are recalling events from weeks to years ago. Regardless of the mode of data collection, reliance on the participants recall of past events is unavoidable (Khare & Vedel, 2019). However, inaccurate or incomplete recollection, and subsequent recall bias can be problematic in health research (Brusco & Watts, 2015). Being unable to recollect a memory in absolute entirety is a reported difficulty in longer recall periods and may be particularly relevant in this population due to the ubiquity of dissociative presentations with psychoses (Longden et al., 2020), and associations between dissociation and memory fragmentation (White et al., 2013). However, studies have noted that the emotional saliency of events are important in memory recall (Ottenstein & Lischetzke, 2020) (particularly negative emotional events such as fear and sadness were recalled more accurately), and less frequent events such as hospitalisation and specialist interactions in healthcare are more accurately reported (Seidl et al., 2016). Thus, although there may be some query about retrospective recall in some instances, there is evidence to suggest that memory of such experiences should not be highly compromised.

Finally, a limitation of the current research was that a psychological model, and thus psychological formulation, was not used in understanding the role of sleep and psychosis in this study. Whilst the qualitative element of the research sought to facilitate construction of participant experiences, formulation would allow the consideration of individuality of experience and explore the role of psychological processes further (Johnstone, 2018). For example, questions raised such as the function of NSSI in this group, the role of rumination, and perceived contributors (to name a few potential areas of interest) to the onset of sleep disturbance were not explored. Additionally, given the role of trauma in the development of psychosis (Stanton et al., 2020), it would be important to explore sleep as a ‘trigger’ (and thus

possible mediator or moderator) in the relationship between disturbed sleep and psychosis.

5. Future Research Directions

The findings of this thesis indicate areas that may warrant attention for future research. Much of the future directions are discussed explicitly in the journal paper, so this section will aim to broadly summarise future research directions.

1. Despite its limited use (Davies et al., 2017), this research has indicated that actigraphy is feasible to use with those with FEP to explore distinct aspects of sleep over longer periods of time. Thus, adequately powered research exploring associations between specific actigraphy measured sleep disturbances, psychosis symptoms, and suicidal ideation is warranted.
2. This research noted a range of disrupted sleep parameters in this participant group (such as duration, WASO, and sleep latency). Exploration of distinct sleep parameters and their relationship with both symptoms and suicidality (particularly ideation and attempt) is warranted. Further, given research noting the importance of the timing of nocturnal wakefulness (Perlis, Grandner, Chakravorty, et al., 2016; Tubbs et al., 2021, 2022) in the sleep-suicidality relationship, studies exploring the duration, timing, and frequency of WASO may be useful.
3. Considerable variability both within and between participants data was observed. Given associations with earlier nocturnal wakefulness (Perlis, Grandner, Brown, et al., 2016; Tubbs et al., 2021) and suicidality, and sleep variability and NSSI, the absence of a consistent sleep schedule may be notable in this group and warrants further attention.
4. Considering sleep disturbances as both a distal and proximal risk factor for suicidality in FEP is necessary. Given relationships between insomnia and suicidality over longer-term periods in FEP (Ayers et al., 2024; Ketcham et al., 2024), relationships between discrete sleep parameters (such as duration or WASO) over longer periods to consider aspects of sleep as distal risk factors for suicidality is needed. Further, methods such as EMA that sample momentary measures may be useful to capture daily fluctuations in both sleep

and suicidal thoughts in order to inform knowledge of proximal or acute predictors of suicidality in FEP.

5. In the qualitative data, many participants discussed using substances to fall and remain asleep. However, many noted they did not achieve better quality sleep, thus, implicitly implicating the role of sleep quality in their experiences of restful sleep. Considering a measure of sleep quality, such as the Pittsburgh Sleep Quality Index (Buysse et al., 1989) may be useful in future work. There is some research exploring sleep quality in psychosis (S. Clarke et al., 2021; Ered et al., 2018), and in the sleep-suicide relationship more broadly (Holdaway et al., 2018; Shepard et al., 2022), yet this area remains unexplored in FEP.
6. The lack of qualitative work in the sleep-psychosis and sleep-suicide relationship is notable. Qualitative research facilitates deeper insight into plausible relationships (Stores et al., 2023) and adds both context and meaning to identified associations. Further, qualitative work allows exploration of the psychological processes involved in the sleep-suicide relationship as discussed in this work (such as rumination, hopelessness, and entrapment).

5. Critical Reflection

6.1. Project development

Prior to training, I had experience of undertaking both qualitative and quantitative research, focused broadly in the area of lifestyle and mental health. As discussed in section 2.3, lifestyle factors (such as sleep and physical activity) in the context of complex mental health problems is an area I have continued to feel passionate about. Though I wanted to continue and develop as a scientist-practitioner, I knew that I needed to choose a research project that I would remain passionate about in three years work. I wanted to continue to work in an area that felt important to me and would allow me to continue to pursue a career in both research and clinical psychology following training.

Two of my previous supervisors, who I now consider friends, continued to indirectly encourage and support my research interests in sleep. When on my first-year placement, the office was conveniently situated next to the EIP team, and due to my interests in psychosis I was supported by my supervisor to shadow and collaborate

with EIP. During my shadowing, I noticed so many participants disclosed difficulties sleeping, and this was a consistent discussion in MDT meetings. On researching further, I was drawn to research describing the proposed relationship between sleep and unusual experiences across the psychosis spectrum. From discussions during my PhD and with previous colleagues, I had insight into the association between sleep and suicide and was drawn to this area of research in psychosis. I was surprised when reviewing the literature about the several things, (i) that much of the research used single-item measures of sleep, and actigraphy was uncommon; (ii) the lack of 'voice' in studies, as very few included qualitative research; and (iii) the focus on longer-term psychosis, and limited exploration in FEP.

Working with people who have experienced trauma often involves (safely) exploring the past and gives voice to experiences that have often been banished from sharing, or have been blocked entirely from the conscious mind. Clinical psychology often involves working 'backwards' whereby exploration of past experiences allows links to be made in the present. I wondered whether understanding a change in phenomena such as sleep in the early stages of psychosis would allow for earlier monitoring and intervention that may ultimately play a small part in someone's experience. I felt passionate about continuing to research in my area of interest, whilst developing a project that gave voice to those who are often unheard. Whilst I have enjoyed writing my thesis, there have been considerable challenges along the way. I believe my experiences have influenced my approach to research and clinical practice in the future, and I will discuss this in the subsequent sections.

6.2. Methodological Choice

Throughout the first year of training, my project evolved considerably between protocol submission and my application for ethics. Due to the constraints of academia, in my previous research I had neglected the role of those with lived experience when developing a project. However, the participants I met at the hospital taught me so much about ensuring that research projects reflected the needs and wishes of the population of interest, and conducting research *with,* rather than 'on' people. Consequently, I enjoyed the research panels attended in first year and the engagement with the Trent DClinPsy SUCAP members. When I proposed my research (that was initially a longitudinal study) with multiple data collection time points, a SUCAP member noted

that number of time points may pose a problem with demand and resource for a DClinPsy project, but also potentially neglected the qualitative experience. Initially, I had proposed multiple, shorter interviews in line with longitudinal time points, however, the SUCAP member offered the reflection that this may detract from the depth of insight I received. When considering the lack of wider literature regarding sleep and suicidality in FEP, and the limited qualitative work in those with psychosis generally, it made both pragmatic and academic sense to use a cross-sectional design.

Considering the quantitative methods involved in this project resulted in considerable debate. Whilst the measures in this study are appropriate to address the research question (notwithstanding limitations noted in Section 2 and 4.8), their choice was also impacted by resource, time, and available training in the timescale and scope of a DClinPsy project. Some measures required advanced training, whilst in other cases suitable measures had been published following ethical approval. I found balancing the expectations of the project I would like to complete with the demands of training difficult, and conversations in supervision were so helpful to “reign in” my ideas and develop a project that was both academically and practically robust and clinically meaningful.

6.3. Ethics and Recruitment

The process of ethical approval for this project was one of the most time consuming and frustrating parts of the work. The IRAS process was arduous and felt repetitive, and I became frustrated with the number of iterations I had to complete with the sponsor before being approved for submission. In the subsequent REC review, I was reminded of the broad range of professionals involved in approval; for many, the topics of both psychosis and suicide raised some concern. In my clinical experience I had witnessed the importance of disclosing suicidal thoughts, supported by the knowledge that research has noted talking about suicide contributes to alleviated risk (Bryan et al., 2018). However, the REC process furthered my understanding of the importance of communicating this with those with do not work in mental health professions and prompted me to reflect on my rationale and ensure this topic was clinically meaningful and ethically sound.

The recruitment process also did not come without challenge. The two team leaders in EIP were incredible at advertising my research in team meetings, service reviews,

and in communication with clients. However, only having a day a week to complete research activities prompted me to reflect on the importance of time in a research context, both to initiate participant contact, but to build relationships and be 'visible' in the service of interest. My project required EIP professionals to gain consent to be contacted by myself from the participant, which felt like an additional demand to add to their workload when staffing was already low. In my previous work I had perhaps neglected the lived experience of those supporting those with mental health difficulties. In this project, the input I received from EIP managers and team members helped guide my project and discuss practical considerations that I may otherwise have overlooked. I aimed to attend service meetings to advertise my research but emphasise the clinical benefit of this work with FEP clients. When being involved with research in the future, I will consider allocating time in the process to build relationships with service managers and team members.

Recruitment for this project in some ways was paradoxical. Several participants consented to take part and in initial phone calls when discussing the research, disclosed they had experienced poor and/or worsening sleep. In three cases, over the next week when we were arranging to meet, two participants were admitted to hospital due to a deterioration in their mental health, and another experienced heightened paranoia and was unable to be seen alone. A limitation of the work, as discussed, was only people 'well enough' to consent were able to participate, which excluded those who were experiencing acute psychosis, and in some cases acute sleep deprivation. This remained a noted challenge in the research, as in many cases, participants struggled to trust others and experienced paranoia, thus, relationship building and creating safety was an important part of the process. In future, I would like to allocate a small proportion of time to be able to engage more meaningfully with participants to establish safety whether in the recruitment or data collection process.

6.4. Data Collection and Analysis

There is considerably less qualitative work undertaken with those with psychosis than other mental health presentations, and attrition statistics from previous studies indicated both engagement and adherence to the research process was low in FEP and longer-term psychosis. Subsequently, prior to starting the project, I was apprehensive about undertaking interviews. However, the qualitative component of

this research became arguably the most informative aspect by adding context, meaning, and insight into the psychological processes attached to the proposed sleep-suicide relationship in FEP.

In contrast with previous research noting limited engagement, all participants were enthusiastic about wanting to share their experiences of sleep. In most cases, the interview felt natural and conversational, and I discussed the difficulties of disentangling my role as a researcher and a clinical psychologist with my supervisor. I found myself wanting to further explore the processes and perceived meaning behind some of their experiences but was careful to ensure that our discussion remained in the boundaries of the research scope, and did not transition to participants 'stories'. In several cases, participants disclosed experiencing abuse and how this related to the unusual experiences they had, such as hearing voices. This dynamic was difficult to navigate as I wanted to ensure they felt heard and continued to feel safe enough to share such personal experiences, but I was conscious that the implicit 'contract' of the research did not involve such discussion. It was challenging to redirect conversation towards what they had previously consented to without feeling dismissive.

I found the interview schedule very restrictive, and the most meaningful interviews were those that felt 'free flowing'. I enjoyed the qualitative aspect of the work (from data collection to analysis) much more enjoyable, which has re-emphasised my favoured research methodology for future work. Being able to hear the lived stories and construction of experience from participants felt both valuable and informative, and I have attempted to ensure that both in this thesis and the journal paper that I have emphasised the problems of neglecting qualitative research, and endorsed the need for further qualitative work in the sleep-suicide and sleep-psychosis field.

I think due to the significance that the participants afforded to sleep in their construction of psychosis experiences, I felt a sense of pressure to do the data "justice" in analysis. I felt that the time-demands of a DClinPsy project were always present and at times I felt conflicted between being 'internally rushed' to be able to continue with the next thesis section, and feeling frustrated as I wanted to complete a slower, iterative process. Due to the scope of the research question, there were avenues of exploration in the interview and subsequent codes in the analysis process that I had to neglect. When coding before, I have noticed a tendency to code *everything* to ensure

everything is captured. This was potentially reflected in my initial findings draft, which my supervisor reviewed. We discussed that whilst the theme ‘told a story’, this perhaps came at the expense of nuance within this, and it became a difficult balance to ensure that the themes presented were inclusive of participant experience but did not become descriptive ‘bucket themes.

When analysing the Actiwatch data, I found the process of visually exploring participants sleep and wake patterns really interesting. I began to internally connect the stories they had told me the data I could see. For example, participants 4 and 10 still experienced significant sleep disruption and had described nights where they are unable to sleep due to unusual experiences or continual awakenings, which was evidenced in the data due to later sleep hours and further awakenings. I would have enjoyed an additional formulative aspect to this project (or as a future project) to construct an understanding of how and why sleep becomes disturbed what maintains this for each individual, to add further meaning to the data.

Finally, I noticed that at times I withdrew from attending supervision (giving reasons such as not having much to discuss because I was ‘getting on with things’). In final year, we completed a questionnaire for the FGI module that indicated I have a tendency and preference to work alone. This complimented my CAT reformulation completed in first year that acknowledged I can fall into a role of shutting people out, particularly if there is opportunity for perceived judgement or criticism. I had never felt criticised by my supervisor throughout the project, but upon reflection now I wonder if at times, due to the external circumstances I was juggling throughout training, that it became easier in the short-term to meet semi-regularly for supervision. As the project progressed, I was able to discuss my tendency to withdraw more broadly with Laura Hancox, and following this made a conscious effort to book in multiple supervisions in advance, which in the analysis stage were valuable.

6.5. Writing up

Having written a PhD thesis, I had initially felt relatively comfortable with the idea of writing a DClinPsy thesis due to familiarly with the process. The experience of completing a PhD was something I endeavoured to keep to myself throughout training, and rarely (if ever, if I could avoid it), did I mention my PhD experiences to anyone on training. Research and writing has been something I have enjoyed for a number of

years, however, I was naïve in anticipating the volume of work in the time scale of training, and balancing placement, other assignments, and my life outside the course within this. My PhD experiences felt luxurious in comparison, where the majority of my working week consisted of at least some allocated time to write. This contrast was initially very difficult, and I felt frustrated and sad at different points of the write up that I felt I could not give 'all' of myself to the work. Due to caring demands for family members in late 23 and early 24, I had hugely neglected the write-up of my thesis and was faced with a lot to do in a very short time prior to submission. Though many events were unavoidable, and I would not change the time I spent in other places during this time, in future work, I will endeavour to allocate even small pockets of time to write.

A considerable challenge I experienced during the writing process was the ensuring consistent use of terminology. In most academic journals, 'psychosis symptoms' or 'positive symptoms' are the accepted operationalisation of the broad range of experiences those with psychosis experience. I found this challenging, as the medicalised view conflicts with my construction of psychosis, and I have a preference for the term 'unusual experiences'. I found talking about 'psychotic disorders' particularly challenging, particularly given such experiences are often rooted in trauma, poverty, and other adverse personal and social circumstances. I was aware in an academic sense there was a need to operationalise things, and it was not pragmatic or accepted by many potential journals to use alternative terminology. This made me consider the gap between academia and practice at times, and although huge efforts have made to continue to close this gap, as a researcher-clinician, this was something I struggled with. When talking to participants in the research I aimed to use their language. For example, some participants discussed "my episode", whilst others preferred "symptoms" over "unusual experiences". Ultimately, the experiences and preferences are individual, which is what makes for difficulty in using consistent terminology in academic papers.

Whilst insights were gleaned in this study, suggestions such as the incorporation of qualitative research to give patient voice is in line with trauma-informed healthcare strategies and is not new phenomena. However, problematic and stigmatising narratives are still very present around people with psychosis. Perspectives on psychosis date back to much earlier work (such as Bentall's 'madness explained' and the 'divided self' by R.D. Laing) and incorporate perspectives on what would now be

understood as dissociation and trauma responses. However, in the public domain, and despite increased awareness of more common mental health difficulties, psychosis often remains taboo and misunderstood, and we still have a long way to go.

6.6. Challenges

Throughout completing this thesis, I encountered a number of personal challenges. The unexpected illness and loss of one of the most important people in my life offered a challenge that I had not yet experienced and had a huge impact on my well-being and subsequent ability to work effectively. I have no doubt that I would have struggled to finish my thesis and training generally without the support I have been given from the course and my friends. What is notable for me now looking back, is that the loss of my nan impacted my investment in this topic when writing up. During her illness, and following her death, for months I slept very little, struggling to fall asleep and awaking in the early hours, dreading going to bed and the inevitably of waking up. This experience compounded my understanding of the influence of 'trauma', and the other psychological processes contributing to disrupted sleep. Throughout this period, I became preoccupied with my own health and the health of others, and upon reflection I can see how this cycle became reinforced by the lack of sleep I was experiencing and subsequent lack of emotional processing. These reflections in the write up provided me with motivation to push through, reminding me of the close connection anyone at any time may have to these experiences.

Another challenge I encountered was developing a project that was clinically meaningful in the scope of a DClinPsy project. My project altered a lot throughout the first 18 months of training due to resource, time-demands, staffing, and the findings of my systematic review. In comparison to some of my friends who were able to recruit through social media and/or complete data collection online, I felt an alternative challenge such as engaging with already stretched NHS services and the time demands that came from attending services, meeting with participants, and recollecting the Actiwatch a week later. My supervisor was helpful in making me "reign in" my research ideas to something pragmatic, but that was also in line with the evidence base so far. Through iteration, I could see that my initial idea was both too ambitious and also too big a leap from where the evidence currently existed, and supervision allowed me to develop a clinically meaningful project.

5.7. Implications for Personal Clinical Practice

Alongside other aspects of clinical training, completing this research has impacted my practice and helped to shape an idea of my working life moving forwards. This work has added to my view that working relationships are imperative in mental health services for effective engagement with staff and clients. Attending MDT meetings and making time to meet people face to face adds value and 'visibility' to your role and helped facilitate relationships that allowed me to work collaboratively with EIP on this project. However, it was challenging to conduct a DClinPsy research project in a service without psychologists, and throughout my trips to the office I was continually reminded (often verbally!) that the service would benefit from a psychologist. In my development, it made me realise that in my initial stages of post qualification that I would like to work in a service whereby I am not the sole psychologist, in order to continue to build relationships and learn from others more experienced than myself. Upon qualifying, I hope to work in a community mental health team with people who have experienced longstanding mental health difficulties and complex trauma, and may have experiences such as psychosis, dissociative presentations, and relational difficulties. I feel passionate about giving individuals voice in this area and providing a safe relationship.

Finally, when completing my PhD, I considered how much I enjoyed talking to individuals and constructing meaning in their lives, though throughout training, I noticed that I actually enjoyed the process of having assignments and a thesis (not including the time restrictions and other difficulties!). These reflections have led me to consider a dual role in clinical psychology and academia, and I have started to consider ways I may go about this. However, the most important thing I have taken from this work is the value of time. Going forwards, I'd like to continue with research as an integrated part of my week with time afforded to the process,

5.8. Dissemination

I feel that research dissemination is important, especially through channels that will allow participants and involved service to hear about the findings. Following the submission of this thesis, I am planning to produce an accessible summary of the main findings to share with participants, as well as the Early Intervention team that kindly supported my project. With my remaining study budget, I am hoping to find an

appropriate conference to present this research and will aim to submit this journal for publication.

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Extended References

Abdelazeem, B., Abbas, K. S., Amin, M. A., El-Shahat, N. A., Malik, B., Kalantary, A., & Eltobgy, M. (2022). The effectiveness of incentives for research participation: A systematic review and meta-analysis of randomized controlled trials. *PLOS ONE*, *17*(4), e0267534. https://doi.org/10.1371/journal.pone.0267534

Adan, A., Archer, S. N., Hidalgo, M. P., Di Milia, L., Natale, V., & Randler, C. (2012). Circadian Typology: A Comprehensive Review. *Chronobiology International*, *29*(9), 1153–1175. https://doi.org/10.3109/07420528.2012.719971

Afonso, P., Luísa Figueira, M., Paiva, T., & Í Sa Figueira, M. L. (2014). Sleep-wake patterns in schizophrenia patients compared to healthy controls. *The World Journal of Biological Psychiatry*, *15*(7), 517–524. https://doi.org/10.3109/15622975.2012.756987

Ahonen, L., Loeber, R., & Brent, D. A. (2019). The Association Between Serious Mental Health Problems and Violence: Some Common Assumptions and Misconceptions. *Trauma, Violence, & Abuse*, *20*(5), 613–625. https://doi.org/10.1177/1524838017726423

Aili, K., Åström-Paulsson, S., Stoetzer, U., Svartengren, M., & Hillert, L. (2017). Reliability of Actigraphy and Subjective Sleep Measurements in Adults: The Design of Sleep Assessments. *Journal of Clinical Sleep Medicine*, *13*(01), 39–47. https://doi.org/10.5664/jcsm.6384

Ajnakina, O., David, A. S., & Murray, R. M. (2019). 'At risk mental state' clinics for psychosis – an idea whose time has come – and gone! *Psychological Medicine*, *49*(4), 529–534. https://doi.org/10.1017/S0033291718003859

Ajnakina, O., Morgan, C., Gayer-Anderson, C., Oduola, S., Bourque, F., Bramley, S., Williamson, J., MacCabe, J. H., Dazzan, P., Murray, R. M., & David, A. S. (2017). Only a small proportion of patients with first episode psychosis come via prodromal services: a retrospective survey of a large UK mental health programme. *BMC Psychiatry*, *17*(1), 308. https://doi.org/10.1186/s12888-017-1468-y

Alessi, E. J., & Kahn, S. (2023). Toward a trauma-informed qualitative research approach: Guidelines for ensuring the safety and promoting the resilience of research participants. *Qualitative Research in Psychology*, *20*(1), 121–154. https://doi.org/10.1080/14780887.2022.2107967

Allen, R. E. S., & Wiles, J. L. (2016). A rose by any other name: participants choosing research pseudonyms. *Qualitative Research in Psychology*, *13*(2), 149–165. https://doi.org/10.1080/14780887.2015.1133746

American Psychiatric Association. (2022). *American Psychiatric Association - Diagnostic and Statistical Manual of Mental Disorders _ Fifth Edition Text Revision DSM-5-TR™-American Psychiatric Association Publishing (2022)*.

