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Psychosis and COVID-19: Tele-mental health and Team Formulation.

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Submitted in partial fulfilment of the requirements for the degree of

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Institute of Health and Wellbeing

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## TABLE OF CONTENTS

<b>List of Tables and figures.....</b>	<b>4</b>
<b>Acknowledgements.....</b>	<b>5</b>
<b>CHAPTER 1: SYSTEMATIC REVIEW .....</b>	<b>6</b>
ABSTRACT .....	7
INTRODUCTION .....	8
<i>Review questions.....</i>	<i>10</i>
METHODS .....	10
<i>Search strategy.....</i>	<i>10</i>
<i>Eligibility criteria .....</i>	<i>10</i>
<i>Data selection and extraction process.....</i>	<i>12</i>
<i>Quality assessment.....</i>	<i>13</i>
RESULTS .....	14
<i>Study characteristics.....</i>	<i>15</i>
<i>Methodological quality appraisal.....</i>	<i>37</i>
<i>Narrative synthesis.....</i>	<i>38</i>
DISCUSSION .....	44
<i>Implications .....</i>	<i>46</i>
<i>Strengths and limitations .....</i>	<i>47</i>
<i>Conclusions.....</i>	<i>48</i>
REFERENCES .....	48
<b>CHAPTER 2: MAJOR RESEARCH PROJECT .....</b>	<b>53</b>
PLAIN ENGLISH SUMMARY.....	54
ABSTRACT .....	55
INTRODUCTION.....	56
<i>Aims of the research.....</i>	<i>59</i>
METHODS .....	59
<i>Study Design .....</i>	<i>59</i>
<i>Context .....</i>	<i>59</i>
<i>Reflexivity .....</i>	<i>60</i>
<i>Epistemological stance .....</i>	<i>60</i>
<i>Ethical Considerations .....</i>	<i>61</i>
<i>Intervention: Team Formulation.....</i>	<i>61</i>
<i>Participants.....</i>	<i>61</i>
<i>Materials .....</i>	<i>62</i>
<i>Procedures.....</i>	<i>63</i>
<i>Data analysis .....</i>	<i>64</i>
RESULTS .....	65

<i>Team Formulation Quality Rating Scale</i> .....	65
<i>Thematic analysis</i> .....	67
DISCUSSION .....	76
<i>Implications</i> .....	79
<i>Limitations</i> .....	81
<i>Conclusions</i> .....	82
REFERENCES .....	82
<b>APPENDIX 1: SYSTEMATIC REVIEW</b> .....	<b>87</b>
APPENDIX 1.1: AUTHORS GUIDELINES SAGE OPEN .....	87
APPENDIX 1.2 SEARCH STRATEGY .....	89
APPENDIX 1.3 MIXED METHOD APPRAISAL TOOL (2018) .....	92
APPENDIX 1.3.4 MIXED METHOD APPRAISAL TOOL RATINGS .....	98
<b>APPENDIX 2: MAJOR RESEARCH PROJECT</b> .....	<b>102</b>
APPENDIX 2.1 TEAM FORMULATION QUALITY RATING SCALE .....	102
APPENDIX 2.2 SEMI STRUCTURED INTERVIEW TOPIC GUIDE .....	103
APPENDIX 2.3 INITIAL LOGIC MODEL .....	112
APPENDIX 2.4 EMAIL INVITATION TO CLINICAL PSYCHOLOGISTS .....	113
APPENDIX 2.5 PARTICIPANT INFORMATION SHEET – CLINICAL PSYCHOLOGISTS .....	114
APPENDIX 2.6 CONSENT FORM – CLINICAL PSYCHOLOGISTS .....	120
APPENDIX 2.7 EMAIL INVITE SEMI STRUCTURED INTERVIEWS .....	122
APPENDIX 2.8 PARTICIPANT INFORMATION SHEET – SEMI STRUCTURED INTERVIEWS .....	123
APPENDIX 2.9: CONSENT FORM SEMI STRUCTURED INTERVIEWS .....	128
APPENDIX 2.10 BRAUN AND CLARK (2006) STAGE MODEL OF THEMATIC ANALYSIS .....	130
APPENDIX 2.11 LOGIC MODEL CODING DEFINITIONS .....	131
APPENDIX 2.12 EXAMPLE OF CODING .....	132
APPENDIX 2.13 RESULTS OF TEAM FORMULATION QUALITY RATING SCALE .....	134
APPENDIX 2.14 MRP RESEARCH PROPOSAL .....	135
APPENDIX 2.15 UNIVERSITY OF GLASGOW MVLS ETHICAL APPROVAL .....	150
APPENDIX 2.16 MVLS ETHICAL APPROVAL OF AMENDMENTS .....	151
APPENDIX 2.17 NHS GREATER GLASGOW AND CLYDE R&D APPROVAL .....	153

## LIST OF TABLES

<b>CHAPTER 1: SYSTEMATIC REVIEW</b> .....	<b>8</b>
TABLE 1.1: SAMPLE CHARACTERISTICS .....	17
TABLE 1.2: STUDY FINDINGS: TELEPHONE DELIVERY .....	24
TABLE 1.3: STUDY FINDINGS: VIDEO CONFERENCING DELIVERY .....	31
TABLE 1.4: STUDY FINDINGS: DELIVERY MODE NOT DEFINED .....	36

## LIST OF FIGURES

### **CHAPTER 1: SYSTEMATIC REVIEW**

FIGURE 1.1: PRISMA FLOW DIAGRAM SHOWING OUTCOMES OF SEARCH STRATEGY .....	15
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### **CHAPTER 2: MAJOR RESEARCH PROJECT**

FIGURE 2.1 LIST OF THEMES UNDER LOGIC MODEL FRAMEWORK .....	67
FIGURE 1.2 PROPOSED LOGIC MODEL OF TEAM FORMULATION .....	76

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## Chapter 1

The utilisation, acceptability and effectiveness of synchronous tele-mental health in providing mental health care to individuals experiencing psychosis: a systematic Review.

Prepared in accordance with the author requirements for SAGE Open.

*Word count: 9908 (excluding references).*

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## Abstract

**Purpose of the review:** Advances in technology, increased access to digital platforms and the context of the COVID-19 pandemic has meant that many mental health services have moved to adopt virtual or 'blended' models of mental health care delivery (tele-mental health). Access to and continuing engagement with specialist mental health care for individuals with psychosis is an important priority; however, there are concerns around digital exclusion amongst this population. This review explored utilisation of synchronous tele-mental health for individuals with psychosis and synthesised the evidence for its acceptability and effectiveness for this group.

**Method:** Four databases (EMBASE, PsychINFO, CINAHL and MEDLINE) were systematically searched. Articles retrieved were assessed against eligibility criteria. Those studies included in the review underwent quality assessment using the Mixed Methods Appraisal Tool. Results of the included studies were summarised in a narrative synthesis.

**Results:** A total of 15 primary studies were included in the review. Results showed that tele-mental health had been utilised to provide mental health to individuals experiencing psychosis via telephone and videoconferencing software. Tele-mental health was used to provide individual and group psychological therapy, monitoring and encouraging medication adherence as well as to provide full-service delivery during the COVID-19 pandemic. There was some low-quality evidence that both video and telephone interventions were accepted by patients. Telephone tele-mental health appeared to be associated with increasing medication adherence however quality of evidence was poor.

**Conclusions:** Given the heterogeneity and methodological weaknesses of the included studies, it may be premature to make any firm conclusions regarding the acceptability and effectiveness of synchronous tele-mental health within this population. Further high-quality research within this area should remain a priority, as tele-mental health continues to be utilised within the current context of the ongoing COVID-19 pandemic.



## Introduction

Psychosis refers to a group of mental health conditions characterised by the experience of hallucinations (seeing or hearing things that other people cannot), delusions (holding unusual beliefs or believing things that are not true), thought disorder and negative symptoms (such as apathy, social withdrawal or a reduction in speech) (Bürgy, 2008). Certain communities are at more risk of developing psychosis including immigrants, those from ethnic minority backgrounds (Fearon et al., 2006) and those who have experienced trauma and childhood adversity (Duhig et al., 2015). Individuals experiencing psychosis are more likely to be living in poverty, have poorer physical health outcomes and lower life expectancies (Gaughran, 2020). Schizophrenia is a psychotic disorder which has been associated with poor long-term outcomes (Correll et al., 2018).

Research has shown improvements in illness severity and quality of life amongst patients with schizophrenia when they receive specialist integrated treatment (Schöttle et al., 2014). For individuals experiencing a first episode of psychosis, early intervention in psychosis (EIP) services offer specialist stand-alone services which use a coordinated care model of multidisciplinary treatment, utilising assertive outreach have been shown to be associated with better patient outcomes than 'treatment as usual' (Correl et al., 2018).

The COVID-19 pandemic has been shown to increase the number of individuals struggling with poor mental health, due to both the physical effects of the virus itself and the effect of isolation from repeated periods of 'lock down'. The COVID-19 crisis exacerbated pre-existing inequalities and vulnerable groups have been disproportionately affected including women, youth and people with pre-existing physical and mental health conditions (Pierce et al., 2020). People experiencing psychosis are thought to be a group that are at increased risk of contracting COVID-19 and experiencing the adverse mental health impacts of the pandemic (Druss, 2020).

The COVID-19 pandemic has also brought about new challenges for mental health services, who have had to rapidly adapt service provision to comply with to social distancing measures by reducing face to face consultations and implementing tele-mental health (Corruble, 2020). Tele-mental health refers to the uses of digital technology to provide mental health care and treatment. Tele-mental health can be 'synchronous' (O'Keefe, 2019) involving real-time communication with a mental health care professional through the telephone or secure video conferencing solutions or 'asynchronous' whereby clinical data is sent from a patient to a

mental health professional through electronic communication that allows the specialist to review the data at a later point. Asynchronous communication includes email, mobile apps, and other message systems.

An umbrella review by Barnett et al. (2021) concluded that tele-mental health (both asynchronous and synchronous) has the potential to be both an effective and acceptable form of mental health care delivery. However, digital exclusion (referred to as the 'digital divide') of certain groups of individuals, including those experiencing poverty or individuals from ethnic minorities is a major challenge (Primm et al., 2010). Individuals with psychosis are more likely to be from marginalised groups and therefore there has been concern regarding the use of tele-mental health as a mode of service delivery for this population due to lack of access to equipment and broadband (Spanakis et al., 2021). This means, it is important for health care providers to understand the acceptability of tele mental health in providing care to individuals with psychosis.

Sharp et al. (2011) reviewed the literature on videoconferencing use for care provision in individuals with psychosis. They found videoconferencing was both acceptable and reliable for mental health care delivery. However, the review was limited by the availability of a small number of studies. A scoping review by Santesteban-Echarri et al. (2018) examined synchronous telehealth interventions for schizophrenia-spectrum disorders found evidence to suggest these interventions were both feasible and acceptable. However, these reviews reported that the quality of the existing evidence was weak.

This review aimed to systematically identify and synthesise the evidence of acceptability and effectiveness of synchronous tele-mental health service delivery to individuals with psychosis only. This review is well timed given the advances in technology and increased access to digital platforms which may have made the delivery of tele-mental health more feasible to implement in mental health care settings. Furthermore, the COVID-19 pandemic prompted the rapid pivot to a virtual or 'blended' approach to mental health care delivery due to the need to reduce face to face consultations (Yellowlees et al., 2020). Given the importance of access to and continuing engagement with specialist mental health care for individuals with psychosis, this review aims to explore the utilisation of synchronous tele-mental health for individuals with psychosis and synthesise the evidence for its acceptability and effectiveness in this group.

## Review Questions

- 1.) What is the evidence that tele-mental health, using real time telephone or video conferencing software has been utilised as a mode of service delivery for individuals with psychosis?
- 2.) What is the evidence that tele-mental health is an acceptable mode of service delivery for individuals with psychosis?
- 3.) What is the evidence that tele-mental health is an effective mode of service delivery for individuals with psychosis?

## Method

This systematic review followed PRISMA reporting guidance (Moher et al., 2009). The protocol for the review was registered on Prospero (CRD42021283868).

### Search strategy

Four databases were systematically searched for relevant research studies: CINAHL, PsycINFO, MEDLINE and EMBASE from their inception date until 4<sup>th</sup> of October 2021. Google Scholar was also searched. Search terms in relation to tele-health (e.g., telepsychiatry, telemedicine, teletherapy) and psychosis (e.g. psychosis, schizophrenia, hallucinations) were developed in collaboration with a specialist subject librarian. Full search strategies for each database are provided in Appendix 1.2. Reference lists of included papers were scrutinised to identify any additional papers meeting inclusion criteria. A forward citation search of the included papers was conducted using Google Scholar.

### Eligibility Criteria

The following inclusion and exclusion criteria were applied to determine eligibility of studies.

### Population

#### *Inclusion:*

- Individuals 16 years and older with affective and non-affective psychosis (diagnosed using any recognised diagnostic criteria (ICD-10 or DSM-5) for a psychotic disorder or

individuals experiencing psychotic symptoms and receiving care from a mental health service.

- Study sample was exclusive to individuals experiencing psychosis.

*Exclusion:*

- Studies of individuals who are reported to be at 'Clinical High Risk' of psychosis, or have psychosis related to a dementia.
- Studies with a mixed mental health disorder presentation (where only some participants have psychosis) were excluded.

## Exposure

*Inclusion:*

- Synchronous tele-mental health involving real-time communication with a mental health care professional through telephone or secure video conferencing.
- Studies focussed on mental health service delivery exploring the use of synchronous tele-mental health including individual or group psychological therapy (teletherapy), assessment, psychiatric consultations/intervention or ongoing monitoring and review of symptoms/mental state or medication adherence.

*Exclusion:*

- Asynchronous telepsychiatry using mobile phone apps and any other E-health intervention that does not include real-time two-way communication with a mental health professional via telephone or video conferencing.
- Studies of tele-mental health interventions where the primary aim of the technology was not to facilitate direct therapeutic contact with a mental health professional; for example, apps and websites delivering assessment or treatment in a digital format.
- Studies with a mix of both synchronous and asynchronous tele-mental health
- Virtual reality interventions.
- Interventions delivered exclusively to caregivers.
- Studies of hypothetical acceptability.

## Outcomes

### *Inclusion:*

- Acceptability of tele-mental health delivery including patient self-reported satisfaction, attrition, attendance, uptake, drop out, levels of engagement/disengagement.
- Evidence of the effectiveness of tele-mental health service delivery based on author defined outcomes.

### *Exclusion:*

- Studies which did not examine outcomes related to acceptability or effectiveness of synchronous tele-mental health.

## Study Design

### *Inclusion:*

- Primary research studies.
- Research published in English.
- Trials with or without a control group.
- Qualitative, quantitative and mixed method studies.

### *Exclusion:*

- Case study reports, case series, opinion articles or review articles.

## Data selection process

Potentially eligible citations were exported to EndNote X9 and duplicates removed. Following de-duplication, titles and abstracts were screened by the primary reviewer (HL) against the inclusion/exclusion criteria. Full texts of potentially relevant articles were then retrieved and assessed against the eligibility criteria by HL. Uncertainties regarding eligibility were discussed with AG (research supervisor).

## Data extraction

Data were extracted from included articles into a Spreadsheet. Extracted data included: Author, year of publication, country, study design, sample size, mean age and range, gender, ethnicity, diagnosis/clinical presentation, service context, purpose of tele-mental health service delivery, description of tele-mental health service delivery, data relating to patient acceptability and author reported outcomes relating to effectiveness.

## Quality Assessment

The Mixed Methods Appraisal Tool (Hong et al., 2018) (MMAT) was used to appraise the methodological quality of included studies. The MMAT allows for methodological appraisal of quantitative, qualitative, and mixed methods research (appendix 1.3). The MMAT has 5 criteria for each type of study. Ratings include “Yes” indicating the criteria has been met, “no” indicating the criteria has not been met and ‘Can’t tell’ which means that the paper does not report appropriate information to answer either ‘Yes’ or ‘No’, or the information for the criterion is unclear. To begin, calibration was established by HL with a second rater KO. Four studies were chosen at random to be rated during the calibration phase. Ratings were discussed and agreed. The researcher and KO then appraised a further 7 studies independently. There was a 90% agreement between raters. Discrepancies were discussed and final ratings agreed. HL rated the remaining 4 studies.

## Data analysis and synthesis

Due to the heterogeneity of the included studies, the researcher conducted a narrative synthesis informed by Synthesis Without Meta-Analysis guidelines (Campbell et al., 2020).

1. Studies were grouped by service delivery mode (videoconferencing or telephone). Then purpose of the services delivered (e.g. psychological therapy, monitoring of symptoms, general service delivery or intervention to increase medication adherence) was then described.
2. Evidence relating to the acceptability for each service delivery mode was synthesised. This included data related to the uptake of tele-mental health interventions, measures of attendance/engagement, dropout rates and outcomes relating to patient satisfaction in the included studies.

3. It was unlikely that outcomes related to effectiveness would be able to be synthesised using a standardised metric due to heterogeneity of the outcomes measured. Therefore, the outcomes relating to effectiveness of each delivery mode will be summarised using author reported outcomes.

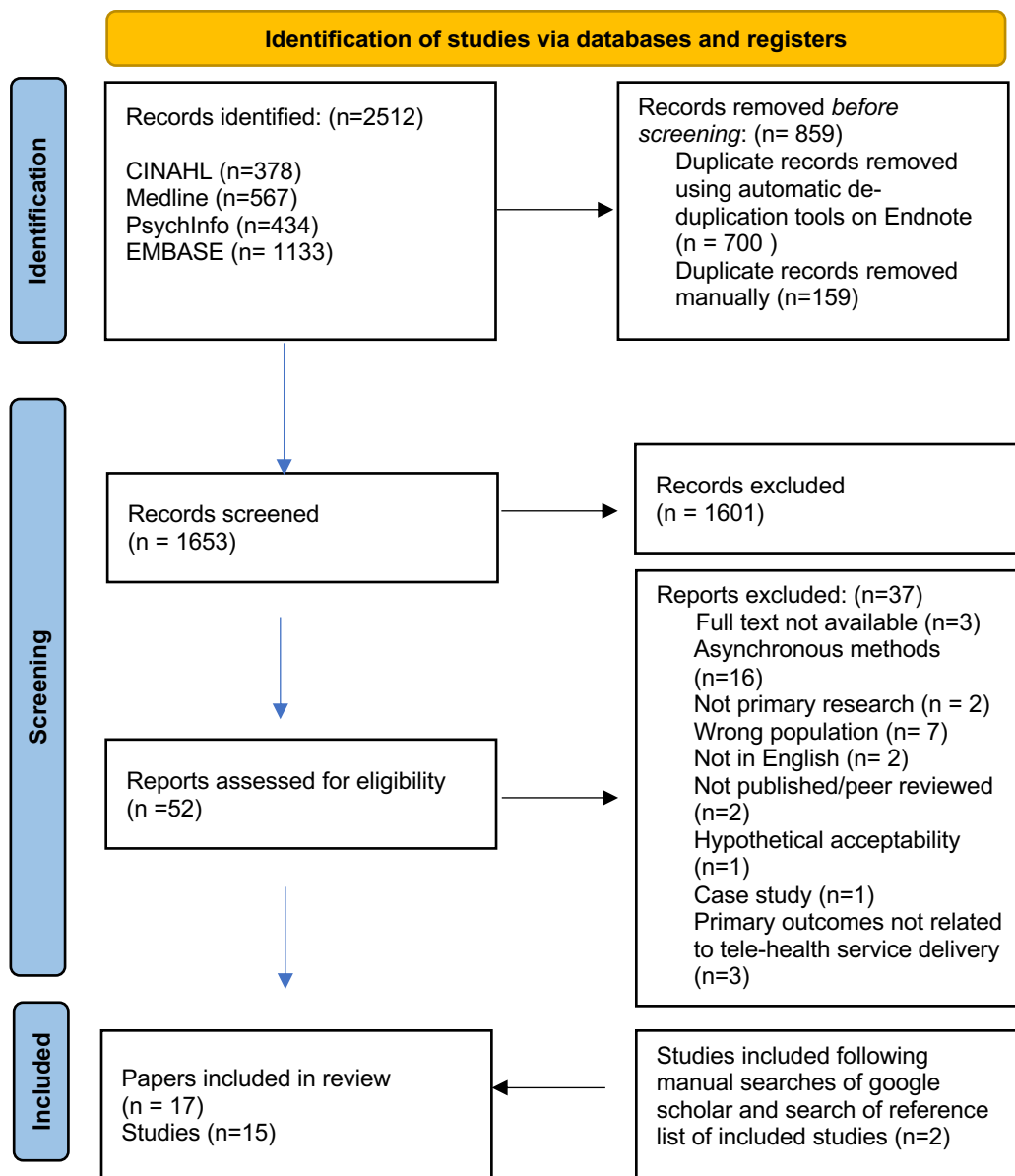
4. Certainty of the evidence was evaluated with reference to study quality as measured by the MMAT and the review aimed to outline methodological limitations of the included studies and recommendations for future research. The limitations of the synthesis were also considered.

## Results

Figure 1.1 displays the results of the search strategy. The initial search of the four databases produced 2512 results. The references and abstracts were then exported to reference management software (EndNote) and deduplicated. The titles and abstracts of the remaining 1653 articles were screened for eligibility. A further 1601 records were excluded, 52 studies were read in full, 15 studies were deemed eligible, and 2 studies were also identified from reviewing the references of included articles.

Two papers consisted of the same sample (Beebe et al., 2016 and Beebe et al., 2017), confirmed upon contacting the lead author. Both papers were included in the review as one study (BEEBE2016/17). Mulligan et al (2014) was a subsample of participants from an RCT by Haddock et al (2017). Both papers were included in the review but reported as one study (HADDOCK2017/14). Therefore, the final 17 papers included in the review include data from 15 separate studies.

**Figure 1.1 – PRISMA Flow Diagram**



### Study characteristics

Table 1.1 describes the sample characteristics of the 15 included studies. Studies were published between 2000 and 2021. Studies were conducted in USA (n=8), the UK (n=2), Australia (n=1), Canada (n=1), Korea (n=1), Turkey (n=1) and Spain (n=1). The total original sample size (prior to drop out) was n= 1820 (range=7-928, mean=121.3 and median=32). This is excluding the partial samples in the two follow up studies by Beebe et al., 2017 and Mulligan et al., 2014. The total final sample (final sample sizes after dropout) from the 15 primary studies was n=1638 (range 7-847, mean=109.2 and median=30). This therefore gives an overall total attrition rate of 10%.



Sample characteristics were provided on the 'final sample size' (after dropout) in most studies and is therefore what is reported here. Mean sample ages were reported in 12/15 studies. The total mean age of participants was 36.2 (average range 20-52 years). The proportion of males was reported in 14/15 primary studies and the average proportion of males was 61%. Ethnicity was reported in 8/15 primary studies. The average proportion of white participants was 56.1%. The average proportion of African American participants was 39.8%. The proportions were 2.3% and 1.3% for Asian and Hispanic participants, respectively.

With regards to diagnoses, most participants across the studies had a diagnosis of Schizophrenia (64.44%). Other diagnoses included Early/first episode psychosis (21.98%), Schizophrenia spectrum disorders (6.49%), Schizoaffective disorder (5.65%) Complex psychosis (1.38%) and Bi-polar disorder (0.06%)

Eight primary studies explored the use of telephone tele-mental health service delivery, six primary studies explored the use of videoconferencing tele-mental health service delivery. One study (Alston et al., 2019) did not describe the mode of tele-mental health delivery. The findings relating to acceptability and effectiveness of telephone tele-mental health delivery are summarised in table 1.2. The findings relating to the acceptability and effectiveness of videoconferencing tele-mental health service delivery are summarised in table 1.3.

Reviewers observed a tendency in some of the included studies of reporting differences between groups that were not of statistical significance. We decided not to report the values for non-statistically significant findings in this review. Where statistically significant findings were reported these data were included in the below tables. For this review, statistical significance was defined as  $p \leq 0.05$ .

To ensure clarity of reporting the reviewer has reported the original sample size (prior to drop out) and the final sample size of the studies in the review. As most studies reported sample characteristics of the 'final sample' that is what is reported in the tables below. One study (HADDOCK2017/14) where this data was not provided. Where there was no drop out/loss to follow up the final sample size only is reported.