Amiri, S. (2023). Sleep Duration, Sleep Quality, and Insomnia in Association With Self-Rated Health: A Systematic Review and Meta-Analysis. *Sleep Medicine Research*, *14*(2), 66–79. https://doi.org/10.17241/smr.2023.01732

Ancoli-Israel, S., Martin, J. L., Blackwell, T., Buenaver, L., Liu, L., Meltzer, L. J., Sadeh, A., Spira, A. P., & Taylor, D. J. (2015). The SBSM Guide to Actigraphy Monitoring: Clinical and Research Applications. *Behavioral Sleep Medicine*, *13*(sup1), S4–S38. https://doi.org/10.1080/15402002.2015.1046356

Andover, M. S., & Gibb, B. E. (2010). Non-suicidal self-injury, attempted suicide, and suicidal intent among psychiatric inpatients. *Psychiatry Research*, *178*(1), 101–105. https://doi.org/10.1016/j.psychres.2010.03.019

Angarita, G. A., Emadi, N., Hodges, S., & Morgan, P. T. (2016). Sleep abnormalities associated with alcohol, cannabis, cocaine, and opiate use: a comprehensive review. *Addiction Science & Clinical Practice*, *11*(1), 9. https://doi.org/10.1186/s13722-016-0056-7

Antwi, S. K., & Hamza, K. (2015). Qualitative and Quantitative Research Paradigms in Business Research: A Philosophical Reflection. *European Journal of Buisness and Management*, *7*, 217–225.

Arboleya-Faedo, T., González-Menéndez, A., González-Pando, D., Paino, M., & Alonso-Pérez, F. (2023). Experiences of Self-Stigma in People with Chronic Psychosis: A Qualitative Study. *International Journal of Environmental Research and Public Health*, *20*(9), 5688. https://doi.org/10.3390/ijerph20095688

Arciniegas, D. B. (2015). Psychosis. *Continuum (Minneapolis, Minn.)*, *21*(3 Behavioral Neurology and Neuropsychiatry), 715–736. https://doi.org/10.1212/01.CON.0000466662.89908.e7

Ayers, N., McCall, W. V, & Miller, B. J. (2024). Sleep Problems, Suicidal Ideation, and Psychopathology in First-Episode Psychosis. *Schizophrenia Bulletin*, *50*(2), 286–294. https://doi.org/10.1093/schbul/sbad045

Baglioni, C., Nanovska, S., Regen, W., Spiegelhalder, K., Feige, B., Nissen, C., Reynolds, C. F., & Riemann, D. (2016). Sleep and mental disorders: A meta-analysis of polysomnographic research. *Psychological Bulletin*, *142*(9), 969–990. https://doi.org/10.1037/bul0000053

Bailey, T., Alvarez-Jimenez, M., Garcia-Sanchez, A. M., Hulbert, C., Barlow, E., & Bendall, S. (2018). Childhood Trauma Is Associated With Severity of Hallucinations and Delusions in Psychotic Disorders: A Systematic Review and Meta-Analysis. *Schizophrenia Bulletin*, *44*(5), 1111–1122. https://doi.org/10.1093/schbul/sbx161

Baron, K. G., & Reid, K. J. (2014). Circadian misalignment and health. *International Review of Psychiatry*, *26*(2), 139–154. https://doi.org/10.3109/09540261.2014.911149

Barrett, A., Kajamaa, A., & Johnston, J. (2020). How to … be reflexive when conducting qualitative research. *The Clinical Teacher*, *17*(1), 9–12. https://doi.org/10.1111/tct.13133

Barrett, E. A., Aminoff, S. R., Simonsen, C., & Romm, K. L. (2020). Opening the curtains for better sleep in psychotic disorders - considerations for improving sleep treatment. *Comprehensive Psychiatry*, *103*, 152207. https://doi.org/10.1016/j.comppsych.2020.152207

Bashir, Z., Griffiths, S. L., & Upthegrove, R. (2022). Recognition and management of depression in early psychosis. *BJPsych Bulletin*, *46*(2), 83–89. https://doi.org/10.1192/bjb.2021.15

Batterham, P. J., Ftanou, M., Pirkis, J., Brewer, J. L., Mackinnon, A. J., Beautrais, A., Fairweather-Schmidt, A. K., & Christensen, H. (2015). A systematic review and evaluation of measures for suicidal ideation and behaviors in population-based research. *Psychological Assessment*, *27*(2), 501–512. https://doi.org/10.1037/pas0000053

Batterham, P. J., Werner-Seidler, A., Calear, A. L., McCallum, S., & Gulliver, A. (2021). Specific aspects of sleep disturbance associated with suicidal thoughts and attempts. *Journal of Affective Disorders*, *282*, 574–579. https://doi.org/10.1016/j.jad.2020.12.150

Battista, A., & Torre, D. (2023). Mixed methods research designs. *Medical Teacher*, *45*(6), 585–587. https://doi.org/10.1080/0142159X.2023.2200118

Beattie, L., Espie, C. A., Kyle, S. D., & Biello, S. M. (2015). How are normal sleeping controls selected? A systematic review of cross-sectional insomnia studies and a standardized method to select healthy controls for sleep research. *Sleep Medicine*, *16*(6), 669–677. https://doi.org/10.1016/j.sleep.2015.01.010

Beck, A. T., Brown, G. K., & Steer, R. A. (1997). Psychometric characteristics of the Scale for Suicide Ideation with psychiatric outpatients. *Behaviour Research and Therapy*, *35*(11), 1039–1046. https://doi.org/10.1016/S0005-7967(97)00073-9

Beck, A. T., Kovacs, M., & Weissman, A. (1979). Assessment of suicidal intention: The Scale for Suicide Ideation. *Journal of Consulting and Clinical Psychology*, *47*(2), 343–352. https://doi.org/10.1037/0022-006X.47.2.343

Beck, A. T., & Steer, R. A. (1991). *Beck Scale For Suicide Ideation manual* (1993 ed). Pearson.

Benson, K. L. (2006). Sleep in Schizophrenia: Impairments, Correlates, and Treatment. *Psychiatric Clinics of North America*, *29*(4), 1033–1045. https://doi.org/10.1016/j.psc.2006.08.002

Bentall, R. P., de Sousa, P., Varese, F., Wickham, S., Sitko, K., Haarmans, M., & Read, J. (2014). From adversity to psychosis: pathways and mechanisms from specific adversities to specific symptoms. *Social Psychiatry and Psychiatric Epidemiology*, *49*(7), 1011–1022. https://doi.org/10.1007/s00127-014-0914-0

Berk, M. (2007). Early intervention in bipolar disorders. *Acta Neuropsychiatrica*, *19*(1), 68–69. https://doi.org/10.1111/j.1601-5215.2007.00185.x

Bernert, R. A., Kim, J. S., Iwata, N. G., & Perlis, M. L. (2015). Sleep Disturbances as an Evidence-Based Suicide Risk Factor. In *Current Psychiatry Reports* (Vol. 17, Issue 3, pp. 1–9). Current Medicine Group LLC 1. https://doi.org/10.1007/s11920-015-0554-4

Bernert, R. A., & Nadorff, M. R. (2015). Sleep Disturbances and Suicide Risk. *Sleep Medicine Clinics*, *10*(1), 35–39. https://doi.org/10.1016/j.jsmc.2014.11.004

Berry, K., & Bucci, S. (2016). What does attachment theory tell us about working with distressing voices? *Psychosis*, *8*(1), 60–71. https://doi.org/10.1080/17522439.2015.1070370

Berry, K., Varese, F., & Bucci, S. (2017). Cognitive attachment model of voices: Evidence base and future implications. *Frontiers in Psychiatry*, *8*(JUN). https://doi.org/10.3389/fpsyt.2017.00111

Bhaskar, R. (1989). *Reclaiming Reality: A Critical Introduction to Contemporary Philosophy*. Verso.

Bhugra, D., & Flick, G. R. (2007). *Pathways to care for patients with bipolar disorder*.

Bixler, E. (2009). Sleep and society: An epidemiological perspective. *Sleep Medicine*, *10*, S3–S6. https://doi.org/10.1016/j.sleep.2009.07.005

Blanchard, J. J., Andrea, A., Orth, R. D., Savage, C., & Bennett, M. E. (2020). Sleep disturbance and sleep-related impairment in psychotic disorders are related to both positive and negative symptoms. *Psychiatry Research*, *286*, 112857. https://doi.org/10.1016/j.psychres.2020.112857

Bolton, C., Gooding, P., Kapur, N., Barrowclough, C., & Tarrier, N. (2007). Developing psychological perspectives of suicidal behaviour and risk in people with a diagnosis of schizophrenia: We know they kill themselves but do we understand why? *Clinical Psychology Review*, *27*(4), 511–536. https://doi.org/10.1016/j.cpr.2006.12.001

Boonstra, N., Klaassen, R., Sytema, S., Marshall, M., De Haan, L., Wunderink, L., & Wiersma, D. (2012). Duration of untreated psychosis and negative symptoms — A systematic review and meta-analysis of individual patient data. *Schizophrenia Research*, *142*(1–3), 12–19. https://doi.org/10.1016/j.schres.2012.08.017

Borbély, A. A., Daan, S., Wirz-Justice, A., & Deboer, T. (2016). The two-process model of sleep regulation: a reappraisal. *Journal of Sleep Research*, *25*(2), 131–143. https://doi.org/10.1111/jsr.12371

Bornheimer, L. A., & Jaccard, J. (2017). Symptoms of Depression, Positive Symptoms of Psychosis, and Suicidal Ideation Among Adults Diagnosed With Schizophrenia Within the Clinical Antipsychotic Trials of Intervention Effectiveness. *Archives of Suicide Research*, *21*(4), 633–645. https://doi.org/10.1080/13811118.2016.1224990

Bornheimer, L. A., Wojtalik, J. A., Li, J., Cobia, D., & Smith, M. J. (2021). Suicidal ideation in first-episode psychosis: Considerations for depression, positive symptoms, clinical insight, and cognition. *Schizophrenia Research*, *228*, 298–304. https://doi.org/10.1016/j.schres.2020.12.025

Bostwick, J. M., Pabbati, C., Geske, J. R., & Mckean, A. J. (2016). Suicide Attempt as a Risk Factor for Completed Suicide: Even More Lethal Than We Knew. *Am J Psychiatry*, *173*, 1094–1100. https://doi.org/10.1176/appi.ajp.2016.15070854

Bostwick, J. M., Pabbati, C., Geske, J. R., & McKean, A. J. (2016). Suicide Attempt as a Risk Factor for Completed Suicide: Even More Lethal Than We Knew. *American Journal of Psychiatry*, *173*(11), 1094–1100. https://doi.org/10.1176/appi.ajp.2016.15070854

Bowen, M., Kinderman, P., & Cooke, A. (2019). Stigma: a linguistic analysis of the UK red-top tabloids press' representation of schizophrenia. *Perspectives in Public Health*, *139*(3), 147–152. https://doi.org/10.1177/1757913919835858

Boyce, R., Williams, S., & Adamantidis, A. (2017). REM sleep and memory. *Current Opinion in Neurobiology*, *44*, 167–177. https://doi.org/10.1016/j.conb.2017.05.001

Bradley, J., Freeman, D., Chadwick, E., Harvey, A. G., Mullins, B., Johns, L., Sheaves, B., Lennox, B., Broome, M., & Waite, F. (2018). Treating Sleep Problems in Young People at Ultra-High Risk of Psychosis: A Feasibility Case Series. *Behavioural and Cognitive Psychotherapy*, *46*(3), 276–291. https://doi.org/10.1017/S1352465817000601

Brager-Larsen, A., Zeiner, P., Klungsøyr, O., & Mehlum, L. (2022). Is age of self-harm onset associated with increased frequency of non-suicidal self-injury and suicide attempts in adolescent outpatients? *BMC Psychiatry*, *22*(1), 58. https://doi.org/10.1186/s12888-022-03712-w

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*, *9*, 26152. https://doi.org/10.3402/qhw.v9.26152

Braun, V., & Clarke, V. (2016). (Mis)conceptualising themes, thematic analysis, and other problems with Fugard and Potts' (2015) sample-size tool for thematic analysis. *International Journal of Social Research Methodology*, *19*(6), 739–743. https://doi.org/10.1080/13645579.2016.1195588

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, *18*(3), 328–352. https://doi.org/10.1080/14780887.2020.1769238

Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, *9*(1), 3–26. https://doi.org/10.1037/qup0000196

Braun, V., & Clarke, V. (2023). Toward good practice in thematic analysis: Avoiding common problems and be(com)ing a *knowing* researcher. *International Journal of Transgender Health*, *24*(1), 1–6. https://doi.org/10.1080/26895269.2022.2129597

Brinkman, J. E., Reddy, V., & Sharma, S. (2024). *Physiology of Sleep*.

Brohan, E., Elgie, R., Sartorius, N., & Thornicroft, G. (2010). Self-stigma, empowerment and perceived discrimination among people with schizophrenia in 14 European countries: The GAMIAN-Europe study. *Schizophrenia Research*, *122*(1–3), 232–238. https://doi.org/10.1016/j.schres.2010.02.1065

Brown, K. M., Elliott, S. J., Leatherdale, S. T., & Robertson-Wilson, J. (2015). Searching for rigour in the reporting of mixed methods population health research: a methodological review. *Health Education Research*, *30*(6), 811–839. https://doi.org/10.1093/her/cyv046

Brüdern, J., Hallensleben, N., Höller, I., Spangenberg, L., Forkmann, T., Rath, D., Strauß, M., Kersting, A., & Glaesmer, H. (2022). Sleep disturbances predict active suicidal ideation the next day: an ecological momentary assessment study. *BMC Psychiatry*, *22*(1), 65. https://doi.org/10.1186/s12888-022-03716-6

Brusco, N. K., & Watts, J. J. (2015). Empirical evidence of recall bias for primary health care visits. *BMC Health Services Research*, *15*, 381. https://doi.org/10.1186/s12913-015-1039-1

Bryman, A., Becker, S., & Sempik, J. (2008). Quality Criteria for Quantitative, Qualitative and Mixed Methods Research: A View from Social Policy. *International Journal of Social Research Methodology*, *11*(4), 261–276. https://doi.org/10.1080/13645570701401644

Bucci, S., Butcher, I., Hartley, S., Neil, S. T., Mulligan, J., & Haddock, G. (2015). Barriers and facilitators to recruitment in mental health services: Care coordinators' expectations and experience of referring to a psychosis research trial. *Psychology and Psychotherapy: Theory, Research and Practice*, *88*(3), 335–350. https://doi.org/10.1111/papt.12042

Buizza, C., Strozza, C., Sbravati, G., de Girolamo, G., Ferrari, C., Iozzino, L., Macis, A., Kennedy, H. G., & Candini, V. (2022). Positive and negative syndrome scale in forensic patients with schizophrenia spectrum disorders: a systematic review and meta-analysis. *Annals of General Psychiatry*, *21*(1), 36. https://doi.org/10.1186/s12991-022-00413-2

Burgess-Barr, S., Nicholas, E., Venus, B., Singh, N., Nethercott, A., Taylor, G., & Jacobsen, P. (2023). International rates of receipt of psychological therapy for

psychosis and schizophrenia: systematic review and meta-analysis. *International Journal of Mental Health Systems*, *17*(1), 8. https://doi.org/10.1186/s13033-023-00576-9

Burke, T. A., Hamilton, J. L., Seigel, D., Kautz, M., Liu, R. T., Alloy, L. B., & Barker, D. H. (2022). Sleep irregularity and nonsuicidal self-injurious urges and behaviors. *Sleep*, *45*(6). https://doi.org/10.1093/sleep/zsac084

Burke, T., Thompson, A., Mifsud, N., Yung, A. R., Nelson, B., McGorry, P., & O'Donoghue, B. (2022). Proportion and characteristics of young people in a first-episode psychosis clinic who first attended an at-risk mental state service or other specialist youth mental health service. *Schizophrenia Research*, *241*, 94–101. https://doi.org/10.1016/j.schres.2021.12.035

Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, *2*(1), 14. https://doi.org/10.1186/s42466-020-00059-z

Busner, J., & Targum, S. D. (2007). The Clinical Global Impressions Scale. *Psychiatry (Edgmont)*, *4*(7), 28–37.

Büsselmann, M., Nigel, S., Otte, S., Lutz, M., Franke, I., Dudeck, M., & Streb, J. (2020). High Quality of Life Reduces Depression, Hopelessness, and Suicide Ideations in Patients in Forensic Psychiatry. *Frontiers in Psychiatry*, *10*. https://doi.org/10.3389/fpsyt.2019.01014

Buysse, D. J. (2014). Sleep Health: Can We Define It? Does It Matter? *Sleep*, *37*(1), 9–17. https://doi.org/10.5665/sleep.3298

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh sleep quality index: A new instrument for psychiatric practice and research. *Psychiatry Research*, *28*(2), 193–213. https://doi.org/10.1016/0165-1781(89)90047-4

Calear, A. L., Batterham, P. J., & Christensen, H. (2014). Predictors of help-seeking for suicidal ideation in the community: Risks and opportunities for public suicide prevention campaigns. *Psychiatry Research*, *219*(3), 525–530. https://doi.org/10.1016/j.psychres.2014.06.027

Calkins, M. E., Moore, T. M., Satterthwaite, T. D., Wolf, D. H., Turetsky, B. I., Roalf, D. R., Merikangas, K. R., Ruparel, K., Kohler, C. G., Gur, R. C., & Gur, R. E. (2017). Persistence of psychosis spectrum symptoms in the Philadelphia Neurodevelopmental Cohort: a prospective two-year follow-up. *World Psychiatry*, *16*(1), 62–76. https://doi.org/10.1002/wps.20386

Cappuccio, F. P., D'Elia, L., Strazzullo, P., & Miller, M. A. (2010). Sleep Duration and All-Cause Mortality: A Systematic Review and Meta-Analysis of Prospective Studies. *Sleep*, *33*(5), 585–592. https://doi.org/10.1093/sleep/33.5.585

Carruthers, S. P., Lee, S. J., Sankaranarayanan, A., Sumner, P. J., Toh, W. L., Tan, E. J., Neill, E., van Rheenen, T. E., Gurvich, C., & Rossell, S. L. (2021). Psychosis and Hopelessness Mediate the Relationship Between Reduced Sleep

and Suicidal Ideation in Schizophrenia Spectrum Disorders. *Archives of Suicide Research*. https://doi.org/10.1080/13811118.2021.1944412

Carskadon, M. A., & Dement, W. C. (2005). Normal Human Sleep: An Overview. In *Principles and Practice of Sleep Medicine* (pp. 13–23). Elsevier. https://doi.org/10.1016/B0-72-160797-7/50009-4

Casanovas, F., Trabsa, A., Bergé, D., Sánchez-Gistau, V., Moreno, I., Sanchez, J., Montalvo, I., Tost, M., Labad, J., Pérez-Solà, V., & Mané, A. (2022). Incidence rate and distinctive characteristics of first episode psychosis during the COVID-19 pandemic: a multicenter observational study. *Scientific Reports*, *12*(1), 22036. https://doi.org/10.1038/s41598-022-26297-6

Chakravorty, S., Siu, H. Y. K., Lalley-Chareczko, L., Brown, G. K., Findley, J. C., Perlis, M. L., & Grandner, M. A. (2015). Sleep Duration and Insomnia Symptoms as Risk Factors for Suicidal Ideation in a Nationally Representative Sample. *The Primary Care Companion For CNS Disorders*. https://doi.org/10.4088/PCC.13m01551

Challis, S., Nielssen, O., Harris, A., & Large, M. (2013a). Systematic meta-analysis of the risk factors for deliberate self-harm before and after treatment for first-episode psychosis. *Acta Psychiatrica Scandinavica*, *127*(6), 442–454. https://doi.org/10.1111/acps.12074

Challis, S., Nielssen, O., Harris, A., & Large, M. (2013b). Systematic meta-analysis of the risk factors for deliberate self-harm before and after treatment for first-episode psychosis. *Acta Psychiatrica Scandinavica*, *127*(6), 442–454. https://doi.org/10.1111/acps.12074

Chang, W. C., Chen, E. S. M., Hui, C. L. M., Chan, S. K. W., Lee, E. H. M., & Chen, E. Y. H. (2014). The relationships of suicidal ideation with symptoms, neurocognitive function, and psychological factors in patients with first-episode psychosis. *Schizophrenia Research*, *157*(1–3), 12–18. https://doi.org/10.1016/j.schres.2014.06.009

Chapman, C. L., Mullin, K., Ryan, C. J., Kuffel, A., Nielssen, O., & Large, M. M. (2015). Meta-analysis of the association between suicidal ideation and later suicide among patients with either a schizophrenia spectrum psychosis or a mood disorder. *Acta Psychiatrica Scandinavica*, *131*(3), 162–173. https://doi.org/10.1111/acps.12359

Chaput, J.-P., Dutil, C., Featherstone, R., Ross, R., Giangregorio, L., Saunders, T. J., Janssen, I., Poitras, V. J., Kho, M. E., Ross-White, A., & Carrier, J. (2020). Sleep duration and health in adults: an overview of systematic reviews. *Applied Physiology, Nutrition, and Metabolism*, *45*(10 (Suppl. 2)), S218–S231. https://doi.org/10.1139/apnm-2020-0034

Chaput, J.-P., McHill, A. W., Cox, R. C., Broussard, J. L., Dutil, C., da Costa, B. G. G., Sampasa-Kanyinga, H., & Wright, K. P. (2023). The role of insufficient sleep and circadian misalignment in obesity. *Nature Reviews Endocrinology*, *19*(2), 82–97. https://doi.org/10.1038/s41574-022-00747-7

Che, T., Yan, C., Tian, D., Zhang, X., Liu, X., & Wu, Z. (2021). The Association Between Sleep and Metabolic Syndrome: A Systematic Review and Meta-Analysis. *Frontiers in Endocrinology*, *12*. https://doi.org/10.3389/fendo.2021.773646

Chiu, V. W., Ree, M., Janca, A., & Waters, F. (2016). Sleep in Schizophrenia: Exploring Subjective Experiences of Sleep Problems, and Implications for Treatment. *Psychiatric Quarterly*, *87*(4), 633–648. https://doi.org/10.1007/s11126-015-9415-x

Christofides, S., Johnstone, L., & Musa, M. (2012). 'Chipping in': Clinical psychologists' descriptions of their use of formulation in multidisciplinary team working. *Psychology and Psychotherapy: Theory, Research and Practice*, *85*(4), 424–435. https://doi.org/10.1111/j.2044-8341.2011.02041.x

Clarke, L., Chisholm, K., Cappuccio, F. P., Tang, N. K. Y., Miller, M. A., Elahi, F., & Thompson, A. D. (2021). Sleep disturbances and the At Risk Mental State: A systematic review and meta-analysis. In *Schizophrenia Research* (Vol. 227, pp. 81–91). Elsevier B.V. https://doi.org/10.1016/j.schres.2020.06.027

Clarke, S., Hanna, D., Davidson, S., Shannon, C., & Mulholland, C. (2021b). The association between sleep quality and attenuated psychotic symptoms. *Early Intervention in Psychiatry*, *15*(4), 837–848. https://doi.org/10.1111/eip.13020

Clay, F., Allan, S., Lai, S., Laverty, S., Jagger, G., Treise, C., & Perez, J. (2018). The over-35s: early intervention in psychosis services entering uncharted territory. *BJPsych Bulletin*, *42*(4), 137–140. https://doi.org/10.1192/bjb.2018.28

Clemente, V., Ruivo Marques, D., Miller-Mendes, M., Morin, C. M., Serra, J., & Allen Gomes, A. (2021). The European Portuguese version of the insomnia severity index. *Journal of Sleep Research*, *30*(1). https://doi.org/10.1111/jsr.13198

Colizzi, M., Ruggeri, M., & Lasalvia, A. (2020). Should we be concerned about stigma and discrimination in people at risk for psychosis? A systematic review. *Psychological Medicine*, *50*(5), 705–726. https://doi.org/10.1017/S0033291720000148

Colrain, I. M., Nicholas, C. L., & Baker, F. C. (2014). Alcohol and the sleeping brain. *Handbook of Clinical Neurology*, *125*, 415–431. https://doi.org/10.1016/B978-0-444-62619-6.00024-0

Coppersmith, D. D. L., Ryan, O., Fortgang, R. G., Millner, A. J., Kleiman, E. M., & Nock, M. K. (2023). Mapping the timescale of suicidal thinking. *Proceedings of the National Academy of Sciences*, *120*(17). https://doi.org/10.1073/pnas.2215434120

Cox, R. C., Brown, S. L., Chalmers, B. N., & Scott, L. N. (2023a). Examining sleep disturbance components as near-term predictors of suicide ideation in daily life. *Psychiatry Research*, *326*, 115323. https://doi.org/10.1016/j.psychres.2023.115323

Cox, R. C., Brown, S. L., Chalmers, B. N., & Scott, L. N. (2023b). Examining sleep disturbance components as near-term predictors of suicide ideation in daily life. *Psychiatry Research*, *326*, 115323. https://doi.org/10.1016/j.psychres.2023.115323

Cresswell, J. W., & Plano Cark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.).

Critical Appraisal Skills Programme. (2018). *CASP (Qualitative) Checklist*.

Cuthbert, B. N., & Morris, S. E. (2021). Evolving Concepts of the Schizophrenia Spectrum: A Research Domain Criteria Perspective. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/FPSYT.2021.641319/FULL

David Klonsky, E., Kotov, R., Bakst, S., Rabinowitz, J., & Bromet, E. J. (2012). Hopelessness as a predictor of attempted suicide among first admission patients with psychosis: a 10-year cohort study. *Suicide & Life-Threatening Behavior*, *42*(1), 1–10. https://doi.org/10.1111/j.1943-278X.2011.00066.x

Davies, G., Haddock, G., Yung, A. R., Mulligan, L. D., & Kyle, S. D. (2017). A systematic review of the nature and correlates of sleep disturbance in early psychosis. In *Sleep Medicine Reviews* (Vol. 31, pp. 25–38). W.B. Saunders Ltd. https://doi.org/10.1016/j.smrv.2016.01.001

Dazzi, T., Gribble, R., Wessely, S., & Fear, N. T. (2014). Does asking about suicide and related behaviours induce suicidal ideation? What is the evidence? *Psychological Medicine*, *44*(16), 3361–3363. https://doi.org/10.1017/S0033291714001299

de Beurs, D. P., Fokkema, M., de Groot, M. H., de Keijser, J., & Kerkhof, A. J. F. M. (2015). Longitudinal measurement invariance of the Beck Scale for Suicide Ideation. *Psychiatry Research*, *225*(3), 368–373. https://doi.org/10.1016/j.psychres.2014.11.075

De Crescenzo, F., D'Alò, G. L., Ostinelli, E. G., Ciabattini, M., Di Franco, V., Watanabe, N., Kurtulmus, A., Tomlinson, A., Mitrova, Z., Foti, F., Del Giovane, C., Quested, D. J., Cowen, P. J., Barbui, C., Amato, L., Efthimiou, O., & Cipriani, A. (2022). Comparative effects of pharmacological interventions for the acute and long-term management of insomnia disorder in adults: a systematic review and network meta-analysis. *The Lancet*, *400*(10347), 170–184. https://doi.org/10.1016/S0140-6736(22)00878-9

Delorme, T. C., Srivastava, L. K., & Cermakian, N. (2020). Are Circadian Disturbances a Core Pathophysiological Component of Schizophrenia? *Journal of Biological Rhythms*, *35*(4), 325–339. https://doi.org/10.1177/0748730420929448

Demke, E. (2022). The Vulnerability-Stress-Model-Holding Up the Construct of the Faulty Individual in the Light of Challenges to the Medical Model of Mental Distress. *Frontiers in Sociology*, *7*, 833987. https://doi.org/10.3389/fsoc.2022.833987

DeRosse, P., & Karlsgodt, K. H. (2015). Examining the Psychosis Continuum. *Current Behavioral Neuroscience Reports*, *2*(2), 80–89. https://doi.org/10.1007/s40473-015-0040-7

Devi, F., Shahwan, S., Teh, W. L., Sambasivam, R., Zhang, Y. J., Lau, Y. W., Ong, S. H., Fung, D., Gupta, B., Chong, S. A., & Subramaniam, M. (2019). The prevalence of childhood trauma in psychiatric outpatients. *Annals of General Psychiatry*, *18*(1), 15. https://doi.org/10.1186/s12991-019-0239-1

Díaz-Oliván, I., Porras-Segovia, A., Barrigón, M. L., Jiménez-Muñoz, L., & Baca-García, E. (2021). Theoretical models of suicidal behaviour: A systematic review and narrative synthesis. *The European Journal of Psychiatry*, *35*(3), 181–192. https://doi.org/10.1016/j.ejpsy.2021.02.002

Dijk, D.-J., & Archer, S. N. (2010). PERIOD3, circadian phenotypes, and sleep homeostasis. *Sleep Medicine Reviews*, *14*(3), 151–160. https://doi.org/10.1016/j.smrv.2009.07.002

Dixon, L. B., Holoshitz, Y., & Nossel, I. (2016). Treatment engagement of individuals experiencing mental illness: review and update. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *15*(1), 13–20. https://doi.org/10.1002/wps.20306

Dixon-Woods, M. (2004). The problem of appraising qualitative research. *Quality and Safety in Health Care*, *13*(3), 223–225. https://doi.org/10.1136/qshc.2003.008714

Drake, C. L., Pillai, V., & Roth, T. (2014). Stress and sleep reactivity: a prospective investigation of the stress-diathesis model of insomnia. *Sleep*, *37*(8), 1295–1304. https://doi.org/10.5665/sleep.3916

Ebrahim, I. O., Shapiro, C. M., Williams, A. J., & Fenwick, P. B. (2013). Alcohol and Sleep I: Effects on Normal Sleep. *Alcoholism: Clinical and Experimental Research*, *37*(4). https://doi.org/10.1111/acer.12006

Edmondson, A. J., Brennan, C. A., & House, A. O. (2016). Non-suicidal reasons for self-harm: A systematic review of self-reported accounts. *Journal of Affective Disorders*, *191*, 109–117. https://doi.org/10.1016/j.jad.2015.11.043

Ekirch, A. R. (2016). Segmented Sleep in Preindustrial Societies. *Sleep*, *39*(3), 715–716. https://doi.org/10.5665/sleep.5558

Eliasson, E. T., McNamee, L., Swanson, L., Lawrie, S. M., & Schwannauer, M. (2021). Unpacking stigma: Meta-analyses of correlates and moderators of personal stigma in psychosis. *Clinical Psychology Review*, *89*, 102077. https://doi.org/10.1016/j.cpr.2021.102077

Ered, A., Cooper, S., & Ellman, L. M. (2018). Sleep quality, psychological symptoms, and psychotic-like experiences. *Journal of Psychiatric Research*, *98*, 95–98. https://doi.org/10.1016/j.jpsychires.2017.12.016

Farris, M. S., Devoe, D. J., & Addington, J. (2020). Attrition rates in trials for adolescents and young adults at clinical high-risk for psychosis: A systematic review and meta-analysis. In *Early Intervention in Psychiatry* (Vol. 14, Issue 5, pp. 515–527). Blackwell Publishing. https://doi.org/10.1111/eip.12864

Faulkner, S., & Bee, P. (2016). Perspectives on Sleep, Sleep Problems, and Their Treatment, in People with Serious Mental Illnesses: A Systematic Review. *PloS One*, *11*(9), e0163486. https://doi.org/10.1371/journal.pone.0163486

Faulkner, S., & Bee, P. (2017). Experiences, perspectives and priorities of people with schizophrenia spectrum disorders regarding sleep disturbance and its treatment: a qualitative study. *BMC Psychiatry*, *17*(1), 158. https://doi.org/10.1186/s12888-017-1329-8

Favril, L., Yu, R., Uyar, A., Sharpe, M., & Fazel, S. (2022). Risk factors for suicide in adults: systematic review and meta-analysis of psychological autopsy studies. *Evidence Based Mental Health*, *25*(4), 148–155. https://doi.org/10.1136/ebmental-2022-300549

Fekedulegn, D., Andrew, M. E., Shi, M., Violanti, J. M., Knox, S., & Innes, K. E. (2020). Actigraphy-based assessment of sleep parameters. In *Annals of Work Exposures and Health* (Vol. 64, Issue 4, pp. 350–367). Oxford University Press. https://doi.org/10.1093/ANNWEH/WXAA007

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *International Journal of Qualitative Methods*, *5*(1), 80–92. https://doi.org/10.1177/160940690600500107

Ferrarelli, F. (2020). Sleep disturbances in schizophrenia and psychosis. *Schizophrenia Research*, *221*, 1–3. https://doi.org/10.1016/j.schres.2020.05.022

Fialko, L., Freeman, D., Bebbington, P. E., Kuipers, E., Garety, P. A., Dunn, G., & Fowler, D. (2006). Understanding suicidal ideation in psychosis: findings from the Psychological Prevention of Relapse in Psychosis (PRP) trial. *Acta Psychiatrica Scandinavica*, *114*(3), 177–186. https://doi.org/10.1111/j.1600-0447.2006.00849.x

Finlay, L. (2017). Championing “reflexivities”. *Qualitative Psychology*, *4*(2), 120–125. https://doi.org/10.1037/qup0000075

Finlay, L. (2021). Thematic analysis: The ‘good’, the ‘bad’ and the ‘ugly. *Journal for Qualitative Research in Psychotherapy*, *11*, 103–116.

Fiorentini, A., Cantù, F., Crisanti, C., Cereda, G., Oldani, L., & Brambilla, P. (2021). Substance-Induced Psychoses: An Updated Literature Review. *Frontiers in Psychiatry*, *12*, 694863. https://doi.org/10.3389/fpsyt.2021.694863

Fjeldsted, R., Teasdale, T. W., Jensen, M., & Erlangsen, A. (2017). Suicide in Relation to the Experience of Stressful Life Events: A Population-Based Study. *Archives of Suicide Research*, *21*(4), 544–555. https://doi.org/10.1080/13811118.2016.1259596

Fonseca-Pedrero, E., Gooding, D. C., Ortuño-Sierra, J., & Paino, M. (2016). Assessing self-reported clinical high risk symptoms in community-derived adolescents: A psychometric evaluation of the Prodromal Questionnaire-Brief. *Comprehensive Psychiatry*, *66*, 201–208. https://doi.org/10.1016/j.comppsych.2016.01.013

Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., Musacchio, K. M., Jaroszewski, A. C., Chang, B. P., & Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, *143*(2), 187–232. https://doi.org/10.1037/bul0000084

Freeman, D., & Fowler, D. (2009). Routes to psychotic symptoms: trauma, anxiety and psychosis-like experiences. *Psychiatry Research*, *169*(2), 107–112.

Freeman, D., Morrison, A., Bird, J. C., Chadwick, E., Bold, E., Taylor, K. M., Diamond, R., Collett, N., Černis, E., Isham, L., Lister, R., Kirkham, M., Teale, A.-L., Twivy, E., & Waite, F. (2019). The weeks before 100 persecutory delusions: the presence of many potential contributory causal factors. *BJPsych Open*, *5*(5), e83. https://doi.org/10.1192/bjo.2019.67

Freeman, D., Sheaves, B., Goodwin, G. M., Yu, L.-M., Nickless, A., Harrison, P. J., Emsley, R., Luik, A. I., Foster, R. G., Wadekar, V., Hinds, C., Gumley, A., Jones, R., Lightman, S., Jones, S., Bentall, R., Kinderman, P., Rowse, G., Brugha, T., … Espie, C. A. (2017). The effects of improving sleep on mental health (OASIS): a randomised controlled trial with mediation analysis. *The Lancet Psychiatry*, *4*(10), 749–758. https://doi.org/10.1016/S2215-0366(17)30328-0

Freeman, D., Sheaves, B., Waite, F., Harvey, A. G., & Harrison, P. J. (2020a). Sleep disturbance and psychiatric disorders. *The Lancet Psychiatry*, *7*(7), 628–637. https://doi.org/10.1016/S2215-0366(20)30136-X

Freeman, D., Sheaves, B., Waite, F., Harvey, A. G., & Harrison, P. J. (2020b). Sleep disturbance and psychiatric disorders. *The Lancet Psychiatry*, *7*(7), 628–637. https://doi.org/10.1016/S2215-0366(20)30136-X

Freeman, D., Taylor, K. M., Molodynski, A., & Waite, F. (2019). Treatable clinical intervention targets for patients with schizophrenia. *Schizophrenia Research*, *211*, 44–50. https://doi.org/10.1016/j.schres.2019.07.016

Freeman, D., Waite, F., Startup, H., Myers, E., Lister, R., McInerney, J., Harvey, A. G., Geddes, J., Zaiwalla, Z., Luengo-Fernandez, R., Foster, R., Clifton, L., & Yu, L.-M. (2015a). Efficacy of cognitive behavioural therapy for sleep improvement in patients with persistent delusions and hallucinations (BEST): a prospective, assessor-blind, randomised controlled pilot trial. *The Lancet Psychiatry*, *2*(11), 975–983. https://doi.org/10.1016/S2215-0366(15)00314-4

Freeman, D., Waite, F., Startup, H., Myers, E., Lister, R., McInerney, J., Harvey, A. G., Geddes, J., Zaiwalla, Z., Luengo-Fernandez, R., Foster, R., Clifton, L., & Yu, L.-M. (2015b). Efficacy of cognitive behavioural therapy for sleep improvement in patients with persistent delusions and hallucinations (BEST): a prospective,

assessor-blind, randomised controlled pilot trial. *The Lancet Psychiatry*, *2*(11), 975–983. https://doi.org/10.1016/S2215-0366(15)00314-4

Freud, S. (1894). *The Neuro-Psychoses of Defence: Vol. III*.

Fusar-Poli, P., Byrne, M., Badger, S., Valmaggia, L. R., & McGuire, P. K. (2013). Outreach and support in South London (OASIS), 2001–2011: Ten years of early diagnosis and treatment for young individuals at high clinical risk for psychosis. *European Psychiatry*, *28*(5), 315–326. https://doi.org/10.1016/j.eurpsy.2012.08.002

Fusar-Poli, P., Cappucciati, M., Bonoldi, I., Hui, L. M. C., Rutigliano, G., Stahl, D. R., Borgwardt, S., Politi, P., Mishara, A. L., Lawrie, S. M., Carpenter, W. T., & McGuire, P. K. (2016). Prognosis of brief psychotic episodes a meta-analysis. In *JAMA Psychiatry* (Vol. 73, Issue 3, pp. 211–220). American Medical Association. https://doi.org/10.1001/jamapsychiatry.2015.2313

Fusar-Poli, P., Cappucciati, M., Rutigliano, G., Schultze-Lutter, F., Bonoldi, I., Borgwardt, S., Riecher-Rössler, A., Addington, J., Perkins, D., Woods, S. W., McGlashan, T. H., Lee, J., Klosterkötter, J., Yung, A. R., & McGuire, P. (2015). At risk or not at risk? A meta-analysis of the prognostic accuracy of psychometric interviews for psychosis prediction. *World Psychiatry*, *14*(3), 322–332. https://doi.org/10.1002/wps.20250

Fusar-Poli, P., Salazar de Pablo, G., Rajkumar, R. P., López-Díaz, Á., Malhotra, S., Heckers, S., Lawrie, S. M., & Pillmann, F. (2022). Diagnosis, prognosis, and treatment of brief psychotic episodes: a review and research agenda. *The Lancet Psychiatry*, *9*(1), 72–83. https://doi.org/10.1016/s2215-0366(21)00121-8

Galbiati, A., Sforza, M., Fasiello, E., Casoni, F., Marrella, N., Leitner, C., Zucconi, M., & Ferini-Strambi, L. (2020a). The association between emotional dysregulation and REM sleep features in insomnia disorder. *Brain and Cognition*, *146*, 105642. https://doi.org/10.1016/j.bandc.2020.105642

Galbiati, A., Sforza, M., Fasiello, E., Casoni, F., Marrella, N., Leitner, C., Zucconi, M., & Ferini-Strambi, L. (2020b). The association between emotional dysregulation and REM sleep features in insomnia disorder. *Brain and Cognition*, *146*, 105642. https://doi.org/10.1016/j.bandc.2020.105642

Garety, P. A., Kuipers, " E, Fowler, D., Freeman, D., & Bebbington, □□□ P E. (2001). A cognitive model of the positive symptoms of psychosis. In *Psychological Medicine* (Vol. 31).

Geoffroy, P. A., Tebeka, S., Blanco, C., Dubertret, C., & Le Strat, Y. (2020). Shorter and longer durations of sleep are associated with an increased twelve-month prevalence of psychiatric and substance use disorders: Findings from a nationally representative survey of US adults (NESARC-III). *Journal of Psychiatric Research*, *124*, 34–41. https://doi.org/10.1016/j.jpsychires.2020.02.018

Gerner, J., Ballard, E., Farmer, C., Duncan, W. C., & Zarate, C. (2020). Wakefulness After Sleep Onset as Predicting Suicidal Ideation. *Biological Psychiatry*, *87*(9), S240. https://doi.org/10.1016/j.biopsych.2020.02.1189

Giesbrecht, C. J., O'Rourke, N., Leonova, O., Strehlau, V., Paquet, K., Vila-Rodriguez, F., Panenka, W. J., MacEwan, G. W., Smith, G. N., Thornton, A. E., & Honer, W. G. (2016). The Positive and Negative Syndrome Scale (PANSS): A Three-Factor Model of Psychopathology in Marginally Housed Persons with Substance Dependence and Psychiatric Illness. *PloS One*, *11*(3), e0151648. https://doi.org/10.1371/journal.pone.0151648

Gill, K. E., Quintero, J. M., Poe, S. L., Moreira, A. D., Brucato, G., Corcoran, C. M., & Girgis, R. R. (2015). Assessing suicidal ideation in individuals at clinical high risk for psychosis. *Schizophrenia Research*, *165*(2–3), 152–156. https://doi.org/10.1016/J.SCHRES.2015.04.022

Giocondo, J. G., Salum, G. A., Gadelha, A., Argolo, F. C., Simioni, A. R., Mari, J. J., Miguel, E. C., Bressan, R. A., Rohde, L. A., & Pan, P. M. (2021). Psychotic-like Experiences and Common Mental Disorders in Childhood and Adolescence: Bidirectional and Transdiagnostic Associations in a Longitudinal Community-based Study. *Schizophrenia Bulletin Open*, *2*(1). https://doi.org/10.1093/schizbullopen/sgab028

Glozier, N. (2012). Maybe It's Quality Not Length That Matters. *Sleep*, *35*(3), 313–314. https://doi.org/10.5665/sleep.1684

Golombek, D. A., & Rosenstein, R. E. (2010). Physiology of Circadian Entrainment. *Physiological Reviews*, *90*(3), 1063–1102. https://doi.org/10.1152/physrev.00009.2009

Gottlieb, D. J., & Punjabi, N. M. (2020). Diagnosis and Management of Obstructive Sleep Apnea. *JAMA*, *323*(14), 1389. https://doi.org/10.1001/jama.2020.3514

Grattan, R. E., Lara, N., Botello, R. M., Tryon, V. L., Maguire, A. M., Carter, C. S., & Niendam, T. A. (2019). A History of Trauma is Associated with Aggression, Depression, Non-Suicidal Self-Injury Behavior, and Suicide Ideation in First-Episode Psychosis. *Journal of Clinical Medicine*, *8*(7), 1082. https://doi.org/10.3390/jcm8071082

Greene, J. C. (2012). Engaging Critical Issues in Social Inquiry by Mixing Methods. *American Behavioral Scientist*, *56*(6), 755–773. https://doi.org/10.1177/0002764211433794

Grima, N., Ponsford, J., Rajaratnam, S. M., Mansfield, D., & Pase, M. P. (2016). Sleep Disturbances in Traumatic Brain Injury: A Meta-Analysis. *Journal of Clinical Sleep Medicine : JCSM : Official Publication of the American Academy of Sleep Medicine*, *12*(3), 419–428. https://doi.org/10.5664/jcsm.5598

Gupta, U., & Kharawala, S. (2012). Informed consent in psychiatry clinical research: A conceptual review of issues, challenges, and recommendations. *Perspectives in Clinical Research*, *3*(1), 8. https://doi.org/10.4103/2229-3485.92301

Haney, E. , O. M. , C. S. , L. A. , P. K. , D. L. , O. C. , & K. D. (2012). *Suicide risk factors and risk assessment tools: A systematic review.* .

Hardy, A., Keen, N., van den Berg, D., Varese, F., Longden, E., Ward, T., & Brand, R. M. (2024). Trauma therapies for psychosis: A state-of-the-art review. *Psychology and Psychotherapy: Theory, Research and Practice*, *97*(1), 74–90. https://doi.org/10.1111/papt.12499

Haro, J. M., Kamath, S. A., Ochoa, S., Novick, D., Rele, K., Fargas, A., Rodríguez, M. J., Rele, R., Orta, J., Kharbeng, A., Araya, S., Gervin, M., Alonso, J., Mavreas, V., Lavrentzou, E., Liontos, N., Gregor, K., & Jones, P. B. (2003). The Clinical Global Impression–Schizophrenia scale: a simple instrument to measure the diversity of symptoms present in schizophrenia. *Acta Psychiatrica Scandinavica*, *107*(s416), 16–23. https://doi.org/10.1034/j.1600-0447.107.s416.5.x

Harper, C. E. (2011). Identity, intersectionality, and mixed-methods approaches. *New Directions for Institutional Research*, *2011*(151), 103–115. https://doi.org/10.1002/ir.402

Harris, K., Haddock, G., Peters, S., & Gooding, P. (2021). Psychometric properties of the Suicidal Ideation Attributes Scale (SIDAS) in a longitudinal sample of people experiencing non-affective psychosis. *BMC Psychiatry*, *21*(628), 1–10.