**Table 1.1 Sample characteristics**

<b>Telephone Delivery</b>							
Study reference	Authors, year of publication and Country of study origin.	Study Design (MMAT)	Sample Characteristics				
			Sample size	Diagnosis (Final sample)	Mean age and Age range (Final sample)	% (n) Male (Final sample)	% (n) Ethnicity (Final sample)
<b>BEEBE2001</b>	<b>Beebe (2001)</b>  USA	Randomised control study	<b>Original Sample:</b> n=48  IG: n=24 CG: n=24  <b>Final sample:</b> n=37  IG: n=15  CG: n=22	Schizophrenia (100%, n=37)	<b>Mean Age:</b> 40.4 years <b>Age Range:</b> 18-68 years	73%(n=27)	Caucasian: 73% (n=27) African American: 27%(n=10)
<b>BEEBE2004</b>	<b>Beebe and Tian (2004)</b>  USA	Randomised control study	<b>Final sample:</b> n=20  IG: n =10  CG: n=10	Schizophrenia (100%, n=20)	<b>Mean Age:</b> 44 <b>Age Range:</b> 23-78	45% (n=9)	Caucasian: 60% (n=12) African American: 35% (n=7) Asian: 5% (n=1)

<b>BEEBE2008</b>	<b>Beebe et al., (2008)</b>  <b>USA</b>	Randomised control study.	<b>Original Sample :</b> n= 29  IG: n=15 CG: n=14  <b>Final sample:</b> n= 25  IG: n=13 CG: n=12	Schizophrenia (100%, n=25)	<b>Mean Age:</b> 52 <b>Age Range:</b> 25-69	60%(n=15)	Caucasian:56% (n=14) African American: 44% (n=11)
<b>BEEBE2016/17</b>	<b>Beebe (2015 / 2017)</b>  <b>Country:</b> USA	Randomised control study	<b>Original Sample:</b> n=185  <b>Final Sample:</b>  3 months: n=140  9 months: n=119  No IG or CG sample size data.	Schizoaffective disorder (68%, n=94) and Schizophrenia (32% n=46)	<b>Mean Age:</b> 46.1 years <b>Age Range:</b> 19-71	57.1% (n=80)	*at three month follow up.  Caucasian: 62.1%(n=87) African American: 35.7% (n=50) Asian: 2.1% (n=3)
<b>HADDOCK2017/2014</b>	<b>Haddock et al. (2017) /Mulligan et al. (2014)</b>  <b>Country:</b> UK	Randomised Control study	<b>Original Sample:</b> n= 95*  *95 participants who consented prior to drop out	Schizophrenia Spectrum disorder (100%, n=95)	<b>Mean Age:</b> 36 <b>Age Range:</b> Not reported	63.2%(n=60)	*Of original sample.  White: 80% (n=76) Black minority ethnic group: 13.7% (n=13)

			<p>pre therapy allocation</p> <p>TAU n= 32,</p> <p>Low support (LS), Telephone CBT n=34 High support (HS) Telephone support + Group therapy n= 23</p> <p><b><u>9 months (final sample) :</u></b> 67 TAU n=26, LS n=28, HS n=13</p> <p><b><u>15 months:</u></b> TAU: n=23, LS n=24, HS n =11</p>				Mixed race: 4.2% (n=4) Not reported 2% (n=2)
<b>MONTES2010</b>	<p><b>Montes et al. (2010)</b></p> <p><b><u>Country:</u></b> Spain</p>	Randomised control study	<p><b><u>Original sample:</u></b> n =928</p> <p>IG: n=456 CG: n=472</p> <p><b><u>Final Sample: n=</u></b> 847</p>	Schizophrenia (100%, n=847)	<p><b><u>Mean Age:</u></b> 40.1</p> <p><b><u>Age range:</u></b> Not reported</p>	66.6% (n=564)	Not reported

			IG: n=409 CG: n=438				
<b>SALZER2004</b>	<b>Salzer et al., (2004)</b>  <b>Country:</b> USA	Randomised control study	<b>Original sample:</b> n = 32  IG: n =18 CG: n=14  <b>Final Sample:</b> n=23  IG: n=13 CG: n=10	Schizophrenia (100%, n=23)	<b>Mean Age:</b> Not reported <b>Age Range:</b> Not reported	Not reported	Not reported.
<b>USLU2020</b>	<b>Uslu and Buldukoglu (2020).</b>  <b>Country:</b> Turkey	Randomised control study	<b>Original Sample</b> n =46  IG: n=22 CG: n=24  <b>Final Sample:</b> n=45  IG: n=21 CG: n=24	Schizophrenia (100%, n=45)	<b>Mean Age:</b> 37.8 <b>Age Range:</b> 20-82	60%(n=27)	Not reported.

Video-conferencing delivery							
Study number	Authors, year of publication and Country of study origin.	Study Design (MMAT)	Sample Characteristics				
			Sample size	Diagnosis	Mean age and Age range  (Final Sample)	N (%) Male  (Final Sample)	N (%) Ethnicity  (Final Sample)
CHAE2000	Chae et al., (2000).  <u>Country:</u> Korea	Quantitative Non-randomised Cross sectional analytic study	<u>Final sample Size:</u> 30  Tele-mental health group n=15  Face to face assessment group: n=15	Schizophrenia (100%, n=30)	<u>Mean age:</u> 35.5  <u>Age range:</u> Not reported	47%(n=14)	Not reported.
CHAUDHRY2021	Chaudhry, et al., (2021).  <u>Country:</u> USA	Quantitative Nonrandomised study  Case Control	<u>Final sample:</u> 244  Pre COVID-19; n=107  2020 COVID-19 telehealth period: n=137	First Episode psychosis/ early psychosis (100%, n=244)	Not reported	70.7%(n=172)	African American: 59.9%(n=146) Caucasian:32%(n=78) Hispanic:6.1%(n=15) Vietnamese:0.4%(n=1) American Indian: 1.6%(n=4)

<b>LECOMTE2020</b>	<b>Lecomte et al. (2020).</b>  <u>Country:</u> Canada	Mixed Methods	<b>Original Sample:</b> n=17  <b>Final Sample:</b> n=14	Schizophrenia -spectrum disorder (92.9%, n=13) and Bipolar disorder (7.1%, n=1)	<b>Mean Age:</b> 22.5 <b>Age range:</b> Not reported	78.6%(n=11)	Not reported
<b>LYNCH2020</b>	<b>Lynch et al. (2020).</b>  <u>Country:</u> USA	Quantitative non randomised	<b>Final sample:</b> n=23	Complex Psychosis* (100%, n=23)	<b>Mean age:</b> 32.6  <b>Age Range:</b> Not reported	73.9% (n=17)	Caucasian: 88% (n=20) Black/African: 4%(n=1) Hispanic: 4%(n=1) Asian:4%(n=1)
<b>STAIN2011</b>	<b>Stain et al. (2011).</b>  <u>Country:</u> <u>Australia</u>	Quantitative Non-Randomised Study  Before and after time series.	<b>Final sample:</b> n=11	Early psychosis (within two years of first onset of psychotic symptoms) (100%, n=11)	<b>Mean Age:</b> 20 <b>Age Range:</b> 14-27	45.5%(n=5)	Not reported.
<b>WOOD2021</b>	<b>Wood et al. (2021).</b>  <u>Country:</u> UK	Mixed methods study	<b>Final sample:</b> n=7	Early psychosis (100%, n=7)	<b>Mean Age:</b> 26.9 years <b>Age Range:</b> 18-29	42.9%(n=3)	Not reported

<b>Delivery mode not defined</b>							
<b>Study number</b>	<b>Authors, year of publication and Country of study origin.</b>	<b>Study Design (MMAT)</b>	<b>Sample Characteristics</b>				
			<b>Sample size</b>	<b>Diagnosis</b>	<b>Mean age and Age range</b>	<b>N (%) Male</b>	<b>N (%) Ethnicity</b>
<b>ALSTON2019</b>	<b>Alston et al. (2019)</b>  <u>Country:</u> US	Quantitative non randomised	<b>Final sample:</b> n= 105  <b>Individuals receiving telehealth:</b> n= 35	First episode psychosis (100%, n=105)	<b>Mean Age:</b> Not listed  <b>Age Range:</b> 18-26	70.5%(n=74)	African American: 73.3% (n=77) Caucasian: 21.9%(n=23) Hispanic: 4.8% (n=5)

Key: “Original sample”; refers to studies whereby drop out is reported. The original sample is the number of participants who agreed to take part in the study/were randomised to treatment. “Final sample” refers to the final sample size of the study after dropout; IG: Intervention Group; CG: Control Group; TAU: Treatment as usual; complex psychosis\*: psychotic disorder and at least one of the following: past or concurrent substance use, pre- morbid developmental disorders, concurrent physical health conditions and past or concurrent mood disorder symptoms.



**Table 1.2 study findings: Telephone delivery**

Telephone tele-mental health delivery						
Study Reference	Authors and study context	Description of service delivery	Acceptability outcomes		Primary effectiveness Outcomes	
			Measure	Findings	Measure	Findings
<b>BEEBE2001</b>	<b>Beebe (2001)</b>  <b>Context:</b> Hospital inpatients about to be discharged to the community.	Telephone intervention to improve outcomes for clients with schizophrenia. After hospital discharge participants in the intervention group received weekly telephone intervention for three months.	<b>Drop out.</b>	IG Dropout: 37.5% (n=9) CG Dropout: 8.3% (n=2)	<b>Community survival:</b> days in the community before rehospitalisation Number and frequency of rehospitalisation's.  <b>Rehospitalisation length.</b>	Slight increase in community survival for intervention group  A reduction in frequency and duration of rehospitalisation stays amongst intervention group.  No differences were of statistical significance.
<b>BEEBE2004</b>	<b>Beebe and Tian. (2004)</b>  <b>Context:</b> Hospital inpatients discharged to	TIPS (Telephone Intervention Problem solving). Participants in the experimental	<b>Engagement with intervention</b> Length in minutes of each call.	Experimental participants conversed longer during the telephone call on average than controls at each measurement point.	Not applicable.	Not applicable.

	the community.	<p>group attended two face-to-face meetings with the TIPS provider for the purpose of establishing rapport prior to beginning their calls.</p> <p>Control Group: TIPS provided weekly for six weeks with no face-to-face contact prior to beginning calls.</p> <p><b><u>Frequency and duration:</u></b> Both groups received TIPS sessions weekly for three months.</p>	<p>Number of feeling statements made during each call.</p> <p>Number of one-word responses made during each call.</p> <p><b><u>Uptake and dropout.</u></b></p>	<p>The differences in length of conversation between week three and week one revealed a significant group difference. (<math>F(1,7) = 8.49, p = 0.02</math>)</p> <p>The odds of an experimental participant making a feeling statement was higher than controls. The odds of experimental participants making a one-word answer was lower than control participants. However, both differences between groups were not statistically significant.</p> <p><b><u>Drop out</u></b></p> <p>Dropout: 27% (n=4).</p> <p>No between group comparison.</p>		
<b>BEEBE2008</b>	<b>Beebe et al. (2008)</b>	TIPS – manualised telephone	<b><u>Drop out</u></b>	<p>IG drop out: 24% (n=2)</p> <p>CG drop out: 14% (n=2)</p>	<b><u>Medication treatment adherence.</u></b>	TIPS group had higher medication adherence across all three months than

	<p><b>Context:</b> Outpatients receiving Community Mental Health care.</p>	<p>nursing intervention. <b>Frequency and duration:</b> weekly for three months.</p> <p>TAU control group: Usual case management</p>			<p>Pill count and adherence to intramuscular antipsychotic medication.</p>	<p>the TAU groups (80% vs 60.1%, p= 0.0298).</p>
<p><b>BEEBE2016/17</b></p>	<p><b>Beebe et al. (2016)</b>  <b>Beebe et al. (2017)</b>  <b>Context:</b> Outpatient service for patients with schizophrenia spectrum disorders</p>	<p>TIPS (As described by <u>Beebe et al., 2008</u>)  <b>Frequency and duration:</b> weekly for 3 months (2016) and nine months (2017).</p>	<p><b>Drop out</b></p>	<p>Dropout across control and intervention arm of the study:  3 months: 24.3% (n=45)  9 months: 36.2%(n=66)  No control group vs TIPS drop out comparison reported.</p>	<p><b>Medication Adherence:</b> Medication adherence Rating Scale (MARS), pill count and serum medication levels.  Medication Adherence Self Efficacy Scale (MASES).  <b>Psychotic symptoms:</b> PANSS.</p>	<p>Authors reported improvement in MARS scores, pill count PANSS and MASES at both 3 and 9 month follow up. However, the differences between and within groups were not statistically significant.</p>
<p><b>HADDOCK2017/14</b></p>	<p><b>Haddock et al. (2017)</b></p>	<p>Telephone Support (TS): weekly</p>	<p><b>Participant treatment preference.</b></p>	<p>n=3 participants chose to be randomised. n=30 chose</p>	<p><b>Questionnaire about the Process</b></p>	

	<p><b>Mulligan et al. (2014)</b></p> <p><b>Context:</b> Participants were recruited from three NHS Mental Health Trusts in England.</p>	<p>telephone CBT for nine months</p> <p>High support (HS): weekly telephone CBT + 12 group sessions. Fortnightly for 6 months</p> <p>TAU: multidisciplinary community health care, medication and regular review</p>	<p><b><u>Reason for preference.</u></b></p> <p><b><u>Therapy Uptake:</u></b> number of sessions attended.</p> <p><b><u>Dropout.</u></b></p>	<p>TAU, n=32 chose TS and n=22 chose HS.</p> <p>Reasons for choosing HS included opportunity to engage with others, social contact and more therapy. Reasons for TS included convenience of delivery not having to travel to clinic, disliking groups but wanting therapy. Reasons for TAU included dislike of therapy, therapy viewed as unnecessary or satisfaction with current support.</p> <p>Therapy uptake: TS attended significantly more telephone sessions (mean = 15.81) than the HS (mean = 9.78) (p=0.034).</p> <p>TS missed telephone appointments (mean=4.35) was similar to HS (mean = 4.48).</p>	<p><b><u>of Recovery (QPR).</u></b></p> <p><b><u>Subjective Experiences of Psychosis Scale (SEPS).</u></b></p> <p><b><u>Working Alliance Inventory (WAI):</u></b> Subsample TS (n=15) and HS (n=7).</p>	<p>No treatment effect on QPR scores at follow up or comparisons between groups.</p> <p>SEPS negative impacts outcome at 15- month follow-up, where there was an estimated difference in adjusted means comparing HS to TAU of 16.85 units (95% CI 1.36–32.35, p = 0.03) in favour of TAU.</p> <p>WAI ratings similar to published face to face studies in that therapist rated alliance scores were significantly lower than client rated scores.</p> <p>WAI Ratings not associated with symptom severity except higher depression associated with higher client rated WAI (r(22) = .472, p = .027)</p>
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				<p><b>Dropout:</b> 9 months: TAU 18.7%, TS 17.67% and HS 43.5%.</p> <p>15 months: TAU 28.2%, TS 29.42% and HS 52.2%.</p>		
<b>MONTES2010</b>	<p><b>Montes et al. (2010)</b></p> <p><b>Context:</b> Outpatients across 198 community mental health in Spain.</p>	<p>Intervention: standardized telephone call made by a nurse at weeks 4, 8, and 12. If non-adherence to treatment indicated the patient was scheduled to have an additional visit with the psychiatrist within 7 days.</p> <p>Control group: One appointment with the psychiatrist after 4 months.</p>	<b>Drop out.</b>	<p>IG dropout: 10.3% (n=47) CG dropout: 7.2% (n=34)</p>	<p><b>Adherence to antipsychotic medication.</b> Patients were classified according to register of Adherence (RAT) (high and moderate adherence, &gt;60% of doses) and non-adherent (low and no adherence, &lt;60% of doses).</p>	<p>Significantly higher percentage of patients in the IG (96.7%) were classified as adherent to treatment compared to the CG (91.2%) (P = 0.0007).</p> <p>The percentage of patients classified as adherent increased progressively following each telephone call in the IG.</p>

		<b><u>Duration and frequency:</u></b> One phone call per month in the IG over four months.				
<b>SALZER2004</b>	<p><b>Salzer et al. (2004)</b></p> <p><b><u>Context:</u></b> large, urban community mental health centre.</p>	<p>Telephone medication management (TMM).</p> <p><b><u>Duration and frequency:</u></b> Not defined</p>	<p><b><u>Uptake.</u></b></p> <p><b><u>Engagement with tele-mental health.</u></b></p>	<p>Intervention Uptake: 84% (n=15/18)</p> <p>14/15 participated for at least 35 out of 52 scheduled weeks.</p>	<p><b><u>Self-report measures:</u></b> insight, attitudes toward medication, subjective response to medication, side effects, distress from side effects, number of extreme side effects, symptoms and functioning, medication adherence, staff relationships and treatment satisfaction.</p> <p>Authors do not describe how outcomes were measured.</p>	<p>Outcomes analyses was conducted for 10/14 of control group participants and 13/15 of the TMM intervention group.</p> <p>No significant differences between groups.</p>

<p><b>USLU2020</b></p>	<p><b>Uslu and Buldukoglu (2020).</b></p> <p><b>Context:</b> Patients about to be discharged from psychiatric inpatient services.</p>	<p>Intervention group: TIPS (Beebe, 2004)</p> <p>Control group: TAU</p> <p>Both the control and intervention group received brief Medication Adherence Training (MAT). 2x 20 minute sessions</p> <p><b>Frequency and duration:</b> TIPS delivered once per week for two months.</p>	<p><b>Drop out</b></p>	<p>IG drop out: 4.5% (n=1) CG dropout: 0</p>	<p><b>Medication adherence:</b> MARS</p> <p>A final assessment form which asks participants a question relating to voluntary medication discontinuation and belief in the necessity of medication.</p>	<p>Statistically significant decrease in MARS scores observed for the participants in the CG (P = 0.001).</p> <p>A statistically significant increase was observed in the IG (P &lt; 0.001).</p> <p>MARS scores of the intervention group were statistically higher than those of the CG (P &lt; 0.001).</p> <p>The rate of continued medication use after TIPS was significantly higher in the intervention group than that in the CG (P &lt; 0.001).</p> <p>The rate of believing in the necessity of medication after TIPS was significantly higher in the IG than that in the CG (P = 0.004).</p>
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Key: IG: Intervention group; CG: control group; complex psychosis\*: psychotic disorder and at least one of the following: past or concurrent substance use, pre-morbid developmental disorders, concurrent physical health conditions and past or concurrent mood disorder symptoms.

**Table 1.3: Study findings: Video conferencing delivery**

<b>Video conferencing tele-mental health Delivery</b>						
<b>Study Reference</b>	<b>Study</b>	<b>Description of service delivery</b>	<b>Acceptability outcomes</b>		<b>Primary effectiveness Outcomes</b>	
			<b>Measure</b>	<b>Findings</b>	<b>Measure</b>	<b>Findings</b>
<b>CHAE2000</b>	<p><b><u>Chae et al. (2000)</u></b></p> <p><b><u>Context:</u></b> Community mental health centre.</p>	<p>Assessment session with a doctor and a nurse where the Brief Psychotic Rating Scale (BPRS) completed independently. Assessments were conducted either via video conferencing software or face to face.</p>	<p><b><u>Patient Acceptability:</u></b> Patient report.</p> <p>Patients were asked to rate four categories of acceptability; comfort level during the interview, ability to express themselves, the quality of the interpersonal relationship and the usefulness of the interview.</p>	<p>Authors report a trend toward higher levels of overall acceptability for telemedicine than face to face assessment.</p> <p>No significant difference between videoconferencing (14.1/20) and face to face (13.7/20) for overall acceptability scores.</p> <p>There were no significant differences between telemedicine and face to face assessment for all acceptability categories.</p>	<p><b><u>Reliability</u></b></p> <p>Both raters scored the patients' responses, and the intraclass correlation coefficient for the two raters' scores was calculated for each BPRS item. To measure inter-rater reliability in Face to face and via video assessments.</p>	<p>A comparison of agreement by intraclass correlation for the 18 rating items between the two groups, agreement was similar for three items; agreement in telemedicine was higher than in face-to-face interviews for eight items; and it was lower for seven items. The differences were not of statistical significance. The agreement correlation for the BPRS total score for telemedicine was higher than that for face-to-face interviews.</p>



						This difference failed to reach statistical significance.
<b>CHAUDHRY2021</b>	<b>Chaudhry, et al. (2021)</b>  <b><u>Context:</u></b> Early Psychosis Intervention Clinic	Transition to complete virtual service during COVID-19.  Conversion of all psychotherapy and medication management services to tele-mental health using video conferencing software.	<b><u>Attendance rates.</u></b>	An increased proportion of attended appointments was seen from 2019 (67%) to 2020 (72%).  This difference in attendance rate was significant, (X <sup>2</sup> = 4.07, P = 0.049).	<b><u>Hospitalisations.</u></b>	The difference in hospitalisation rates were not significant.
<b>LECOMTE2020</b>	<b>Lecomte et al. (2020)</b>  <b><u>Context:</u></b> Early intervention in psychosis service.	Group CBT for psychosis via videoconference.  <b><u>Frequency and Duration:</u></b> twice weekly for 3 months	<b><u>Drop-out rates.</u></b>  <b><u>Attendance rates .</u></b>  <b><u>Qualitative information:</u></b> Obstacles and advantages of participating to the videoconferencing group for participants.	Drop Out: 17.6% (n=3)  Average attendance rate was 18.5 sessions out of a maximum 24 (77%).  At least 50% of participants for each group needed to loan an iPad from the service.	<b><u>Psychotic symptoms:</u></b> BPRS.  <b><u>Social support:</u></b> Social Provision Scale.  <b><u>Self-esteem:</u></b> Self Esteem Rating Scale (SERD-SF), short form.	Statistically significant improvements for negative self-esteem (t=-2.45, p=.03 and overall psychiatric symptoms (t=3.44, p=0.005).  Trend towards improvements in overall self-esteem and negative symptoms but differences not of statistical significance.

<p><b>LYNCH2020</b></p>	<p><b>Lynch &amp; Saperstein. (2020)</b></p> <p><b>Context:</b> Recovery service for individuals with Severe mental illness</p>	<p>Recovery service underwent a rapid telehealth conversion during COVID-19. All scheduled sessions were offered as previously scheduled, but in a synchronous video format.</p>	<p><b><u>Enrolment to converted telehealth sessions.</u></b></p> <p><b><u>Dropout.</u></b></p> <p><b><u>Number of sessions attended and missed.</u></b></p>	<p>90% (18/20) enrolled to telehealth. Two patients opted out (10%) and three patients entered following the telehealth conversion.</p> <p>Average sessions attended pre telehealth = 18.6, post telehealth conversion = 21.33</p> <p>Average sessions missed pre telehealth = 3.85, post telehealth = 2.9</p> <p>No statistically significant differences noted.</p>	<p>Not applicable.</p>	<p>Not applicable.</p>
<p><b>STAIN2011</b></p>	<p><b>Stain et al, (2011)</b></p> <p><b>Context:</b> Community mental health services.</p>	<p>Neuropsychological testing and clinical assessment.</p> <p>All patients underwent both face to face testing and testing via videoconferencing.</p>	<p><b><u>Consumer satisfaction questionnaire.</u></b></p>	<p>Consumer satisfaction questionnaires completed by 6/11 participants. 6/6 felt comfortable and understood the instructions during the videoconference assessment.</p>	<p><b>Correlation:</b> Face to face and video conferencing assessment scores.</p>	<p>Correlations between the face-to-face and videoconference modes of assessment were significant for the AQOL (r=0.81, p&lt;0.010) WTAR (r=0.93, p&lt;0.01), the COWAT (r=0.81, p&lt;0.010), the Logical Memory subtest of the Wechsler Memory Scale</p>

		<p>Neuropsychological: Wechsler Test of Adult Reading (WTAR), WMS-R Logical Memory Subtest, WAIS-III Digit Span Subtest and Controlled Oral Word Association Test (COWAT).</p> <p>Clinical tests: BPRS, Assessment of Quality of Life (AQoL) Social and Occupational Functioning Assessment Scale (SOFAS).</p>		5/6 recommended videoconference interview to a friend who needed help.		<p>(<math>r=0.96, p&lt;0.001</math>) and the BPRS (<math>r=0.94, p&lt;0.001</math>). Complete agreement between modes for the SOFAS.</p> <p>Non-significant correlations were found for the Digit Span subtest (<math>r=0.59</math>).</p>
<b>WOOD2021</b>	<p><b>Wood et al. (2021).</b></p> <p><b>Context:</b> First episode psychosis service.</p>	<p>Researchers ran two successive therapeutic groups informed by Acceptance and Commitment Therapy. Groups were held via videoconferencing</p>	<p><b>Client satisfaction:</b> Client satisfaction Questionnaire (CSQ) and participant feedback questionnaire with free text comments.</p>	<p>Attendance: Group one (n=4): two attended all four sessions, one attended three sessions, and one attended one session.</p>	Not applicable	Not applicable

		each lasting four sessions during the COVID-19 pandemic.	<b><u>Attendance.</u></b>	<p>Group two (n=5): two participants attended all four sessions, one participant attended two sessions, and two participants attended one session.</p> <p>Mean CSQ ratings were 26.4/32.</p> <p>Themes from feedback questionnaire:</p> <ul style="list-style-type: none"> <li>- Meeting others</li> <li>- Group leadership</li> <li>- Group format and content</li> </ul>		
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Key: IG: Intervention group; CG: control group.

**Table 1.4 Study findings – Delivery mode not defined**

Delivery Mode Not Defined						
Study Name	Study	Description of service delivery	Acceptability outcomes		Primary effectiveness Outcomes	
			Measure	Findings	Measure	Findings
ALSTON2019	<p><b>Alston et al. (2019)</b></p> <p><b>Context:</b> Community behavioural health-care system that covers eight counties for various mental health-care needs.</p>	No description of telehealth intervention.	<p><b>Disengagement from service:</b> Measured adherence measured by attendance at appointments.</p>	<p>Patients who were treated with telehealth were more likely to disengage from treatment than people who received care face to face.</p> <p>22/35 (63%) patients who received telehealth care delivery were lost to follow up compared with 26/68 (38%) who received face to face care. This difference was of statistical significance (<math>p = 0.0177</math>).</p>	Not applicable.	Not applicable.

## Methodological Quality Appraisal

A table of the MMAT can be found in appendix 1.4. The methodological critique of the included studies is taken into consideration within the narrative synthesis. Overall, there were 7 RCTs (randomised controlled trials), 5 quantitative non-randomised studies and three mixed methods studies. Most of the included studies had small sample sizes. There was a tendency to over report the importance or 'significance' of findings as trends that were not statistically significant. Reporting was also particularly unclear and difficult to interpret in some studies (ALSTON2019, BEEBE2016/17), which is discussed further in the narrative synthesis.

The overall quality of the included studies was poor. The mixed method studies were rated as being of particularly poor quality with no rationale for the mixed methods approach. Some studies failed to describe the qualitative aspect of the studies in the methods section. Qualitative aspects of the three studies were rated poorly, with little to no description of how qualitative data were analysed and instead 'themes' appeared to be presented with little explanation as to how they were derived. Qualitative components of the studies appeared to be an 'add on' with little consideration given to the methodology. The MMAT requires the rater to appraise the qualitative and quantitative components of the methodology in addition to the mixed method criteria. The methodological quality of the quantitative component of these studies appeared somewhat stronger than the qualitative aspect.

For randomised controlled trials 3/7 studies administered appropriate randomisation. No studies included assessor and rater blinding in their methodology and there were some differences between groups at baseline in two studies. Complete outcome data was determined as a loss of no more than 25% of data at follow up for the purposes of this review and according to this criterion 4/7 studies did not provide complete outcome data.

For quantitative non-randomised studies two studies used a cross sectional analytical design, two were cohort studies and one study utilised a before and after time series design. 4/5 studies utilised a control group or condition. Most studies included a representative sample and used appropriate outcome measures; however three studies failed to account for possible confounding variables. Three studies had complete outcome data and two studies' poor reporting made this difficult to interpret.

## Narrative Synthesis

### Telephone service delivery

#### *Types of tele-mental health care delivered*

Eight primary studies (described in table 1.2) described tele-mental health care delivered to via telephone. All eight of these studies were randomised controlled trials. Sample sizes (prior to drop out) varied from n=20 to n=928. Overall, sample sizes (prior to drop out) were small (mean n=172 median n=47) which limits the results of many of the studies and may explain in part why findings often failed to reach statistical significance. Three studies (BEEBE2004, BEEB2008, BEEBE2016/17 and USLU2020) described Beebe et al's (2004) telephone problem solving intervention (TIPS). BEEBE2001 described the use of a telephone intervention whereby weekly telephone calls were made to support recently discharged patients with schizophrenia. A further two studies described the use of telephone calls to support medication management in individuals with schizophrenia (MONTES2010 and SALZER2004). Only one study (HADDOCK2017/14) described the delivery of psychological therapy via telephone.

#### *Acceptability of telephone tele-mental health*

*Dropout:* Dropout was reported across 6 studies which examined the delivery of telephone tele-mental health (BEEBE2001, BEEBE2004, BEEBE2008, MONTES2010, and USLU2020). BEEBE2016/17 only reported drop out across the study (intervention and control group combined) rather than the TIPS intervention group. Therefore, their dropout rate was not included in this synthesis. As HADDOCK2014/17 compared drop out across different types of telephone support different at different follow up points, their findings will be considered separately.

Of the above six studies, the mean proportion of participants who dropped out of telephone delivered tele-mental health was 20.7% with a drop out range between 4.5% and 37.5%. Only 3/6 studies provided comparison dropout rates for control groups (BEEBE2001, BEEBE2008 and MONTES2010) which makes it difficult to interpret the acceptability of the interventions based on dropout rates alone. Of the three studies which did report control group drop out, the average proportion of participants who dropped out was 9.83% which is a smaller proportion than the average dropout rate for those receiving telephone interventions in the three studies (23.9%).

Across the three studies which described Beebe et al.'s (2008)'s TIPS dropout rates were variable; 27% (BEEBE2004), 24% (BEEBE2008) and 4.5% (USLU2020). Authors concluded relatively high acceptability for the intervention, with a dropout rate of less than 30% across their studies. However, evidence related to acceptability should be examined in the context of methodological limitations. For example, BEEBE2004 provided no control group dropout rate for comparison. BEEBE2008 found a lower dropout rate amongst their control group (14%) compared with the intervention group.

BEEBE2001 reported the highest dropout rate of 37.5% compared to just 9% for control participants, suggesting lower acceptability for their weekly telephone intervention. MONTES2010 found a relatively similar level of drop out for their telephone medication management intervention (10.3%) as in their TAU control (8%).

HADDOCK2017/14 compared dropout rates at 9 and 15 month follow up points for their CBT for psychosis telephone intervention. Authors reported a higher level of drop out among the high telephone support group (43.48%) compared with the low support telephone group (17.7%) and TAU (18.7%) at nine month follow up. This may suggest that the lower intensity telephone delivered psychological therapy is more accepted.

*Uptake:* SALZER2004 described uptake of their telephone medication management intervention. The reporting of this study is poor and description of the intervention was limited. Authors describe 84% uptake for their telephone intervention. A total of 5 participants were also lost to follow up which again limited their findings in the context of an already small original sample size (n=32).

*Engagement:* BEEBE2004 explored whether a one-off face to face appointment with the TIPS provider would increase engagement. Results showed that experimental participants interacted for significantly longer during the telephone call on average than controls. This might suggest increased engagement with the intervention following this initial face to face appointment. However, the differences between groups regarding the odds of a participant making a 'feeling statement' or making a one-word answer were non-significant.

*Preference:* HADDOCK2017/14 was a mixed methods preference RCT whereby participants were able to be randomised or to self-allocate themselves to TAU, telephone CBT (TS) or high intensity telephone CBT (HS). 3 participants chose to be randomised, n=30 chose TAU, n=32 chose TS and n=22 chose HS. As 60% of participants chose to allocate themselves to the two groups which received telephone CBT it could be suggested that this telephone delivery of CBT



may be a preferred form of tele-mental health care for some individuals with schizophrenia spectrum disorders. However, as there was no alternative face to face CBT offered the evidence relating to acceptability of telephone CBT may be limited.

#### *Effectiveness of telephone tele-mental health*

*Medication adherence:* Five studies examined the effectiveness of telephone delivered tele-mental health aiming to improve medication adherence (BEEBE2008, BEEBE2016/17, MONTES2010, SALZER2004 and USLUS2020). Three of those studies examined the effectiveness of TIPS (BEEBE2008). Two studies found a significantly higher levels of medication adherence for those receiving the TIPS intervention compared with controls (BEEBE2008 and USLU2020). Conversely BEEBE2016/17 did not find any significant differences in medication adherence pre and post TIPS intervention or between the intervention and control groups at all timepoints in their study (3 and 9 months). MONTES2010 found that their nurse led telephone calls with outpatients with schizophrenia led to significantly higher percentage of participants being classified adherent to their medication (96.7%) than the control group (91.2%). SALZER2004 delivered a 'telephone medication management' intervention but found no significant differences in medication adherence between those receiving the intervention and those in their control group. Overall, there appeared to be mixed findings regarding the effectiveness of telephone delivered tele-mental health on increasing medication adherence. However, those studies which found no significant improvements (BEEBE2016/17 and SALZER2004) were poorly reported studies with methodological limitations. Therefore, it may be that evidence from the studies included in the review suggests telephone delivered tele-mental health may be effective in increasing medication adherence for individuals with schizophrenia.

*Psychotic symptoms:* There was limited evidence of the effectiveness of tele-mental health on reduction of psychotic symptoms. While authors of BEEBE2016/17 reported improvements in PANSS scores at each follow up point, the differences between and within groups were non-significant. HADDOCK2017/14 found that weekly CBT delivered via telephone had little impact upon psychotic symptoms.

*Therapeutic alliance:* HADDOCK2017/14 compared therapeutic alliance in their sample of participants receiving CBT for psychosis via telephone to other studies delivering face to face interventions for this populations. Results indicated that therapeutic alliance in their sample was similar to or better than ratings reported within face-to-face studies.

*Rehospitalisation:* BEEBE2001 studied the impact of a tele-mental health intervention aimed at improving outcomes for clients with schizophrenia following hospital discharge. Authors found that frequency of rehospitalisation and length of rehospitalisation was reduced in their intervention group. However, the results were not of statistical significance, likely due to a small sample size.

## Video-conferencing service delivery

### *Types of tele-mental health care delivered*

Six studies described tele-mental health delivered via videoconferencing software (CHAE2000, CHAUDHRY2021, LECOMTE2020, LYNCH2020, STAIN2011, and WOOD2021). Four studies were quantitative nonrandomised studies (CHAE2000, CHAUDHRY2021, LYNCH2020, STAIN2011) and two used mixed methods designs (LECOMTE2020 and WOOD2021).

Sample sizes of the included studies (prior to drop out) ranged from n=7 to n=244 (average = 63.7, median = 23). CHAE2000 and STAIN2011 described the use of video conferencing software to undertake assessment. LECOMTE2020 and WOOD2021 described facilitating therapeutic groups over video. CHAUDHRY2021 and LYNCH2020 described conversion of mental health services to tele-mental health care via videoconferencing during the COVID-19 pandemic. CHAUDHRY2021 described tele-mental health conversion in a first episode psychosis service in the US. LYNCH2020 took place in a service which provided support to individuals with 'complex psychosis'.

### *Acceptability of video-conferencing delivery of tele-mental health*

*Drop out:* LECOMTE2020 explored the delivery of group CBT for psychosis and reported a 17.6% drop out rate. The study however, did not have a control group to compare drop out. Authors reported that over 50% of participants were required to be loaned an iPad by the service to complete the intervention. Therefore, access to technology could have been a more significant barrier, had the service not had the ability to provide technology.

*Engagement:* Engagement with tele-mental health was measured by attendance rates in four studies (CHAUNDHRY2021, LECOMTE2020, LYNCH2020 and WOOD2021).

The two studies which described tele-health conversion during the COVID-19 pandemic (LYNCH2020 and CHAUNDHRY2021) compared attendance rates of face-to-face appointments pre pandemic vs attendance rates at tele-mental health appointments delivered via video

conferencing. Both studies reported an increase in average attendance rates and a drop in 'no shows' during the COVID-19 time period. However, whilst CHAUNDRY2021 found the difference in engagement to be statistically significant, LYNCH2020 did not. CHAUNDRY2021 speculated that the increase in attendance was due to the elimination of transportation to clinic as a barrier. They described widespread poverty amongst their population and limited public transport. By contrast LYNCH2020 described a service of mostly private paying participants. Therefore, access to up-to-date technology, internet and appropriate privacy for appointments was likely to have been available to participants in their study. Despite both studies consisting of a participant group with different sociodemographic characteristics, there does not appear to have been any reduction in attendance observed in the transition to video-conferencing tele-mental health during the pandemic.

LECOMTE2020 and WOOD2021 reported the piloting of group therapy delivered via video conferencing software. LECOMTE found an average attendance rate of 77% for their CBT for psychosis group. However, their study had no control group by which to compare attendance. WOOD2021 reported an average of 67% attendance across the two ACT groups delivered during the pandemic. However, their sample size was small and groups consisted of only 4 sessions.

*Patient self-report of satisfaction:* Self-reported patient satisfaction of video conferencing tele-mental health delivery was reported in three studies (CHAE2000, STAIN2011 and WOOD2021). Two of these studies explored the use of video conferencing techniques for the purposes of assessment. CHAE2000 reported a trend towards higher levels of acceptability for telemedicine than face to face administration of the BPRS. However, the differences in patient reported satisfaction for the two modalities were not significant, suggesting similar levels of acceptability for video conferencing and face to face assessment.

STAIN2011 reported "high" levels of patient satisfaction in their study which administered both neuropsychological and clinical assessments. Participants undertook assessment via both modalities (videoconferencing and face to face). Results indicated that participants felt comfortable with and could understand the instructions during the videoconference assessment. 83.3% of participants reported they would recommend videoconferencing interview. The findings are however significantly limited due to only 6/11 (54.54%) participants completing the consumer satisfaction questionnaire.

WOOD2021 also administered a client satisfaction questionnaire (CSQ) for participants taking part in their ACT group. Mean CSQ ratings were 26.4 of a total of 32, which suggested reasonably high levels of patient satisfaction. However, the findings related to acceptability were limited by the lack of control group comparison, small sample size and limited number of sessions.

### *Effectiveness of video conferencing delivery of tele-mental health*

*Assessment reliability:* Two studies explored the reliability of administering assessments via videoconferencing (CHAE2000 and STAIN2011). CHAE2011 compared inter-rater reliability of the BPRS administered in person versus video. Authors found that the agreement correlation for the BPRS total score for telemedicine ( $r=0.82$ ) was significantly higher than that for face-to-face interviews ( $r=0.67$ ).

STAIN2011 used repeated measures to assess reliability of neuropsychological and clinical assessments via video conferencing vs face to face. Correlations between the face-to-face and video conferencing modes of assessment were significant for most of the assessments. However, there was a non-significant correlation for the digit span subtest.

Overall, findings from the two studies (CHAE2000 and STAIN2011) suggest good reliability of assessment delivered via video conferencing techniques. However, this was limited by the small sample sizes of both studies. The non-significant correlation of the digit span subtest by STAIN2011 may be due to poor internet connection/lagging of video conferencing software and might suggest that certain tests may be less appropriate to be carried out via videoconferencing.

*Psychological outcomes:* LECOMTE2020 completed pre and post measures of the BRPS and the self-esteem rating scale short form (SERD-SF) in a sample of participants receiving video delivered group CBT for psychosis. Their results showed significant improvements between the pre- and post-measures for negative self-esteem, overall self-esteem, and overall psychiatric symptoms. The findings are however limited by the absence of a control group and a small sample size.

*Hospitalisation:* CHAUDHRY2021 compared the hospitalisation rate for their sample of individuals with early psychosis pre COVID-19 telehealth service conversion and post conversion, finding no significant differences between the two time points.

## Delivery Mode Not Defined

ALSTON2019 did not describe the delivery mode of tele-mental health in their study. Their study explored predictors of treatment adherence for individuals with new onset psychosis. In terms of acceptability of tele-mental health, they found that significantly more (63%) patients who received telehealth care delivery were lost to follow up compared with patients who received face to face care delivery (38%). These findings contrasted that of other studies which generally suggest acceptance of tele-mental health. Of note, most participants in the study were from ethnic minority backgrounds (73.3% African American) unlike other studies, whereby most samples were predominantly Caucasian. The reason for this finding is not clear. It may be that those from ethnic minority backgrounds as part of a marginalised group may feel more suspicious of tele-mental health or that ethnicity may intersect with other poverty and the 'digital divide'. Overall, the findings are significantly limited by poor methodology of the study, and a lack of description of tele-mental health intervention provided and how outcomes were measured.

## Discussion

This systematic review aimed to explore the utilisation of synchronous tele-mental health for individuals with psychosis and synthesise the evidence for its acceptability and effectiveness in this group. Overall, the methodological quality of the included studies was weak. Many studies were exploratory pilot studies or consisted of small sample sizes which lacked adequate statistical power to reliably detect differences or effects. In addition, some studies were limited by their poor reporting.

### Telephone delivered tele-mental health

Telephone delivered tele-mental health was utilised in the included studies to provide; a problem-solving intervention for individuals with schizophrenia spectrum disorders, weekly telephone support to recently discharged inpatients with schizophrenia, support telephone medication management and the delivery of CBT for psychosis (CBTp). In terms of acceptability, drop-out rates for telephone delivered tele-mental health were mixed, with drop-out ranging between 4.5% and 37.5%. Of note BEEBE2004 findings suggested that a face-to-face appointment with the intervention (TIPS) provider may increase engagement with the intervention.

Findings from the review suggest that telephone delivered tele-mental health may be an effective mode of service delivery when used to target an increase in medication adherence. This is consistent with a review by Basit et al. (2019) that found tele-mental health (both synchronous and asynchronous) may improve medication adherence in patients with depression, bipolar disorder, or schizophrenia. The current review found less evidence to suggest that this mode of tele-mental health was effective in reducing psychotic symptoms. Only one study explored the delivery of psychological therapy via telephone (HADDOCK2017/14) which found similar patient and therapist reported therapeutic alliance as previous studies offering face to face CBTp.

The convenience, ease of access and affordability of telephone delivered tele-mental health may make it an acceptable form of mental health service delivery. Irvine et al. (2020) found a small amount of comparative empirical literature which looked at psychological therapy delivered via telephone vs face-to-face. Their review found no evidence of differences between telephone and face to face psychological therapy across a range of interactional features. Kang (2021) found that most patients in their study reported a positive experience with using telephone counselling for individuals experiencing opioid use disorder, despite some concerns regarding an impersonal experience. It may be that adopting a hybrid in-person/tele-mental health approach may be one way to minimise concerns regarding an impersonal experience and allow clinicians to develop a rapport with service users. Vera San Juan (2021) reported that service users in their study valued personalised, flexible options consisting of a combination of different types of remote and face-to-face contact.

### Video delivered tele-mental health

Video delivered tele-mental health in this review was utilised to undertake assessment and facilitate therapeutic groups. Two studies also described conversion of mental health services to tele-mental health care via videoconferencing during the COVID-19 pandemic.

In terms of acceptability, it was reassuring to note that the two studies which described the pivot from face to face to videoconferencing tele-mental health during the COVID-19 pandemic seen no reduction in attendance rates following the transition. In fact, CHAUNDRY021 found a significant increase in attendance rates during the pandemic. However, it is not clear to what extent video delivered tele-mental health may be accepted as a long-term mental health care delivery mode. It may be that the short term 'emergency'

conditions of the COVID-19 pandemic make video delivered tele-mental health an acceptable form of mental health delivery.

In terms of effectiveness, two studies which explored the effectiveness of conducting clinical and neuropsychological assessment via videoconferencing software found there were no significant differences in test scores between face to face and video assessment other than for the digit span subtest. This may be due to poor internet connection/lagging of video conferencing software and might suggest that certain tests may be less appropriate to be carried out via videoconferencing. LECOMTE2020 found significant improvements on BPRS and self-esteem scores following a small pilot study of CBTp.

### Implications

The findings of this review may suggest that clinicians continue to consider and utilise synchronous tele-mental health as a mode of mental health care delivery for individuals experiencing psychosis. However, this should be approached with caution. Whilst studies have shown high levels of internet access and use amongst patients with severe mental illness (SMI)(Thomas et al., 2017) it is important to look beyond access to the internet and consider whether service users have access to adequate broadband connection speed or privacy to take therapeutic video calls. Services supporting individuals with SMI, including psychosis should therefore hold in mind these potential barriers when delivering tele-mental health via video-call. This is of relevance for services supporting individuals with psychosis as research has found that individuals from Black, Asian and Minority Ethnic groups are more vulnerable to developing psychosis (Fearon et al., 2006) and have been found to be disproportionately affected by digital poverty (Zhai, 2021).

Three studies within the review considered digital exclusion within the population. LECOMTE2020 loaned iPads to their participants, CHAE2000 set up videoconferencing equipment in participants homes and WOOD2021 selected a sample of participants that were known to have access to the required technology. This should be held in mind when interpreting the results of these studies. Tele-mental health delivered via telephone may be a more accessible mode of delivery in terms of cost, convenience and availability. However, further research comparing acceptability of different types of tele-mental health is required in order to make this assertion. Overall, mental health services should acknowledge the 'digital divide' and aim to provide equitable care to those in need, whilst following local COVID-19 public health restrictions.

Future research priorities include conducting high quality and adequately powered randomised controlled trials that compare synchronous tele-mental health to face-to-face mental health care. Few included studies compared tele-mental health to an active face-to-face intervention group. Further research on delivery of psychological therapy or whole service conversion would be of benefit. In addition, qualitative research is warranted to explore patient experience of tele-mental health and understand some of the barriers to accessing tele-mental health as well as any perceived benefits of this mode of mental health service delivery. The qualitative component of the mixed methods studies included in this review were particularly poor. None of the studies within the review reported included people with psychosis in their study teams. Future research should seek to actively collaborate with individuals with lived experience in both service and research design.

### Strengths and Limitations

A strength of this review is its inclusion of both mixed methods, qualitative and quantitative studies and all study designs. However, this heterogeneity of study design and methodology provided a challenge to the synthesis of results.

The review decided to include only studies which contained an exclusive sample of patients with psychosis. This set the review apart from previous reviews (Santesteban-Echarr et al., 2020) and allowed for exploration of synchronous tele-mental health amongst patients with psychosis. Reviewers acknowledge that the exclusion of studies containing mixed samples of patients with psychosis and other mental health conditions, may mean that some studies are missed. In addition, this review excluded studies that were not in the English and that were not peer-reviewed. This may have led to relevant studies in grey literature and other languages being missed. In addition, a second rater was not utilised when screening the studies for eligibility. Another limitation is that this review only reported the data for statistically significant findings. A further review may benefit from reporting and/or calculating effect sizes.

Overall, the findings of this review are limited by the heterogeneity of the included studies and their methodological quality. Most studies consisted of small sample sizes with underpowered analysis which may impact and limit the conclusions that can be drawn, particularly relating to the effectiveness of synchronous tele-mental health amongst this population. Evidence relating to acceptability of synchronous tele-mental health is also limited by poor reporting, the lack of an active control group, inconsistent provision of equipment and



selecting participants for whom it was known that access to appropriate technology was available.

## Conclusion

This review provides a unique synthesis of the evidence of the acceptability and effectiveness of synchronous tele-mental health as a mode of mental health care delivery for individuals experiencing psychosis. Given the methodological weaknesses of the included studies, it may be premature to make firm conclusions regarding the acceptability and efficacy of synchronous tele-mental health within this population. Further high-quality research within this area should remain a priority, as tele-mental health continues to be utilised within the current context of the ongoing COVID-19 pandemic.

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## Chapter 2

# **The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic.**

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## Plain Language Summary

**Background:** Formulation is a key skill of Clinical Psychologists. Formulation uses psychological theory to help understand a person's distress and is often used within mental health teams. This has been termed "Team Formulation" and involves a Clinical Psychologist holding a staff meeting with the aim of developing a shared understanding of patients' difficulties. Research on Team Formulation suggests that it helps staff members to gain a better understanding of a patient's behaviour and increases compassion toward the patient. Little is known about what exactly it is about Team Formulation that is useful. The COVID-19 pandemic has also meant that mental health services have had to change the way they do team formulations, holding them online through videoconferencing.

**Aims:** The research used mixed methods with the aim of better understanding the common components of Team Formulation and the 'key ingredients' of the process. This was also the first study to explore virtual team formulation.

**Methods:** The research was conducted within an Early Intervention in Psychosis Service that holds regular Team Formulations. Participants were the staff working within the service. Based on the research and experience, the researcher developed a 'model' of Team Formulation. The researcher then joined 13 Team Formulations, taking notes as an observer. The Team Formulation Quality Rating Scale (TFQS), which highlights the main components of Team Formulation was also completed. Interviews were completed with 7 staff who attended Team Formulations to hear their views. All data gathered was analysed to identify themes and an updated model of Team Formulation was created.

**Results:** The results showed that TFQS scores were lower on items relating to 'consideration of goals and values' and 'consideration of patients' race and culture'. Participants interviewed felt the reflective 'safe space' created during Team Formulations was important. They also said they helped them to feel supported by their colleagues and valued for their work. Team formulation was described as allowing staff to make sense of the thoughts, feelings and behaviours of their service users.

**Practical Applications:** The findings of this study and the model of team formulation outline the important components of Team Formulation that impact on the work of mental health teams. The findings of the research will help psychologists with the planning and practice of formulating within teams.

## Abstract

**Background:** Team Formulation (TF) involves facilitating multidisciplinary health staff to construct a shared understanding of a patient's difficulties. There is a limited understanding of implementation processes and the 'active ingredients' of TF.

**Aims:** To develop an empirical and theory-based Logic Model of TF in order to articulate the key components of TF and its theorised change mechanisms, from the point of view of multidisciplinary mental health staff. A further aim was to explore how TF was adapted during the COVID-19 pandemic.

**Methods:** A mixed methods design was used. The researcher attended TF meetings within an early intervention in psychosis service. An ethnographic stance was adopted by the researcher to gain a deeper understanding of TF. The Team Formulation Quality Rating Scale was completed based on researcher observation of 13 TF meetings. In-depth semi-structured interviews were then conducted with 7 mental health staff.

**Results:** Participants highlighted the importance of the reflective space created during TF. They described feeling supported by their colleagues and valued for their work. Results suggest TF may enhance staff members capacity to mentalise or think together.

**Applications:** It is hoped that the logic model produced by the research will aid further TF research and routine implementation in health and social care services.



## Introduction

Psychosis is characterised by experiences of hearing or seeing things that others cannot (hallucinations), believing things that others find to be unusual (delusions), speaking in a way that others find difficult to understand (thought disorder) and confusion, where individuals may feel out of touch with reality (Cooke, 2017). Psychotic experiences are a key criterion in a range of mental health disorders including Schizophrenia. In individuals who go on to be diagnosed with Schizophrenia, a first episode of psychosis is reported to most commonly occur between the age of 15 and 30 years (Jones, 2013). The diagnosis of Schizophrenia has been associated with poor long-term outcomes (Correll et al., 2018), including reduced life expectancy and poor quality of life. In addition, psychosis can occur in response to stressful life events and circumstances such as abuse and trauma (Read et al., 2008) and is often comorbid with experience of complex trauma and early adversity.

Research shows that individuals from ethnic minority backgrounds are more likely than white people to be diagnosed with Schizophrenia (Boydell et al., 2001). A review by Kirkbride et al, (2012) identified a higher rate of psychotic disorders amongst a number of different ethnic minority groups. Psychotic disorders were found to be most prominent amongst migrants and descendants of Caribbean and black African origin. In addition, racism, and other forms of discrimination (Janssen et al., 2012) as well as social deprivation and living in dense urban environments (Kirkbride et al., 2014) have been shown to increase the risk of developing psychosis.

There is a consensus that if multidisciplinary interventions are delivered early, in a co-ordinated way, during a first episode of psychosis, outcomes are improved and can prevent chronic long-term difficulties (Alvarez-Jimenez et al., 2011; Correll et al., 2018). Early intervention in psychosis (EIP) services have been established in recent decades and offer specialist multidisciplinary care to individuals with FEP. Treatments provided by EIP services are team-based, consisting of multiple co-ordinated multidisciplinary interventions (Albert and Weibell, 2019).

Delivery of co-ordinated and integrated models of health and social care for people with FEP present a challenge. One aspect of complexity is the contribution of multiple and intersecting risk factors, described above, which influence longer term outcomes. A second is the co-ordinated, integrated and individualised delivery of multidisciplinary interventions. Team Formulation may offer a way for mental health staff working with FEP to explore and develop

a nuanced understanding of what precipitated and continues to maintain their patients' difficulties and how best the team might intervene.

### Team Formulation

Team formulation (TF) has been described as the *“process of facilitating a group of professionals to construct a shared understanding of a service user's difficulties”* (Johnstone & Dallos, 2014, p. 5). TF takes various forms. It can involve psychologists developing a formulation of a patient's difficulties which they then share informally with the rest of the team (Christofides et al., 2012). It can also be done via scheduled structured team meetings whereby a clinical psychologist facilitates a team discussion considering a patient's presenting difficulties and the relevant predisposing, maintaining and protective factors in order to inform care planning (Ingham et al., 2008; McTeirnan et al., 2021). The Division of Clinical Psychology (DCP, 2011) have argued that TF benefits individuals, teams, services and organisations. Davenport (2002) found that TF enabled staff to positively impact therapeutic milieu in an inpatient mental health setting. Johnstone et al. (2014) found mental health staff reported that TF increased effective team working, by enhancing communication and drawing on the skills of different professionals. Berry et al. (2009) found that the use of TF in psychosis services enhanced staff's understanding of their patients' difficulties and promoted more positive attitudes towards patients. Unadkat et al. (2015) found that healthcare staff reported benefits including recognition and validation of the work they are doing.

In a systematic review exploring TF and its implementation, Geach et al. (2018) synthesised and described three distinct but overlapping approaches to TF including Structured (multidisciplinary) Consultation, Reflective Practice Meetings, and Unstructured sharing of ideas. Although delivery of TF varied according to these approaches, most included components such as developing a shared understanding and explanation of patients' problems, having an explanation of the development of those problems, use of psychological theory to inform these understandings and plans for future interventions. Reviewers concluded that TF was a “catch all” term which included different practices and highlighted the need for greater standardisation of TF processes.