Harris, L. M., Huang, X., Linthicum, K. P., Bryen, C. P., & Ribeiro, J. D. (2020). Sleep disturbances as risk factors for suicidal thoughts and behaviours: a meta-analysis of longitudinal studies. *Scientific Reports*, *10*(1). https://doi.org/10.1038/s41598-020-70866-6

Hartley, S., Haddock, G., Vasconcelos e Sa, D., Emsley, R., & Barrowclough, C. (2014). An experience sampling study of worry and rumination in psychosis. *Psychological Medicine*, *44*(8), 1605–1614. https://doi.org/10.1017/S0033291713002080

Harvey, A. G. (2002). A cognitive model of insomnia. In *Behaviour Research and Therapy* (Vol. 40). www.elsevier.com/locate/brat

Harvey, A. G., Schmidt, D. A., Scarnà, A., Semler, C. N., & Goodwin, G. M. (2005). Sleep-related functioning in euthymic patients with bipolar disorder, patients with insomnia, and subjects without sleep problems. *The American Journal of Psychiatry*, *162*(1), 50–57. https://doi.org/10.1176/appi.ajp.162.1.50

Harvey, A. G., Talbot, L. S., & Gershon, A. (2009). Sleep Disturbance in Bipolar Disorder Across the Lifespan. *Clinical Psychology : A Publication of the Division of Clinical Psychology of the American Psychological Association*, *16*(2), 256–277. https://doi.org/10.1111/j.1468-2850.2009.01164.x

Harvey, A. G., & Tang, N. K. Y. (2012). (Mis)perception of sleep in insomnia: a puzzle and a resolution. *Psychological Bulletin*, *138*(1), 77–101. https://doi.org/10.1037/a0025730

Harvey, L. (2011). Intimate reflections: private diaries in qualitative research. *Qualitative Research*, *11*(6), 664–682. https://doi.org/10.1177/1468794111415959

Hawton, K., Sutton, L., Haw, C., Sinclair, J., & Deeks, J. J. (2005). Schizophrenia and suicide: Systematic review of risk factors. In *British Journal of Psychiatry* (Vol. 187, Issue JULY, pp. 9–20). https://doi.org/10.1192/bjp.187.1.9

Hennig, T., Schlier, B., & Lincoln, T. M. (2020). Sleep and psychotic symptoms: An actigraphy and diary study with young adults with low and elevated psychosis proneness. *Schizophrenia Research*, *221*, 12–19. https://doi.org/10.1016/j.schres.2019.09.012

Hewitt, E. (2017). Building bridges: the use of reflective oral diaries as a qualitative research tool. *International Journal of Research & Method in Education*, *40*(4), 345–359. https://doi.org/10.1080/1743727X.2015.1114601

Holdaway, A. S., Luebbe, A. M., & Becker, S. P. (2018). Rumination in relation to suicide risk, ideation, and attempts: Exacerbation by poor sleep quality? *Journal of Affective Disorders*, *236*, 6–13. https://doi.org/10.1016/j.jad.2018.04.087

Holma, K. M., Haukka, J., Suominen, K., Valtonen, H. M., Mantere, O., Melartin, T. K., Sokero, T. P., Oquendo, M. A., & Isometsä, E. T. (2014). Differences in incidence of suicide attempts between bipolar I and II disorders and major depressive disorder. *Bipolar Disorders*, *16*(6), 652–661. https://doi.org/10.1111/bdi.12195

Homman, L. E., Smart, S. E., O'Neill, F., & MacCabe, J. H. (2021). Attrition in longitudinal studies among patients with schizophrenia and other psychoses; findings from the STRATA collaboration. *Psychiatry Research*, *305*, 114211. https://doi.org/10.1016/j.psychres.2021.114211

Hor, K., & Taylor, M. (2010). Suicide and schizophrenia: a systematic review of rates and risk factors. In *Journal of psychopharmacology (Oxford, England)* (Vol. 24, Issue 4 Suppl, pp. 81–90). https://doi.org/10.1177/1359786810385490

Howes, O. D., Whitehurst, T., Shatalina, E., Townsend, L., Onwordi, E. C., Mak, T. L. A., Arumuham, A., O'Brien, O., Lobo, M., Vano, L., Zahid, U., Butler, E., & Osugo, M. (2021). The clinical significance of duration of untreated psychosis: an umbrella review and random-effects meta-analysis. *World Psychiatry*, *20*(1), 75–95. https://doi.org/10.1002/wps.20822

Huda, A. S. (2021). The medical model and its application in mental health. *International Review of Psychiatry*, *33*(5), 463–470. https://doi.org/10.1080/09540261.2020.1845125

Hutton, P., & Taylor, P. J. (2014). Cognitive behavioural therapy for psychosis prevention: a systematic review and meta-analysis. *Psychological Medicine*, *44*(3), 449–468. https://doi.org/10.1017/S0033291713000354

Hwang, D. K., Nam, M., & Lee, Y. J. G. (2019). The effect of cognitive behavioral therapy for insomnia in schizophrenia patients with sleep Disturbance: A non-

randomized, assessor-blind trial. *Psychiatry Research*, *274*, 182–188. https://doi.org/10.1016/j.psychres.2019.02.002

Inchausti, L., Gorostiza, I., Gonzalez Torres, M. A., & Oraa, R. (2023). The transition to Schizophrenia spectrum disorder from a first psychotic episode that did or did not appear to be induced by substance use. *Psychiatry Research*, *328*, 115475. https://doi.org/10.1016/j.psychres.2023.115475

Inyang, B., Gondal, F. J., Abah, G. A., Minnal Dhandapani, M., Manne, M., Khanna, M., Challa, S., Kabeil, A. S., & Mohammed, L. (2022). The Role of Childhood Trauma in Psychosis and Schizophrenia: A Systematic Review. *Cureus*. https://doi.org/10.7759/cureus.21466

Ising, H. K., Veling, W., Loewy, R. L., Rietveld, M. W., Rietdijk, J., Dragt, S., Klaassen, R. M. C., Nieman, D. H., Wunderink, L., Linszen, D. H., & Van Der Gaag, M. (2012). The validity of the 16-item version of the prodromal questionnaire (PQ-16) to screen for ultra high risk of developing psychosis in the general help-seeking population. *Schizophrenia Bulletin*, *38*(6), 1288–1296. https://doi.org/10.1093/schbul/sbs068

Itani, O., Jike, M., Watanabe, N., & Kaneita, Y. (2017). Short sleep duration and health outcomes: a systematic review, meta-analysis, and meta-regression. *Sleep Medicine*, *32*, 246–256. https://doi.org/10.1016/j.sleep.2016.08.006

Itzik, L., & Walsh, S. D. (2023). Giving Them a Choice: Qualitative Research Participants Chosen Pseudonyms as a Reflection of Self-Identity. *Journal of Cross-Cultural Psychology*, *54*(6–7), 705–721. https://doi.org/10.1177/00220221231193146

Javed, A., & Das, D. (2022). Suicide in patients under care of first-episode psychosis service. *Progress in Neurology and Psychiatry*, *26*(1), 34–37. https://doi.org/10.1002/pnp.739

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A Review of the Quality Indicators of Rigor in Qualitative Research. *American Journal of Pharmaceutical Education*, *84*(1), 7120. https://doi.org/10.5688/ajpe7120

Johnstone, L. (2018). Psychological Formulation as an Alternative to Psychiatric Diagnosis. *Journal of Humanistic Psychology*, *58*(1), 30–46. https://doi.org/10.1177/0022167817722230

Jones, B. J., & Spencer, R. M. C. (2020). Role of Napping for Learning Across the Lifespan. *Current Sleep Medicine Reports*, *6*(4), 290–297. https://doi.org/10.1007/s40675-020-00193-9

Kapila, A., Fisher, H. L., Johnson, S., Major, B., Rahaman, N., Joyce, J., Chamberlain-Kent, N., Lawrence, J., Young, A. H., & Stone, J. M. (2019). Clinical and demographic differences between patients with manic, depressive and schizophrenia-spectrum psychoses presenting to Early Intervention Services in London. *Early Intervention in Psychiatry*, *13*(3), 509–516. https://doi.org/10.1111/eip.12511

Kasanova, Z., Hajdúk, M., Thewissen, V., & Myin-Germeys, I. (2020). Temporal associations between sleep quality and paranoia across the paranoia continuum: An experience sampling study. *Journal of Abnormal Psychology*, *129*(1), 122–130. https://doi.org/10.1037/abn0000453

Kaur, M. (2016). Application of Mixed Method Approach in Public Health Research. *Indian Journal of Community Medicine : Official Publication of Indian Association of Preventive & Social Medicine*, *41*(2), 93–97. https://doi.org/10.4103/0970-0218.173495

Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a Research Paradigm and Its Implications for Social Work Research. *Social Sciences*, *8*(9), 255. https://doi.org/10.3390/socsci8090255

Keers, R., Ullrich, S., DeStavola, B. L., & Coid, J. W. (2014). Association of Violence With Emergence of Persecutory Delusions in Untreated Schizophrenia. *American Journal of Psychiatry*, *171*(3), 332–339. https://doi.org/10.1176/appi.ajp.2013.13010134

Kelleher, I. (2023). Psychosis prediction 2.0: why child and adolescent mental health services should be a key focus for schizophrenia and bipolar disorder prevention research. *The British Journal of Psychiatry*, *222*(5), 185–187. https://doi.org/10.1192/bjp.2022.193

Kelly, R. M., McDermott, J. H., & Coogan, A. N. (2022). Differences in Sleep Offset Timing between Weekdays and Weekends in 79,161 Adult Participants in the UK Biobank. *Clocks & Sleep*, *4*(4), 658–674. https://doi.org/10.3390/clockssleep4040050

Kerkhof, G. A. (2017). Epidemiology of sleep and sleep disorders in The Netherlands. *Sleep Medicine*, *30*, 229–239. https://doi.org/10.1016/j.sleep.2016.09.015

Kerr, P. L., Muehlenkamp, J. J., & Turner, J. M. (2010). Nonsuicidal Self-Injury: A Review of Current Research for Family Medicine and Primary Care Physicians. *The Journal of the American Board of Family Medicine*, *23*(2), 240–259. https://doi.org/10.3122/jabfm.2010.02.090110

Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., Wittchen, H., Ronald Kessler, C. C., & Wiley Online Library, in. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research Int. J. Methods Psychiatr. Res*, *21*(3), 169–184. https://doi.org/10.1002/mpr.1359

Ketcham, E., Schooler, N. R., Severe, J. B., Buckley, P. F., & Miller, B. J. (2024). Longitudinal study of insomnia, suicidal ideation, and psychopathology in schizophrenia. *Schizophrenia Research*, *267*, 34–38. https://doi.org/10.1016/j.schres.2024.03.030

Khare, S. R., & Vedel, I. (2019). Recall bias and reduction measures: an example in primary health care service utilization. *Family Practice*, *36*(5), 672–676. https://doi.org/10.1093/fampra/cmz042

Kidder, L. H., & Fine, M. (1987). Qualitative and quantitative methods: When stories converge. *New Directions for Program Evaluation*, *1987*(35), 57–75. https://doi.org/10.1002/ev.1459

Kiekens, G., Hasking, P., Boyes, M., Claes, L., Mortier, P., Auerbach, R. P., Cuijpers, P., Demyttenaere, K., Green, J. G., Kessler, R. C., Myin-Germeys, I., Nock, M. K., & Bruffaerts, R. (2018). The associations between non-suicidal self-injury and first onset suicidal thoughts and behaviors. *Journal of Affective Disorders*, *239*, 171–179. https://doi.org/10.1016/j.jad.2018.06.033

Kingdon, D., & Mander, H. (2015). The evolution of cognitive–behavioral therapy for psychosis. *Psychology Research and Behavior Management*, 63. https://doi.org/10.2147/PRBM.S52267

Kirkbride, J. B., Errazuriz, A., Croudace, T. J., Morgan, C., Jackson, D., Boydell, J., Murray, R. M., & Jones, P. B. (2012). Incidence of Schizophrenia and Other Psychoses in England, 1950–2009: A Systematic Review and Meta-Analyses. *PLoS ONE*, *7*(3), e31660. https://doi.org/10.1371/journal.pone.0031660

Kitto, S. C., Chesters, J., & Grbich, C. (2008). Quality in qualitative research. *Medical Journal of Australia*, *188*(4), 243–246. https://doi.org/10.5694/j.1326-5377.2008.tb01595.x

Kivelä, L., Papadopoulos, M. R., & Antypa, N. (2018). Chronotype and Psychiatric Disorders. *Current Sleep Medicine Reports*, *4*(2), 94–103. https://doi.org/10.1007/s40675-018-0113-8

Kivelä, L., van der Does, W. A. J., Riese, H., & Antypa, N. (2022). Don't Miss the Moment: A Systematic Review of Ecological Momentary Assessment in Suicide Research. *Frontiers in Digital Health*, *4*. https://doi.org/10.3389/fdgth.2022.876595

Kiwan, N., Mahfoud, Z., Ghuloum, S., Chamali, R., Yehya, A., Hammoudeh, S., Hani, Y., Amro, I., & Al-Amin, H. (2019). Self-Reported Sleep and Exercise Patterns in Patients with Schizophrenia: a Cross-Sectional Comparative Study. *International Journal of Behavioral Medicine*. https://doi.org/10.1007/s12529-019-09830-2

KLEIN, M. (1946). Notes on some schizoid mechanisms. *The International Journal of Psycho-Analysis*, *27*(Pt 3-4), 99–110.

Kline, E., & Schiffman, J. (2014). Psychosis risk screening: A systematic review. *Schizophrenia Research*, *158*(1–3), 11–18. https://doi.org/10.1016/j.schres.2014.06.036

Klonsky, E. D. (2011). Non-suicidal self-injury in United States adults: prevalence, sociodemographics, topography and functions. *Psychological Medicine*, *41*(9), 1981–1986. https://doi.org/10.1017/S0033291710002497

Klonsky, E. D., May, A. M., & Saffer, B. Y. (2016). The critical distinction between suicidal ideation and suicide attempts. *Annual Review of Clinical Psychology*, *12*, 307–330. https://doi.org/10.1002/wps.20907

Koyanagi, A., & Stickley, A. (2015). The Association between Sleep Problems and Psychotic Symptoms in the General Population: A Global Perspective. *Sleep*, *38*(12), 1875–1885. https://doi.org/10.5665/sleep.5232

Kroll, J. L. (2007). New directions in the conceptualization of psychotic disorders. *Current Opinion in Psychiatry*, *20*(6), 573–577. https://doi.org/10.1097/YCO.0b013e3282f08759

Kuipers, E., Garety, P., Fowler, D., Freeman, D., Dunn, G., & Bebbington, P. (2006). Cognitive, emotional, and social processes in psychosis: Refining cognitive behavioral therapy for persistent positive symptoms. *Schizophrenia Bulletin*, *32*(SUPPL.1). https://doi.org/10.1093/schbul/sbl014

Lahman, M. K. E., Rodriguez, K. L., Moses, L., Griffin, K. M., Mendoza, B. M., & Yacoub, W. (2015). A Rose By Any Other Name Is Still a Rose? Problematizing Pseudonyms in Research. *Qualitative Inquiry*, *21*(5), 445–453. https://doi.org/10.1177/1077800415572391

Lappin, J. M., Heslin, M., Jones, P. B., Doody, G. A., Reininghaus, U. A., Demjaha, A., Croudace, T., Jamieson-Craig, T., Donoghue, K., Lomas, B., Fearon, P., Murray, R. M., Dazzan, P., & Morgan, C. (2016). Outcomes following first-episode psychosis – Why we should intervene early in all ages, not only in youth. *Australian & New Zealand Journal of Psychiatry*, *50*(11), 1055–1063. https://doi.org/10.1177/0004867416673454

Laskemoen, J. F., Aas, M., Vaskinn, A., Berg, A. O., Lunding, S. H., Barrett, E. A., Melle, I., & Simonsen, C. (2021). Sleep disturbance mediates the link between childhood trauma and clinical outcome in severe mental disorders. *Psychological Medicine*, *51*(14), 2337–2346. https://doi.org/10.1017/S0033291720000914

Lauderdale, D. S., Knutson, K. L., Yan, L. L., Liu, K., & Rathouz, P. J. (2008). Self-reported and measured sleep duration: how similar are they? *Epidemiology (Cambridge, Mass.)*, *19*(6), 838–845. https://doi.org/10.1097/EDE.0b013e318187a7b0

Le Bon, O. (2020). Relationships between REM and NREM in the NREM-REM sleep cycle: a review on competing concepts. *Sleep Medicine*, *70*, 6–16. https://doi.org/10.1016/j.sleep.2020.02.004

Leamy, M., Bird, V., Boutillier, C. Le, Williams, J., & Slade, M. (2011). Conceptual framework for personal recovery in mental health: systematic review and narrative synthesis. *British Journal of Psychiatry*, *199*(6), 445–452. https://doi.org/10.1192/bjp.bp.110.083733

Li, S. X., Lam, S. P., Zhang, J., Yu, M. W. M., Chan, J. W. Y., Chan, C. S. Y., Espie, C. A., Freeman, D., Mason, O., & Wing, Y. K. (2016). Sleep disturbances and

suicide risk in an 8-year longitudinal study of schizophrenia-spectrum disorders. *Sleep*, *39*(6), 1275–1282. https://doi.org/10.5665/sleep.5852

Lin, H.-T., Lai, C.-H., Perng, H.-J., Chung, C.-H., Wang, C.-C., Chen, W.-L., & Chien, W.-C. (2018). Insomnia as an independent predictor of suicide attempts: a nationwide population-based retrospective cohort study. *BMC Psychiatry*, *18*(1), 117. https://doi.org/10.1186/s12888-018-1702-2

Lincoln, T. M., & Pedersen, A. (2019). An Overview of the Evidence for Psychological Interventions for Psychosis: Results From Meta-Analyses. *Clinical Psychology in Europe*, *1*(1). https://doi.org/10.32872/cpe.v1i1.31407

Lincoln, Y. S., Guba, E. G., & Pilotta, J. J. (1985). Naturalistic inquiry. *International Journal of Intercultural Relations*, *9*(4), 438–439. https://doi.org/10.1016/0147-1767(85)90062-8

Linscott, R. J., & van Os, J. (2013). An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: on the pathway from proneness to persistence to dimensional expression across mental disorders. *Psychological Medicine*, *43*(6), 1133–1149.

Littlewood, D., Kyle, S. D., Pratt, D., Peters, S., & Gooding, P. (2017). Examining the role of psychological factors in the relationship between sleep problems and suicide. *Clinical Psychology Review*, *54*, 1–16. https://doi.org/10.1016/j.cpr.2017.03.009

Littlewood, D. L., Gooding, P., Kyle, S. D., Pratt, D., & Peters, S. (2016a). Understanding the role of sleep in suicide risk: qualitative interview study. *BMJ Open*, *6*, 12113. https://doi.org/10.1136/bmjopen-2016

Littlewood, D. L., Gooding, P., Kyle, S. D., Pratt, D., & Peters, S. (2016b). Understanding the role of sleep in suicide risk: qualitative interview study. *BMJ Open*, *6*, 12113. https://doi.org/10.1136/bmjopen-2016

Littlewood, D. L., Kyle, S. D., Carter, L.-A., Peters, S., Pratt, D., & Gooding, P. (2019). Short sleep duration and poor sleep quality predict next-day suicidal ideation: an ecological momentary assessment study. *Psychological Medicine*, *49*(3), 403–411. https://doi.org/10.1017/S0033291718001009

Littlewood, D. L., & Russell, K. (2020). Is there a role for sleep medicine in suicide prevention? In *Sleep Medicine* (Vol. 66, pp. 262–263). Elsevier B.V. https://doi.org/10.1016/j.sleep.2019.08.005

Liu, J., Fang, Y., Gong, J., Cui, X., Meng, T., Xiao, B., He, Y., Shen, Y., & Luo, X. (2017). Associations between suicidal behavior and childhood abuse and neglect: A meta-analysis. *Journal of Affective Disorders*, *220*, 147–155. https://doi.org/10.1016/j.jad.2017.03.060

Liu, R. T., Steele, S. J., Hamilton, J. L., Do, Q. B. P., Furbish, K., Burke, T. A., Martinez, A. P., & Gerlus, N. (2020a). Sleep and suicide: A systematic review

and meta-analysis of longitudinal studies. In *Clinical Psychology Review* (Vol. 81). Elsevier Inc. https://doi.org/10.1016/j.cpr.2020.101895

Liu, R. T., Steele, S. J., Hamilton, J. L., Do, Q. B. P., Furbish, K., Burke, T. A., Martinez, A. P., & Gerlus, N. (2020b). Sleep and suicide: A systematic review and meta-analysis of longitudinal studies. In *Clinical Psychology Review* (Vol. 81). Elsevier Inc. https://doi.org/10.1016/j.cpr.2020.101895

Loewy, R. L., Corey, S., Amirfathi, F., Dabit, S., Fulford, D., Pearson, R., Hua, J. P. Y., Schlosser, D., Stuart, B. K., Mathalon, D. H., & Vinogradov, S. (2019). Childhood trauma and clinical high risk for psychosis. *Schizophrenia Research*, *205*, 10–14. https://doi.org/10.1016/j.schres.2018.05.003

Loewy, R. L., Pearson, R., Vinogradov, S., Bearden, C. E., & Cannon, T. D. (2011). Psychosis risk screening with the Prodromal Questionnaire — Brief Version (PQ-B). *Schizophrenia Research*, *129*(1), 42–46. https://doi.org/10.1016/j.schres.2011.03.029

Longden, E., Branitsky, A., Moskowitz, A., Berry, K., Bucci, S., & Varese, F. (2020). The Relationship Between Dissociation and Symptoms of Psychosis: A Meta-analysis. *Schizophrenia Bulletin*, *46*(5), 1104–1113. https://doi.org/10.1093/schbul/sbaa037

Lorentzen, E. A., Mors, O., & Kjær, J. N. (2022). The Prevalence of Self-injurious Behavior in Patients With Schizophrenia Spectrum Disorders: A Systematic Review and Meta-analysis. *Schizophrenia Bulletin Open*, *3*(1). https://doi.org/10.1093/schizbullopen/sgac069

Louzon, S. A., Bossarte, R., McCarthy, J. F., & Katz, I. R. (2016). Does Suicidal Ideation as Measured by the PHQ-9 Predict Suicide Among VA Patients? *Psychiatric Services*, *67*(5), 517–522. https://doi.org/10.1176/appi.ps.201500149

Ludwig, L., Mehl, S., Schlier, B., Krkovic, K., & Lincoln, T. M. (2020). Awareness and rumination moderate the affective pathway to paranoia in daily life. *Schizophrenia Research*, *216*, 161–167. https://doi.org/10.1016/j.schres.2019.12.007

Lunsford-Avery, J. R., LeBourgeois, M. K., Gupta, T., & Mittal, V. A. (2015). Actigraphic-measured sleep disturbance predicts increased positive symptoms in adolescents at ultra high-risk for psychosis: A longitudinal study. *Schizophrenia Research*, *164*(1–3), 15–20. https://doi.org/10.1016/j.schres.2015.03.013

Lunsford-Avery, J. R., Orr, J. M., Gupta, T., Pelletier-Baldelli, A., Dean, D. J., Smith Watts, A. K., Bernard, J., Millman, Z. B., & Mittal, V. A. (2013). Sleep dysfunction and thalamic abnormalities in adolescents at ultra high-risk for psychosis. *Schizophrenia Research*, *151*(1–3), 148–153. https://doi.org/10.1016/j.schres.2013.09.015

Macneil, C. A., Hasty, M. K., Conus, P., & Berk, M. (2012). Is diagnosis enough to guide interventions in mental health? Using case formulation in clinical practice. *BMC Medicine*, *10*, 111. https://doi.org/10.1186/1741-7015-10-111

Malda, A., Boonstra, N., Barf, H., De Jong, S., Aleman, A., Addington, J., Pruessner, M., Nieman, D., De Haan, L., Morrison, A., Riecher-Rössler, A., Studerus, E., Ruhrmann, S., Schultze-Lutter, F., An, S. K., Koike, S., Kasai, K., Nelson, B., McGorry, P., … Maria Pijnenborg, G. H. (2019). Individualized prediction of transition to psychosis in 1,676 individuals at clinical high risk: Development and validation of a multivariable prediction model based on individual patient data meta-analysis. *Frontiers in Psychiatry*, *10*(MAY). https://doi.org/10.3389/fpsyt.2019.00345

Malik, S., Kanwar, A., Sim, L. A., Prokop, L. J., Wang, Z., Benkhadra, K., & Murad, M. H. (2014). The association between sleep disturbances and suicidal behaviors in patients with psychiatric diagnoses: a systematic review and meta-analysis. *Systematic Reviews*, *3*(1), 18. https://doi.org/10.1186/2046-4053-3-18

Malla, A. K., Psych, M., Norman, R. M., & Joober, R. (2005). First-Episode Psychosis, Early Intervention, and Outcome: What Have We Learned? In *Can J Psychiatry* (Vol. 50, Issue 14).