Although TF shows promise, the lack of standardisation and tools to assess the quality of TF hampers the development and implementation of TF practices. Bucci et al. (2019) developed the Team Formulation Quality Rating Scale (TFQS) to address this gap. The tool was developed based on evidence-based models of formulation, combined with what were

considered core elements of formulation. Bucci et al. (2019) reported good content and face validity as assessed by experts in TF, as well as adequate internal consistency and inter-rater reliability. They recommended that the TFQS may be a useful tool in beginning to define the core aspects of TF.

### Team formulation During the COVID-19 Pandemic

Individuals with severe mental illness, including psychosis, are thought to be at increased risk of COVID-19 and adverse psychological effects of the pandemic (Druss, 2020). COVID-19 has also impacted on the functioning and provision of mental health services, with many services scaling back and working remotely due to national lockdowns. Furthermore, mental health services have been required to adapt to meet the needs of the vulnerable populations they serve. The COVID-19 pandemic is therefore an important contextual factor that needs to be considered in terms of developing further research into the implementation of TF in mental health services, especially as there has been greater utilisation of digital technologies to deliver care (Kola, 2020).

### The proposed study

Arguably TF is best understood as a complex intervention, comprising of several different components which interact on different levels with the aim of producing change (Moore et al., 2015; Skivington et al., 2021). The UK Medical Research Council (MRC) guidance on evaluating complex interventions recommends the use of process evaluation, to develop a theoretical and empirical model to explore how certain components of an intervention lead to changes in clinical outcomes (Moore et al., 2015). Using a process evaluation approach to TF could provide a more in depth understanding of the implementation, mechanisms of impact and contextual moderators of TF.

This study will develop a logic model of TF from the perspective of mental health staff working in an EIP service, to articulate the standardisation across practices and define the potential change mechanisms. Logic models are diagrammatic models, which outline different processes and activities involved in a particular intervention and outline assumptions regarding expected change mechanisms (Afifi et al., 2011). There has been no research exploring the delivery of TF using digital technologies. This research may support in person and virtual TF implementation in the future.

## Aims

The research aimed to develop an empirical and theory-based logic model of TF based on the experiences of staff working in an EIP service. It aimed to articulate the common components and change mechanisms underpinning the process. The study also explored how TF was adapted given the evolving public health measures.

## Method

### Study Design

The study used a mixed methods design with three components.

1. A person-centred ethnographic account of virtual TF meetings.
2. Completion of Team Formulation Quality Rating Scale (TFQS, Bucci et al., 2019) following TF meetings.
3. In-depth semi-structured interviews with staff who attend and contribute to team formulations as part of their routine practice in an EIP service.

Mixed methods were chosen, as qualitative data can provide an in depth understanding of the complex mechanisms of interventions and how context may affect implementation (Moore et al., 2015). The quantitative aspect of the TFQS was used to assess fidelity to previous descriptions of TF, the quality of TF and highlight any possible areas of convergence and divergence with the qualitative data.

### Context

This EIP service in this study is a health board wide provision. The service covers a total population of around 1.2 million people. Service users are people usually within the age range 16-35 years, who appear to be experiencing their first episode of psychosis. Once referred, service users will receive care and treatment from the service for two years. The service is made up of a multidisciplinary staff team consisting of Nurses, Occupational therapists, Clinical Psychologists, Consultant Psychiatrists and Peer support workers. The team operate an open referral system. Referrals are accepted from; Community Mental Health teams, GP's,

Inpatient Services, Primary Care teams, Statutory and Non Statutory services. Self-referrals are accepted in consultation with the individuals GP.

### Reflexivity

The research was conducted during the primary researcher's (HL) 3<sup>rd</sup> year of training as a clinical psychologist. During the research HL completed a specialist third year placement within the EIP service. Being a member of the team may have enhanced the ethnographic component of the study, as HL developed working relationships with some of the staff members. It also meant HL attended TF sessions in the service and was able to observe differences and similarities in the facilitation process across the service. The dual role of 'trainee' and 'researcher' within the service, was a topic of clinical and research supervision throughout the project. These separate meetings encouraged consideration of the dual role and the use of reflective notes throughout the research process. Three of the research participants also worked with HL during her clinical placement. In these interviews it was particularly emphasised to participants the importance of understanding their experiences of TF, whether positive or negative. AG and SC were the research supervisors, and both have been involved in the development of the TF model in the service. The ethnographic component of the study was seen as an important design consideration to enable and empower HL to develop an account of her own experiences and observations of TF, independent of that of her research supervisors.

As a trainee HL was asked to facilitate TF sessions prior to data collection. This brought to awareness the lack of formal training on how to facilitate TF and that the expectation was that trainees rely on observation of their supervisor, before facilitating their own TF. This motivated HL to develop a framework that could be used to help train other psychologists in TF. HL asked her clinical supervisor to score her facilitation using the TFQS and rated herself. This experience, alongside clinical supervision helped HL to gain insight into the complexity of TF. This in turn enhanced the ethnographic component of the research by promoting reflection whilst observing TF.

### Epistemological Stance

The researcher took a 'critical realist' stance during the study. Critical realism focuses on understanding, opposed to describing, social reality (Vincent & O'Mahoney, 2018). Critical realism states that while there is an objective reality, this is mediated by socio-cultural meanings and participants' and researchers' interpretations. It acknowledges both the active

role of the researcher in qualitative research and the social context of the study (Terry, Clarke & Braun, 2017). This position was adopted across the mixed methods used within the study, and therefore findings were considered in relation to the wider context of the EIP service, the COVID-19 pandemic and the public health measures under which the study took place. The researcher's dual role was also considered.

### Ethical Considerations

Ethical issues were considered prior to conducting the research, ensuring that participation in the study was voluntary and refusal to participate would not impact employment. All research data were confidential and transcribed data were fully anonymised. In addition, in taking ethnographic notes HL documented her experiences and observations of TF processes, rather than of specific team members. As the completion of the TQRS documented the quality of a TF conducted by an individual psychologist, informed consent was taken from psychologists before completion of this measure.

Prior to conducting, ethical approval was provided by University of Glasgow Medical Veterinary Life Sciences Research Ethics Committee (ID: 200200005) and managerial approval by NHS Greater Glasgow & Clyde Research & Innovation Department (ID:GN20MH540).

### Intervention: Team Formulation

Within the EIP service, a TF is held for each patient 12 weeks following acceptance to the team. TF last approximately one hour and are held via Microsoft teams. TF is facilitated by a clinical psychologist. Transtheoretical aspects of TF are facilitated using the '5Ps' framework (Macneil et al., 2012) to facilitate discussion and shared understanding of a patient's; Presenting problems, Predisposing factors (what may have made the person vulnerable to developing presenting difficulties), Precipitating factors (what triggers or significant events occurred in the lead up to these difficulties emerging), Perpetuating factors (what maintains these difficulties ) and Protective factors (strengths, assets and resources of the patient). A plan for the person's care, including support to family, is then developed based upon the formulation.

### Participants

There were two groups of participants for the study. The first group of participants were clinical psychologists who facilitated regular team formulation sessions comprising 4 Clinical Psychologists within the EIP service. 4/5 psychologists in the service invited to participate took

part. The remaining psychologist did not participate due to formulation sessions being postponed due to holidays and staff absences during the study period. HL attended a total of 13 TF meetings facilitated by the participating psychologists. The sample size of 13 team formulation sessions was determined to maximise the inclusion of clinical psychologists in the service (detailed in Table 2.1 below).

Table 2.1: Participant Information (Psychologists)

<b>Participant</b>	<b>Number of observed TF facilitated</b>
Psychologist 1	4
Psychologist 2	4
Psychologist 3	3
Psychologist 4	2

The second group of participants were seven staff members from different disciplines within the EIP service (Psychiatry, Nursing and Occupational Therapy) who took part in semi-structured interviews. All staff members in the service were invited to take part in the study via email, totalling 40 mental health professionals. There were no exclusion criteria for participants taking part in the research. 7 staff participated; 4 were nurses, 2 were occupational therapists and 1 was a psychiatrist. Length of time working for the service ranged from 8 months to 13 years. Due to the small team and ensuring the confidentiality of participants, details regarding demographic characteristics of all participants were not collected.

## Materials

The Team Formulation Quality Rating Scale (TFQS, Bucci et al., 2019) is comprised of two parts (Appendix 2.1). The first ‘Section A’ (structure) assessed whether the facilitator of the TF possessed the defined core skills necessary to develop a collaborative multi-disciplinary TF. The second part of the scale ‘Section B’ (content) assessed whether the facilitator addressed the key content to enable them to develop meaningful formulations with the staff in attendance.

The topic guide (Appendix 2.2) for a semi-structured interview was developed based on the logic model, which drew upon the existing literature on team formulation (Appendix 2.3). Questions were developed in consultation and discussion with HL's academic and field supervisors. The interview schedule was structured using questions relating to the MRC complex interventions process evaluation framework (Moore et al., 2015), as well as more general questions regarding participant's own experiences. The interview topic guide was designed to be flexible, whilst providing a structure. Open questions were asked, and participants were encouraged to reflect on positive and negative experiences of TF. Interviews, held via Microsoft Teams, were audio-recorded, transcribed verbatim and then coded.

## Procedures

### Development of the logic model

The logic model in this study was developed in two phases. The first phase involved identifying the proposed inputs, process, contextual moderators and mechanisms of impact, as well as proposed outputs and outcomes from the existing literature and theory surrounding TF and the researchers' experiences (see Appendix 2.3). This initial logic model was then used to guide HL's ethnographic observations of TF, as well as forming the basis of a topic guide to be used in interviews with staff who regularly attend TF meetings within an EIP service. An intended outcome of the study was to revise and update the logic model, based on the themes emerging from both the interviews and ethnographic observational notes.

### Ethnography

Larsen (2007) promoted the use of person-centred ethnography in evaluating complex mental health interventions. Ethnography is a social science research method whereby the researcher becomes an active participant in the study, to gain a deeper insight and understanding of a social process or situation. This methodological approach was adopted with aims of providing rich empirical documentation and examination of the TF process.

An email invitation (see Appendix 2.4) was sent out to all psychologists in the team who facilitate TF, asking them to take part in the study (Participant Information Sheet, Appendix 2.5). As TFs were held virtually, participants completed an online consent form (Appendix 2.6). HL attended TF meetings and made reflective, observational notes throughout. These ethnographic notes focused purely on the facilitation process of the meeting itself. No



reference was made to specific contributions made by staff or the content of the meeting, including patient information.

### Team Formulation Quality Rating Scale (TQRS)

Immediately following TF, HL completed the TFQS. The Clinical Psychologist facilitating the meeting was also given a copy of the TFQS to complete following the meeting. HL met with the psychologist who facilitated the TF following the meeting to compare and agree on final ratings. This discussion with psychologists whilst completing the TFQS was also incorporated into the ethnographic component of the study.

### Semi-structured Interviews

The team leader sent out an email, inviting potential participants to email the researcher if they wished to take part (Appendix 2.7). A Participant Information Sheet (Appendix 2.8) was emailed to potential participants. One to one interviews were conducted with HL on Microsoft teams. Consent was given using an electronic consent form (Appendix 2.9). Interviews lasted for 30-40 minutes and were on average, 33 minutes.

### Data Analyses

Braun and Clarke (2013, p. 50) have previously recommended sample sizes between 6–10 participants for thematic analysis (TA); however they have more recently suggested that the use of data saturation is not consistent with values and assumptions of TA (Braun and Clarke, 2021). They argue sample size is often pragmatic, based on time and resource and argue that sample size requirements should be estimated based on the diversities of identities, experiences and perspectives, alongside the depth and richness of data generated for each participant. Therefore, HL ensured that interviews were conducted across different disciplines and formulations were attended across different teams within the service and delivered by different facilitating psychologists. The topic guide was designed to maximise participants' engagement and managerial support was available to ensure that they could participate during working hours.

There were three different sources of data: ethnographic notes from TF, interview transcriptions and quantitative data from the TFQS. During data analysis HL met with AG to review transcripts, coding, quotes and emerging themes. Transcriptions of the semi structured interviews and ethnographic notes were analysed together using TA. TA was decided to be the most appropriate approach as it offers flexibility and allows for a rich detailed account of data

across an entire data set, rather than focusing on individual experiences (Braun & Clark, 2006). Thematic analysis was conducted in line with Braun and Clark's (2006) stage model of TA (Appendix 2.10).

A mix of deductive and inductive analyses were used. The initial logic model provided a framework for the thematic analysis. Firstly, a deductive approach to coding the data was completed using the conceptual framework provided by the logic model developed in the first stage of the study. Data were coded as being either; inputs, intervention processes, mechanisms of change, contextual moderators, outputs or outcomes (appendix 2.11). Codes were based on the UK Medical Research council guidance on process evaluation of complex interventions (Moore et al., 2015). Following this, data were analysed under each logic model heading using an inductive, bottom-up approach. New codes were generated, and themes were constructed within each of the logic model headings.

The data generated from the TFQS were described and compared with the themes emerging from the TA. Emerging themes from the interviews and ethnography that were not previously captured within the TFQS, were then incorporated into the synthesis of the study findings and their implications.

## Results

For the ethnographic component of the study, HL attended 13 routine TF sessions. The TFQS was completed following each TF. Interviews were conducted with 7 staff members. The data derived from the researchers' ethnographic notes from TF meetings, reflections on the process of completing TFQS, and interview transcriptions were analysed together using thematic analysis. Themes were organised under the 6 Logic model headings: inputs, processes, mechanisms of change, contextual moderators, outputs and outcomes.

### Team Formulation Quality Rating Scale (TQRS)

Results indicated that TF meetings showed reasonably high levels of fidelity to the TF process measured by the TFQS (see Appendix 2.14). From an ethnographic perspective, psychologists reported finding the tool a useful to guide their thinking around facilitating TF. In the early stages of the study, the TFQS '*consideration of goals and values*' item scored poorly. However, in later sessions facilitated by the same psychologists, HL observed facilitators ensuring to explore the patient's goals and values during meetings. Similarly, HL observed the psychologists referring to the other items in the scale in latter TF meetings, where they may

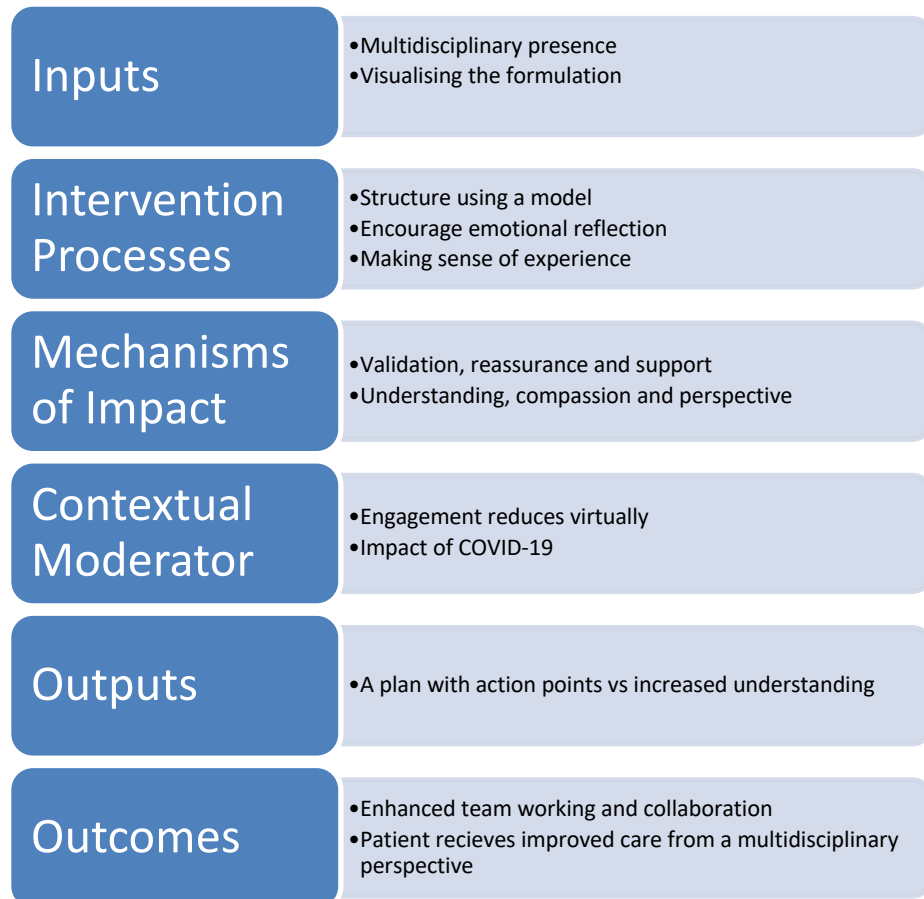
have previously scored lower in earlier ratings. Therefore, the scale itself seemed to influence the practice of psychologists during TF meetings.

It was noteworthy that only 5 of the 13 TF meetings explicitly considered the social and cultural aspects of the patient's life; suggesting that issues of gender, race, culture, gender, living environment, health and other social factors, relevant to formulation, were given limited discussion in the remaining 8 TF meetings. When compared to the qualitative interview data, there was some divergence from the TFQS findings, particularly on item 2A collaboration. Participants in interviews reported engagement with virtual TF to be lower, limiting their contributions to TF discussions. This contrasts with the finding that in 9 of the 13 TF meetings, collaboration was scored as explicitly present (the remaining 4 to some extent). It may be that these contrasting findings on engagement and collaboration reflected HL's experience of TF sessions being online, whereas participants had previous experiences of face-to-face TF.

## Thematic Analysis

Below are the details of the themes generated from the ethnographic observation of TF sessions and semi-structured interviews.

Figure 2.1: List of themes under Logic Model Framework



### Inputs

Inputs refer to the resources or conditions required for TF to be effective.

#### *Multidisciplinary presence*

Having a staff member representing each discipline was reported to to be an important resource for TF to be productive. This included representatives from nursing, occupational

therapy, psychology and psychiatry. Several participants referred to the need for the medical expertise of the consultant psychiatrist.

*“if the main treating consultant isn’t there. Or if there’s not a medical representative...we’re not going to get a full MDT formulation” Nurse 1 (Page 4, Line 165).*

There were often queries or decisions made regarding medication during TF and it appeared to be a platform for facilitating discussion about treatment and medication options with the wider team. Identifying possible input from other disciplines and informal discussion around referrals to other professions were observed during TF. Therefore, the representation of professionals from each discipline allowed MDT informed care planning.

### *Visualising the formulation*

Participants often referred to the way in which formulations were conducted prior to the COVID-19 pandemic and made comparisons with virtual TF process. Previously, psychologists used a white board to document key points of the discussion under the ‘5P’s’ headings. Links between experiences and present difficulties could be drawn visually and a timeline was produced. This visual aspect of TF was reported to be important in encouraging reflection throughout the process.

*“I think there’s just something much more powerful about seeing in it in one place and seeing the connections and how it interlinks” Nurse 3 (Page 6, Line 272).*

The shift to virtual TF led to some variation in how the process was facilitated via Microsoft Teams. Some psychologists attempted to replicate the visual aspect of TF by sharing a word document on the screen and typed discussion points. Other psychologists chose to write their own notes by hand. Participants reported preferring the in person use of the white board vs the shared screen.

*“You don’t get the chance to stop and reflect on it in the way that you do when it’s on the white board, all of it in front of you. I always find when I see it on the whiteboard, I’m more likely to think ‘oh that’s missing’ or ‘oh that’s something’ you know I just feel it has more of an impact than when you’re seeing it virtually.” Nurse 3, (Page 6, Line 272).*

It appeared that the shared screen did not allow the same opportunity for reflection in action during the TF. However, the visual component of TF using the screen sharing facility on Microsoft teams still appeared to be valued.

*"Yeah I think, I do like the visual aspect of it... I do like that. I think that's helpful and on teams you're seeing it visually." Nurse 2 (Page 5 Line 235).*

## Intervention Processes

Intervention processes are the activities and processes that occur as part of TF.

### *Structure using a model*

The Clinical Psychologists were observed to facilitate and structure the TF sessions, outlining the purpose of the session and the patient being discussed. The '5P's' model was the most frequently used formulation model, which seemed to be well accepted by teams.

*"I like the model we use in our team of the 5 P's. Erm, it sort of gives you hooks to hang things on." Psychiatrist (Page 5, Line 205).*

Having a familiar structure or model to each formulation also allowed for keyworkers to prepare information in advance.

*"I think that the 5 P's is what the key workers expect and so they gather their information and data around the 5 P's." Nurse 3 (Page 7, Line 317).*

As the team contributed to the discussion, the psychologist was observed to link points made to the formulation. This was aided by the psychologist expressing clarifying statements and providing frequent summaries. The Clinical Psychologist's expertise in psychological theory and formulation appeared to be important in structuring the TF session, as facilitators were observed to link relevant psychological theory to the patient's presenting difficulties. One participant contrasted this with their previous experiences where TF was facilitated by another professional.

*"there was a period where we had no psychology... We all erm (laughs) took a turn at facilitating and taking notes I think... It felt much more haphazard and much less structured in how it was carried out and more of a 'oh we'll tick that off and we're able to say we've done a formulation for that person'. Rather than there being erm, a meaningful kind of document at the end of it which you know basically guides treatment going forward." Occupational therapist 2 (Page 4, line 181).*

### *Encouraging emotional reflection*

The researcher observed how psychologists encouraged staff to share their emotional experience of working with the patient being discussed. This was done through modelling, whereby the psychologist shared their own thoughts and feelings based on the discussion and this seemed to normalise and validate the emotional experiences of staff.

*“...the facilitator commented ‘I can feel myself getting annoyed just hearing about it. How was it making you feel?’ There was a real attempt to label and validate the emotions of the keyworker.” Ethnographic Notes (Page 3, Line 102).*

All participants commented on the value of TF in providing a reflective space to discuss the emotional impact of their work. During TF, HL observed staff discussing their feelings of frustration or worry, which allowed the psychologist the opportunity to encourage the team to make sense of these emotional experiences. Time was spent considering why patients might elicit emotions amongst staff; particularly those who had disengaged from the service.

*“...you know sometimes we work with a difficult client group... And you do find yourself getting frustrated so sometimes, when you go into formulation with these thoughts you can erm... it’s almost as if you are able to use that as a kind of reflective space to think well actually is there a reason why that’s happening?” Nurse 1 (Page 7, Line 320).*

### *Making sense of experience*

Psychologists were observed to frequently pause and encourage reflections when keyworkers were describing patient histories, to encourage consideration of the possible significance of events. Participants reflected on the understandings of a patient’s difficulties that emerged during this process.

*“There’s always some kind of insight I get into their experiences that maybe helps me get a bit of a better understanding of why they present the way they’re presenting... I think to get that different perspective from the formulation about his childhood and maybe his attachment style that kind of thing has been really helpful personally for me.” Occupational Therapist 1 (Page 7, Line 310).*

Whilst sometimes the psychologist would make links to specific psychological theories, they also utilised less formal or explicit means to consider the impact of experiences on the development of beliefs. For example:

*“The facilitator often used metaphors/links to pop culture/fictional characters as a way of thinking about the client’s presentation and linking to psychological theory but in a less formal ‘jargonistic’ way which appeared to be well accepted by the team who engaged with discussion around this.” Ethnographic Notes (Page 2, Line 43).*

## Mechanisms of Impact

Mechanisms of impact are described as the intermediate mechanisms through which TF activities produce intended (or unintended) effects.

### *Validation, reassurance, and support*

Staff said one of the main benefits of TF was the reassurance and validation they received from colleagues. HL observed that when staff were struggling with a particular patient, the expression of struggling would evoke a response from other team members. Staff would share similar struggles they themselves had faced. TF seemed to offer a context for staff to experience support in response to aspects of their role where they experienced struggles.

*“we get that reassuring arm around you saying, you are actually doing ok and I think we would all feel that we would struggle in this situation.” Nurse 4 (Page 9, Line 398).*

TF seemed to promote an open and accepting culture of mutual peer support. TF was observed to provide an opportunity for the emotionally difficult work of the team to be recognised and validated, which appeared to be of particular value where staff members were struggling.

*“Erm, I think it was good to get (pause) I think when maybe you’re experiencing something difficult that normally is easy for you. I think maybe you give yourself a bit of a hard time so you know, I was thinking I must be doing something wrong, or maybe I’m off the ball so I think it’s quite good. Actually I think it was reassuring when I was hearing people saying you know that actually sounds really horrible.” Nurse 2 (Page 2 Line 80).*

The psychologist was also observed to provide and model validation and recognition of the work of the team in supporting patients.

*“Validation and encouragement observed from other staff members about how tricky it can be to work with these clients who do not engage with the team. Praise given also from the facilitator ‘you’ve done a really good job they’ve not been an easy person to help.’” Ethnographic Notes (Page 10, Line 341).*



### *Understanding, compassion and perspective*

Participants reported that TF increased their understanding of the patient's difficulties. The role of past experiences and trauma were considered, and the team discussed what might have led psychosis to develop as well as the possible impact of past experiences on the development of beliefs. This increased understanding was reported to lead to feelings of empathy and compassion.

*"There's one patient that I work with that contacts regularly and from what I can remember of the formulation, I didn't feel particularly empathetic towards this patient...I mean it probably did impact on how I interacted with them, and what I was prepared to do for them. What the formulation did, it definitely helped with my compassion and empathy with them.*

*Understanding how early experiences had formed a lot of their morals and principles. The way they went about carrying out actions and being impulsive now. Erm, so it definitely helps with that."* Occupational Therapist 2 (Page 8, Line 361).

Staff also commented on the formulation being a time for the team to step away from other service-related issues and work politics and focus exclusively on the patient and their needs.

*"I think often we divert away from patient care and get into politics and all the other aspects of work that get in the way. Whereas formulation is a case where we can actually focus in on the patient."* Nurse 4 (Page 9, Line 386).

### **Contextual Moderators**

Contextual moderators are the factors external to the TF which may influence its implementation, or whether its mechanisms of impact act as intended.

### *Engagement reduces virtually*

Based on interviews with staff and discussions with Clinical Psychologists, a theme of engagement being hampered by the move to virtual TF emerged. This included the presence of distractions at home when completing TF virtually.