Marin, L., Guàrdia, A., González-Rodríguez, A., Haba-Rubio, J., Natividad, M., Bosch, E., Domínguez, N., & Monreal, J. A. (2023). Sleep Disturbances in At-Risk Mental States and First Episode of Psychosis: A Narrative Review on Interventions. *Clocks & Sleep*, *5*(2), 249–259. https://doi.org/10.3390/clockssleep5020020

Marriott, M. R., Thompson, A. R., Cockshutt, G., & Rowse, G. (2019). Narrative insight in psychosis: The relationship with spiritual and religious explanatory frameworks. *Psychology and Psychotherapy*, *92*(1), 74–90. https://doi.org/10.1111/papt.12178

Martindale, B., & Summers, A. (2013). The psychodynamics of psychosis. *Advances in Psychiatric Treatment*, *19*(2), 124–131. https://doi.org/10.1192/apt.bp.111.009126

Marwaha, S., Hett, D., Johnson, S., Fowler, D., Hodgekins, J., Freemantle, N., McCrone, P., Everard, L., Jones, P., Amos, T., Singh, S., Sharma, V., & Birchwood, M. (2021). The impact of manic symptoms in first-episode psychosis: Findings from the UK National EDEN study. *Acta Psychiatrica Scandinavica*, *144*(4), 358–367. https://doi.org/10.1111/acps.13307

Mason, O., Startup, M., Halpin, S., Schall, U., Conrad, A., & Carr, V. (2004). Risk factors for transition to first episode psychosis among individuals with “at-risk mental states.” *Schizophrenia Research*, *71*(2–3), 227–237. https://doi.org/10.1016/j.schres.2004.04.006

McCall, W. V., Porter, B., Pate, A. R., Bolstad, C. J., Drapeau, C. W., Krystal, A. D., Benca, R. M., Rumble, M. E., & Nadorff, M. R. (2021). Examining suicide assessment measures for research use: Using item response theory to optimize

psychometric assessment for research on suicidal ideation in major depressive disorder. *Suicide and Life-Threatening Behavior*, *51*(6), 1086–1094. https://doi.org/10.1111/sltb.12791

McCall, W. V., & Black, C. G. (2013). The link between suicide and insomnia: theoretical mechanisms. *Current Psychiatry Reports*, *15*(9), 389. https://doi.org/10.1007/s11920-013-0389-9

McGinty, J., Sayeed Haque, M., & Upthegrove, R. (2018). Depression during first episode psychosis and subsequent suicide risk: A systematic review and meta-analysis of longitudinal studies. *Schizophrenia Research*, *195*, 58–66. https://doi.org/10.1016/j.schres.2017.09.040

McGrath, J. J., Saha, S., Al-Hamzawi, A., Alonso, J., Bromet, E. J., Bruffaerts, R., Caldas-de-Almeida, J. M., Chiu, W. T., de Jonge, P., Fayyad, J., Florescu, S., Gureje, O., Haro, J. M., Hu, C., Kovess-Masfety, V., Lepine, J. P., Lim, C. C. W., Mora, M. E. M., Navarro-Mateu, F., … Kessler, R. C. (2015). Psychotic Experiences in the General Population. *JAMA Psychiatry*, *72*(7), 697. https://doi.org/10.1001/jamapsychiatry.2015.0575

McNiel, D. E., Eisner, J. P., & Binder, R. L. (2000). The Relationship Between Command Hallucinations and Violence. *Psychiatric Services*, *51*(10), 1288–1292. https://doi.org/10.1176/appi.ps.51.10.1288

Mehl, S., Werner, D., & Lincoln, T. M. (2015). Does Cognitive Behavior Therapy for psychosis (CBTp) show a sustainable effect on delusions? A meta-analysis. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.01450

Migueles, J. H., Cadenas-Sanchez, C., Ekelund, U., Delisle Nyström, C., Mora-Gonzalez, J., Löf, M., Labayen, I., Ruiz, J. R., & Ortega, F. B. (2017). Accelerometer Data Collection and Processing Criteria to Assess Physical Activity and Other Outcomes: A Systematic Review and Practical Considerations. *Sports Medicine*, *47*(9), 1821–1845. https://doi.org/10.1007/s40279-017-0716-0

Miller, B. J., McEvoy, J. P., & McCall, W. v. (2021). Insomnia, Suicidal Ideation, and Suicide Attempts in the Clinical Antipsychotic Trials of Intervention Effectiveness. *The Journal of Clinical Psychiatry*, *82*(3). https://doi.org/10.4088/jcp.20m13338

Miller, B. J., Parker, C. B., Rapaport, M. H., Buckley, P. F., & McCall, W. V. (2019). Insomnia and suicidal ideation in nonaffective psychosis. *Sleep*, *42*(2). https://doi.org/10.1093/sleep/zsy215

Miller, T. J., Mcqlashan, T. H., Rosen, J. L., Cadenhead, K., Ventura, J., Mcfarlane, W., Perkins, D. O., Pearlson, Q. D., & Woods, S. W. (2003). *Prodromal Assessment With the Structured Interview for Prodromal Syndromes and the Scale of Prodromal Symptoms: Predictive Validity, Interrater Reliability, and Training to Reliability*. https://academic.oup.com/schizophreniabulletin/article/29/4/703/1887836

Mishara, B. L., & Chagnon, F. (2016). Why Mental Illness is a Risk Factor for Suicide. In *The International Handbook of Suicide Prevention* (pp. 594–608). Wiley. https://doi.org/10.1002/9781118903223.ch34

Moccia, L., Kotzalidis, G. D., Bartolucci, G., Ruggiero, S., Monti, L., Biscosi, M., Terenzi, B., Ferrara, O. M., Mazza, M., Di Nicola, M., Janiri, D., Simonetti, A., Caroppo, E., Janiri, L., & Sani, G. (2023). COVID-19 and New-Onset Psychosis: A Comprehensive Review. *Journal of Personalized Medicine*, *13*(1), 104. https://doi.org/10.3390/jpm13010104

Moe, A. M., Llamocca, E., Wastler, H. M., Steelesmith, D. L., Brock, G., Bridge, J. A., & Fontanella, C. A. (2022). Risk Factors for Deliberate Self-harm and Suicide Among Adolescents and Young Adults With First-Episode Psychosis. *Schizophrenia Bulletin*, *48*(2), 414–424. https://doi.org/10.1093/schbul/sbab123

Mogavero, M. P., DelRosso, L. M., Fanfulla, F., Bruni, O., & Ferri, R. (2021). Sleep disorders and cancer: State of the art and future perspectives. *Sleep Medicine Reviews*, *56*, 101409. https://doi.org/10.1016/j.smrv.2020.101409

Monsonet, M., Kwapil, T. R., & Barrantes-Vidal, N. (2020). Deconstructing the relationships between self-esteem and paranoia in early psychosis: an experience sampling study. *British Journal of Clinical Psychology*, *59*(4), 503–523. https://doi.org/10.1111/bjc.12263

Montaruli, A., Castelli, L., Mulè, A., Scurati, R., Esposito, F., Galasso, L., & Roveda, E. (2021). Biological Rhythm and Chronotype: New Perspectives in Health. *Biomolecules*, *11*(4), 487. https://doi.org/10.3390/biom11040487

Montaruli, A., Galasso, L., Caumo, A., Cè, E., Pesenti, C., Roveda, E., & Esposito, F. (2017). The circadian typology: the role of physical activity and melatonin. *Sport Sciences for Health*, *13*(3), 469–476. https://doi.org/10.1007/s11332-017-0389-y

Morgan, C., & Gayer-Anderson, C. (2016). Childhood adversities and psychosis: evidence, challenges, implications. *World Psychiatry*, *15*(2), 93–102. https://doi.org/10.1002/wps.20330

Morin, C. M., Belleville, G., Bélanger, L., & Ivers, H. (2011). The Insomnia Severity Index: Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response. *Sleep*, *34*(5), 601–608. https://doi.org/10.1093/sleep/34.5.601

Morin, C. M., & Jarrin, D. C. (2022). Epidemiology of Insomnia. *Sleep Medicine Clinics*, *17*(2), 173–191. https://doi.org/10.1016/j.jsmc.2022.03.003

Muehlenkamp, J. J., Claes, L., Havertape, L., & Plener, P. L. (2012). International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. *Child and Adolescent Psychiatry and Mental Health*, *6*(1), 10. https://doi.org/10.1186/1753-2000-6-10

Mukumbang, F. C. (2023). Retroductive Theorizing: A Contribution of Critical Realism to Mixed Methods Research. *Journal of Mixed Methods Research*, *17*(1), 93–114. https://doi.org/10.1177/15586898211049847

Mulligan, L. D., Haddock, G., Emsley, R., Neil, S. T., & Kyle, S. D. (2016a). High resolution examination of the role of sleep disturbance in predicting functioning and psychotic symptoms in schizophrenia: A novel experience sampling study. *Journal of Abnormal Psychology*, *125*(6), 788–797. https://doi.org/10.1037/abn0000180

Mulligan, L. D., Haddock, G., Emsley, R., Neil, S. T., & Kyle, S. D. (2016b). High resolution examination of the role of sleep disturbance in predicting functioning and psychotic symptoms in schizophrenia: A novel experience sampling study. *Journal of Abnormal Psychology*, *125*(6), 788–797. https://doi.org/10.1037/abn0000180

Musiek, E. S., Xiong, D. D., & Holtzman, D. M. (2015). Sleep, circadian rhythms, and the pathogenesis of Alzheimer Disease. *Experimental & Molecular Medicine*, *47*(3), e148–e148. https://doi.org/10.1038/emm.2014.121

Myers, E., Startup, H., & Freeman, D. (2011). Cognitive behavioural treatment of insomnia in individuals with persistent persecutory delusions: A pilot trial. *Journal of Behavior Therapy and Experimental Psychiatry*, *42*(3), 330–336. https://doi.org/10.1016/j.jbtep.2011.02.004

Nadorff, M. R., Nazem, S., & Fiske, A. (2005). *Insomnia Symptoms, Nightmares and Suicide Risk: Duration of Sleep Disturbance Matters*. https://doi.org/10.1111/sltb.12003

National Institute for Health and Care Excellence (NICE). (2021). *Psychosis and Schizophrenia: What is it?*

Naughton, S., Brady, A., Geary, E., Counihan, E., & Clarke, M. (2024). An exploratory study of psychosis risk factors in individuals who are referred but do not meet criteria for an early intervention in psychosis service. *BJPsych Open*, *10*(1), e21. https://doi.org/10.1192/bjo.2023.640

Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A., Bruffaerts, R., Chiu, W. T., de Girolamo, G., Gluzman, S., de Graaf, R., Gureje, O., Haro, J. M., Huang, Y., Karam, E., Kessler, R. C., Lepine, J. P., Levinson, D., Medina-Mora, M. E., … Williams, D. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *British Journal of Psychiatry*, *192*(2), 98–105. https://doi.org/10.1192/bjp.bp.107.040113

Noiriel, A., Verneuil, L., Osmond, I., Manolios, E., Revah-Levy, A., & Sibeoni, J. (2020). The Lived Experience of First-Episode Psychosis: A Systematic Review and Metasynthesis of Qualitative Studies. *Psychopathology*, *53*(5–6), 223–238. https://doi.org/10.1159/000510865

Nordentoft, M., Laursen, T. M., Agerbo, E., Qin, P., Høyer, E. H., & Mortensen, P. B. (2004). Change in suicide rates for patients with schizophrenia in Denmark,

1981-97: Nested case-control study. *British Medical Journal*, *329*(7460), 261–264. https://doi.org/10.1136/bmj.38133.622488.63

Nordholm, D., Jensen, M. A., Glenthøj, L. B., Kristensen, T. D., Wenneberg, C., Garde, A. H., & Nordentoft, M. (2023). Sleep disturbances and the association with attenuated psychotic symptoms in individuals at ultra high-risk of psychosis. *Journal of Psychiatric Research*, *158*, 143–149. https://doi.org/10.1016/j.jpsychires.2022.12.041

Nyhuis, C. C., & Fernandez-Mendoza, J. (2023). Insomnia nosology: a systematic review and critical appraisal of historical diagnostic categories and current phenotypes. *Journal of Sleep Research*, *32*(6). https://doi.org/10.1111/jsr.13910

O' Sullivan, L., Feeney, L., Crowley, R. K., Sukumar, P., McAuliffe, E., & Doran, P. (2021). An evaluation of the process of informed consent: views from research participants and staff. *Trials*, *22*(1), 544. https://doi.org/10.1186/s13063-021-05493-1

O'Connell, N., O'Connor, K., McGrath, D., Vagge, L., Mockler, D., Jennings, R., & Darker, C. D. (2021). Early Intervention in Psychosis services: A systematic review and narrative synthesis of the barriers and facilitators to implementation. *European Psychiatry : The Journal of the Association of European Psychiatrists*, *65*(1), e2. https://doi.org/10.1192/j.eurpsy.2021.2260

O'Connell, N., O'Connor, K., McGrath, D., Vagge, L., Mockler, D., Jennings, R., & Darker, C. D. (2022). Early Intervention in Psychosis services: A systematic review and narrative synthesis of the barriers and facilitators to implementation. *European Psychiatry*, *65*(1), e2. https://doi.org/10.1192/j.eurpsy.2021.2260

O'Connor, C., & Joffe, H. (2020). Intercoder Reliability in Qualitative Research: Debates and Practical Guidelines. *International Journal of Qualitative Methods*, *19*, 160940691989922. https://doi.org/10.1177/1609406919899220

O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational-volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *373*(1754). https://doi.org/10.1098/rstb.2017.0268

O'Connor, R. C., & Nock, M. K. (2014). The psychology of suicidal behaviour. *The Lancet Psychiatry*, *1*(1), 73–85. https://doi.org/10.1016/S2215-0366(14)70222-6

O'Connor, R. C., & Portzky, G. (2018). The relationship between entrapment and suicidal behavior through the lens of the integrated motivational–volitional model of suicidal behavior. *Current Opinion in Psychology*, *22*, 12–17. https://doi.org/10.1016/j.copsyc.2017.07.021

O'Donoghue, B., Lyne, J. P., Renwick, L., Lane, A., Madigan, K., Staines, A., O'Callaghan, E., & Clarke, M. (2016). Neighbourhood characteristics and the incidence of first-episode psychosis and duration of untreated psychosis. *Psychological Medicine*, *46*(7), 1367–1378. https://doi.org/10.1017/S003329171500286X

O'Keeffe, J., Conway, R., & McGuire, B. (2017). A systematic review examining factors predicting favourable outcome in cognitive behavioural interventions for psychosis. *Schizophrenia Research*, *183*, 22–30. https://doi.org/10.1016/j.schres.2016.11.021

Oliver, D., Reilly, T. J., Baccaredda Boy, O., Petros, N., Davies, C., Borgwardt, S., Mcguire, P., & Fusar-Poli, P. (2020). What Causes the Onset of Psychosis in Individuals at Clinical High Risk? A Meta-analysis of Risk and Protective Factors. *Schizophrenia Bulletin*, *46*(1), 110–120. https://doi.org/10.1093/schbul/sbz039

Oluwoye, O., Stiles, B., Monroe-DeVita, M., Chwastiak, L., McClellan, J. M., Dyck, D., Cabassa, L. J., & McDonell, M. G. (2018). Racial-Ethnic Disparities in First-Episode Psychosis Treatment Outcomes From the RAISE-ETP Study. *Psychiatric Services*, *69*(11), 1138–1145. https://doi.org/10.1176/appi.ps.201800067

Onwuegbuzie, A. J., & Collins, K. M. (2007). A typology of mixed methods sampling designs in social science research. *Qualitative Report*, *12*(2), 281–316.

Opler, M. G. A., Yavorsky, C., & Daniel, D. G. (2017). Positive and Negative Syndrome Scale (PANSS) Training: Challenges, Solutions, and Future Directions. *Innovations in Clinical Neuroscience*, *14*(11–12), 77–81.

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R):Validation with Clinical and Nonclinical Samples. *Assessment*, *8*(4), 443–454. https://doi.org/10.1177/107319110100800409

Ottenstein, C., & Lischetzke, T. (2020). Recall bias in emotional intensity ratings: investigating person-level and event-level predictors. *Motivation and Emotion*, *44*(3), 464–473. https://doi.org/10.1007/s11031-019-09796-4

Overall, J. E., & Gorham, D. R. (1962). The Brief Psychiatric Rating Scale. *Psychological Reports*, *10*(3), 799–812. https://doi.org/10.2466/pr0.1962.10.3.799

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Administration and Policy in Mental Health*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Palmer, C. A., & Alfano, C. A. (2017). Sleep and emotion regulation: An organizing, integrative review. In *Sleep Medicine Reviews* (Vol. 31, pp. 6–16). W.B. Saunders Ltd. https://doi.org/10.1016/j.smrv.2015.12.006

Park, C. H. K., Lee, J. W., Lee, S. Y., Moon, J., Jeon, D.-W., Shim, S.-H., Cho, S.-J., Kim, S. G., Lee, J., Paik, J.-W., Kim, M.-H., You, S., Jeon, H. J., Rhee, S. J., Kim, M. J., Kim, J., & Ahn, Y. M. (2020). Suicide risk factors across suicidal ideators, single suicide attempters, and multiple suicide attempters. *Journal of Psychiatric Research*, *131*, 1–8. https://doi.org/10.1016/j.jpsychires.2020.08.018

Patterson, M. R., Nunes, A. A. S., Gerstel, D., Pilkar, R., Guthrie, T., Neishabouri, A., & Guo, C. C. (2023). 40 years of actigraphy in sleep medicine and current state of the art algorithms. *Npj Digital Medicine*, *6*(1), 51. https://doi.org/10.1038/s41746-023-00802-1

Pearce, J., Rafiq, S., Simpson, J., & Varese, F. (2019). Perceived discrimination and psychosis: a systematic review of the literature. *Social Psychiatry and Psychiatric Epidemiology*, *54*(9), 1023–1044. https://doi.org/10.1007/s00127-019-01729-3

Peel-Wainwright, K., Hartley, S., Boland, A., Rocca, E., Langer, S., & Taylor, P. J. (2021). The interpersonal processes of non-suicidal self-injury: A systematic review and meta-synthesis. *Psychology and Psychotherapy: Theory, Research and Practice*, *94*(4), 1059–1082. https://doi.org/10.1111/papt.12352

Pelizza, L., Pellegrini, C., Quattrone, E., Azzali, S., Landi, G., Pellegrini, P., & Leuci, E. (2020a). Suicidal Ideation in Patients Experiencing a First-episode Psychosis: Findings From the 2-Year Follow-up of the “Parma Early Psychosis” Program. *Suicide and Life-Threatening Behavior*, *50*(4), 838–855. https://doi.org/10.1111/sltb.12625

Pelizza, L., Pellegrini, C., Quattrone, E., Azzali, S., Landi, G., Pellegrini, P., & Leuci, E. (2020b). Suicidal Thinking and Behavior in First Episode Schizophrenia: Findings from the 24-Month Follow-Up of the “Parma Early Psychosis” Program. *Archives of Suicide Research*. https://doi.org/10.1080/13811118.2020.1820411

Pelizza, L., Poletti, M., Azzali, S., Paterlini, F., Garlassi, S., Scazza, I., Rocco Chiri, L., Pupo, S., & Raballo, A. (2019). *Suicidal Thinking and Behavior in Adolescents at Ultra-High Risk of Psychosis: A Two-year Longitudinal Study*. https://doi.org/10.1111/sltb.12549

Pelizza, L., Pompili, M., Azzali, S., Paterlini, F., Garlassi, S., Scazza, I., Chiri, L. R., Poletti, M., Pupo, S., & Raballo, A. (2021). Suicidal thinking and behaviours in First Episode Psychosis: Findings from a 3-year longitudinal study. *Early Intervention in Psychiatry*, *15*(3), 624–633. https://doi.org/10.1111/eip.12994

Peralta, V., García de Jalón, E., Moreno-Izco, L., Peralta, D., Janda, L., Sánchez-Torres, A. M., Cuesta, M. J., Ballesteros, A., Gil-Berrozpe, G., Hernández, R., Lorente, R., Fañanás, L., Papiol, S., Ribeiro, M., Rosero, A., & Zandio, M. (2022). Long-Term Outcomes of First-Admission Psychosis: A Naturalistic 21-Year Follow-Up Study of Symptomatic, Functional and Personal Recovery and Their Baseline Predictors. *Schizophrenia Bulletin*, *48*(3), 631–642. https://doi.org/10.1093/schbul/sbab145

Perkins, D. O., Gu, H., Boteva, K., & Lieberman, J. A. (2005). Relationship Between Duration of Untreated Psychosis and Outcome in First-Episode Schizophrenia: A Critical Review and Meta-Analysis. *American Journal of Psychiatry*, *162*(10), 1785–1804. https://doi.org/10.1176/appi.ajp.162.10.1785

Perlis, M. L., Grandner, M. A., Brown, G. K., Basner, M., Chakravorty, S., Morales, K. H., Gehrman, P. R., Chaudhary, N. S., Thase, M. E., & Dinges, D. F. (2016).