*"Sometimes kids just don't have those boundaries. You may be in a meeting you know but if they want a drink, they want a drink...so you know they come and harass you anyway...It's a lot more easy to up and leave... It's a lot more easy to go and deal with something when you have to...Erm, so I think the distractions, is problematic. Whereas when you're in a room actually doing it. It's you know, your focus is on what you're doing."* Nurse 1 (Page 3, Line 119).

In addition, sustaining the level of attention required for formulation was more challenging virtually.

*“I think formulation you need your full concentration for it. I think that’s thing that’s probably the hardest for me personally is trying to keep your focus when you’re on screen... I think even if you just miss five minutes of it. It can be difficult to chip in.” Nurse 4 (Page 2, Line 81).*

Difficulty sustaining attention seemed to reduce contributions to TF. Participants also described struggling to read social cues via video, making contribution more difficult.

*“I think it’s difficult to read the cues a wee bit... I think it’s easier to just sit in silence in (Microsoft) Teams whereas you can read the kind of body language, and there’s something you want to say it. It might not be something that’s very very important or significant.....Those kind of contributions happen a lot more when formulations are done in the room.” Nurse 1 (Page 6, Line 248).*

This suggested that conducting TF virtually may reduce the amount of informal discussion and contributions from the wider team. It was observed in the TF sessions that staff would turn their camera off and put themselves on mute. This is a unique feature of video conferencing software and may have led to reduced engagement compared to in-person TF.

*“I think erm, the format of all of it being delivered on teams can be quite easy for people to sit back and maybe turn off their camera, turn off their sound, take a phone call or erm maybe not be as present as you would be forced to be in person I think.” Occupational Therapist 1 (Page 4, Line 153).*

### *Impact of COVID-19*

Participants described how the ongoing COVID-19 pandemic had impacted their jobs and the TF process. The move to remote working led to staff feeling isolated in their work, with less familiarity of colleagues’ patients; making it more difficult to contribute to formulation discussions. This could also have impacted upon team working and collaboration during TF.

*“It’s that feeling that you’re doing your job with one hand tied behind your back at the moment. You can see a need for someone to be supported to do things in the community but those things aren’t available in the community at the moment in order to do so. That’s the only time where you think, well these are the things we’d like to be doing but of course we can’t do that just now.” Occupational Therapist 2 (Page 7, Line 281).*

The COVID-19 pandemic also resulted in higher referral rates and bigger caseloads for staff teams. This was thought to reduce staff morale and increase stress levels, which then impacted on the quality of TF.

*"... the formulation used to have more enthusiasm, we were all together and I guess there's a difficulty for the psychologist to try to maintain that on a screen. I think that it probably gets worse, as time goes on and as morale is getting lower on a wider scale of the team. Caseloads are getting higher and people are stressed. Possibly, unless it's your own patient I think a keyworker probably might find that their time could be spent doing something else."*

*Psychiatrist (Page 1, Line 39).*

## Outputs

The outputs are what is produced as a result of TF.

### *A plan with specific action points vs a better understanding of the client*

There were mixed views regarding the importance of having a plan with action points at the end of the TF. For some, a more concrete care plan with specific action points increased confidence in the agreed MDT care plan and individual roles.

*"I think as a key worker (a plan with action points) it is really helpful because you are often juggling a lot of different balls...So it feels that when you get that plan, it almost feels that you've got something concrete and it helps you to feel like, oh right I'm on the right track."*

*Nurse 3 (Page 10, Line 452).*

For others, a detailed plan was idealistic, and it was the formulation discussion which enhanced the team's understanding of the patient, that was the main product of the TF. For those staff members, a specific plan was something to strive towards, but not essential.

*"For me, it's I find a better understanding of the patient. What their needs are, and we do have a bit of a plan so, it's not always crystalised but we do have some sort of plan. Which is a bit helpful."* Nurse 1 (Page 9, Line 386).

## Outcomes

Outcomes refer to the effect or impact of TF.

### *Collaboration and team working*

TF was described as promoting multidisciplinary team working and collaboration. This was observed as the psychologists appeared to draw upon the strengths, knowledge and experience of different staff members, across different disciplines. Participants described TF as increasing the feeling of team cohesion. Some staff compared their experience of working in teams without regular TF.

*“I think when I compare it to CMHTs that I’ve worked in...MDT formulation is certainly not routine practice... You see it there that things are very fragmented where there’s people under the care of one discipline. Erm, so if anything formulation keeps everyone glued together, for the patient.” Psychiatrist (Page 7, Line 313).*

Participants also referred to the power of TF in balancing out the hierarchy within teams, with value being given to every staff member’s opinion.

*“I think it feels that everybody’s opinion kind of matters...and actually in some ways I feel that the key workers are empowered because they’ve got so much of the information and I think other members of the multidisciplinary team really acknowledge that in our service.” Nurse 3 (Page 13, Line 570).*

### *Enhanced patient care*

Participants reflected on the role of TF in enhancing the care that patients received from the service.

*“It helps us to put things into perspective then you can then go to help the patient and erm. I suppose help them in the most appropriate way... I think the formulation or reformulation can just get us motivated again. A bit cheesy, but inspire us to help the patient a bit more.” Nurse 4 (Page 12, Line 516).*

TF was described as focusing staff’s thinking on the patient’s needs and many felt that TF, as part of routine practice, increased the quality of care the service provided.

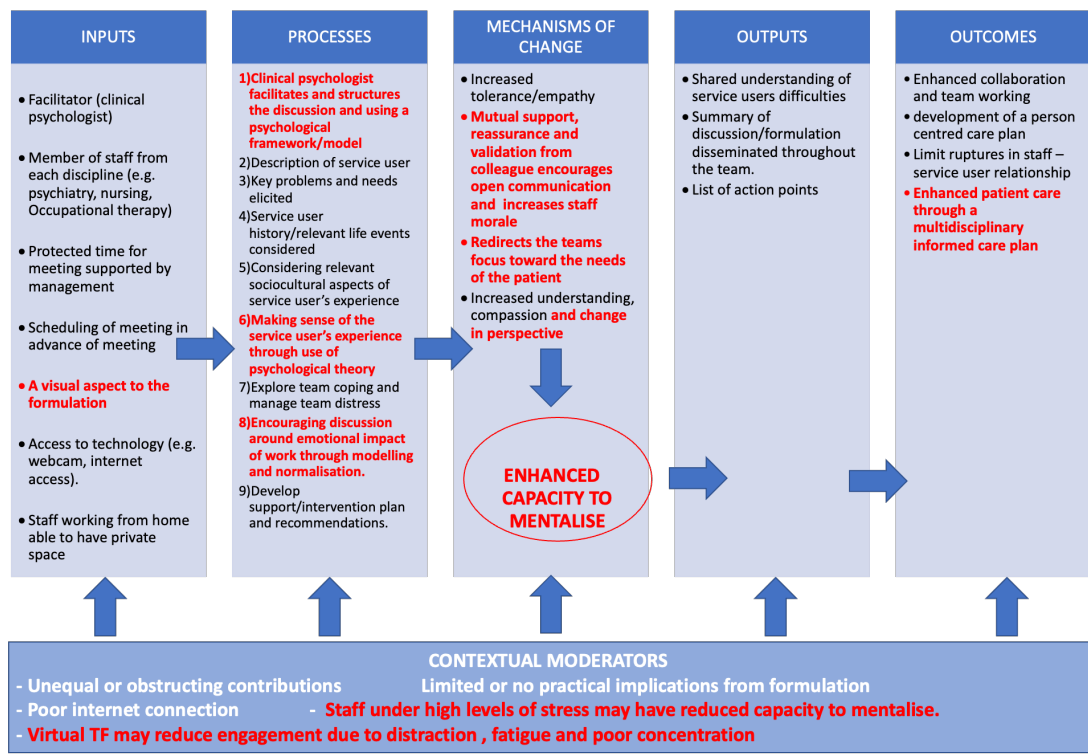
*“I’d like to think that they (TF) enhance the care that’s given. I think that erm, you know I’m definitely proud to be part of a team that is able to be as reactive to patient need. ...We’re able*

to sort of get in really early with that support and provide a really really good service for patients. That's something I'm proud of and I think that yeah team formulation probably is a big big part of that." Occupational Therapist 2 (Page 10, Line 434).

## Discussion

The research aimed to develop an empirical and theory-based logic model of TF, based on the experiences of staff working in an EIP service. It aimed to articulate the common components of this, as well as the change mechanisms underpinning the process. The MRC evaluation of complex intervention framework (2015) was used as a basis to understand TF and to guide the development of a revised logic model (Figure 3), based on the mixed methods analysis utilised in the current study and evidence base for TF. The text in red integrates the findings from the current study. The text in black represents the components of TF identified in the existing literature and the researchers' own experiences.

**Figure 3: Proposed Logic model of team formulation**



## An explanatory framework of Team Formulation

Understanding how participants interact with an intervention, is key to understanding how the intervention produces change (Moore, 2015). The themes derived from the data in this study provided insight into how staff engage and interact with the TF process, in a way that brings about changes in practice. Previous studies highlighted TF as providing the team with a 'safe space' to reflect and explore their emotions towards patients (Johnstone, 2014; Herhaus, 2014). In the current study, clinical psychologists were observed to encourage discussion and reflection about the emotional impact of working with the patient through modelling and normalising. Staff reported valuing the opportunity to discuss the emotional impact of their work, particularly when working with patients who were difficult to engage and where they experienced feelings such as frustration or anxiety. This may be of particular importance, as studies have shown that when feelings of anxiety or fear were not resolved, during periods of crisis, staff were more likely to use more restrictive practices (Thornicroft et al., 2013).

The reflective safe space created by TF may also allow the team to connect with each other. The support and reassurance from colleagues when anxieties or frustrations were expressed during TF encouraged a platform of mutual peer support. This may in turn strengthen relationships within the team and foster a culture of information sharing and joint problem solving. This platform of mutual respect, support and validation may be the underlying change mechanism through which TF produces enhanced team working, described in the literature (Johnstone, 2014; McTeirnan et al., 2021). As well as producing change at the team level, TF was reported to increase staff's understanding of the patient's difficulties, in the context of their previous experiences and the broader system. Like previous research, this increased understanding was reported to enhance staff's compassion toward the patient (Berry et al., 2016, Unadkat et al., 2015).

One potential interpretation of these findings is that the reflective, supportive space provided by TF provided staff the opportunity to 'mentalise'. Mentalisation is described as the ability to understand our own and others mental states and then make sense of the impact of those mental states on the behaviours, thoughts and emotions in both ourselves and others (Allen et al., 2008). This understanding of the beliefs, actions and intentions of a patient, as well as workers own reactions to the patient, is something which was reported in the study as being developed and strengthened during the TF process. It may be that TF provides a context for staff mentalising. Taking a stance of curiosity, TF may facilitate the exploration of hypotheses and encourage the team to place value on gaining a better understanding of patients'

thoughts, feelings and behaviours, as well as their own. Mentalising theory proposes that a well-developed ability to mentalise, strengthens relationships and reduces the adverse effects of disagreements or misinterpretation (Sharp & Fonagy, 2008). Therefore, it could be hypothesised that if TF provides a safe space for and facilitates mentalisation. Mentalisation may serve as a key underlying '*change mechanism*' which strengthens the relationships within teams and between staff and patients. It may be that the reported change in perspective towards clients in the study is facilitated through mentalisation.

### Contextual Moderators

The findings of the current study suggests that mentalising activities may be a change mechanism which brings about the desired outcomes associated with TF. Therefore, it might be important to consider the contextual factors which may reduce or enhance mentalisation activities. Research suggests that capability to mentalise is fragile and can be reduced when under high levels of threat or stress (Liotti & Gilbert, 2011). The findings of this study suggested that increased work-related stress during COVID-19, reduced the quality of formulation discussions and the team's engagement with the process. Therefore, the presence of high levels of stress among a staff team may be a barrier to the implementation of TF, through its effects on mentalisation activities. Further, non-COVID-19 related pressures of working in the NHS such as underfunding and under resource, may also serve as a contextual moderator to successful TF more generally. Research has documented the challenges of a rapid transition to remote working during the COVID-19 pandemic for mental health clinicians (Johnstone et al., 2021), as well as the adverse effects on staffing and caseloads (Billings et al., 2021). The EIP service in this study experienced a 20-25% increase in caseload since the beginning of the COVID-19 pandemic. Research has also found mental health staff experience increased fatigue, anxiety, professional self-doubt and disconnection from their patients when working virtually (Aafjes-van Doorn et al., 2020; Liberati, 2021).

Participants in the current study reported that conducting TF virtually reduced their engagement. It could also be that the digital delivery of TF altered the level of safety experienced by staff. If some team members are not present on screen due to the number of professionals present, the feeling of connectedness to the team may be reduced. There is limited research which examines the effectiveness of virtual reflective practice in team working. However, one study by Baker et al. (2021) found that reflective practice groups held virtually during the COVID-19 pandemic were as effective as face-to-face groups.

## Social and cultural aspects of the patient's experience

A decision was made to include in the logic model, the consideration of socio-cultural aspects of a patient's experience. This was due to the notably poorer scoring of this item on the TFQS within the study. Findings suggested that TF created a reflective space for the team to think together and mentalise, not just about how the patient with psychosis and their family members may be thinking and feeling, but also how staff members themselves responded to patients. This is particularly relevant for incorporating meaningful reflections on the broader influences of race, culture, disability and poverty, including inequalities in power and privilege. Individuals with psychosis are more likely to come from minority ethnic backgrounds (Boydell et al., 2001) and backgrounds characterised by disadvantage, deprivation, poverty and discrimination (Kirkbride et al., 2014). It is important mental health staff team members acknowledge how their own experiences of inequalities, power and privilege, influence how they make sense of psychotic experiences and the impact of broader contextual, cultural and systemic influences on recovery. TF could offer a reflective context for staff to think together about these complexities and their impacts. Jones et al. (2019) highlighted the importance of EIP services developing a contextually nuanced understanding of structural adversity and other psychosocial drivers, which might predict treatment response to better meet the needs of their diverse client group.

## Implications

There may be areas of potential overlap within the logic model developed as part of the study. For example, enhanced collaboration and team working could be viewed as either a 'mechanism of impact' or a 'proposed outcome'. The findings of the study identify the multiple interacting components of TF as an intervention and proposes a theory of how these intervention components link and interact together, the hypothesised change mechanisms and contextual factors which may affect successful implementation. The findings suggested that TF provided a safe space for teams to connect, reflect and think together. This may create optimum conditions for the team to mentalise, leading to outcomes such as enhanced teamworking and improved therapeutic relationships with patients.

This theory has implications for clinical practice and suggests that attention should be paid to maximising the reflective components of TF. For example, the visual elements of TF were described as helping to promote reflection and psychologists facilitating TF encouraged reflection on staff's own emotional reactions. These processes of TF are hypothesised to be



important to facilitate the team's mentalising, that are perhaps not captured by the TFQS and could be considered as additional items in future revisions of the scale. For example, additional items might include 'modelling and encouraging emotional reflection' or more explicit references to how mentalisation activities might be encouraged.

The logic model generated by the research may act as a useful aid in services considering implementing TF. The TFQS showed high levels of fidelity in this study and was noted to be a useful tool by the psychologists who took part. The TFQS, combined with the logic model developed in this study, may be useful tools to facilitate the practice of TF. The TFQS provides professionals with a list of items to cover during TF sessions, whilst the logic model supports the planning or implementation of TF within services. The logic model may provide additional information regarding the potential inputs and conditions required for TF, which might aid implementation. Clinical psychologists who use TF in their practice may also benefit from using the TFQS as a method to enhance and promote good practice.

The findings may suggest that TF may be of value specifically in EIP services. This is due to the nature of team working within EIP services. There are often multiple different professionals delivering multiple coordinated interventions for each patient. TF offers an opportunity for the team to come together and develop a multidisciplinary informed and contextually nuanced understanding of the patients' difficulties. In addition, engaging patients with psychosis and their families can at times be challenging (Doyle et al., 2014) but has been reported to be key to successful treatment. Results of this study suggest TF offers staff the opportunity to make sense of a patient's behaviour and engagement with the service in the context of their past experiences, attachment style or psychotic symptoms. This can allow the team to think together how best to intervene and facilitate engagement.

Future research might seek to assess the validity of the logic model in a different service context. Standardised measures such as the Multidimensional Mentalizing Questionnaire (Gori et al., 2021) may be used to assess for mentalisation in staff teams who use TF to explore the potential role of mentalisation as a change mechanism in TF. Future research could also test and develop upon the existing logic model, by conducting a process evaluation study of the implementation of TF within a different service context and where TF is not routine practice. It may be that contextual moderators differ between services and where TF is not already established practice. Future research would also benefit from the inclusion of people who are using services and their supporters.

## Limitations

The findings of the study are based on ethnographic observations of TF in one EIP service and interviews with a small number of staff. Additionally, the experience and implementation of virtual TF sessions may vary across services, depending on the population being served, which may limit the transferability of the findings to other EIP services. It is noted that qualitative methods are not designed for tests of generalizability, rather as Malterud (2001) has argued, qualitative methods have informational power that provide important insights for practice and understanding. The researcher was completing a placement as a trainee clinical psychologist in the service whilst the research was being conducted. This may have facilitated the ethnographic component of the study by providing an enriched contextual understanding of TF to accompany the interview data from staff. The researcher's dual role of trainee and researcher may have also led to demand characteristics and a favourable view of TF being portrayed by participants interviewed, due to the role of Clinical Psychologists in facilitating TF. Only 7/40 staff took part in the semi structured interviews. The study took place during the context of a National lockdown due to COVID-19. The service was under increased pressure with an increase in workload. It may also be that those staff members who volunteered to take part in the study had a more favourable experience of TF or it could have been that those staff who felt less pressured or stressed in their work felt they had the capacity to participate in research activities. Participants also identified that their engagement with TF reduced when conducted virtually. This may mean that those participants were also less engaged with the virtual interviews conducted as part of the study. The knowledge of being observed during the TF session might have also impacted upon the behaviour of participants. There is a possibility that psychologists facilitating the TF sessions may have been conscious of the researcher's presence as an observer and scorer, which may have led to changes in facilitation process. The discussions held between researcher and psychologists when rating TFQS may have influenced subsequent ratings. The researcher observed psychologists ensure to include aspects that were missed or scored poorly in previous TF sessions. It may also have meant that the researcher was more vigilant to those ratings which were scored more poorly (e.g. consideration of social and cultural aspects of patient experience) in subsequent TF sessions.

TF has been part of routine practice within the service in this study for 10 years. TF is well established, and many multidisciplinary staff have high levels of familiarity with the process. It may be possible that if the study was conducted in a service where TF was newly implemented, the experiences of participants would reflect that context and provide new and

important insights. The analysis of the data was conducted by the primary researcher, although this was done in regular consultation with the researcher's academic supervisor. An important feature of this study was the use of the MRC Complex Interventions Framework to provide a consensus based and empirically derived model to organise the researchers' analysis, observations and construction of themes.

An important limitation of the study and the TF logic model developed is that it was based on staff experiences and views. Therefore, the proposed patient outcomes are based only on the experiences of staff. Key stakeholders such as the wider Multidisciplinary team and service users were also not consulted in the development of the topic guide for the semi structured interviews, which is a further limitation. As the MRC guidelines (Skivington et al., 2021) recommend the input of multiple stakeholders when conducting process evaluations, it will be important that future research aims to include the perspectives of patients and their supporters.

## Conclusions

This is the only study, to the researcher's knowledge, which examines virtual TF in the context of the COVID-19 Pandemic, and the challenges which are brought about implementing TF digitally. The study was limited by a small sample size and the methodological challenges of the researcher occupying a dual role within the service. However, the research does provide important insights into some of the potential change mechanisms underlying the TF process, including the role of TF in facilitating mentalisation, which may improve team relationships and functioning and strengthen relationships between key workers and patients. Further research is merited in different contexts, incorporating the experiences of people with lived experience and their supporters.

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## **Appendix 1.1: Publishing Guidelines SAGE Open journal**

### Aims and Scope

*SAGE Open* publishes peer-reviewed, original research and review articles in an open access format. Accepted articles span the full extent of the social and behavioral sciences and the humanities.

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  - Authors who want their articles to receive free, broad, and global distribution on a powerful, highly discoverable publishing platform.
  - Authors who want their articles branded and marketed by a world-leading social science publisher.
  - Authors who want or need their articles to be open access because of university or government mandates.
-



## 6. Preparing your manuscript

### 6.1 Word processing formats

The preferred format for your manuscript is Word. Templates are available on the [Manuscript Submission Guidelines](#) page of our Author Gateway.

### 6.2 Artwork, figures and other graphics

For guidance on the preparation of illustrations, pictures and graphs in electronic format, please visit SAGE's [Manuscript Submission Guidelines](#).

Figures supplied in color will appear in color online.

### 6.3 Supplemental material

This journal is able to host additional materials online (e.g. datasets, podcasts, videos, images etc) alongside the full-text of the article. These will be subjected to peer-review alongside the article. For more information please refer to our guidelines on submitting supplemental files, which can be found within our [Manuscript Submission Guidelines page](#).

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### 6.5 English language editing services

## 7.2 Title, keywords and abstracts

Please supply a title, short title, an abstract and keywords to accompany your article. The title, keywords and abstract are key to ensuring readers find your article online through online search engines such as Google. Please refer to the information and guidance on how best to title your article, write your abstract and select your keywords by visiting the SAGE Journal Author Gateway for guidelines on [How to Help Readers Find Your Article Online](#).

**Please be sure to write your titles and abstracts with a global, interdisciplinary audience in mind.**

**Articles** should not exceed 10,000 words (excluding references) and may present original research or literature reviews. The word count (which includes all text including the abstract, manuscript, notes, tables, figures, etc.) should appear on the title page.

Manuscripts should include an **abstract** of approximately 150 words, and, beneath the abstract, 4-5 keywords. When preparing your abstract, we suggest you describe the purpose of your research, the methods or approaches you used, your results, and your conclusions.

All manuscripts should follow the style guidelines set forth in the sixth edition of the Publication Manual of the American Psychological Association.

## 7.3 Information required for completing your submission

## Appendix 1.2: Search Strategy

### PSYCHINFO (EBSCO)

S1	DE "Psychosis" OR DE "Acute Psychosis" OR DE "Affective Psychosis" OR DE "Chronic Psychosis" OR DE "HallucinosiS" OR DE "Paranoia (Psychosis)" OR DE "Reactive Psychosis" OR DE "Schizophrenia" OR DE "Paranoid Schizophrenia" OR Schizophrenia" OR DE "Acute Schizophrenia" OR DE "Catatonic Schizophrenia" OR DE "Paranoid Schizophrenia" OR DE "Process Schizophrenia" OR DE "Schizoaffective Disorder" OR DE "Schizophrenia (Disorganized Type)" OR DE "Schizophreniform Disorder" OR DE "Undifferentiated Schizophrenia" OR "Hallucinations" OR "Delusions"
S2	TI ((TI " Psychosis") OR (TI " Early Psychos*") OR (TI " First Episode Psychosis") OR (TI "psychoses") OR (TI "Psychotic*") OR (TI "Schizo*") OR (TI "hallucin*") OR (TI "Delusion*") OR (TI affective psychosis) OR (AB "Psychosis") OR (AB " Early Psychos*") OR (AB " First Episode Psychos*") OR (AB "New Psychosis") OR (AB "psychoses") OR (AB "Psychotic*") OR (AB "Schizo*") OR (AB "hallucin*") OR (AB "Delusion*") OR (AB affective psychos*))
S3	S1 OR S2
S4	DE "Telepsychiatry" OR DE "Telemedicine" OR DE "Video-Based Interventions" OR DE "Digital Video" OR DE "Videoconferencing OR DE "Teleconferencing" OR DE "Telecommunications Media" OR "Online Therapy" OR DE "Computer Mediated Communication"
S5	(TI "Telepsychiatry") OR (TI "Telemedicine") OR (TI "Video-Based Interventions") OR (TI "Digital Video") OR (TI "Videoconferencing") OR (TI "Teleconferencing") OR TI ("Telecommunications Media") OR ( TI "Online Therapy") OR (TI "Computer Mediated Communication") (TI "telemental*") OR (TI "teletherapy") OR (TI "tele-mental") OR (TI "video call") OR (TI "telephone") OR (TI "televideo") OR (AB "Telepsychiatry") OR (AB "Telemedicine") OR (AB "Video-Based Interventions") OR (AB "Digital Video") OR (AB "Videoconferencing") OR (AB "Teleconferencing") OR (AB "Telecommunications Media") OR ( AB "Online Therapy") OR (AB "Computer Mediated Communication") (AB "telemental*") OR (AB "teletherapy") OR (AB "tele-mental") OR (AB "video call") OR (AB "telephone") OR (AB "televideo")
S6	S4 or S5
S7	S3 AND S6

**CINAHL (EBSCO)**

S1	(MH "Psychotic Disorders") OR (MH "Affective Disorders, Psychotic") OR ("Schizoaffective Disorder") OR (MH "Schizoaffective Disorder") OR (MH "Schizophrenia") OR (MH "Hallucinations") OR (MH "Delusions")
S2	TI ((TI " Psychosis") OR (TI " Early Psychos*") OR (TI " First Episode Psychosis") OR (TI "psychoses") OR (TI "Psychotic*") OR (TI "Schizo*") OR (TI "hallucin*") OR (TI "Delusion*") OR (TI affective psychosis) OR (AB "Psychosis") OR (AB " Early Psychos*") OR (AB " First Episode Psychos*") OR (AB "New Psychosis") OR (AB "psychoses") OR (AB "Psychotic*") OR (AB "Schizo*") OR (AB "hallucin*") OR (AB "Delusion*") OR (AB affective psychos*))
S3	S1 or S2
S4	(MH "Telepsychiatry") OR (MH "Telehealth") (MH "Videoconferencing") OR (MH "Videorecording") OR (MH "Audiovisuals") OR (MH "Teleconferencing")
S5	(TI "Telepsychiatry" OR (TI "Telemedicine") OR (TI "Video-Based Interventions") OR (TI "Digital Video") OR (TI "Videoconferencing") OR (TI "Teleconferencing") OR (TI "Telecommunications Media") OR ( TI "Online Therapy") OR (TI "Computer Mediated Communication") (TI "telemental*") OR (TI "teletherapy") OR (TI "tele-mental") OR (TI "video call") OR (TI "telephone") OR (TI "televideo") OR (AB "Telepsychiatry") OR (AB "Telemedicine") OR (AB "Video-Based Interventions") OR (AB "Digital Video") OR (AB "Videoconferencing") OR (AB "Teleconferencing") OR (AB "Telecommunications Media") OR ( AB "Online Therapy") OR (AB "Computer Mediated Communication") (AB "telemental*") OR (AB "teletherapy") OR (AB "tele-mental") OR (AB "video call") OR (AB "telephone") OR (AB "televideo"))
S6	S4 or S5
S7	S3 AND S6

**Medline (OVID)**

S1	"schizophrenia spectrum and other psychotic disorders"/ or psychotic disorders/ or schizophrenia/
S2	Hallucinations/
S3	Affective Disorders, Psychotic/
S4	Delusions/

S5	(Psychosis or Early Psychos or First Episode Psychosis or psychoses or Psychotic or Schizo* or hallucin* or Delusion* or affective psychosis).tw
S6	1 or 2 or 3 or 4 or 5
S7	Videoconferencing/
S8	Telemedicine/
S9	Telephone/
S10	Telecommunications/
S11	(Telepsychiatry or Telemedicine or Video-Based Interventions or Digital Video or Videoconferencing or Teleconferencing or Telecommunications Media or Online Therapy or Computer Mediated Communication or telemental* or teletherapy or tele-mental or video call or telephone or televideo).tw
S12	S7 or S8 or S9 or S10 or S11
S13	S6 AND S12

#### **EMBASE**

S1	psychosis/ or affective psychosis/ or schizoaffective psychosis/ or acute psychosis/
S2	schizophrenia spectrum disorder/ or paranoid schizophrenia/ or schizophrenia/
S3	Hallucination/
S4	Delusion/
S5	(Psychosis or Early Psychos or First Episode Psychosis or psychoses or Psychotic or Schizo* or hallucin* or Delusion* or affective psychosis).tw
S6	1 or 2 or 3 or 4 or 5
S7	telepsychiatry/ or telemedicine/ or telepsychology/ or telepsychotherapy/
S8	videoconferencing/
S9	teleconference/
S10	(Telepsychiatry or Telemedicine or Video-Based Interventions or Digital Video or Videoconferencing or Teleconferencing or Telecommunications Media or Online Therapy or Computer Mediated Communication or telemental* or teletherapy or tele-mental or video call or telephone or televideo).tw.
S11	7 or 8 or 9 or 10
S12	6 and 11

## **Appendix 1.3: Mixed Method Appraisal Tool**

### **How to use the MMAT?**

This document comprises two parts: checklist (Part I) and explanation of the criteria (Part II).