Nocturnal Wakefulness as a Previously Unrecognized Risk Factor for Suicide. *The Journal of Clinical Psychiatry*, *77*(6), e726-33. https://doi.org/10.4088/JCP.15m10131

Perlis, M. L., Grandner, M. A., Chakravorty, S., Bernert, R. A., Brown, G. K., & Thase, M. E. (2016). Suicide and sleep: Is it a bad thing to be awake when reason sleeps? *Sleep Medicine Reviews*, *29*, 101–107. https://doi.org/10.1016/j.smrv.2015.10.003

Perlis, M. L., Posner, D., Riemann, D., Bastien, C. H., Teel, J., & Thase, M. (2022). Insomnia. *The Lancet*, *400*(10357), 1047–1060. https://doi.org/10.1016/S0140-6736(22)00879-0

Petrovsky, N., Ettinger, U., Hill, A., Frenzel, L., Meyhofer, I., Wagner, M., Backhaus, J., & Kumari, V. (2014). Sleep Deprivation Disrupts Prepulse Inhibition and Induces Psychosis-Like Symptoms in Healthy Humans. *Journal of Neuroscience*, *34*(27), 9134–9140. https://doi.org/10.1523/JNEUROSCI.0904-14.2014

Pieters, L. E., Deenik, J., de Vet, S., Delespaul, P., & van Harten, P. N. (2023). Combining actigraphy and experience sampling to assess physical activity and sleep in patients with psychosis: A feasibility study. *Frontiers in Psychiatry*, *14*, 1107812. https://doi.org/10.3389/fpsyt.2023.1107812

Pigeon, W. R., Pinquart, M., & Connor, K. (2012). Meta-Analysis of Sleep Disturbance and Suicidal Thoughts and Behaviors. *Journal of Clinical Psychiatry*, *73*(9), 1160–1167.

Pilgrim, D. (2014). Some implications of critical realism for mental health research. *Social Theory & Health*, *12*(1), 1–21. https://doi.org/10.1057/sth.2013.17

Pinninti, N., Steer, R. A., Rissmiller, D. J., Nelson, S., & Beck, A. T. (2002). Use of the Beck Scale for Suicide Ideation with psychiatric inpatients diagnosed with schizophrenia, schizoaffective, or bipolar disorders. *Behaviour Research and Therapy*, *40*(9), 1071–1079. https://doi.org/10.1016/S0005-7967(02)00002-5

Platz, C., Umbricht, D. S., Cattapan-Ludewig, K., Dvorsky, D., Arbach, D., Brenner, H.-D., & Simon, A. E. (2006). Help-seeking pathways in early psychosis. *Social Psychiatry and Psychiatric Epidemiology*, *41*(12), 967–974. https://doi.org/10.1007/s00127-006-0117-4

Podlogar, M. C., Gutierrez, P. M., & Osman, A. (2023). Optimizing the Beck Scale for Suicide Ideation: An Item Response Theory Approach Among U.S. Military Personnel. *Assessment*, *30*(4), 1321–1333. https://doi.org/10.1177/10731911221092420

Poe, S. L., Brucato, G., Bruno, N., Arndt, L. Y., Ben-David, S., Gill, K. E., Colibazzi, T., Kantrowitz, J. T., Corcoran, C. M., & Girgis, R. R. (2017). Sleep disturbances in individuals at clinical high risk for psychosis. *Psychiatry Research*, *249*, 240–243. https://doi.org/10.1016/j.psychres.2016.12.029

Potter, G. D. M., Skene, D. J., Arendt, J., Cade, J. E., Grant, P. J., & Hardie, L. J. (2016). Circadian Rhythm and Sleep Disruption: Causes, Metabolic Consequences, and Countermeasures. *Endocrine Reviews*, *37*(6), 584–608. https://doi.org/10.1210/er.2016-1083

Prakash, J., Chatterjee, K., Srivastava, K., & Chauhan, V. (2021). First-episode psychosis: How long does it last? A review of evolution and trajectory. *Industrial Psychiatry Journal*, *30*(2), 198. https://doi.org/10.4103/ipj.ipj_38_21

Qin, S., Leong, R. L. F., Ong, J. L., & Chee, M. W. L. (2023). Associations between objectively measured sleep parameters and cognition in healthy older adults: A meta-analysis. *Sleep Medicine Reviews*, *67*, 101734. https://doi.org/10.1016/j.smrv.2022.101734

Ramain, J., Conus, P., & Golay, P. (2021). A narrative review of intervention in first-episode affective psychoses. *Journal of Psychiatric Research*, *143*, 123–137. https://doi.org/10.1016/j.jpsychires.2021.09.023

Reed, G. M., First, M. B., Kogan, C. S., Hyman, S. E., Gureje, O., Gaebel, W., Maj, M., Stein, D. J., Maercker, A., Tyrer, P., Claudino, A., Garralda, E., Salvador-Carulla, L., Ray, R., Saunders, J. B., Dua, T., Poznyak, V., Medina-Mora, M. E., Pike, K. M., … Saxena, S. (2019). Innovations and changes in the ICD-11 classification of mental, behavioural and neurodevelopmental disorders. *World Psychiatry*, *18*(1), 3–19. https://doi.org/10.1002/wps.20611

Reeve, S., Emsley, R., Sheaves, B., & Freeman, D. (2017). Disrupting Sleep: The Effects of Sleep Loss on Psychotic Experiences Tested in an Experimental Study With Mediation Analysis. *Schizophrenia Bulletin*. https://doi.org/10.1093/schbul/sbx103

Reeve, S., Emsley, R., Sheaves, B., & Freeman, D. (2018). Disrupting Sleep: The Effects of Sleep Loss on Psychotic Experiences Tested in an Experimental Study With Mediation Analysis. *Schizophrenia Bulletin*, *44*(3), 662–671. https://doi.org/10.1093/schbul/sbx103

Reeve, S., Sheaves, B., & Freeman, D. (2019). Sleep Disorders in Early Psychosis: Incidence, Severity, and Association with Clinical Symptoms. *Schizophrenia Bulletin*, *45*(2), 287–295. https://doi.org/10.1093/schbul/sby129

Regeer, E. J., Kupka, R. W., Have, M. ten, Vollebergh, W., & Nolen, W. A. (2015). Low self-recognition and awareness of past hypomanic and manic episodes in the general population. *International Journal of Bipolar Disorders*, *3*(1), 22. https://doi.org/10.1186/s40345-015-0039-8

Rehman, A., Waite, F., Sheaves, B., Biello, S., Freeman, D., & Gumley, A. (2017). Clinician perceptions of sleep problems, and their treatment, in patients with non-affective psychosis. *Psychosis*, *9*(2), 129–139. https://doi.org/10.1080/17522439.2016.1206955

Riemann, D., Baglioni, C., Bassetti, C., Bjorvatn, B., Dolenc Groselj, L., Ellis, J. G., Espie, C. A., Garcia-Borreguero, D., Gjerstad, M., Gonçalves, M., Hertenstein,

E., Jansson-Fröjmark, M., Jennum, P. J., Leger, D., Nissen, C., Parrino, L., Paunio, T., Pevernagie, D., Verbraecken, J., … Spiegelhalder, K. (2017). European guideline for the diagnosis and treatment of insomnia. *Journal of Sleep Research*, *26*(6), 675–700. https://doi.org/10.1111/jsr.12594

Robinson, J., Harris, M. G., Harrigan, S. M., Henry, L. P., Farrelly, S., Prosser, A., Schwartz, O., Jackson, H., & McGorry, P. D. (2010). Suicide attempt in first-episode psychosis: A 7.4year follow-up study. *Schizophrenia Research*, *116*(1), 1–8. https://doi.org/10.1016/j.schres.2009.10.009

Rogers, E., Gresswell, M., & Durrant, S. (2023). The relationship between sleep and suicidality in schizophrenia spectrum and other psychotic disorders: A systematic review. *Schizophrenia Research*, *261*, 291–303. https://doi.org/10.1016/j.schres.2023.10.010

Rogers, M. L., Gallyer, A. J., & Joiner, T. E. (2021). The relationship between suicide-specific rumination and suicidal intent above and beyond suicidal ideation and other suicide risk factors: A multilevel modeling approach. *Journal of Psychiatric Research*, *137*, 506–513. https://doi.org/10.1016/j.jpsychires.2021.03.031

Rogers, M. L., & Joiner, T. E. (2017). Rumination, Suicidal Ideation, and Suicide Attempts: A Meta-Analytic Review. *Review of General Psychology*, *21*(2), 132–142. https://doi.org/10.1037/gpr0000101

Romier, A., Maruani, J., Lopez-Castroman, J., Palagini, L., Serafini, G., Lejoyeux, M., d'Ortho, M.-P., & Geoffroy, P. A. (2023). Objective sleep markers of suicidal behaviors in patients with psychiatric disorders: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *68*, 101760. https://doi.org/10.1016/j.smrv.2023.101760

Rudd, M. D. (2006). Fluid Vulnerability Theory: A Cognitive Approach to Understanding the Process of Acute and Chronic Suicide Risk. In *Cognition and suicide: Theory, research, and therapy.* (pp. 355–368). American Psychological Association. https://doi.org/10.1037/11377-016

Ruhrmann, S., Schultze-Lutter, F., Salokangas, R. K. R., Heinimaa, M., Linszen, D., Dingemans, P., Birchwood, M., Patterson, P., Juckel, G., Heinz, A., Morrison, A., Lewis, S., Graf von Reventlow, H., & Klosterkötter, J. (2010). Prediction of Psychosis in Adolescents and Young Adults at High Risk. *Archives of General Psychiatry*, *67*(3), 241. https://doi.org/10.1001/archgenpsychiatry.2009.206

Sabouri, M., Mirhashemi, M., Shafiei, M., Mahmoodkhani, M., & Tehrani, D. S. (2023). Mild traumatic brain injury: Insomnia or sleepiness. *Interdisciplinary Neurosurgery*, *34*, 101814. https://doi.org/10.1016/j.inat.2023.101814

Sadeh, A. (2011). The role and validity of actigraphy in sleep medicine: An update. *Sleep Medicine Reviews*, *15*(4), 259–267. https://doi.org/10.1016/j.smrv.2010.10.001

Sansone, R. A., & Sansone, L. A. (2012). Rumination: relationships with physical health. *Innovations in Clinical Neuroscience*, *9*(2), 29–34.

Saunders, B., Kitzinger, J., & Kitzinger, C. (2015). Anonymising interview data: challenges and compromise in practice. *Qualitative Research*, *15*(5), 616–632. https://doi.org/10.1177/1468794114550439

Savill, M., D'Ambrosio, J., Cannon, T. D., & Loewy, R. L. (2018). Psychosis risk screening in different populations using the Prodromal Questionnaire: A systematic review. In *Early Intervention in Psychiatry* (Vol. 12, Issue 1, pp. 3–14). Blackwell Publishing. https://doi.org/10.1111/eip.12446

Schoonenboom, J., & Johnson, R. B. (2017). How to Construct a Mixed Methods Research Design. *Kolner Zeitschrift Fur Soziologie Und Sozialpsychologie*, *69*(Suppl 2), 107–131. https://doi.org/10.1007/s11577-017-0454-1

Scott, J., Kallestad, H., Vedaa, O., Sivertsen, B., & Etain, B. (2021). Sleep disturbances and first onset of major mental disorders in adolescence and early adulthood: A systematic review and meta-analysis. In *Sleep Medicine Reviews* (Vol. 57). W.B. Saunders Ltd. https://doi.org/10.1016/j.smrv.2021.101429

Selby, E. A., Kranzler, A., Fehling, K. B., & Panza, E. (2015). Nonsuicidal self-injury disorder: The path to diagnostic validity and final obstacles. *Clinical Psychology Review*, *38*, 79–91. https://doi.org/10.1016/j.cpr.2015.03.003

Seow, L. S. E., Abdin, E., Chang, S., Chong, S. A., & Subramaniam, M. (2018). Identifying the best sleep measure to screen clinical insomnia in a psychiatric population. *Sleep Medicine*, *41*, 86–93. https://doi.org/10.1016/j.sleep.2017.09.015

Setién-Suero, E., Suárez-Pinilla, P., Ferro, A., Tabarés-Seisdedos, R., Crespo-Facorro, B., & Ayesa-Arriola, R. (2020). Childhood trauma and substance use underlying psychosis: a systematic review. *European Journal of Psychotraumatology*, *11*(1). https://doi.org/10.1080/20008198.2020.1748342

Sharma, A., Sethi, G., Tambuwala, M. M., Aljabali, A. A. A., Chellappan, D. K., Dua, K., & Goyal, R. (2020). Circadian Rhythm Disruption and Alzheimer's Disease: The Dynamics of a Vicious Cycle. *Current Neuropharmacology*, *19*(2), 248–264. https://doi.org/10.2174/1570159X18666200429013041

Sheaves, B., Freeman, D., Isham, L., McInerney, J., Nickless, A., Yu, L.-M., Rek, S., Bradley, J., Reeve, S., Attard, C., Espie, C. A., Foster, R., Wirz-Justice, A., Chadwick, E., & Barrera, A. (2018). Stabilising sleep for patients admitted at acute crisis to a psychiatric hospital (OWLS): an assessor-blind pilot randomised controlled trial. *Psychological Medicine*, *48*(10), 1694–1704. https://doi.org/10.1017/S0033291717003191

Sheaves, B., Holmes, E. A., Rek, S., Taylor, K. M., Nickless, A., Waite, F., Germain, A., Espie, C. A., Harrison, P. J., Foster, R., & Freeman, D. (2019). Cognitive Behavioural Therapy for Nightmares for Patients with Persecutory Delusions (Nites): An Assessor-Blind, Pilot Randomized Controlled Trial. *The Canadian Journal of Psychiatry*, 070674371984742. https://doi.org/10.1177/0706743719847422

Shepard, C. A., Rufino, K. A., Lee, J., Tran, T., Paddock, K., Wu, C., Oldham, J. M., Mathew, S. J., & Patriquin, M. A. (2022). *Nighttime Sleep Quality and Daytime Sleepiness Predicts Suicide Risk in Adults Admitted to an Inpatient Psychiatric Hospital*. https://doi.org/10.1080/15402002.2022.2050724

Short, N. A., Ennis, C. R., Oglesby, M. E., Boffa, J. W., Joiner, T. E., & Schmidt, N. B. (2015). The mediating role of sleep disturbances in the relationship between posttraumatic stress disorder and self-injurious behavior. *Journal of Anxiety Disorders*, *35*, 68–74. https://doi.org/10.1016/j.janxdis.2015.09.004

Siddaway, A. P., Taylor, P. J., Wood, A. M., & Schulz, J. (2015). A meta-analysis of perceptions of defeat and entrapment in depression, anxiety problems, posttraumatic stress disorder, and suicidality. *Journal of Affective Disorders*, *184*, 149–159. https://doi.org/10.1016/j.jad.2015.05.046

Simmons, Z., Erickson, L. D., Hedges, D., & Kay, D. B. (2020). Insomnia Is Associated With Frequency of Suicidal Ideation Independent of Depression: A Replication and Extension of Findings From the National Health and Nutrition Examination Survey. *Frontiers in Psychiatry*, *11*. https://doi.org/10.3389/fpsyt.2020.561564

Simon, G. E., Coleman, K. J., Yarborough, B. J. H., Operskalski, B., Stewart, C., Hunkeler, E. M., Lynch, F., Carrell, D., & Beck, A. (2017). First Presentation With Psychotic Symptoms in a Population-Based Sample. *Psychiatric Services (Washington, D.C.)*, *68*(5), 456–461. https://doi.org/10.1176/appi.ps.201600257

Sinead Ryan, G. (2019). Erratum: Postpositivist critical realism: philosophy, methodology and method for nursing research (Nurse researcher (2019)). In *Nurse researcher* (Vol. 27, Issue 3, pp. 20–26). NLM (Medline). https://doi.org/10.7748/nr.2019.e1598

Sitko, K., Bewick, B. M., Owens, D., & Masterson, C. (2020). Meta-analysis and Meta-regression of Cognitive Behavioral Therapy for Psychosis (CBTp) Across Time: The Effectiveness of CBTp has Improved for Delusions. *Schizophrenia Bulletin Open*, *1*(1). https://doi.org/10.1093/schizbullopen/sgaa023

Smith, J. M., Alloy, L. B., & Abramson, L. Y. (2006). Cognitive Vulnerability to Depression, Rumination, Hopelessness, and Suicidal Ideation: Multiple Pathways to Self-Injurious Thinking. *Suicide and Life-Threatening Behavior*, *36*(4), 443–454. https://doi.org/10.1521/suli.2006.36.4.443

Staines, L., Healy, C., Coughlan, H., Clarke, M., Kelleher, I., Cotter, D., & Cannon, M. (2022). Psychotic experiences in the general population, a review; definition, risk factors, outcomes and interventions. *Psychological Medicine*, *52*(15), 1–12. https://doi.org/10.1017/S0033291722002550

Stanton, K. J., Denietolis, B., Goodwin, B. J., & Dvir, Y. (2020). Childhood Trauma and Psychosis. *Child and Adolescent Psychiatric Clinics of North America*, *29*(1), 115–129. https://doi.org/10.1016/j.chc.2019.08.004

Steger, M. F. (2022). Meaning in life is a fundamental protective factor in the context of psychopathology. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *21*(3), 389–390. https://doi.org/10.1002/wps.20916

Stores, R., Linceviciute, S., Pilkington, K., & Ridge, D. (2023). Sleep disturbance, mental health, wellbeing and educational impact in UK university students: a mixed methods study. *Journal of Further and Higher Education*, *47*(8), 995–1008. https://doi.org/10.1080/0309877X.2023.2209777

Streatfeild, J., Smith, J., Mansfield, D., Pezzullo, L., & Hillman, D. (2021). The social and economic cost of sleep disorders. *Sleep*, *44*(11). https://doi.org/10.1093/sleep/zsab132

Sturgiss, E. A., & Clark, A. M. (2020). Using critical realism in primary care research: an overview of methods. *Family Practice*, *37*(1), 143–145. https://doi.org/10.1093/fampra/cmz084

Subramaniam, M., Abdin, E., Shahwan, S., Satghare, P., Vaingankar, J. A., Rama Sendren, J., Picco, L., Chua, B. Y., Ng, B. T., Chong, S. A., & Verma, S. (2018). Prevalence, correlates and outcomes of insomnia in patients with first episode psychosis from a tertiary psychiatric institution in Singapore. *General Hospital Psychiatry*, *51*, 15–21. https://doi.org/10.1016/j.genhosppsych.2017.11.009

Suetani, S., & Wang, W. (2023). First episode psychosis and beyond: much progress made but much more needed. *BMC Psychiatry*, *23*(1), 143. https://doi.org/10.1186/s12888-023-04639-6

Supartini, A., Honda, T., Basri, N. A., Haeuchi, Y., Chen, S., Ichimiya, A., & Kumagai, S. (2016). The Impact of Sleep Timing, Sleep Duration, and Sleep Quality on Depressive Symptoms and Suicidal Ideation amongst Japanese Freshmen: The EQUSITE Study. *Sleep Disorders*, *2016*, 1–10. https://doi.org/10.1155/2016/8737654

Szasz, T. S. (1960). The myth of mental illness. *American Psychologist*, *15*(2), 113–118. https://doi.org/10.1037/h0046535

Sznitman, S. R., Shochat, T., van Rijswijk, L., Greene, T., & Cousijn, J. (2023). Cannabis and Alcohol Use and Their Associations with Sleep: A Daily Diary Investigation of Single-Use and Co-Use in College Students. *Cannabis and Cannabinoid Research*, *8*(3), 527–536. https://doi.org/10.1089/can.2021.0106

Tahmasian, M., Khazaie, H., Golshani, S., & Avis, K. T. (2013). Clinical Application of Actigraphy in Psychotic Disorders: A Systematic Review. *Current Psychiatry Reports*, *15*(6), 359. https://doi.org/10.1007/s11920-013-0359-2

Tariq, S., & Woodman, J. (2013). Using mixed methods in health research. *JRSM Short Reports*, *4*(6), 204253331347919. https://doi.org/10.1177/2042533313479197

Taylor, B. J., & Hasler, B. P. (2018). Chronotype and Mental Health: Recent Advances. *Current Psychiatry Reports*, *20*(8), 59. https://doi.org/10.1007/s11920-018-0925-8

Taylor, P. J., Gooding, P., Wood, A. M., & Tarrier, N. (2011). The role of defeat and entrapment in depression, anxiety, and suicide. *Psychological Bulletin*, *137*(3), 391–420. https://doi.org/10.1037/a0022935

Taylor, P. J., Hutton, P., & Wood, L. (2015). Are people at risk of psychosis also at risk of suicide and self-harm? A systematic review and meta-analysis. *Psychological Medicine*, *45*, 911–926.

Ter Heege, F. M., Mijnster, T., van Veen, M. M., Pijnenborg, G. H. M., de Jong, P. J., Boersma, G. J., & Lancel, M. (2020). The clinical relevance of early identification and treatment of sleep disorders in mental health care: protocol of a randomized control trial. *BMC Psychiatry*, *20*(1), 331. https://doi.org/10.1186/s12888-020-02737-3

Thakrar, V., Bardhan, M., & Chakraborty, N. (2023). Early intervention in psychosis: An analysis of the characteristics and service needs of patients over the age of 35. *Early Intervention in Psychiatry*, *17*(2), 177–182. https://doi.org/10.1111/eip.13318

Thomas, N. (2015). What's really wrong with cognitive behavioral therapy for psychosis? *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00323

Topor, A., Andersson, G., Denhov, A., Holmqvist, S., Mattsson, M., Stefansson, C.-G., & Bülow, P. (2014). Psychosis and poverty: Coping with poverty and severe mental illness in everyday life. *Psychosis*, *6*(2), 117–127. https://doi.org/10.1080/17522439.2013.790070

Torrens Darder, I., Argüelles-Vázquez, R., Lorente-Montalvo, P., Torrens-Darder, M. del M., & Esteva, M. (2021). Primary care is the frontline for help-seeking insomnia patients. *European Journal of General Practice*, *27*(1), 286–293. https://doi.org/10.1080/13814788.2021.1960308

Tracy, S. J. (2010). Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

Trauelsen, A. M., Bendall, S., Jansen, J. E., Nielsen, H.-G. L., Pedersen, M. B., Trier, C. H., Haahr, U. H., & Simonsen, E. (2015). Childhood adversity specificity and dose-response effect in non-affective first-episode psychosis. *Schizophrenia Research*, *165*(1), 52–59. https://doi.org/10.1016/j.schres.2015.03.014

Tschentscher, N., Woll, C. F. J., Tafelmaier, J. C., Kriesche, D., Bucher, J. C., Engel, R. R., & Karch, S. (2023). Neurocognitive Deficits in First-Episode and Chronic Psychotic Disorders: A Systematic Review from 2009 to 2022. *Brain Sciences*, *13*(2). https://doi.org/10.3390/brainsci13020299

Tubbs, A. S., Fernandez, F.-X., Grandner, M. A., Perlis, M. L., & Klerman, E. B. (2022). The Mind After Midnight: Nocturnal Wakefulness, Behavioral Dysregulation, and Psychopathology. *Frontiers in Network Physiology*, *1*. https://doi.org/10.3389/fnetp.2021.830338

Tubbs, A. S., Fernandez, F.-X., Perlis, M. L., Hale, L., Branas, C. C., Barrett, M., Chakravorty, S., Khader, W., & Grandner, M. A. (2021). Suicidal ideation is associated with nighttime wakefulness in a community sample. *Sleep*, *44*(1). https://doi.org/10.1093/sleep/zsaa128

Turecki, G., Brent, D. A., Gunnell, D., O'Connor, R. C., Oquendo, M. A., Pirkis, J., & Stanley, B. H. (2019). Suicide and suicide risk. *Nature Reviews Disease Primers*, *5*(1), 74. https://doi.org/10.1038/s41572-019-0121-0

Unterrassner, L., Wyss, T. A., Wotruba, D., Ajdacic-Gross, V., Haker, H., & Rössler, W. (2017). Psychotic-Like Experiences at the Healthy End of the Psychosis Continuum. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.00775

Vaillancourt, R., Gallagher, S., Cameron, J. D., & Dhalla, R. (2022). Cannabis use in patients with insomnia and sleep disorders: Retrospective chart review. *Canadian Pharmacists Journal : CPJ = Revue Des Pharmaciens Du Canada : RPC*, *155*(3), 175–180. https://doi.org/10.1177/17151635221089617

Van Eck, R. M., Burger, T. J., Vellinga, A., Schirmbeck, F., & de Haan, L. (2018). The Relationship Between Clinical and Personal Recovery in Patients With Schizophrenia Spectrum Disorders: A Systematic Review and Meta-analysis. *Schizophrenia Bulletin*, *44*(3), 631–642. https://doi.org/10.1093/schbul/sbx088

van Heeringen, K. (2012). *Stress–Diathesis Model of Suicidal Behavior*.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, *117*(2), 575–600. https://doi.org/10.1037/a0018697

van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychological Medicine*, *39*(2), 179–195. https://doi.org/10.1017/S0033291708003814

van Spijker, B. A. J., Batterham, P. J., Calear, A. L., Farrer, L., Christensen, H., Reynolds, J., & Kerkhof, A. J. F. M. (2014). The Suicidal Ideation Attributes Scale (SIDAS): Community-Based Validation Study of a New Scale for the Measurement of Suicidal Ideation. *Suicide and Life-Threatening Behavior*, *44*(4), 408–419. https://doi.org/10.1111/sltb.12084

Vandekerckhove, M., & Wang, Y. L. (2018). Emotion, emotion regulation and sleep: An intimate relationship. In *AIMS Neuroscience* (Vol. 5, Issue 1, pp. 1–17). AIMS Press. https://doi.org/10.3934/Neuroscience.2018.1.1

Varese, F., Barkus, E., & Bentall, R. P. (2012). Dissociation mediates the relationship between childhood trauma and hallucination-proneness. *Psychological Medicine*, *42*(5), 1025–1036. https://doi.org/10.1017/S0033291711001826

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., Read, J., van Os, J., & Bentall, R. P. (2012). Childhood Adversities Increase the Risk of

Psychosis: A Meta-analysis of Patient-Control, Prospective- and Cross-sectional Cohort Studies. *Schizophrenia Bulletin*, *38*(4), 661–671. https://doi.org/10.1093/schbul/sbs050

Varghese, D., Scott, J., Welham, J., Bor, W., Najman, J., O'Callaghan, M., Williams, G., & McGrath, J. (2011). Psychotic-Like Experiences in Major Depression and Anxiety Disorders: A Population-Based Survey in Young Adults. *Schizophrenia Bulletin*, *37*(2), 389–393. https://doi.org/10.1093/schbul/sbp083

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18*(1), 148. https://doi.org/10.1186/s12874-018-0594-7

Ventriglio, A., Gentile, A., Bonfitto, I., Stella, E., Mari, M., Steardo, L., & Bellomo, A. (2016). Suicide in the early stage of schizophrenia. In *Frontiers in Psychiatry* (Vol. 7, Issue JUN). Frontiers Research Foundation. https://doi.org/10.3389/fpsyt.2016.00116

Verdolini, N., Borràs, R., Sparacino, G., Garriga, M., Sagué-Vilavella, M., Madero, S., Palacios-Garrán, R., Serra, M., Forte, M. F., Salagre, E., Aedo, A., Salgado-Pineda, P., Salvatierra, I. M., Sánchez Gistau, V., Pomarol-Clotet, E., Ramos-Quiroga, J. A., Carvalho, A. F., Garcia-Rizo, C., Undurraga, J., … Amoretti, S. (2022). Prodromal phase: Differences in prodromal symptoms, risk factors and markers of vulnerability in first episode mania versus first episode psychosis with onset in late adolescence or adulthood. *Acta Psychiatrica Scandinavica*, *146*(1), 36–50. https://doi.org/10.1111/acps.13415

Victor, S. E., & Klonsky, E. D. (2014a). Correlates of suicide attempts among self-injurers: A meta-analysis. *Clinical Psychology Review*, *34*(4), 282–297. https://doi.org/10.1016/j.cpr.2014.03.005

Victor, S. E., & Klonsky, E. D. (2014b). Correlates of suicide attempts among self-injurers: A meta-analysis. *Clinical Psychology Review*, *34*(4), 282–297. https://doi.org/10.1016/j.cpr.2014.03.005

Vila-Badia, R., Kaplan, M., Butjosa, A., Del Cacho, N., Serra-Arumí, C., Colomer-Salvans, A., Esteban-Sanjusto, M., Iglesias-González, M., Cuñat, O., Del Hoyo-Buxo, B., Profep, G., & Usall, J. (2022). Suicidal behaviour in first-episode psychosis: The relevance of age, perceived stress and depressive symptoms. *Clinical Psychology & Psychotherapy*, *29*(4), 1364–1373. https://doi.org/10.1002/cpp.2716

Wainberg, M., Jones, S. E., Beaupre, L. M., Hill, S. L., Felsky, D., Rivas, M. A., Lim, A. S. P., Ollila, H. M., & Tripathy, S. J. (2021). Association of accelerometer-derived sleep measures with lifetime psychiatric diagnoses: A cross-sectional study of 89,205 participants from the UK Biobank. *PLOS Medicine*, *18*(10), e1003782. https://doi.org/10.1371/journal.pmed.1003782

Waite, F., Bradley, J., Chadwick, E., Reeve, S., Bird, J. C., & Freeman, D. (2018). The experience of sleep problems and their treatment in young people at ultra-high risk of psychosis: A thematic analysis. *Frontiers in Psychiatry*, *9*(AUG). https://doi.org/10.3389/fpsyt.2018.00375

Waite, F., Černis, E., Kabir, T., Iredale, E., Johns, L., Maughan, D., Diamond, R., Seddon, R., Williams, N., Yu, L.-M., & Freeman, D. (2023). A targeted psychological treatment for sleep problems in young people at ultra-high risk of psychosis in England (SleepWell): a parallel group, single-blind, randomised controlled feasibility trial. *The Lancet Psychiatry*, *10*(9), 706–718. https://doi.org/10.1016/S2215-0366(23)00203-1

Waite, F., Evans, N., Myers, E., Startup, H., Lister, R., Harvey, A. G., & Freeman, D. (2016). The patient experience of sleep problems and their treatment in the context of current delusions and hallucinations. *Psychology and Psychotherapy: Theory, Research and Practice*, *89*, 181–193. https://doi.org/10.1111/papt.12073

Waite, F., Myers, E., Harvey, A. G., Espie, C. A., Startup, H., Sheaves, B., & Freeman, D. (2016). Treating Sleep Problems in Patients with Schizophrenia. *Behavioural and Cognitive Psychotherapy*, *44*(3), 273–287. https://doi.org/10.1017/S1352465815000430

Waite, F., Sheaves, B., Isham, L., Reeve, S., & Freeman, D. (2020a). Sleep and schizophrenia: From epiphenomenon to treatable causal target. *Schizophrenia Research*, *221*, 44–56. https://doi.org/10.1016/j.schres.2019.11.014

Waite, F., Sheaves, B., Isham, L., Reeve, S., & Freeman, D. (2020b). Sleep and schizophrenia: From epiphenomenon to treatable causal target. *Schizophrenia Research*, *221*, 44–56. https://doi.org/10.1016/j.schres.2019.11.014

Wassing, R., Benjamins, J. S., Talamini, L. M., Schalkwijk, F., & Van Someren, E. J. W. (2019). Overnight worsening of emotional distress indicates maladaptive sleep in insomnia. *Sleep*, *42*(4). https://doi.org/10.1093/sleep/zsy268

Waterhouse, J., Fukuda, Y., & Morita, T. (2012). Daily rhythms of the sleep-wake cycle. *Journal of Physiological Anthropology*, *31*(1), 5. https://doi.org/10.1186/1880-6805-31-5

Waters, F., Chiu, V., Atkinson, A., & Blom, J. D. (2018). Severe Sleep Deprivation Causes Hallucinations and a Gradual Progression Toward Psychosis With Increasing Time Awake. *Frontiers in Psychiatry*, *9*. https://doi.org/10.3389/fpsyt.2018.00303

Waters, F., Chiu, V. W., Janca, A., Atkinson, A., & Ree, M. (2015). Preferences for different insomnia treatment options in people with schizophrenia and related psychoses: a qualitative study. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00990

Watkins, E. R., & Roberts, H. (2020). Reflecting on rumination: Consequences, causes, mechanisms and treatment of rumination. In *Behaviour Research and Therapy* (Vol. 127). Elsevier Ltd. https://doi.org/10.1016/j.brat.2020.103573

Watson, P., Zhang, J.-P., Rizvi, A., Tamaiev, J., Birnbaum, M. L., & Kane, J. (2018). A meta-analysis of factors associated with quality of life in first episode psychosis. *Schizophrenia Research*, *202*, 26–36. https://doi.org/10.1016/j.schres.2018.07.013

Weibell, M. A., Hegelstad, W. ten V., Auestad, B., Bramness, J., Evensen, J., Haahr, U., Joa, I., Johannessen, J. O., Larsen, T. K., Melle, I., Opjordsmoen, S., Rund, B. R., Simonsen, E., Vaglum, P., McGlashan, T., McGorry, P., & Friis, S. (2017). The Effect of Substance Use on 10-Year Outcome in First-Episode Psychosis. *Schizophrenia Bulletin*, *43*(4), 843–851. https://doi.org/10.1093/schbul/sbw179

Weissinger, G. M., & Ulrich, C. M. (2019). Informed consent and ethical reporting of research in clinical trials involving participants with psychotic disorders. *Contemporary Clinical Trials*, *84*, 105795. https://doi.org/10.1016/j.cct.2019.06.009

Wenzel, A., & Beck, A. T. (2008). A cognitive model of suicidal behavior: Theory and treatment. *Applied and Preventive Psychology*, *12*(4), 189–201. https://doi.org/10.1016/j.appsy.2008.05.001

White, N. M., Packard, M. G., & McDonald, R. J. (2013). Dissociation of memory systems: The story unfolds. *Behavioral Neuroscience*, *127*(6), 813–834. https://doi.org/10.1037/a0034859

Wickwire, E. M., Albrecht, J. S., Capaldi, V. F., Jain, S. O., Gardner, R. C., Werner, J. K., Mukherjee, P., McKeon, A. B., Smith, M. T., Giacino, J. T., Nelson, L. D., Williams, S. G., Collen, J., Sun, X., Schnyer, D. M., Markowitz, A. J., Manley, G. T., Krystal, A. D., Diaz-Arrastia, R., … Zafonte, R. (2022). Trajectories of Insomnia in Adults After Traumatic Brain Injury. *JAMA Network Open*, *5*(1), e2145310. https://doi.org/10.1001/jamanetworkopen.2021.45310

Winiger, E. A., Hitchcock, L. N., Bryan, A. D., & Cinnamon Bidwell, L. (2021). Cannabis use and sleep: Expectations, outcomes, and the role of age. *Addictive Behaviors*, *112*, 106642. https://doi.org/10.1016/j.addbeh.2020.106642

Wisdom, J. P., Cavaleri, M. A., Onwuegbuzie, A. J., & Green, C. A. (2012). Methodological Reporting in Qualitative, Quantitative, and Mixed Methods Health Services Research Articles. *Health Services Research*, *47*(2), 721–745. https://doi.org/10.1111/j.1475-6773.2011.01344.x

Wood, L., Williams, C., Billings, J., & Johnson, S. (2019a). Psychologists' Perspectives on the implementation of Psychological Therapy for Psychosis in the Acute Psychiatric Inpatient Setting. *Qualitative Health Research*, *29*(14), 2048–2056. https://doi.org/10.1177/1049732319843499

Wood, L., Williams, C., Billings, J., & Johnson, S. (2019b). The role of psychology in a multidisciplinary psychiatric inpatient setting: Perspective from the multidisciplinary team. *Psychology and Psychotherapy: Theory, Research and Practice*, *92*(4), 554–564. https://doi.org/10.1111/papt.12199

Woosley, J. A., Lichstein, K. L., Taylor, D. J., Riedel, B. W., & Bush, A. J. (2014). Hopelessness mediates the relation between insomnia and suicidal ideation. *Journal of Clinical Sleep Medicine : JCSM : Official Publication of the American Academy of Sleep Medicine*, *10*(11), 1223–1230. https://doi.org/10.5664/jcsm.4208

World Health Organization. (2021). *International Classification of Diseases* (11th ed.).

Worley, S. L. (2018). The Extraordinary Importance of Sleep: The Detrimental Effects of Inadequate Sleep on Health and Public Safety Drive an Explosion of Sleep Research. *P & T : A Peer-Reviewed Journal for Formulary Management*, *43*(12), 758–763.

Woznica, A. A., Carney, C. E., Kuo, J. R., & Moss, T. G. (2015). The insomnia and suicide link: Toward an enhanced understanding of this relationship. In *Sleep Medicine Reviews* (Vol. 22, pp. 37–46). W.B. Saunders Ltd. https://doi.org/10.1016/j.smrv.2014.10.004

Wulff, K., Dijk, D.-J., Middleton, B., Foster, R. G., & Joyce, E. M. (2012). Sleep and circadian rhythm disruption in schizophrenia. *British Journal of Psychiatry*, *200*(4), 308–316. https://doi.org/10.1192/bjp.bp.111.096321

Yalvaç, E. B. K., & Gaynor, K. (2021). Emotional dysregulation in adults: The influence of rumination and negative secondary appraisals of emotion. *Journal of Affective Disorders*, *282*, 656–661. https://doi.org/10.1016/j.jad.2020.12.194

Youn, S., Guadagno, B. L., Byrne, L. K., Watson, A. E., Murrihy, S., & Cotton, S. M. (2024). Systematic Review and Meta-analysis: Rates of Violence During First-Episode Psychosis (FEP). *Schizophrenia Bulletin*. https://doi.org/10.1093/schbul/sbae010

Yung, A. R., & Lin, A. (2016). Psychotic experiences and their significance. *World Psychiatry*, *15*(2), 130–131. https://doi.org/10.1002/wps.20328

Yung, A. R., & Mcgorry, P. D. (1996). *The Prodromal Phase of First-Episode Psychosis: Past and Current Conceptualizations 353* (Vol. 22, Issue 2). https://academic.oup.com/schizophreniabulletin/article/22/2/353/1928366

Yung, A. R., Yuen, P., Mcgorry, P. D., Phillips, L. J., Kelly, D., Dell'olio, M., Francey, S. M., Cosgrave, E. M., Killackey, E., Stanford, C., Godfrey, K., & Buckby, J. (2005). Mapping the onset of psychosis: the Comprehensive Assessment of At-Risk Mental States. In *Australian and New Zealand Journal of Psychiatry* (Vol. 39).

Zajenkowski, M., Jankowski, K. S., & Stolarski, M. (2019). Why do evening people consider themselves more intelligent than morning individuals? The role of big five, narcissism, and objective cognitive ability. *Chronobiology International*, *36*(12), 1741–1751. https://doi.org/10.1080/07420528.2019.1680559

Zaks, N., Velikonja, T., Parvaz, M. A., Zinberg, J., Done, M., Mathalon, D. H., Addington, J., Cadenhead, K., Cannon, T., Cornblatt, B., McGlashan, T.,

Perkins, D., Stone, W. S., Tsuang, M., Walker, E., Woods, S. W., Keshavan, M. S., Buysse, D. J., Velthorst, E., & Bearden, C. E. (2022). Sleep Disturbance in Individuals at Clinical High Risk for Psychosis. *Schizophrenia Bulletin*, *48*(1), 111–121. https://doi.org/10.1093/schbul/sbab104

Zanini, M., Castro, J., Coelho, F. M., Bittencourt, L., Bressan, R. A., Tufik, S., & Brietzke, E. (2013). Do sleep abnormalities and misaligned sleep/circadian rhythm patterns represent early clinical characteristics for developing psychosis in high risk populations? In *Neuroscience and Biobehavioral Reviews* (Vol. 37, Issue 10, pp. 2631–2637). https://doi.org/10.1016/j.neubiorev.2013.08.012

Zareian, B., & Klonsky, E. D. (2020). Connectedness and suicide. In *Alternatives to Suicide* (pp. 135–158). Elsevier. https://doi.org/10.1016/B978-0-12-814297-4.00007-8

Zee, P. C., Bertisch, S. M., Morin, C. M., Pelayo, R., Watson, N. F., Winkelman, J. W., & Krystal, A. D. (2023). Long-Term Use of Insomnia Medications: An Appraisal of the Current Clinical and Scientific Evidence. *Journal of Clinical Medicine*, *12*(4). https://doi.org/10.3390/jcm12041629

Zheng, X., Chen, Y., & Zhu, J. (2023). Sleep problems mediate the influence of childhood emotional maltreatment on adolescent non-suicidal self-injury: The moderating effect of rumination. *Child Abuse & Neglect*, *140*, 106161. https://doi.org/10.1016/j.chiabu.2023.106161

Zimmerman, M. E., Benasi, G., Hale, C., Yeung, L.-K., Cochran, J., Brickman, A. M., & St-Onge, M.-P. (2024). The effects of insufficient sleep and adequate sleep on cognitive function in healthy adults. *Sleep Health*, *10*(2), 229–236. https://doi.org/10.1016/j.sleh.2023.11.011

Zubin, J., & Spring, B. (1977). Vulnerability: A new view of schizophrenia. *Journal of Abnormal Psychology*, *86*(2), 103–126. https://doi.org/10.1037/0021-843X.86.2.103

Zutlevics, T. (2016). Could providing financial incentives to research participants be ultimately self-defeating? *Research Ethics*, *12*(3), 137–148. https://doi.org/10.1177/1747016115626756

Appendix A: IRAS Ethical Approval Confirmation Letter

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS
Health Research Authority

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01 June 2023

Dear Dr Tickle

HRA and Health and Care Research Wales (HCRW) Approval Letter

Study title:	**Sleep disturbance, unusual experiences, and suicidal ideation in First Episode Psychosis**
IRAS project ID:	**323182**
Protocol number:	**23008**
REC reference:	**23/WM/0103**
Sponsor	**University of Nottingham**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **323182**. Please quote this on all correspondence.

Yours sincerely,
Rekha Keshvara

Approvals Manager

Email: approvals@hra.nhs.uk

Copy to: *Ms Angela Shone*

Appendix B: Participant Information Sheet

Participant Information Sheet (PIS)
(Final version 2.0 : 25/0523)

IRAS Project ID: 323182

Title of Study: Sleep disturbance, unusual experiences, and suicidal ideation in First Episode Pscyhosis

Name of Primary Researcher: Eva Rogers, Trainee Clinical Psychologist
Local Researcher(s): Dr Mark Gresswell, Programme Director – Trent Doctorate in Clinical Psychology; Dr Simon Durrant, Associate Professor and Director of the University of Lincoln Sleep and Cognition Laboratory

We would like to invite you to take part in our research study. Before you decide, we would like you to understand why the research is being done and what it would involve for you. Information about the study is in this information sheet. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear. You can contact us using the information at the bottom.

Why is the study being done?

My name is Eva and I am a Trainee Clinical Psychologist at the University of Nottingham and the NHS. As a trainee clinical psychologist, I am learning to help people who may have problems with their mental health. Mental health is how we think and feel about things – how we think and feel about things can effect what we do, or how we behave. Part of learning to be a clinical psychologist involves doing a research study.

Lots of people who have problems with their mental health notice changes in their sleep (sometimes they sleep too much, sleep too little or wake up a lot in the night). Sometimes sleep problems can affect how happy and able we are to go about our day, and they can also affect how much time we spend thinking about difficult things that might have happened to us. I am interested in looking at how sleep problems might effect unusual experiences (these can be called psychotic symptoms), and suicidal thoughts.

Why have I been invited?

You are being invited to take part because you are currently receiving support from the Early Intervention in Psychosis Team. You have been asked to take part in this study because you might be having some unusual experiences and your care co-ordinator thought you might like to participate. We are hoping 22 people like you will take part in our study.

Do I have to take part?
No. It is up to you to decide whether or not to take part. You can have 24 hours to think about it and ask as many questions as you would like. You can say yes or no. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to stop participating at any time and without giving a reason. This would not effect the care you receive from the Early Intervention Psychosis team.
What will happen to me if I take part?
If you say yes, you do want to take part in the study, this will happen:

You will meet with the researcher to complete a consent form. This is a written way of saying you understand the study and want to take part. You can ask me any questions you have. Your care co-ordinator will be at this meeting so you will be able to ask the researcher or your care co-ordinator any questions you might have.

At this meeting you will be shown the sleep watch (this is called an Actigraph) that you wear on your wrist. You can ask any questions you would like about this and you can try it on to see if it is comfortable.

If you feel happy to take part in the study, you will be asked to complete the consent form.

After you have completed the consent form, you will then be asked to fill in three short questionnaires. They will take about 20 minutes to complete. One is about your sleep experiences currently, one is about unusual experiences, and the final one is about suicidal thoughts. We are asking you to complete these questionnaires because there is lots of research that suggests that our sleep might affect our thinking and our feelings.

After you have finished the questionnaires, I will put the watch on your wrist so it starts recording. It only records whether you are moving or not, and cannot tell me where you have been or what you have been doing. I will ask that you keep the watch on as much as possible, and especially at night when you sleep. You will be asked to wear the sleep watch for seven days – we would like you to keep this on all of the time! You can take it off when you go in the shower, but it is important that you keep it on as much as you can (especially when you are in bed). The watch doesn't make any noise or show any colours, so you shouldn't notice it too much.

At the end of the 7 day period, we will arrange another meeting where you come in and return the watch. This is so I can download the data and analyse it. I will then ask you some questions to understand what you think about sleep, unusual experiences and suicidal thoughts, and it will last about 20-30 minutes. I will record the interview on a voice recorder. After we have finished the interview I will listen to it and write up what you said on a word document. This document will not have your name on and nobody will know it is you. The recording of our conversation will be stored with the other data from the study and kept in a secure location.

When the interview is finished, that is the end of our study.

Expenses and payments

You will be given a £10 amazon voucher for taking part in the study. If you usually claim travel costs for appointments, you can still do that.