1. Respond to the two screening questions. Responding ‘No’ or ‘Can’t tell’ to one or both questions might indicate that the paper is not an empirical study, and thus cannot be appraised using the MMAT. MMAT users might decide not to use these questions, especially if the selection criteria of their review are limited to empirical studies.
2. For each included study, choose the appropriate category of studies to appraise. Look at the description of the methods used in the included studies. If needed, use the algorithm at the end of this document.
3. Rate the criteria of the chosen category. For example, if the paper is a qualitative study, only rate the five criteria in the qualitative category. The ‘Can’t tell’ response category means that the paper do not report appropriate information to answer ‘Yes’ or ‘No’, or that report unclear information related to the criterion. Rating ‘Can’t tell’ could lead to look for companion papers, or contact authors to ask more information or clarification when needed. In Part II of this document, indicators are added for some criteria. The list is not exhaustive and not all indicators are necessary. You should agree among your team which ones are important to consider for your field and apply them uniformly across all included studies from the same category.

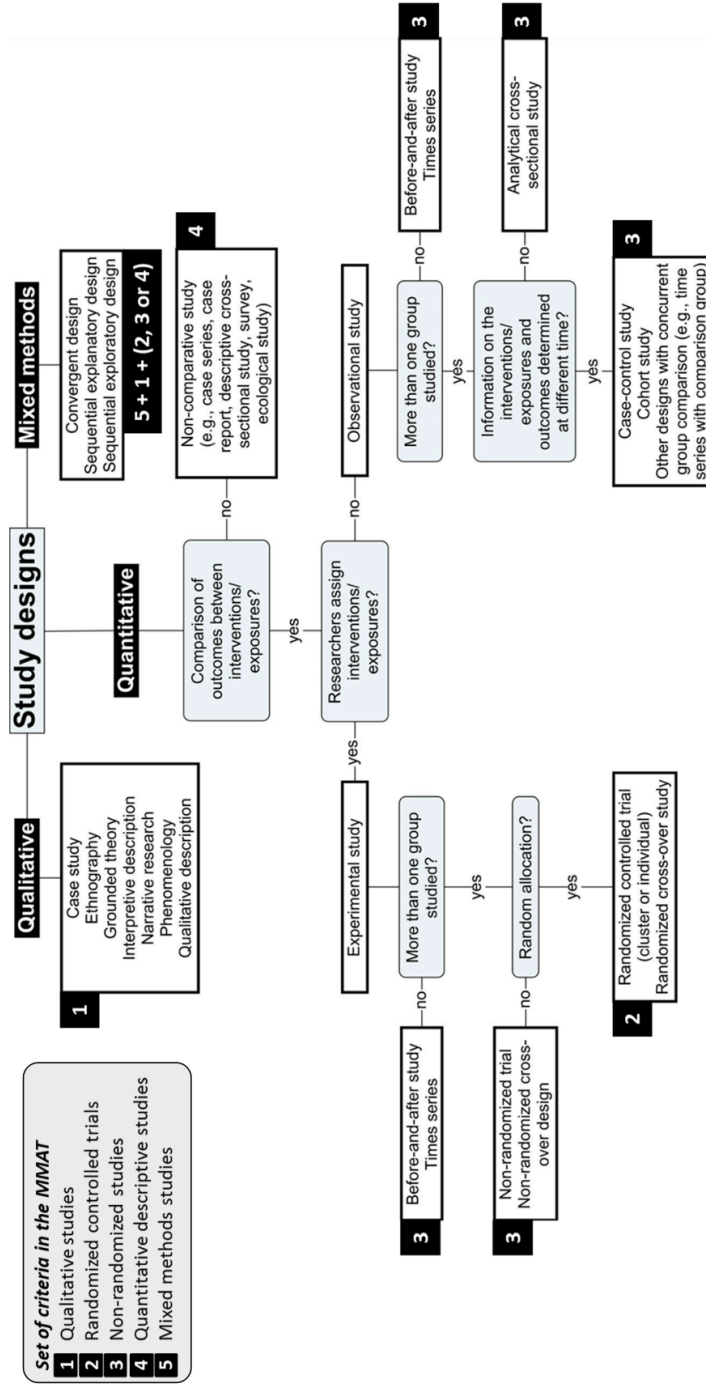
### **How to score?**

It is discouraged to calculate an overall score from the ratings of each criterion. Instead, it is advised to provide a more detailed presentation of the ratings of each criterion to better inform the quality of the included studies. This may lead to perform a sensitivity analysis (i.e., to consider the quality of studies by contrasting their results). Excluding studies with low methodological quality is usually discouraged.

### **How to cite this document?**

Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O’Cathain A, Rousseau M-C, Vedel I. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.

Algorithm for selecting the study categories to rate in the MMAT\*



## Part II: Explanations

1. Qualitative studies	Methodological quality criteria
<p>“Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2013b, p. 3).</p> <p>Common qualitative research approaches include (this list if not exhaustive):</p> <p><b>Ethnography</b> The aim of the study is to describe and interpret the shared cultural behaviour of a group of individuals.</p> <p><b>Phenomenology</b> The study focuses on the subjective experiences and interpretations of a phenomenon encountered by individuals.</p> <p><b>Narrative research</b> The study analyzes life experiences of an individual or a group.</p> <p><b>Grounded theory</b> Generation of theory from data in the process of conducting research (data collection occurs first).</p> <p><b>Case study</b> In-depth exploration and/or explanation of issues intrinsic to a particular case. A case can be anything from a decision-making process, to a person, an organization, or a country.</p> <p><b>Qualitative description</b> There is no specific methodology, but a qualitative data collection and analysis, e.g., in-depth interviews or focus groups, and hybrid thematic analysis (inductive and deductive).</p> <p>Key references: Creswell (2013a); Sandelowski (2010); Schwandt (2015)</p>	<p>1.1. Is the qualitative approach appropriate to answer the research question?</p> <p>Explanations The qualitative approach used in a study (see non-exhaustive list on the left side of this table) should be appropriate for the research question and problem. For example, the use of a grounded theory approach should address the development of a theory and ethnography should study human cultures and societies.</p> <p>This criterion was considered important to add in the MMAT since there is only one category of criteria for qualitative studies (compared to three for quantitative studies).</p> <p>1.2. Are the qualitative data collection methods adequate to address the research question?</p> <p>Explanations This criterion is related to data collection method, including data sources (e.g., archives, documents), used to address the research question. To judge this criterion, consider whether the method of data collection (e.g., in depth interviews and/or group interviews, and/or observations) and the form of the data (e.g., tape recording, video material, diary, photo, and/or field notes) are adequate. Also, clear justifications are needed when data collection methods are modified during the study.</p> <p>1.3. Are the findings adequately derived from the data?</p> <p>Explanations This criterion is related to the data analysis used. Several data analysis methods have been developed and their use depends on the research question and qualitative approach. For example, open, axial and selective coding is often associated with grounded theory, and within- and cross-case analysis is often seen in case study.</p> <p>1.4. Is the interpretation of results sufficiently substantiated by data?</p> <p>Explanations The interpretation of results should be supported by the data collected. For example, the quotes provided to justify the themes should be adequate.</p> <p>1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?</p> <p>Explanations There should be clear links between data sources, collection, analysis and interpretation.</p>

2. Quantitative randomized controlled trials	Methodological quality criteria
<p><b>Randomized controlled clinical trial:</b> A clinical study in which individual participants are allocated to intervention or control groups by randomization (intervention assigned by researchers).</p> <p>Key references: Higgins and Green (2008); Higgins et al. (2016); Oxford Centre for Evidence-based Medicine (2016); Porta et al. (2014)</p>	<p>2.1. Is randomization appropriately performed?</p> <p>Explanations In a randomized controlled trial, the allocation of a participant (or a data collection unit, e.g., a school) into the intervention or control group is based solely on chance. Researchers should describe how the randomization schedule was generated. A simple statement such as "we randomly allocated" or "using a randomized design" is insufficient to judge if randomization was appropriately performed. Also, assignment that is predictable such as using odd and even record numbers or dates is not appropriate. At minimum, a simple allocation (or unrestricted allocation) should be performed by following a predetermined plan/sequence. It is usually achieved by referring to a published list of random numbers, or to a list of random assignments generated by a computer. Also, restricted allocation can be performed such as blocked randomization (to ensure particular allocation ratios to the intervention groups), stratified randomization (randomization performed separately within strata), or minimization (to make small groups closely similar with respect to several characteristics). Another important characteristic to judge if randomization was appropriately performed is allocation concealment that protects assignment sequence until allocation. Researchers and participants should be unaware of the assignment sequence up to the point of allocation. Several strategies can be used to ensure allocation concealment such as relying on a central randomization by a third party, or the use of sequentially numbered, opaque, sealed envelopes (Higgins et al., 2016).</p> <p>2.2. Are the groups comparable at baseline?</p> <p>Explanations Baseline imbalance between groups suggests that there are problems with the randomization. Indicators from baseline imbalance include: "(1) unusually large differences between intervention group sizes; (2) a substantial excess in statistically significant differences in baseline characteristics than would be expected by chance alone; (3) imbalance in key prognostic factors (or baseline measures of outcome variables) that are unlikely to be due to chance; (4) excessive similarity in baseline characteristics that is not compatible with chance; (5) surprising absence of one or more key characteristics that would be expected to be reported" (Higgins et al., 2016, p. 10).</p> <p>2.3. Are there complete outcome data?</p> <p>Explanations Almost all the participants contributed to almost all measures. There is no absolute and standard cut-off value for acceptable complete outcome data. Agree among your team what is considered complete outcome data in your field and apply this uniformly across all the included studies. For instance, in the literature, acceptable complete data value ranged from 80% (Thomas et al., 2004; Zaza et al., 2000) to 95% (Higgins et al., 2016). Similarly, different acceptable withdrawal/dropouts rates have been suggested: 5% (de Vet et al., 1997; MacLachose et al., 2000), 20% (Sindhu et al., 1997; Van Tulder et al., 2003) and 30% for a follow-up of more than one year (Viswanathan and Berkman, 2012).</p> <p>2.4. Are outcome assessors blinded to the intervention provided?</p> <p>Explanations Outcome assessors should be unaware of who is receiving which interventions. The assessors can be the participants if using participant reported outcome (e.g., pain), the intervention provider (e.g., clinical exam), or other persons not involved in the intervention (Higgins et al., 2016).</p> <p>2.5. Did the participants adhere to the assigned intervention?</p> <p>Explanations To judge this criterion, consider the proportion of participants who continued with their assigned intervention throughout follow-up. "Lack of adherence includes imperfect compliance, cessation of intervention, crossovers to the comparator intervention and switches to another active intervention." (Higgins et al., 2016, p. 25).</p>



<b>3. Quantitative non-randomized studies</b>	<b>Methodological quality criteria</b>
<p>Non-randomized studies are defined as any quantitative studies estimating the effectiveness of an intervention or studying other exposures that do not use randomization to allocate units to comparison groups (Higgins and Green, 2008).</p> <p>Common designs include (this list is not exhaustive):</p> <p><b>Non-randomized controlled trials</b> The intervention is assigned by researchers, but there is no randomization, e.g., a pseudo-randomization. A non-random method of allocation is not reliable in producing alone similar groups.</p> <p><b>Cohort study</b> Subsets of a defined population are assessed as exposed, not exposed, or exposed at different degrees to factors of interest. Participants are followed over time to determine if an outcome occurs (prospective longitudinal).</p> <p><b>Case-control study</b> Cases, e.g., patients, associated with a certain outcome are selected, alongside a corresponding group of controls. Data is collected on whether cases and controls were exposed to the factor under study (retrospective).</p> <p><b>Cross-sectional analytic study</b> At one particular time, the relationship between health-related characteristics (outcome) and other factors (intervention/exposure) is examined. E.g., the frequency of outcomes is compared in different population subgroups according to the presence/absence (or level) of the intervention/exposure.</p> <p>Key references for non-randomized studies: Higgins and Green (2008); Porta et al. (2014); Sterne et al. (2016); Wells et al. (2000)</p>	<p>3.1. Are the participants representative of the target population?</p> <p>Explanations Indicators of representativeness include: clear description of the target population and of the sample (inclusion and exclusion criteria), reasons why certain eligible individuals chose not to participate, and any attempts to achieve a sample of participants that represents the target population.</p> <p>3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?</p> <p>Explanations Indicators of appropriate measurements include: the variables are clearly defined and accurately measured; the measurements are justified and appropriate for answering the research question; the measurements reflect what they are supposed to measure; validated and reliability tested measures of the intervention/exposure and outcome of interest are used, or variables are measured using 'gold standard'.</p> <p>3.3. Are there complete outcome data?</p> <p>Explanations Almost all the participants contributed to almost all measures. There is no absolute and standard cut-off value for acceptable complete outcome data. Agree among your team what is considered complete outcome data in your field (and based on the targeted journal) and apply this uniformly across all the included studies. For example, in the literature, acceptable complete data value ranged from 80% (Thomas et al., 2004; Zaza et al., 2000) to 95% (Higgins et al., 2016). Similarly, different acceptable withdrawal/dropouts rates have been suggested: 5% (de Vet et al., 1997; MacLehose et al., 2000), 20% (Sindhu et al., 1997; Van Tulder et al., 2003) and 30% for follow-up of more than one year (Viswanathan and Berkman, 2012).</p> <p>3.4. Are the confounders accounted for in the design and analysis?</p> <p>Explanations Confounders are factors that predict both the outcome of interest and the intervention received/exposure at baseline. They can distort the interpretation of findings and need to be considered in the design and analysis of a non-randomized study. Confounding bias is low if there is no confounding expected, or appropriate methods to control for confounders are used (such as stratification, regression, matching, standardization, and inverse probability weighting).</p> <p>3.5 During the study period, is the intervention administered (or exposure occurred) as intended?</p> <p>Explanations For intervention studies, consider whether the participants were treated in a way that is consistent with the planned intervention. Since the intervention is assigned by researchers, consider whether there was a presence of contamination (e.g., the control group may be indirectly exposed to the intervention) or whether unplanned co-interventions were present in one group (Sterne et al., 2016).</p> <p>For observational studies, consider whether changes occurred in the exposure status among the participants. If yes, check if these changes are likely to influence the outcome of interest, were adjusted for, or whether unplanned co-exposures were present in one group (Morgan et al., 2017).</p>

<b>Methodological quality criteria</b>	
<p><b>5. Mixed methods studies</b></p> <p>Mixed methods (MM) research involves combining qualitative (QUAL) and quantitative (QUAN) methods. In this tool, to be considered MM, studies have to meet the following criteria (Creswell and Plano Clark, 2017): (a) at least one QUAL method and one QUAN method are combined; (b) each method is used rigorously in accordance to the generally accepted criteria in the area (or tradition) of research invoked; and (c) the combination of the methods is carried out at the minimum through a MM design (defined <i>a priori</i>, or emerging) and the integration of the QUAL and QUAN phases, results, and data.</p> <p>Common designs include (this list is not exhaustive):</p> <p><b>Convergent design</b></p> <p>The QUAL and QUAN components are usually (but not necessarily) concomitant. The purpose is to examine the same phenomenon by interpreting QUAL and QUAN results (bringing data analysis together at the interpretation stage), or by integrating QUAL and QUAN datasets (e.g., data on same cases), or by transforming data (e.g., quantization of qualitative data).</p> <p><b>Sequential explanatory design</b></p> <p>Results of the phase 1 - QUAN component inform the phase 2 - QUAL component. The purpose is to explain QUAN results using QUAL findings. E.g., the QUAN results guide the selection of QUAL data sources and data collection, and the QUAL findings contribute to the interpretation of QUAN results.</p> <p><b>Sequential exploratory design</b></p> <p>Results of the phase 1 - QUAL component inform the phase 2 - QUAN component. The purpose is to explore, develop and test an instrument (or taxonomy), or a conceptual framework (or theoretical model). E.g., the QUAL findings inform the QUAN data collection, and the QUAN results allow a statistical generalization of the QUAL findings.</p> <p>Key references: Creswell et al. (2011); Creswell and Plano Clark, (2017); O’Cathain (2010)</p>	<p>5.1. Is there an adequate rationale for using a mixed methods design to address the research question?</p> <p><b>Explanations</b></p> <p>The reasons for conducting a mixed methods study should be clearly explained. Several reasons can be invoked such as to enhance or build upon qualitative findings with quantitative results and vice versa; to provide a comprehensive and complete understanding of a phenomenon or to develop and test instruments (Bryman, 2006).</p> <p>5.2. Are the different components of the study effectively integrated to answer the research question?</p> <p><b>Explanations</b></p> <p>Integration is a core component of mixed methods research and is defined as the “explicit interrelating of the quantitative and qualitative component in a mixed methods study” (Plano Clark and Ivankova, 2015, p. 40). Look for information on how qualitative and quantitative phases, results, and data were integrated (Pluye et al., 2018). For instance, how data gathered by both research methods was brought together to form a complete picture (e.g., joint displays) and when integration occurred (e.g., during the data collection-analysis or/and during the interpretation of qualitative and quantitative results).</p> <p>5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?</p> <p><b>Explanations</b></p> <p>This criterion is related to meta-inference, which is defined as the overall interpretations derived from integrating qualitative and quantitative findings (Teddlie and Tashakkori, 2009). Meta-inference occurs during the interpretation of the findings from the integration of the qualitative and quantitative components, and shows the added value of conducting a mixed methods study rather than having two separate studies.</p> <p>5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?</p> <p><b>Explanations</b></p> <p>When integrating the findings from the qualitative and quantitative components, divergences and inconsistencies (also called conflicts, contradictions, discordances, discrepancies, and dissonances) can be found. It is not sufficient to only report the divergences; they need to be explained. Different strategies to address the divergences have been suggested such as reconciliation, initiation, bracketing and exclusion (Pluye et al., 2009b). Rate this criterion ‘Yes’ if there is no divergence.</p> <p>5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?</p> <p><b>Explanations</b></p> <p>The quality of the qualitative and quantitative components should be individually appraised to ensure that no important threats to trustworthiness are present. To appraise 5.5, use criteria for the qualitative component (1.1 to 1.5), and the appropriate criteria for the quantitative component (2.1 to 2.5, or 3.1 to 3.5, or 4.1 to 4.5). The quality of both components should be high for the mixed methods study to be considered of good quality. The premise is that the overall quality of a mixed methods study cannot exceed the quality of its weakest component. For example, if the quantitative component is rated high quality and the qualitative component is rated low quality, the overall rating for this criterion will be of low quality.</p>

**Appendix 1.4 MMAT Ratings**

<b>1.) Qualitative Studies</b>						
<b>STUDY</b>	<b>DESIGN</b>	<b>1.1 Approach</b>	<b>1.2 Methods adequate to address question</b>	<b>1.3 Findings derived from data</b>	<b>1.4 Interpretation of data</b>	<b>1.5 Coherence</b>
LECOMTE2020	Mixed methods: Before and after time series	Yes	No	No	No	No
WOOD2021	Mixed Methods: Cross sectional analytical	Yes	No	No	No	No
HADDOCK14/17	Mixed Methods: RCT	Yes	Can't tell	Yes	Yes	Can't tell

2.) Quantitative randomised controlled trials						
STUDY	DESIGN	2.1 Randomisation	2.2 Groups comparable at baseline	2.3 Complete outcome data	2.4 Assessor blinding	2.5 Adherence to assigned intervention
BEEBE2001	RCT	Can't tell	Yes	No	No	Yes
BEEBE2004	RCT	Yes	Yes	No	can't tell	Yes
BEEBE2008	RCT	Can't tell	No	Yes	No	Yes
BEEBE2016/17	RCT	can't tell	No	No	can't tell	No
MONTES2010	RCT	Yes	Yes	Yes	No	Yes
SALZER2004	RCT	No	Can't tell	No	Can't tell	No
USLU2018	RCT	Yes	Yes	Yes	No	Yes
HADDOCK2014/17	RCT: Mixed Methods	Yes	No	No	Yes	No

3.) Quantitative non-randomised studies						
STUDY	DESIGN	3.1 participants representative	3.2 appropriate measures	3.3 complete outcome data	3.4 cofounders accounted for	3.5 Intervention administered as intended
ALSTON2019	Cross sectional analytical	Yes	No	Cant tell	No	No
CHAUDHRY2021	Cohort	No	Yes	Yes	No	Yes
CHAE1999	Cross sectional analytical	Yes	Yes	Yes	Yes	Yes
LECOMTE2020	Mixed Methods: Before and after time series	Yes	Yes	No	No	Yes
LYNCH2020	Cohort study	Yes	Yes	Yes	No	Yes
STAIN2011	Before and after time series	Yes	Yes	Unclear	Yes	Yes
WOOD2021	Mixed methods: Cross sectional analytical	No	Yes	No	No	Yes

5.) Mixed methods studies						
STUDY	DESIGN	5.1 rational for MM	5.2 Methods integrated	5.3 Outputs interpreted	5.4 Divergences addressed	5.5 Quality criteria each method
HADDOCK2014/17	RCT: Mixed Methods	No	No	No	No	No
LECOMTE2020	Mixed Methods: Before and after time series	No	No	No	Yes	No No
WOOD2021	Mixed methods: Divergent	No	No	No	No	No

## Appendix 2.1 Team Formulation Quality Rating Scale

*TFQS (Bucci, Knott, Hartley, Raphael & Berry; Journal of Mental Health | 2019*

### **The Team Formulation Quality Scale (TFQS)**

**2 = Yes      1 = To some extent      0 = No**

<b>Item Description</b>	<b>Comments/notes</b>	<b>Score</b>
<b>Section A – Structure</b>		
1. Session opening and agenda setting		
2. Formulation is collaboratively developed. Staff members are actively participating and engaged		
3. Interpersonal effectiveness		
4. Eliciting and responding to feedback		
5. Summary statements		
6. Pacing and efficient use of time		
7. Close of meeting		
<b>Section B – Content</b>		
1. Description of service user		
2. Key problems and needs elicited		
3. Strengths and resources		
4. Goals and values		
5. Significant life events considered in relation to the development and maintenance of service user's beliefs about self/world/others, coping style (positive AND negative) and interpersonal relationships (positive AND negative)		
6. Team coping (emotional impact of service user on staff member/team) and ways the service user draws the staff member/team into responding		
7. Relevant social and cultural aspects of the service user's experience are incorporated (e.g. race, culture, gender, living environment, drug use, physical health etc.)		
8. Support plans/ Interventions/ Recommendations		

**Appendix 2.2: Interview Topic Guide**

<b>Topic Guide for Semi Structured Interview</b>			
<b>Topic</b>	<b>Questions</b>	<b>Prompts</b>	<b>Clarifications</b>
<b>Demographics</b>	<ol style="list-style-type: none"><li>1.) Profession</li><li>2.) How long have you worked in the ESTEEM service?</li><li>3.) What is your professional relationship the client discussed in the team formulation meeting (e.g. key worker).</li></ol>		
<b>Introduction to Interview</b>	<p>Explain: The purpose of the interview today is to try and find out more about your experience of team formulation. It will be more like a conversation but with a focus on your experiences and opinions.</p> <p>Our research is focused on exploring staff experience of Team Formulations Generally. As well as the experience of moving to virtual Team Formulations.</p>		



	<p>Whilst I might begin by asking you about the recent Team formulation held for 'patient X' I will ask that you do not discuss any of the details of specific service users and their care, in order to maintain patient confidentiality.</p> <p>The purpose of the research will be to better understand the outcomes associated with Team Formulation and what are the key mechanisms that bring about change in clinical practice as well as helping us to understand the impacts these meetings may have on service users.</p> <p>We are interested in any challenges/benefits of conducting Team formulations virtually</p> <p>This interview will be recorded and transcribed. Quotations will be used; however, the data will be anonymised.</p> <p>Your participation and reflections as part of the interview wont impact on your employment.</p> <p>Again, I'd like to remind you that participation is voluntary and you do not need to continue.</p> <p>Any questions?</p>
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	Would you consent to take part in the study?		
<b>The Attended Team Formulation</b>	<p>How did you feel the Team Formulation for client 'X' went today?</p> <p>How typical was the meeting today of other Team Formulations that you have attended?</p>	<ul style="list-style-type: none"> <li>• What went well?</li> <li>• What could have gone better?</li> <li>• What have you taken away from the meeting?</li> <li>• Do you have any action points to take away?</li> <li>• Were there any particular challenges completing this TF virtually?</li> <li>• Were there any benefits to holding this TF virtually?</li> </ul>	
<b>Experience of Team Formulation more generally</b>	<p>What has been your experience of attending Team Formulations in your work with the service?</p>	<ul style="list-style-type: none"> <li>• If they are helpful, in what way?</li> <li>• Not so helpful? What could be better? Any difficult experiences?</li> </ul>	

		<ul style="list-style-type: none"> <li>• Are they a good use of clinician's time?</li> </ul>	
<b>Experience of Holding Team Formulation Virtually</b>	<p>How has COVID impacted on team practice of Team Formulation?</p> <p>What has been your experience of the shift to holding Team Formulations virtually?</p>	<ul style="list-style-type: none"> <li>• Benefits</li> <li>• Challenges</li> <li>• What is different about the process when it is conducted virtually?</li> <li>• Is it as effective or useful as holding TF face to face?</li> </ul>	
<b>Resources necessary for successful Team Formulation (inputs)</b>	<p>What do you feel are the required resources or "conditions" for team formulations to be effective or useful?</p>	<ul style="list-style-type: none"> <li>• Are physical resources ( e.g. meeting room, flip chart paper) important?</li> <li>• Who should be in attendance?</li> <li>• Is important that those in attendance have knowledge of the service user?</li> </ul>	

		<ul style="list-style-type: none"> <li>• Does this change when team formulations are completed digitally?</li> </ul>	
<b>Process</b>	<p>What is the typical process of a Team Formulation in your experience?</p> <p>What aspects of this process do you feel are important?</p> <p>Is there anything that could be done differently?</p>	<ul style="list-style-type: none"> <li>• Who facilitates the meeting?</li> <li>• What is typically discussed?</li> <li>• Who contributes?</li> <li>• Do all team members contribute equally?</li> <li>• Is it easy to have equal contributions over microsoft teams?</li> </ul>	
<b>Facilitating Factors</b>	<p>What helps the process of Team Formulation to run smoothly (and be most effective) in your experience?</p>	<ul style="list-style-type: none"> <li>• Is it helpful if the meeting is structured or unstructured?</li> <li>• How important is it that key members of the team are present?</li> </ul>	

		<ul style="list-style-type: none"> <li>• Do Team Formulations feel like a safe space to discuss your emotional reaction to the service user? Does this change if meetings are held virtually?</li> <li>• Are Team members emotional responses an important part of the team formulation process?</li> </ul>	
<b>Obstructive Factors</b>	<p>Are there any circumstances under which the Team Formulation Process is less useful?</p> <p>What prevents Team formulations from running smoothly?</p> <p>What's been your experience of this?</p>	<ul style="list-style-type: none"> <li>• Structured vs unstructured approach</li> <li>• Is it important that the proposed care plan is feasible and able to be implemented by clinicians</li> <li>• Is it important that everyone in the team contributes equally during the team formulation?</li> </ul>	

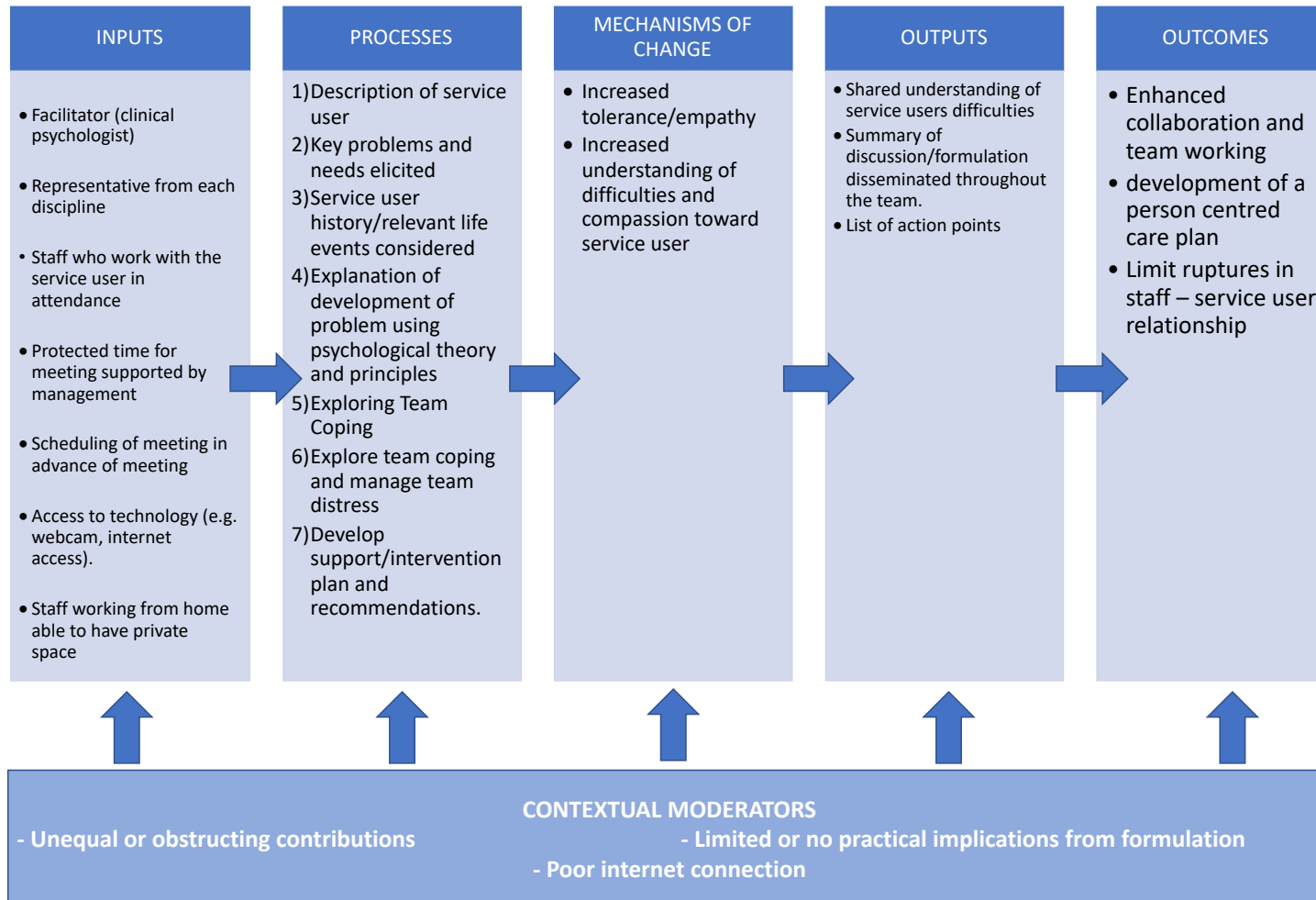
<p><b>Outputs</b></p>	<p>Is it important to have a care plan with action points developed by the end of the meeting?</p>	<ul style="list-style-type: none"> <li>• What is typically produced at the end of a formulation?</li> <li>• Is it useful or important to have a list of action points generated from the meeting?</li> </ul>	
<p><b>Impact on staff</b></p>	<p>How does attendance at Team formulations impact upon your clinical practice?</p> <p>Have there been times when it is more difficult to translate what is discussed in the Team Formulation into clinical practice?</p>	<ul style="list-style-type: none"> <li>• Does it change or impact upon your direct work with service user?</li> <li>• Does it help increase your understanding of the service user's distress?</li> <li>• How does it impact your relationship with the service user?</li> </ul>	

		<ul style="list-style-type: none"> <li>• How does it impact upon your intervention with the client?</li> </ul>	
<b>Impact on Team</b>	Have you found Team Formulations to impact on Team functioning?	<ul style="list-style-type: none"> <li>• Who usually takes the lead on Team formulations?</li> <li>• Who makes the final decisions regarding care planning and how is this reviewed?</li> <li>• How do team formulations increase multi disciplinary working?</li> <li>• Can team formulations be a hindrance to multidisciplinary working</li> <li>• How does the team formulation impact on how the team works with the service user</li> <li>• Power imbalances in the team</li> </ul>	

<b>Impact on the service user</b>	How do you think Team formulations impact on the service user and the care they receive from the service?  What's been your experience of this?	<ul style="list-style-type: none"><li>• Is it easy to see the impact of team formulations on the service user?</li></ul>	
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## Appendix 2.3: Initial Logic Model



## **Appendix 2.4 : Email Invite – Clinical Psychologists**

Email Invite\_Clinical Psychologists\_version 1 22.01.21

Dear <Insert Name Here>

**Title of Project: The Experience and implementation of team formulation in the context of an early intervention in psychosis service during the COVID-19 pandemic and it's aftermath (NHS GG&C R&D Reference GN20MH540)**

You are invited to take part in the research investigating your experiences of implementing our teams' approaches to team formulation in the context the COVID-19 Pandemic and its aftermath.

This project has been approved by the University of Glasgow Research Ethics Committee. The project sponsor is NHS Greater Glasgow & Clyde.

If you decide to take part, the research will involve the researcher attending a team formulation session, which you facilitate as part of your routine practice at Esteem. Prior to the formulation meeting you will be given a copy of the Team Formulation Quality Rating Scale, which is a scale that details some of the proposed components of team formulation. You will have the opportunity to look through this and ask the researcher any questions you may have. It is important for you to know that this is not an evaluative process we are simply interested in the process of team formulation more generally.

During the Team formulation session the researcher will make reflective notes around the process of the meeting. Afterwards you will be asked to complete the Team Formulation Rating Scale, together with the researcher. It is expected that around 20- 30 minutes of your time will be needed to complete the Team Formulation Quality Rating Scale following the Team Formulation session.

Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the attached participant information sheet carefully which details the purpose of the research, and what it will involve in more detail.

Please contact Hannah Lyall ( \_\_\_\_\_ ) if you wish to take part in the research.

If there is anything that is not clear, or if you would like more information please do not hesitate to contact Hannah Lyall (Trainee Clinical Psychologist) at \_\_\_\_\_ or Dr Suzy Clark (Consultant Clinical Psychologist) at [suzy.clark@ggc.scot.nhs.uk](mailto:suzy.clark@ggc.scot.nhs.uk).

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## **Appendix 2.5: Participant Information Sheet – Clinical Psychologists**



### **PARTICIPANT INFORMATION SHEET 2 (Version 3 14/01/2021)**

**Study: *The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic and its aftermath.***

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. If you decide to take part in this study, you will be given a copy of this Participant Information Sheet and the signed consent form to keep.

#### **Purpose of The Study**

This study is being completed by a Trainee Clinical Psychologist at Glasgow University in part fulfilment of their Doctorate in Clinical Psychology award.

The aim of the research is to explore staff experiences of attending Team formulations in the Esteem, Early Intervention Psychosis service in Glasgow. The researchers aim to develop a model of team formulation in order to better understand the common components of this, and important functions of the process. The research will take into consideration the context of the COVID-19 pandemic and its aftermath. It will explore how team formulations can be practiced and how the process of team formulation evolves and adapts throughout the COVID-19 pandemic and its aftermath.

As part of the study, the researcher will attend team formulation meetings. An ethnographic stance will be adopted by the researcher to gain a deeper understanding of team formulation and its implementation. The purpose of the study will be to examine the team formulation process itself, not to record the information about patients. This means the researcher will observe and take research notes during the meeting. Semi structured interviews will be conducted with mental health staff to explore their experience of Team formulation.

**Why Have I Been Invited To Take Part?**

You have been invited to take part in this research because you are a Clinical Psychologist in the Esteem service, whom regularly facilitates Team Formulation meetings as part of your routine practice. We are interested in gaining a better understanding of the Team Formulation process itself including; what 'inputs' (e.g. materials, people present, information) are required for team formulations to go ahead, what things help team formulations to run smoothly and what can stop the process from running smoothly.

**Do I have to take part?**

No, it is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

**What will happen if I do take part?**

Participating in this research will involve the researcher joining a team formulation which you are facilitating. Prior to the formulation meeting you will be given a copy of the Team Formulation Quality Rating Scale (TFQRS) which is a scale which details some of the proposed components of team formulation. You will have the opportunity to look through this and ask the researcher any questions you may have. It is important for you to know that this is not an evaluative process of your skills, we are simply interested in the process of team formulation generally. What is helpful about it and what process issues arise during these formulation sessions.

During the meeting the researcher will make reflective notes; this is relating only to the process and facilitation of the Team Formulation. No specific information about what was said by staff members or information about service users will be included in these notes.

Afterwards we ask that you complete the Team Formulation Rating Scale, as will the researcher. You will both meet together afterwards to compare and agree on the scores.

It is expected that around 20- 30 minutes of your time will be needed to complete the Team Formulation Quality Rating Scale following the Team Formulation session, which typically lasts around 1 hour.

**What are the possible benefits of taking part?**

We cannot guarantee or promise that you will receive any benefits from this research. However, positive feelings associated with contributing to research which aims to develop a better understanding of team formulation, may be a potential benefit for participation.

**What are the possible risks and disadvantages of taking part?**

We do not anticipate any significant risks associated with participation in this project.

**Will my taking part in this study be kept confidential?**

All information which is collected about you, or responses that you provide, during the course of the research will be kept strictly confidential. You will be identified by an ID number, and any information about you will have your name removed so that you cannot be recognised from it. Please note that assurances on confidentiality will be strictly adhered to unless evidence of serious harm, or risk of serious harm, is uncovered. In such cases, the University may be obliged to contact relevant statutory bodies/agencies.

Any data in paper form will be stored in locked filing cabinets in rooms with restricted access to members of the research team at the University of Glasgow. All data in electronic format will be stored on secure password-protected University of Glasgow computers. No one outside of the research team or appropriate governance staff will be able to find out your name, or any other information which could identify you.

All notes made by the researcher will be fully anonymised.

**What will happen to my data?**

NHS Greater Glasgow and Clyde is the sponsor for this study based in Scotland and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. NHS Greater Glasgow and Clyde will keep identifiable information about you for 10 years after the study has finished

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible. You can find out more about how we use your information from Hannah Lyall (Principal Investigator).

We will be collecting and storing identifiable information from you in order to undertake this study (such as your name, profession and amount of time served working for ESTEEM). This means that the University is responsible for looking after your information and using it properly. We may keep identifiable information about you for 10 years after the study has finished and will not pass this information to a third party without your express permission.

Researchers from the University of Glasgow collect, store and process all personal information in accordance with the General Data Protection Regulation (2018).

All study data will be held in accordance with The General Data Protection Regulation (2018)

The data will be stored in archiving facilities in line with the University of Glasgow retention policy of up to 10 years. After this period, further retention may be agreed or your data will be securely destroyed in accordance with the relevant standard procedures.

Your identifiable information might be shared with people who check that the study is done properly. Your data will form part of the study result that will be published in expert journals, presentations, student dissertations/theses (if applicable) and on the internet for other researchers to use. Your name will not appear in any publication.

**What will happen to the results of the research study?**

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission. Information that is published from this study will only include summary information that describes the whole group of participants in this study and not to any individual participant. We will use quotations taken directly from interviews. However, you or your service and its users will not be identifiable based on these quotations.

We will send you a copy of the findings of the research via email, once the study has been completed.

**Who is organising and funding the research?**

The research is being conducted and funded by the University of Glasgow

**Who has reviewed the study?**

The project has been reviewed by The University of Glasgow College of Medical, Veterinary & Life Sciences Ethics Committee and by NHS Greater Glasgow Research and Innovation Directorate.

**Contact for further information**

If you have any concerns about the study or the way it is conducted or if you want to complain about any aspect of this study, please contact either Hannah Lyall (Trainee Clinical Psychologist) or Prof. Andrew Gumley, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1st Floor, Admin Building, University of Glasgow, Glasgow G12 0XH. The usual NHS complaints process is also available to you <https://www.nhsggc.org.uk/get-in-touch-get-involved/complaints/>

**Thank you for reading this Participant Information Sheet**



## Appendix 2.6: Consent Form, Clinical Psychologists



### CONSENT FORM 2 (Version 3 , 14.01.21)

Identification Number for this study:

**Study Title:** The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic and its aftermath.

**Chief Investigator:** Professor Andrew Gumley

**Principal Investigator:** Hannah Lyall

Name of Researcher:

#### CONSENT FORM 2

Please  
initial  
box

I confirm that I have read and understood the Participant Information Sheet 2 version 3 dated 14.01.21.

I have had the opportunity to think about the information and ask questions, and understand the answers I have been given.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights being affected.

I confirm that I agree to the way my data will be collected and processed and that data will be stored for up to 10 years in University archiving facilities in accordance with relevant Data Protection policies and regulations.

I understand that all data and information I provide will be kept confidential and will be seen only by study researchers and regulators whose job it is to check the work of researchers.

I agree that my name, contact details and data described in the information sheet will be kept for the purposes of this research project.

I agree to the researcher making ethnographic notes during the Team Formulation Process.

Consent Form 2 Version 3 14.01.21

**I agree to take part in the study**

---

<b>Participant Name</b>	<b>Date</b>	<b>Signature</b>
.....	... / ... / .....	.....
<b>Researcher</b>	<b>Date</b>	<b>Signature</b>
.....	... / ... / .....	.....

1 copy for participant; 1 copy for researcher

## **Appendix 2.7: Email Invite Semi Structured Interviews**

Email Invitation All Staff\_Version 1 22.01.21

Dear Colleagues

**Title of Project: The Experience and implementation of team formulation in the context of an early intervention in psychosis service during the COVID-19 pandemic and it's aftermath (NHS GG&C R&D Reference GN20MH540)**

You are invited to take part in the research investigating your experiences of implementing our teams' approaches to team formulation in the context the COVID-19 Pandemic and its aftermath.

This project has been approved by the University of Glasgow Research Ethics Committee. The project sponsor is NHS Greater Glasgow & Clyde.

If you decide to take part, the research will require you to participate in one interview to answer questions about your experience of attending Team Formulation meetings within the Esteem Service. Interviews will take place via Microsoft Teams/in person at the Esteem, base, depending on public health restrictions in place at the time. It is expected that the interview will last approximately 1 hour. The interview will be audio recorded. The recording will be retained until the end of the study for the purpose of transcription.

Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the attached Participant Information Sheet carefully which details the purpose of the research, and what it will involve in more detail.

Please contact Hannah Lyall ( \_\_\_\_\_ ) if you would like to participate in the research.

If there is anything that is not clear, or if you would like more information please do not hesitate to contact Hannah Lyall (Trainee Clinical Psychologist) at \_\_\_\_\_  
or Dr Suzy Clark (Consultant Clinical Psychologist) at \_\_\_\_\_  
[suzy.clark@ggc.scot.nhs.uk](mailto:suzy.clark@ggc.scot.nhs.uk).

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## **Appendix 2.8: Participant Information Sheet- Semi Structured Interviews**



### **PARTICIPANT INFORMATION SHEET 1 (Version 3 14.01.21)**

***Study: The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic and its aftermath.***

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. If you decide to take part in this study, you will be given a copy of this Participant Information Sheet and the signed consent form to keep.

#### **Purpose of The Study**

This study is being completed by a Trainee Clinical Psychologist at Glasgow University in part fulfilment of their Doctorate in Clinical Psychology award.

The aim of the research is to explore staff experiences of attending Team formulations in the Esteem, Early Intervention Psychosis service in Glasgow. The researchers aim to develop a model of team formulation in order to better understand the common components of this, and important functions of the process. The research will take into consideration the context of the COVID-19 pandemic and its aftermath. It will explore how team formulations can be practiced and how the process of team formulation evolves and adapts throughout the COVID-19 pandemic and its aftermath.

As part of the study, the researcher will attend team formulation meetings. An ethnographic stance will be adopted by the researcher to gain a deeper understanding of team formulation and its implementation. The purpose of the study will be to examine the team formulation process itself, not to record the information about patients. This means the researcher will observe and take research notes during the meeting. Semi structured interviews will be conducted with mental health staff to explore their experience of Team formulation.

**Why Have I Been Invited To Take Part?**

You have been invited to take part in this research because you are a staff member in ESTEEM. As you know, ESTEEM regularly hold routine team formulation meetings in the service, and we are interested in staff experiences of this process. Including; what 'inputs' (e.g. materials, people present, information) are required for team formulations to go ahead, what things help team formulations to run smoothly and what can stop the process from running smoothly.

**Do I have to take part?**

No, it is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

**What will happen if I do take part?**

Participating in this research will involve taking part in an interview facilitated by the researcher. The interview will either be conducted face to face, or via Microsoft Teams, depending on physical distancing restrictions in place during that time. The interview will be audiotaped with a digital recorder. It is expected the interview will require about 1 hour of your time. The researcher will ask questions relating to your experiences of the team formulation process.

**What are the possible benefits of taking part?**

We cannot guarantee or promise that you will receive any benefits from this research. However, positive feelings associated with contributing to research which aims to develop a better understanding of team formulation, may be a potential benefit for participation.

**What are the possible risks and disadvantages of taking part?**

We do not anticipate any significant risks associated with participation in this project.

**Will my taking part in this study be kept confidential?**

All information which is collected about you, or responses that you provide, during the course of the research will be kept strictly confidential. You will be identified by an ID number, and any information about you will have your name removed so that you cannot be recognised from it. Please note that assurances on confidentiality will be strictly adhered to unless evidence of serious harm, or risk of serious harm, is uncovered. In such cases, the University may be obliged to contact relevant statutory bodies/agencies.

Any data in paper form will be stored in locked filing cabinets in rooms with restricted access to members of the research team at the University of Glasgow. All data in electronic format will be stored on secure password-protected University of Glasgow computers. No one outside of the research team or appropriate governance staff will be able to find out your name, or any other information which could identify you.

All digital recordings will be transcribed by the researcher and fully anonymised. Once the anonymisation of transcripts and their quality has been checked, the digital recordings will then be destroyed following the completion of the research.

**What will happen to my data?**

NHS Greater Glasgow and Clyde is the sponsor for this study based in Scotland and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. NHS Greater Glasgow and Clyde will keep identifiable information about you for 10 years after the study has finished

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible. You can find out more about how we use your information from Hannah Lyall (Principal Investigator).

We will be collecting and storing identifiable information from you in order to undertake this study (such as your name, profession and amount of time served working for ESTEEM). This means that the University is responsible for looking after your information and using it properly. We may keep identifiable information about you for 10 years after the study has finished and will not pass this information to a third party without your express permission.

Researchers from the University of Glasgow collect, store and process all personal information in accordance with the General Data Protection Regulation (2018).

All study data will be held in accordance with The General Data Protection Regulation (2018)

The data will be stored in archiving facilities in line with the University of Glasgow retention policy of up to 10 years. After this period, further retention may be agreed or your data will be securely destroyed in accordance with the relevant standard procedures.

Your identifiable information might be shared with people who check that the study is done properly. Your data will form part of the study result that will be published in expert journals, student dissertations/theses (and on the internet for other researchers to use. Your name will not appear in any publication.

**What will happen to the results of the research study?**

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission. Information that is published from this study will only include summary

information that describes the whole group of participants in this study and not to any individual participant. We will use quotations taken directly from interviews. However, you or your service and its users will not be identifiable based on these quotations.

We will send you a copy of the findings of the research via email, once the study has been completed.

**Who is organising and funding the research?**

The research is being conducted and funded by the University of Glasgow

**Who has reviewed the study?**

The project has been reviewed by The University of Glasgow College of Medical, Veterinary & Life Sciences Ethics Committee and by NHS Greater Glasgow Research and Innovation Directorate.

**Contact for further information**

If you have any concerns about the study or the way it is conducted or if you want to complain about any aspect of this study, please contact either Hannah Lyall (Trainee Clinical Psychologist) or Prof. Andrew Gumley, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1st Floor, Admin Building, University of Glasgow, Glasgow G12 0XH. The usual NHS complaints process is also available to you <https://www.nhsggc.org.uk/get-in-touch-get-involved/complaints/>

**Thank you for reading this Participant Information Sheet**



**Appendix 2.19: Consent Form, semi structured interviews**



**CONSENT FORM 1 (Version 3 - 14.01.21)**

Identification Number for this study:

**Study Title:** The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic and its aftermath.

**Chief Investigator:** Professor Andrew Gumley  
**Principal Investigator:** Hannah Lyall

Name of Researcher:

**CONSENT FORM 1**

Please  
initial  
box

I confirm that I have read and understood the Participant Information Sheet 1 version 3 dated 14.01.21

I have had the opportunity to think about the information, ask questions, and understand the answers I have been given.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights being affected.

I confirm that I agree to the way my data will be collected and processed and that data will be stored for up to 10 years in University archiving facilities in accordance with relevant Data Protection policies and regulations.

I understand that all data and information I provide will be kept confidential and will be seen only by study researchers and regulators whose job it is to check the work of researchers.

I agree that my name, contact details and data described in the information sheet will be kept for the purposes of this research project.

I agree to my interview being audio recorded

I understand that the recorded interview will be transcribed word by word and the transcription stored for up to 10 years in

Staff Consent Form 1 Version 3 (14.01.21)

University archiving facilities in accordance with data protection policies and regulations.

I understand that my information and things that I say in the interview may be quoted in reports and articles that are published about the study, but my name or anything else that could tell people who I am will not be revealed

I agree to take part in the study

---

Participant Name	Date	Signature
.....	... / ... / .....	.....
Researcher	Date	Signature
.....	... / ... / .....	.....