What are the possible disadvantages and risks of taking part?
You will be asked to wear the sleep watch for seven days at a time. The watch is comfortable and you should not notice you are wearing it, but if you do find it uncomfortable, or have any questions about it, you can ask the researcher at any time.

One of the questionnaires asks you questions about suicidal thoughts. These questions might be difficult to answer if you have had a difficult week. But, lots of research has shown that being able to talk about difficult times for us can help us make sense of what happened.

If at any point the research team or a member of your usual care team feel you may be a risk to yourself or others, appropriate action will be taken.

What are the possible benefits of taking part?
There is not much information about sleep, unusual experiences, and suicidal thoughts in people experiencing First Episode Psychosis. This study might help us understand how sleep can effect unusual experiences, and suicidal thoughts.

The information from the sleep watch will tell us how much sleep you are getting, and if there are any problems with it. This information is really useful to help us understand what sleep looks like for people who are experiencing First Episode Psychosis. The information from the questionnaires and interviews may help us understand if your sleep is effecting your thoughts and feelings, and will help us understand how you experience your sleep to impact your mental health.

This study might help clinical psychologists, and people that work in Early Intervention Psychosis teams to know if sleep is important for mental health and how it relates to how you are thinking and feeling. This information could be really helpful for services to know how to improve care and help other people in the future.

What happens when the research study stops?
When the study finishes your care with the Early Intervention Psychosis team will continue as usual. You will no longer meet with Eva and take part in the study. We will keep your contact details for six months after – this is so you can see the data from your sleep watch, if you would like to.

What if there is a problem?
If you have a problem with the study or anything in the study is worrying you, you call tell Eva about it. Eva will try to help you and answer your questions. Eva's contact details are given at the end of this information sheet. If you are still unhappy and you want to complain, you can do this by contacting:

Email: PALSandComplaints@nottshc.nhs.uk Tel : 0115 9934542

Write to: PALS and Complaints, Highbury Hospital, Highbury Road, Nottingham, NG6 9DR

In the event that something does go wrong and you are harmed during the research and this is due to someone's mistake, you may be able to take legal action for compensation against the University of Nottingham but you may have to pay your legal costs.

Will my taking part in the study be kept confidential?
We will follow ethical and legal practice and all information about you will be handled in confidence.

Your data from the sleep watches, questionnaires, and interviews will be confidential. This means I will keep it private and it will only be used for the study. If you say something that makes me worried for your safety or someone else's safety, I might have to tell someone. This would be to everyone safe, and I would tell you if I was going to tell someone. Only your care team, and the research team I am part of will know you are in the study. You can decide who else you tell about being in the study.

The information that I collect about you and the research will be kept in a locked place at the University of Nottingham. The data from the sleep watch, the questionnaires, and the written document of the interviews will be kept on a Onedrive on a computer with a password. Only the research team will have access to this information. Under UK Data Protection laws the University is the Data Controller (legally responsible for the data security) and the Chief Investigator of this study is the Data Custodian (manages access to the data). This means we are responsible for looking after your information and using it properly. Your rights to access, change or move your information are limited as we need to manage your information in specific ways to comply with certain laws and for the research to be reliable and accurate. To safeguard your rights we will use the minimum personally – identifiable information possible.

You can find out more about how we use your information and to read our privacy notice at:

https://www.nottingham.ac.uk/utilities/privacy.aspx.

The data collected for the study will be looked at and stored by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people from regulatory organisations to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

Your contact information will be kept by the University of Nottingham for six months after the end of the study so that we are able to contact you about the findings of the study, unless you let us know you do not want to be contacted. This information will be kept separately from the research data collected and only those who need to will have access to it. All other data (research data) will be kept securely for 7 years. After

this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team given permission by the data custodian will have access to your personal data.

In accordance with the University of Nottingham's, the Government's and our funders' policies we may share our research data with researchers in other Universities and organisations, including those in other countries, for research in health and social care. Sharing research data is important to allow peer scrutiny, re-use (and therefore avoiding duplication of research) and to understand the bigger picture in particular areas of research. Data sharing in this way is usually anonymised (so that you could not be identified) but if we need to share identifiable information we will seek your consent for this and ensure it is secure. You will be made aware then if the data is to be shared with countries whose data protection laws differ to those of the UK and how we will protect your confidentiality.

What will happen if I don't want to carry on with the study?
Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights or your mental health care being affected. If you withdraw we will no longer collect any information about you or from you but we will keep the information about you that we have already obtained as this information may have already been used in some analyses and may still be used in the final study analyses. You have 24 hours after the last time you wear the watch to decide if you would like your data to be included in the report.

Involvement of the General Practitioner/Family doctor (GP)
Your care co-Ordinator will know that you are taking part in the study. Your participation in the study will also be written in your care notes.

What will happen to the results of the research study?
I will write a report about the study. I will not use your name or personal details in the report so no one will know it was you. The report will be given to the University of Nottingham as part of my training to be a clinical psychologist, to show them what I have done.

The report will be online for other people to see it. This will help people learn what sleep is like for people like you – this can help more research be done, and for care teams to learn more about how to help people. If you would like a copy of the report, you can ask Eva for it when it is completed. If you would like to know about the results of the study after, you can ask Eva.

I might speak about the study at a presentation. No one will know you took part in the study except your care team and the researchers unless you tell them.

Who is organising and funding the research?
This research is being organised by the University of Nottingham and is being paid for by Health Education England.

Who has reviewed the study?
All research in healthcare is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by [NHS Health Research Committee] Research Ethics Committee.

Further information and contact details
If you want to ask any questions, please contact me using the number of email address below. I am always happy to answer your questions. If you contact me, it does not mean you have to take part in the study. Thank you for reading this information.

Contact details

Eva Rogers, Trainee clinical psychologist
Email: Eva.Rogers@nottingham.ac.uk
Address: Trent Doctorate in Clinical Psychology, Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, Wollaton Road, Nottingham, NG8 1BB

Dr Mark Gresswell, Programme Director – Trent Doctorate in Clinical Psychology.
Email: mgresswell@lincoln.ac.uk
Telephone: 01522 886820
Address: Sarah Swift Building, University of Lincoln, 8 Bradford Wharf, Lincoln, LN5 7AT

Dr Simon Durrant, Senior Lecturer in Psychology and Director of the University of Lincoln Sleep Research Centre
Email: Sidurrant@lincoln.ac.uk
Telephone: 01522 886985
Address: Sarah Swift Building, University of Lincoln, 8 Bradford Wharf, Lincoln, LN5 7AT

Appendix C: Participant Consent Form

University of Nottingham
UK | CHINA | MALAYSIA

NHS
Nottinghamshire Healthcare
NHS Foundation Trust

CONSENT FORM

(Final version 2.0: 25/05/23)

Title of Study: Sleep disturbance, unusual experiences and suicidal ideation in First Episode Psychosis

IRAS Project ID: 323182

Name of Researcher: Eva Rogers

Name of Participant:

Please initial box

1. I confirm that I have read and understand the information sheet version number 1.0 dated 25/05/23 for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis. ☐
3. I understand that relevant sections of my medical notes and data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential. ☐
4. I understand that the interview will be recorded and that anonymous direct quotes from the interview may be used in the study reports. ☐
5. I understand that my Care Co-ordinator will be made aware I will be taking part in the study ☐
6. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers. ☐
7. I agree to take part in the above study. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Person taking consent	Date	Signature

Appendix D: Interview Schedule

Interview schedule

(Final version 1.0 : date 30.03.23)

Title of Study: Sleep disturbance, unusual experiences, and suicidal ideation in First Episode Psychosis

IRAS Project ID: 323182

Name of Researcher: Eva Rogers

Tell me about you how your sleep is currently

- Duration? amount of time in bed? number of times awakening in the night? difficulties falling/staying asleep

How would you describe a good nights sleep?

- How did you feel when falling asleep? And waking up?
- What was it that makes it a good night's sleep?
- Is there anything that contributes to sleeping well? During the day? Night time?

Can you tell me anything that affects your sleep?

- Is there anything you have tried to improve your sleep?

Do you have any examples where something in your life was affected by your sleep?

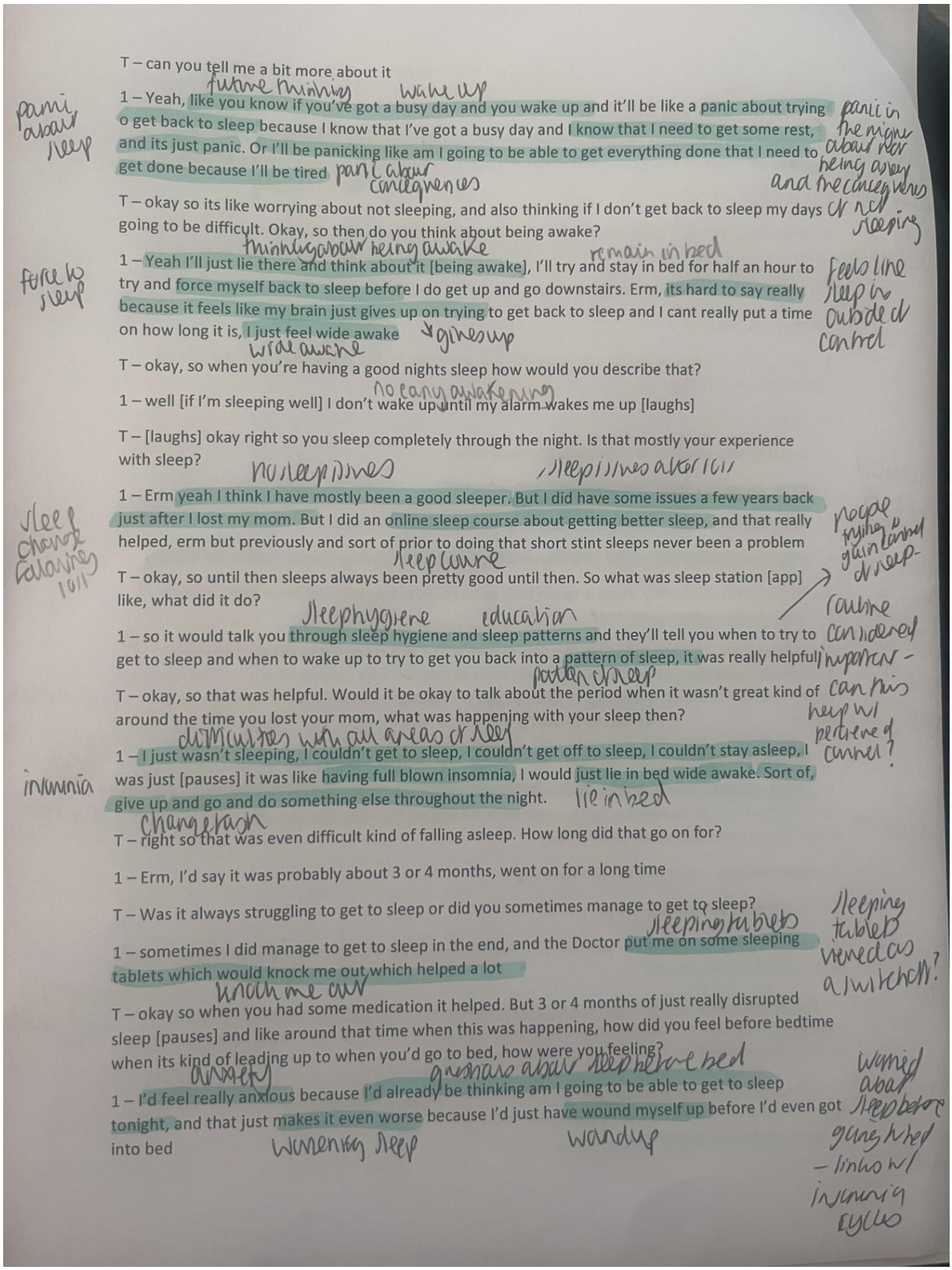
- General mood and anxiety?
- General mental health?
- Daily tasks? Social relations?

How would you describe your sleep when you are feeling well?

- How is your sleep when you are feeling unwell?
- Preceding psychosis episodes? Preceding periods of suicidal thoughts?
- During psychosis episodes? During periods of suicidal thoughts?
- After psychosis episodes? After periods of suicidal thoughts?

Is there anything else you think is important to discuss about your sleep?

Appendix E : Example of Coded Transcript



T – can you tell me a bit more about it

1 – Yeah, like you know if you've got a busy day and you wake up and it'll be like a panic about trying o get back to sleep because I know that I've got a busy day and I know that I need to get some rest, and its just panic. Or I'll be panicking like am I going to be able to get everything done that I need to get done because I'll be tired

T – okay so its like worrying about not sleeping, and also thinking if I don't get back to sleep my days going to be difficult. Okay, so then do you think about being awake?

1 – Yeah I'll just lie there and think about it [being awake], I'll try and stay in bed for half an hour to try and force myself back to sleep before I do get up and go downstairs. Erm, its hard to say really because it feels like my brain just gives up on trying to get back to sleep and I cant really put a time on how long it is, I just feel wide awake

T – okay, so when you're having a good nights sleep how would you describe that?

1 – well [if I'm sleeping well] I don't wake up until my alarm wakes me up [laughs]

T – [laughs] okay right so you sleep completely through the night. Is that mostly your experience with sleep?

1 – Erm yeah I think I have mostly been a good sleeper. But I did have some issues a few years back just after I lost my mom. But I did an online sleep course about getting better sleep, and that really helped, erm but previously and sort of prior to doing that short stint sleeps never been a problem

T – okay, so until then sleeps always been pretty good until then. So what was sleep station [app] like, what did it do?

1 – so it would talk you through sleep hygiene and sleep patterns and they'll tell you when to try to get to sleep and when to wake up to try to get you back into a pattern of sleep, it was really helpful

T – okay, so that was helpful. Would it be okay to talk about the period when it wasn't great kind of around the time you lost your mom, what was happening with your sleep then?

1 – I just wasn't sleeping, I couldn't get to sleep, I couldn't get off to sleep, I couldn't stay asleep, I was just [pauses] it was like having full blown insomnia, I would just lie in bed wide awake. Sort of, give up and go and do something else throughout the night.

T – right so that was even difficult kind of falling asleep. How long did that go on for?

1 – Erm, I'd say it was probably about 3 or 4 months, went on for a long time

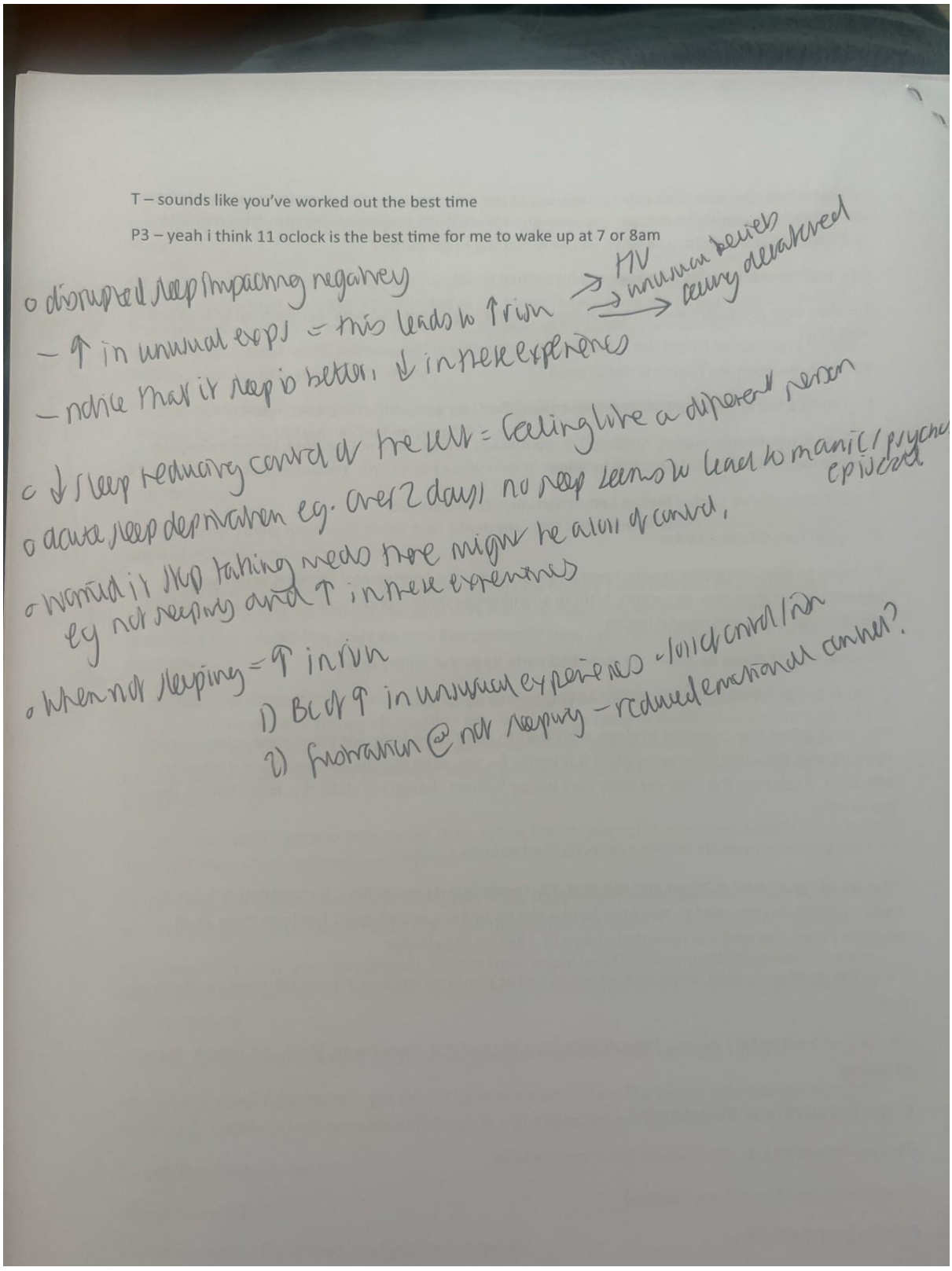
T – Was it always struggling to get to sleep or did you sometimes manage to get to sleep?

1 – sometimes I did manage to get to sleep in the end, and the Doctor put me on some sleeping tablets which would knock me out which helped a lot

T – okay so when you had some medication it helped. But 3 or 4 months of just really disrupted sleep [pauses] and like around that time when this was happening, how did you feel before bedtime when its kind of leading up to when you'd go to bed, how were you feeling?

1 – I'd feel really anxious because I'd already be thinking am I going to be able to get to sleep tonight, and that just makes it even worse because I'd just have wound myself up before I'd even got into bed

Appendix F : Example of Written Summary of Interviews



T – sounds like you've worked out the best time

P3 – yeah i think 11 oclock is the best time for me to wake up at 7 or 8am

o disrupted sleep impacting negatively
– ↑ in unusual exps = this leads to ↑risk → HV → unusual beliefs → being alienated
– notice that if sleep is better, ↓ in these experiences

o ↓ sleep reducing control of the self = feeling like a different person
o acute sleep deprivation eg. over 2 days/ no sleep seems to lead to manic/ psychotic episode
o worried if stop taking meds more might be at risk of control, eg not sleeping and ↑ in these experiences
o when not sleeping = ↑ in risk
1) BC of ↑ in unusual experiences - lose control/ risk
2) frustration @ not sleeping – reduced emotional control?

Sleep Disturbances and Suicidal Ideation in First Episode Psychosis: An Exploratory Mixed Methods Study

University of Nottingham
UK | CHINA | MALAYSIA

Eva Rogers, Mark Gresswell, Simon Durrant and Laura Hancox
Trent Doctorate in Clinical Psychology & Nottingham Institute of Mental Health

University of Lincoln

Background

- The relationship between sleep and suicide is well established[1]
- Sleep disturbances are common in psychosis, and are considered to contribute to psychosis onset[2]
- First Episode Psychosis (FEP) is a high-risk period for suicide[3], yet there is little research exploring the sleep-suicide relationship in FEP
- Current evidence is limited, with studies using single-item measures of sleep, and little qualitative work
- Multi-method approaches would allow exploration of how sleep is disturbed and how those with FEP understand this relationship

Aims

- To explore if sleep disturbances are related to psychotic symptoms and suicidal ideation in FEP
- To explore experiences of those with FEP regarding sleep and suicidal ideation

Quantitative findings:

Non-significant relationships were found between sleep, psychosis symptoms and suicidal ideation, likely due to reduced power.

Sleep Duration (hours) 6.32 (3.57-8.02)
Sleep Efficiency (%) 80.72 (49.79-97.28)
Sleep Latency (mins) 27.12 (0-88)
Wake After Sleep Onset (WASO) (mins) 65.15 (11.14-162.69)

6 participants met criteria for clinical insomnia; all met criteria for subthreshold insomnia

Qualitative findings:

1. Losing Sleep and Losing Myself
   - Acute sleep loss was common before FEP, and contributed to reduced emotional control, loss of personal safety, and losing touch with 'reality'
2. Meaning Making of Sleep and Psychosis
   - A sleep loss-mania-psychosis 'pathway' was described
   - Sleep a 'trigger' in the onset and relapse of psychosis
3. The Emotional Consequences of Sleep Loss
   - Substance use and prescribed medication were crucial to gain sleep
   - Non-suicidal self-injury (NSSI) common after acute sleep loss
4. Feeling Trapped: Suicide As An Escape
   - Rumination, hopelessness and entrapment were common when awake at night
   - Sleep offers an escape that participants were unable to access; suicide offered a 'way out'

Methods

Participants: 10 people (aged 24-62) experiencing FEP participated
Procedure: Participants wore an actigraph for 7 days and nights, completed 3 questionnaires, and a semi-structured interview
Data analysis: Motionware software analysed actigraph data. Bivariate correlations were explored. Qualitative data analysed by Reflexive Thematic analysis[4]

Implications

- Variation in sleep duration, timing, WASO, and latency may be important
- Suicidal ideation and NSSI are common during acute sleep loss

Future research:

- Further sufficiently powered research exploring relationships between sleep, symptoms, and suicidal is warranted
- Exploration of sleep variability and WASO associations with suicidal ideation and NSSI
- Qualitative exploration of psychological processes implicated in the sleep-suicide relationship

1. Waite, F., Sheaves, B., Isham, L., Reeve, S., & Freeman, D. (2020). Sleep and schizophrenia: From epiphenomenon to treatable causal target. Schizophrenia Research, 221, 44-56. 2. Clarke, L., Chisholm, K., Cappuccio, F., ... Thompson, A. (2021). Sleep disturbances and the At Risk Mental State: A Systematic Review and Meta-Analysis. Schizophrenia Research, 227, 81-91. 3. Pelizza, L., Pompili, M., Azzali, S., ... Raballo, A. (2021). Suicidal Thinking and Behaviours in First Episode Psychosis: Findings from a 3-year Longitudinal Study. Early Intervention in Psychiatry, 15(3), 624-633. 4. Braun, V., & Clarke, V. (2019). Reflecting on Reflexive Thematic Analysis. Qualitative Research in Sport, Exercise and Health, 11(4), 589-597