1 copy for participant; 1 copy for researcher

### **Appendix 2.10: BRAUN AND CLARK (2006) STAGE MODEL OF THEMATIC ANALYSIS**

<b>Stage</b>	<b>Details</b>
Familiarisation with the data	The researcher conducted each of the semi structured interviews and sat in on each Team formulation session, which meant that the researcher already had a level of familiarity with the data. The researcher also transcribed each interview. Whilst transcribing initial ideas and impressions were noted.
Generating Initial Codes	Data was coded in two steps.  First a deductive approach to coding across the entire dataset was taken. Coding was completed manually at this stage. The logic model framework was used, and data were coded as referring to either; inputs, intervention processes, contextual moderators, mechanisms of impact, outputs or outcomes associated with the team formulation intervention.  Once data were coded into the logic model framework the data were then coded again. The data under each logic model heading was coded using an inductive, bottom-up approach.
Searching for themes	The lists of codes under each logic model heading (e.g. 'contextual moderators') were transferred on to separate pieces of paper, as recommended by Braun and Clark (2006). First tables were generated and then mind maps to assist the researcher with sorting the different codes into potential themes. A list of candidate themes and all relevant quotations was generated.
Reviewing themes	The themes were then reviewed to ensure that the themes align with the coded extracts and the entire data set (transcribed interviews and ethnographic notes). The researcher met with their research supervisor to discuss and review themes. A logic model was drawn up with the identified themes.
Defining and naming themes	The researcher and research supervisor discussed, refined and operationalised themes and discussed the relationship between themes with regards to the logic model development.
Writing up	Using quotes from the data the researcher constructed an analytic narrative within the logic model framework to describe the proposed key ingredients of team formulation which emerged from the study.

### Appendix 2.11: Logic model codes

<b>Code 1</b>	
<b>Label</b>	<b>Inputs</b>
<b>Description</b>	The resources required for the intervention to be effective.
<b>Code 2</b>	
<b>Label</b>	<b>Intervention Process</b>
<b>Description</b>	The activities and processes that occur as part of the intervention.
<b>Code 3</b>	
<b>Label</b>	<b>Contextual Moderators</b>
<b>Description</b>	Factors external to the intervention which may influence its implementation, or whether its mechanisms of impact act as intended. These may be facilitating factors (i.e. factors which help the intervention to run smoothly) or obstructive factors (i.e. factors which prevent the intervention from running smoothly).
<b>Code 4</b>	
<b>Label</b>	<b>Mechanisms of impact</b>
<b>Description</b>	The intermediate mechanisms through which intervention activities produce intended (or unintended) effects.
<b>Code 5</b>	
<b>Label</b>	<b>Outputs</b>
<b>Description</b>	What is produced as a result of the intervention
<b>Code 6</b>	
<b>Label</b>	<b>Outcome</b>
<b>Description</b>	The effect or impact of the Intervention.

**Appendix 2.12: Example of coding**

Have you had that experience where that's come to light when there's been differences in opinion that have come about during a team formulation session?

Yeah, there has been a few occasions definitely. Certainly within the last (pause) eh when there was another (staff member) within the team who had very strong opinions about one of the patients and I think some of us yeah there was defiantly a big split there. Erm, understanding and formulating did help and we had to do maybe a reformulation a couple of times. But again, it (pause) what it should do is it demonstrates is that it's not the team it's actually the complexities of that individual and what they bring. And it's all based on the right values, we want the patient to do well. I think that's the important thing. I think a formulation can help focus in on that and I think that helps. I think often we divert away from patient care and get in to politics and all the other aspects of work that get in the way. Whereas formulation is a case where we can actually focus in on the patient.

MECHANISM OF IMPACT

- understanding splits in team  
- redirecting focus - patient.

Yeah, definitely.

Outputs

You mentioned a bit about sort of what's produced at the end of the meeting. For you is it important to that there are specific action points that are generated at the end of the team formulation session?

OUTPUTS

Erm (pause) I suppose so. I don't think that's the main thing, if I'm being honest. I think just the process of the discussion is helpful and I think for some patients when we are scratching our head then we would be looking for a plan. But often with these patients its also just about us being able to have a shared understanding, we get that reassuring arm around you saying, you are actually doing ok and I think we would all feel that we would struggle in this situation.

Plan helpful - not main thing discussion important

Yeah

↑ reassurance from keyworkers  
- doing ok  
- ok to struggle.

MECHANISM OF IMPACT

...much of it is maybe bringing out some appropriate

## INPUTS

- too many people → not necessary don't know them = not useful.
- changed mind → can be objective.
- useful for everyone to be part of representative from each discipline minimum.
- medical representative don't need to have met person.
- not full screen sharing

## PROCESS

- psychology led. • keyworker do talking to hospital.
- discuss background + what brought them to hospital.
- important to have some sort of model. → but more of a general discussion
- Useful go through developmental process/background → start with presenting problems + work back flows.
- Not too structured - daunting as new staff
- try do Sp's myself = difficult. Not psychologist I don't think that way.
- Discuss emotional response.

## CONTEXTUAL MODERATORS

- virtual → more distractions
- difficulty keeping things confidential.
- not easy with children at home.
- easier to get up + leave → wouldn't do this in person
- time constraints = leave early.
- less likely say something - virtual can't read cues/body language. Easier sit silence.
- don't like (screen sharing → can't see colleagues).

• get us working together = pos for patient.

## MECHANISMS OF IMPACT

- draws experience of different professions → knowledge about culture.
- experience working asylum seekers - bigger picture.
- learn a lot - what don't know/gaps knowledge
- Safe space - talk emotional response - help understand why feel that way.
- Difficult client group - frustrating formulation reflective space - is there a reason this is happening?)
- experience w/ client challenge - space sit + think → difference to their care + my approach. Opposite direction → understand others = went better
- balance out power.
- help team work - learn how colleagues work help dynamics.
- enhance MDT working.

## OUTPUTS

- less important to have care plan w/ action points → strive toward.
- Sometimes idealistic.
- Better understanding + bit of a plan.
- Within copy sent by psychologist → keyworker printed then uploaded to EMIS.

## OUTCOMES

- focused way working
- Enhanced MDT working
- better care.

**Appendix 2.13: Results of Team Formulation Quality Rating Scale**

<b>Section A - Structure</b>			
	<b>Scores</b>		
	02 = Yes	1 = To some extent	0 = No
1.) Session Opening and agenda setting	10	3	0
2.) Formulation collaboratively developed.	9	4	0
3.) Interpersonal effectiveness	13	0	0
4.) Eliciting and responding to feedback	7	6	0
5.) Summary statements	10	3	0
6.) Pacing and efficient use of time	5	8	0
7.) Close of meeting	8	5	0

<b>Section B - Content</b>			
	<b>Number of formulation sessions gaining each score</b>		
	2 = Yes	1 = To some extent	0 = No
1.) Description of service user	13	0	0
2.) Key problems and needs elicited	11	2	0
3.) Strengths and resources	8	5	0
4.) Goals and values	6	7	0
5.) Significant life events considered	11	2	0
6.) team comping	6	5	1
7.) relevant social and cultural aspects considered	5	8	0
8.) Support plan/intervention	11	2	0

## **Appendix 15: Major Research Project Proposal**

University Supervisor Professor Andrew Gumley, University Of Glasgow

Clinical Supervisor: Dr Suzy Clark, NHS Greater Glasgow and Clyde

Date of Submission: 14.01.2021 version 9

**Project Title:** The experience and implementation of team formulation in the context of an early intervention psychosis service during the COVID-19 Pandemic and its aftermath.

### **Abstract**

**Background:** Team formulation (TF) is promoted by the Division of Clinical Psychology (DCP). There are a number of positive outcomes associated with TF including: enhancing team working, increasing staff empathy, and improving staff understanding of service user's difficulties. However, the evidence base for team formulation remains weak, due to a wide variety of ways in which TF is practiced and a lack of methodology for effectively evaluating TF. There is also limited understanding as to the 'active ingredients' of TF and a lack of attention paid to the complexity of implementation processes. The COVID-19 pandemic has been shown to disproportionately affect certain groups of society, such as those with severe mental ill health such as psychosis. The context of changing physical distancing restrictions requires mental health services to be innovative in their provisions in order to meet the needs of vulnerable populations, such as those with psychosis.

**Aims:** The aim of the current research is to develop an empirical and theory-based logic model of TF in order to articulate the common components of this as well as the change mechanisms underpinning the process of TF. It will explore how team formulations can be practiced innovatively and how the process evolves and adapts throughout the COVID-19 pandemic and its aftermath.

**Methods:** A mixed methods design will be used. The researcher will attend team formulation meetings within the ESTEEM early intervention in psychosis service. A person centered ethnographic stance will be adopted by the researcher to gain a deeper understanding of TF and its implementation. In-depth semi structured interviews will be conducted with mental health staff to explore their experience of TF.



**Applications:** It is hoped that the findings of the research will have clinical implications for applied psychologists and other health care workers in multidisciplinary teams and will aid the planning, implementation and practice of formulating within teams. It is also anticipated that the Logic Model produced by the research will aid implementation of research focused on TF

### Introduction

Formulation has been long identified as a core competency within the profession of clinical psychology (Division of Clinical Psychology (DCP), 2011). Butler (1998, p.2) described formulation as *“the tool used by clinicians to relate theory to practice”*. Formulation is unique to the individual, and is considered as a hypothesis that is continually open to revision in the presence of additional information or experience.

#### **Defining Team formulation**

Team formulation (TF) is promoted and widely encouraged both during clinical training and by professional practice guidelines for clinical psychologists (British Psychological Society, 2015). TF has been described as the “process of facilitating a group of professionals to construct a shared understanding of a service user’s difficulties” (Johnstone & Dallos, 2014, p. 5). However, TF can take various forms and can vary from informal discussions and ‘chipping in’ during multidisciplinary meetings (Christofides et al.,, 2012) to scheduled structured meetings. Geach, Moghaddam and De Boos (2018) conducted a systematic review examining how approaches to TF are defined and implemented in clinical practice. They found that TF was an umbrella “catch all” term which included a number of different practices and highlighted the need for greater standardisation of the ‘team formulation’ process in order to better understand the effective implementation and outcomes associated of this process.

#### **Evaluating Team formulation**

Difficulties in defining and characterizing TF has led to limitations in evaluating the process. Despite this, the DCP state that team formulation provides additional benefits that extends beyond individual therapy (DCP, 2011). They cite that team formulation is beneficial in a number of ways and that benefits are suggested to occur across: individuals, teams, services and organisations. However, these professional assertions of the benefits may be based on a relatively weak and limited evidence base (Geach et al.,, 2017).

Much of the research in this area has involved capturing staff views of the TF process, using self-report questionnaires. Hollingworth and Johnstone (2014) found that staff working in a variety of different adult mental health teams reported team formulation increased effective team working by enhancing communication and drawing on the skills of different professionals. Berry et al., (2016) found that after the introduction of a cognitive behavioural TF model, staff reported an increase in empathy towards clients. In a qualitative study, Unadkat et al., (2015) healthcare staff reported benefits including recognition and validation of the work they are doing as well as an increased understanding of the service users' difficulties. However, staff also reflected that they struggled to identify how these benefits manifested in terms of observable benefits for their clients and changes in their day-to-day clinical practice.

A recent paper by Bucci et al., (2019) attempted to introduce a more standardised approach to the evaluation of TF through the development of a Team Formulation Quality Rating Scale (TFQS). The tool was developed based on evidence-based models of formulation combined with what was considered core elements of formulation that were thought to be common across different interventions and psychological models.

Geach, Moghaddam and De Boos (2019) surveyed clinical psychologists with experience in using TF across a variety of different settings. They identified four types of team formulation practice as well as the factors which facilitate and obstruct the workable implementation of TF. Facilitating (e.g. a clear structure to the, equal contributions from staff members and managing team distress) and obstructive factors (e.g. limited or no formal practical applications and key staff members not in attendance) appeared to be common across all approaches to TF.

A critique of the research in the area of team formulation is that there appears to be a lack of attention given to the complexity and process of TF as a complex intervention. Qualitative methods may provide a method through which to explore and critically examine how desired clinical outcomes are achieved. UK Medical Research Council (MRC) guidance on evaluating complex interventions (Medical Research Council, 2008) recommends developing both theoretical and empirical models to explore and evaluate exactly how certain working components of an intervention lead to changes in specified clinical outcomes (Moore, 2015). This approach could therefore remedy the shortcomings of the current team formulation literature as highlighted by Geach, Moghaddam and De Boos (2017) by paying attention to the interpersonal, procedural and other possible complexities of TF.

### **The impact of COVID-19**

The novel coronavirus (COVID-19) outbreak beginning in 2019 continues to have a significant impact on physical and mental health of the population. The pandemic is thought to increase the number of individuals struggling with poor mental health, due to both the physical effects of the virus itself, the effects of the restrictions put in place to control its spread across the population and the global economic downturn. While the effects of the pandemic is likely to impact the mental health of the population, there are particular vulnerable groups that are more likely to be disproportionately affected. Individuals with severe mental illness, such as psychosis are thought to be at increased risk of COVID-19 and the adverse psychological effects of the pandemic (Druss, 2020). The reasons for this are complex. We know that groups who are more likely to suffer with mental health difficulties (e.g. those with experience of trauma, abuse, discrimination, racism, unemployment, low income) are also the same groups with an increased risk of contracting COVID-19 (Centre for Mental Health, 2020).

Individuals experiencing psychosis are also known to have poorer physical health outcomes and lower life expectancies due to a range of different factors including social and lifestyle factors such as poor diet, increased prevalence of substance use and smoking (Gaughran, 2020). Poor physical health therefore increases likelihood of those experiencing psychosis contracting and suffering more severe complications from the virus. This population is also more likely to be living in poverty (Burns and Esterhuizen 2008), have less secure housing or experience homelessness (Ayano et al., 2019). Tsai and Wilson (2020) report that homelessness increases the risk of becoming infected with the virus and limits the ability to identify and treat. It may also have implications which limit the ability to trace the spread of the virus. Individuals experiencing psychosis have also been reported to have smaller social networks and social support, both pre dating and following first episode psychosis (Gayer-Anderson & Morgan 2013) and this may limit the care and support provided to these individuals if they do become ill with the virus (Druss, 2020). Adherence to protective measures may also be lower for those experiencing psychosis (Maguire et al., 2018) with this population. Periods of acute crisis and ill mental health may make it more challenging for individuals with psychosis to comply with public health guidance for infection control, such as physical distancing and maintaining high personal hygiene standards. This leaves this population more vulnerable to contracting the virus (Brown et al., 2020).

COVID-19 has also impacted on the functioning and provision of mental health services, with many services retreating scaling back and working remotely, particularly in the early phases of the pandemic. Given the complexity of the impact of COVID-19 on individuals with severe mental health difficulties such as psychosis (Brown et al., 2020), mental health services are developing new flexible and innovative ways of working to meet the needs of this vulnerable population. Multidisciplinary mental health teams are required to evolve in the current context, as guidelines and restrictions change.

It will be important to track how the team formulation process itself is practiced innovatively throughout this period of tightening and loosening of government restrictions relating to public health. With more of the workforce working remotely mental health services have begun to utilise virtual communication technology (Lola Kola, 2020) such as video conferencing software which is beginning to be implemented to facilitate team functioning and processes such as Team Formulations. This research will focus on the Team Formulation process during the context of the COVID-19 pandemic and it's aftermath, in a first episode psychosis service in Glasgow.

### **Aims of research**

This research aims to explore the process of TF, during and following the COVID-19 outbreak. The research will focus on developing a logic model of TF, in order to articulate the standardization across practices as well as potential the change mechanisms underpinning the process. Logic models are a diagrammatic models which outline the different processes and activities involved in a particular intervention. Based on theory logic models outline assumptions regarding the expected change mechanisms (Afifi at al., 2011). Logic models have been shown to be useful for planning, implementation and evaluation of community and public health interventions (Kellogg Foundation, 2000). There has yet been no research exploring the virtual delivery of TF and this research may be useful for implementation across services in the future.

The logic model in the current research will be developed in two phases. The first phase will involve identifying the proposed process, contextual moderators, mechanisms of impact as well as proposed outputs and outcomes from the existing literature and theory surrounding team formulation (see Appendix 1). This initial logic model will then be used to guide the researcher's ethnographic observations as well as forming the basis of a semi-structured interview to be used with staff who regularly attend TF meetings within an Early Intervention

for psychosis service in Glasgow. The logic model will then be revised according to the themes which emerge from both the interviews and ethnographic observational notes.

Overall, the research aims to develop an empirical and theory-based logic model of TF in order to articulate the common components of this as well as the change mechanisms underpinning the process of implementing TF in an early intervention in psychosis service throughout the context of the COVID-19 pandemic and its aftermath. The study will explore how TF is practiced innovatively given evolving public health restrictions, to help meet the needs to a population who are at increased risk during the pandemic.

## **Method**

### **Design**

The study will use a mixed methods design with three components: a person centered ethnographic account of virtual team formulation meetings; completion of Team Formulation Quality Rating Scale (TFQRS, Bucci 2019) by the researcher following the attendance of Team formulations and finally; in-depth semi-structured interviews with staff whom attend and contribute to team formulations. TF meetings and subsequent interviews will be held either face to face or virtually via Microsoft Teams depending on public health advice and physical distancing restrictions in place at that time

### ***Ethnography***

Larsen (2007) promoted the use of person centered ethnography in evaluating complex mental health interventions. Ethnography is a social science research method whereby the researcher becomes an active participant in the study, as a means to gaining deeper insight and understanding of a social process or situation. This methodological approach is being adopted in this study with the aim of providing rich empirical documentation and examination of the TF processes and the experienced effects on the staff who are involved.

This is with the aim of elucidating what are the 'active ingredients' of TF as a new complex intervention. Thus the research aims to provide a critical, empirical examination of the TF

processes, how it is experienced and how staff then take these experiences forward in their direct work with service users and their families or other supporters.

### **Participants**

Ten to fifteen staff members of any discipline from the ESTEEM Early Intervention in Psychosis Service in NHS Greater Glasgow & Clyde will be the participants for the study. Staff will be from different disciplines (e.g. nursing, Occupational Therapy). ESTEEM have held regular weekly TF for each service user referred to their service. There is no exclusion criteria for participants taking part in the research.

The researcher will attend routine TF to complete the TFQRS. Participants will then be purposively sampled on the basis of the TFQRS to complete a follow up semi structured video interview. Participants will be sampled in order to reflect a range of different professionals with a variety of experiences. Following analysis, the themes constructed from the qualitative methods will be compared with the ratings on the TFQRS in order to identify consistencies as well as any inconsistencies between these mixed methods.

Sample size will be determined using the principle of Grounded Theory Saturation (Vasileiou et al., 2018). This means that the researcher will stop 'recruiting' i.e. attending Team formulations and conducting interviews when no new data or themes are apparent. The time and scope of the research project will also be taken in to consideration.

### **Materials**

**The Team Formulation Quality Rating Scale** (TFQRS, Bucci et al., 2019). This rating scale is comprised of two parts (see Appendix 3). The first 'Section A' (structure) assesses whether the facilitator of the TF possesses the defined core skills necessary to develop a collaborative multi-disciplinary TF (e.g. conducting preparation for the meeting, implementing the appropriate structure). The second part of the scale 'Section B' (content) assesses whether the facilitator addresses the key content to enable them to develop meaningful formulations with the staff in attendance (e.g. exploring the service user's early life experiences, possible core beliefs and coping styles). There are 7 structure and 8 content items in the TFQRS. Each item is scored on a scale of 0-2 to rate the quality of the facilitator. With 0 = 'No', 1 = 'To Some Extent' and 2 = 'Yes' depending on the extent to which quality criteria for each item of the

scale are evident as guided by the manual, which lists examples of scoring criteria for each item.

**Semi Structured Interview** The topic guide (Appendix 2) for a semi structured video interview will be developed based on the logic model (Appendix 1). These meeting will be held individually either face to face in person or via Microsoft Teams, depending on physical distancing restrictions in place at that particular time. Interviews will be audio-recorded, transcribed verbatim and then coded.

### **Procedures**

For the Semi Structured Interviews, a team leader of the service will send out an email, inviting potential participants to email the researcher if they wish to take part. A Participant Information Sheet and privacy notice will be emailed to potential participants. If semi structured interviews are taking place virtually ,informed consent will be gained, by completion of an online Consent Form. Prior to interview, the researcher will confirm consent is still being given to take part in the research. If semi structured interviews are taking place face to face a paper copy of the consent form will be issued, again allowing participants to have access again to the privacy notice and information sheet and answering any questions participants may have.

For the ethnographic component of the study whereby the researcher attends Team Formulation meetings within the service an email invitation will be sent out to all psychologists in the team who facilitate Team Formulations, asking them to take part in the study. A copy of the participant information sheet (2) and privacy notice will be emailed to all potential participants. If the team formulation is taking place virtually, participants will complete an online consent form. If Team Formulations are occurring in person, the consent form will be issued prior to the Team Formulation meeting beginning.

If consent is gained the researcher will attend routine virtual Team Formulation or face to face meetings held by the ESTEEM service, in which staff members will also be in attendance. One patient is discussed during the meeting and only professionals will be in attendance. Taking an ethnographic stance, the researcher will make reflective and observational notes throughout the meetings. The ethnographic notes that will be made by the researcher during the team formulation will focus purely on the facilitation process of the meeting itself. No reference will

be made to contributions made by any member of staff or any of the content discussed in the meeting e.g. patient information.

Immediately following the Team formulation, the researcher will then complete the Team Formulation Quality Rating Scale (TFQRS) after each meeting (Bucci et al.,, 2019). The Clinical Psychologist facilitating the meeting will be given a copy of the TFQRS to complete following the meeting. This will be issued to along with the participant information sheet. The researcher will also complete a version of the TFQRS. The researcher will meet with the participant following the meeting to compare and agree on final scores.

Purposive sampling based on TFQRS and researcher's ethnographic notes will then be used to ensure a diversity of in depth semi-structured interviews following TF meetings with keyworkers or other staff who are involved in the clinical implementation of the TF.

### **Data Analyses**

There will be three different sources of data; ethnographic reflective notes from TF meetings, transcriptions of semi structured interviews and quantitative data from the completed TFQRS.

Thematic analysis will be used to explore the ethnographic reflective notes as well as the transcriptions from the semi structured interviews. A deductive approach will initially be taken to coding the data using the framework provided by the logic model developed in Stage 1 of the study (see draft Appendix 1). This logic model is based on the existing team formulation literature in terms of; inputs the process of the intervention, facilitating and obstructive factors, perceived mechanisms of impact, outputs and perceived outcomes of team formulations.

These data will then be analysed inductively, in order to construct emerging themes which are not have been captured by our initial logic model. These themes will then be incorporated into a revised logic model.

The themes identified will then be compared to the qualitative data generated from the TFQS to identify areas on convergence and divergence.

The research data will be held securely for a period of ten years after the completion of the research project in accordance with the University's Code of Good Practice in Research. This is



with the exception of audio recordings which will be destroyed after the study has been completed, in line with NHSGG&C guidelines.

Electronic copies of personally-identifiable information, including Consent Forms, recordings and the key to the re-identification of participants with pseudonyms, will be stored separately to the research data using the University Onedrive and will be accessible only by the researchers. Electronic consent forms will be collected if interviews are not to be completed face to face, these will be stored electronically. Any hard copy Consent Forms will be scanned and also stored electronically. The recordings and the key to the pseudonyms will be destroyed once the study is complete.

Names and contact information will not appear anywhere in the transcriptions or researchers ethnographic notes. This information will be stored separately and securely.

Researchers will ensure that the data cannot be connected to an individual through use of pseudonyms and removal of any personally identifiable data from the transcripts (e.g. names of hospitals, wards, service providers etc.).

### **Ethical Considerations**

Before conducting the study, the following ethical issues have been identified:

It will be important that when conducting semi structured interviews with staff members, that the focus is on the experience of the experience of the team formulation meeting itself, as well as the staff member's thoughts about TF more generally, rather than a particular service user and their care plan. This can be ensured through the development of a topic guide for the semi structured interview, which will be developed using the TF logic model (appendix 1). Questions will focus on the staff members experience of Team Formulations and the impact attendance has on the staff member personally, the wider team and their clinical work with service users. To ensure privacy and confidentiality for the service users whom will be discussed during each formulation meeting. The researcher will ensure that the reflective ethnographic notes taken during the formulation meeting will focus only on the process of the meeting itself and not the content.

It will be important to ensure that informed freely given consent is received from the staff members participating in the research. It is important to acknowledge that some staff members may feel conscious or unconscious pressure to take part in research. It will be made clear to staff members that participation is voluntary, reminded of their right to withdraw and

encouraged to ask any questions they may have. The researcher will also hold in mind that participants may feel obligated to report a favourable view of TF, given that these are a routine part of the service and are often led by clinical psychology, which is the discipline of the researcher whom will be conducting interviews.

In the unlikely event where a member of staff may reveal inappropriate practice, the researcher will encourage the staff member to raise this with their supervisor. If a participant does not do so, the researcher would have to follow NHS GG&C staff conduct policy and raise this with appropriate members of the team.

Ethical approval will be sought from University of Glasgow MVLS Research Ethics Committee and managerial approval will be sought from NHS GG&C Research and Innovation Department as well as the ESTEEM Research Governance Committee.

### **Dissemination Plan**

The research will be submitted in partial fulfilment of the Doctorate in Clinical Psychology programme at Glasgow University. A copy of the thesis will be available on the University of Glasgow Website. An email will be sent to participants of the research with the findings of the study, once the research has been completed. A copy of the research may also be distributed to ESTEEM staff via email. The study may also be considered for publication in a scientific journal or presented at a relevant conference at a later date.

<b>Outline</b>	30/09/2019
<b>Draft proposal</b>	09/12/2019
<b>Proposal</b>	27/01/2020
<b>Begin ethics application</b>	February 2020
<b>Final proposal</b>	July 2020
<b>Ethics approval (ideal scenario)</b>	December 2020
<b>Recruitment</b>	January – April 2021
<b>Data collection</b>	January – April 2021
<b>Analyses</b>	April 2021 Onwards
<b>Initial report draft</b>	May 2021
<b>Final report</b>	July 2021

## **Practical Applications**

The findings of this research aims to help provide insight in to how the desired benefits of TF meetings come about in clinical practice. It will also importantly explore how team formulations can be practiced innovatively and how the process evolves and adapts throughout the COVID-19 pandemic and its aftermath. This will have clinical implications for psychologists working in multidisciplinary teams and will aid the planning, implementation and practice of formulating within teams. There will also be research implications, with a theoretical and empirically derived model which researchers can use to develop approaches to the evaluation of TF as a complex intervention.

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