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Theofanis Kyriacou

1665417

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Abstracts

Abstract 1: Systematic Review

Background: Care-experienced children, adolescents, and young people are at increased risk of developing post-traumatic stress disorder (PTSD). However, the effectiveness of trauma-focused interventions, such as trauma-focused cognitive behavioural therapy (TF-CBT) and eye movement desensitisation and reprocessing (EMDR), remains unclear.

Objective: This review aimed to examine the effectiveness of trauma-focused psychotherapies in reducing PTSD symptoms among care-experienced young people.

Participants and Setting: Studies were included if at least 50% of the sample comprised care-experienced individuals aged 0–25 years, evaluated a trauma-focused psychotherapy targeting trauma-related or PTSD symptoms, and reported trauma-related outcomes.

Method: ASSIA, CINAHL, MEDLINE, PsycINFO, Scopus, Social Services Abstracts, Sociological Abstracts, and Social Policy & Practice were searched. A narrative synthesis was conducted, and a meta-analysis of uncontrolled pre–post studies was performed for TF-CBT.

Results: Sixteen studies met inclusion criteria. TF-CBT was the most frequently evaluated intervention, and the pooled pre-post data of eight uncontrolled studies indicated a large effect on child-reported PTSD outcomes, g = 1.07 (95% CI 0.84 to 1.30). However, because the findings were primarily based on uncontrolled studies, they should be interpreted with caution; further limitations are discussed.

Conclusions: Trauma-focused psychotherapies, particularly TF-CBT, showed promising potential for reducing PTSD symptoms in care-experienced young people and provided support for including trauma-focused interventions within services, alongside relational and systemic support. However, the current evidence base remains limited. Future research

should include adequately powered controlled studies, as well as qualitative research exploring acceptability from young people's perspectives.

Abstract 2: Service Improvement Project

Background: Social history includes clients' cultural beliefs, historical trauma, and cohort experiences. However, its integration into psychological formulations in intellectual disability services has yet to be explored. This service improvement project aimed to examine how social history was considered within formulations and to develop recommendations to support inclusion.

Method: Following Patient and Public Involvement consultations, focus groups with psychologists from a community intellectual disability team explored current practice, barriers, and opportunities for integrating social history. Thematic analysis was completed, and recommendations were informed by behaviour change and skills development models.

Results*:* Psychologists noted that social history can contextualise clients' experiences, which then fosters empathy and understanding, but barriers can limit its use. Recommendations included short-term actions and medium-to-long-term actions requiring additional planning.

Conclusions: Recommendations guided by structured models may support more consistent and meaningful integration of social history into psychological formulations. Implementation and evaluation are important next steps.

Abstract 3: Theoretically Driven Research Project

Objectives: To evaluate the effectiveness of a self-administered, online Tetris-based intervention in weakening flashforward imagery in anxious young adults, and to examine whether a 10-minute delay following an imagery reminder is necessary for its effectiveness (i.e., potential boundary condition).

Design: A randomised experimental study using a self-administered online paradigm comparing four intervention conditions with different intervention durations.

Methods: A UK-based sample of young adults aged 18-25 (N=130 powered to detect medium effects) with elevated anxiety symptoms was recruited via Prolific. Participants were randomly assigned to four conditions: reminder +20-min Tetris (R+T20), reminder only (20-min music control), reminder +10-min Tetris (R+T10), or reminder +10-min filler +10-min Tetris (R+F10T10). The procedure involved flashforward recall, randomisation, flashforward vividness and distress ratings (before and after randomisation), and an intrusion provocation task to explore flashforward frequency. Vividness and distress were analysed using mixed-design ANOVAs, and frequency was analysed using a one-way non-parametric test.

Results: Analyses indicated no significant differences between conditions in changes in vividness, distress, or in frequency. Only distress decreased significantly from pre- to post-intervention. Post-hoc power analyses suggested the study may have been underpowered.

Conclusions: The findings do not support the effectiveness of a self-administered Tetris-based intervention in weakening flashforward imagery in anxious young adults, but likely due to limited power to detect potential small effects in online studies. The study cannot conclude whether the 10-min delay following imagery reminder could be omitted. Methodological recommendations are provided to strengthen the online paradigm and further assess this intervention approach in weakening anxiety flashforwards.

Systematic Review of the Literature

Effectiveness of trauma-focused psychotherapies for care-experienced children, adolescents, and young adults: a systematic review and meta-analysis

The Oxford Institute of Clinical Psychology Training & Research

University of Oxford

Internal Supervisor: Dr. Ciorsdan Anderson

Word Count: 5881 (5181 + 700 [5 tables and 2 figures counted as 100 words each)

Target Journal: Child Abuse & Neglect. This journal publishes widely on articles related to child welfare, mental health, and social service systems, of which this review is relevant. This paper will be formatted to the author guidelines when submission is sought for publication.

Declaration of competing interest: None.

Abstract

Background: Care-experienced children, adolescents, and young people are at increased risk of developing post-traumatic stress disorder (PTSD). However, the effectiveness of trauma-focused interventions, such as trauma-focused cognitive behavioural therapy (TF-CBT) and eye movement desensitisation and reprocessing (EMDR), remains unclear.

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Method: ASSIA, CINAHL, MEDLINE, PsycINFO, Scopus, Social Services Abstracts, Sociological Abstracts, and Social Policy & Practice were searched. A narrative synthesis was conducted, and a meta-analysis of uncontrolled pre–post studies was performed for TF-CBT.

Results: Sixteen studies met inclusion criteria. TF-CBT was the most frequently evaluated intervention, and the pooled pre-post data of uncontrolled eight studies indicated a large effect on child-reported PTSD outcomes, g = 1.07 (95% CI 0.84 to 1.30). However, because the findings were primarily based on uncontrolled pre-post studies, they should be interpreted cautiously; further limitations are discussed.

Conclusions: This review provides preliminary evidence from predominantly uncontrolled pre–post studies suggesting that TF-CBT may reduce PTSD symptoms in care-experienced young people, although the current evidence base remains limited and should be interpreted cautiously. Future research should prioritise adequately powered controlled studies across developmental stages, as well as qualitative research exploring acceptability of trauma-focused interventions from young people's perspectives.

AI Statement: Covidence was used during the title and abstract screening stage to support with duplicate removal and to highlight relevant and irrelevant words within titles and abstracts. No generative AI was used as part of this research project.

Introduction

Traumatic experiences in childhood, adolescence and young adulthood are highly prevalent worldwide. Carlson et al. (2020) review found that about two-thirds of youth experience significant adverse experiences, with prevalence varying by type of trauma and context but consistently high across countries. Traumatic experiences include natural disasters, accidents, abuse, neglect, and violence (DiMauro et al., 2014). Such traumatic experiences were shown to be associated with increased mental health difficulties, with an umbrella review suggesting that the pooled prevalence estimate for PTSD in youth was as high as 25% (Tamir et al., 2025).

Given the high prevalence of traumatic experiences in the general youth population, it is important to consider the extent to which this prevalence is amplified, if at all, among youth with care experience. Studies reported that 80% to 90% of children in foster care experienced at least one traumatic event (Salazar et al., 2013), with nearly half exposed to four or more types of trauma (Fratto, 2016). Consequently, the impact of these traumatic experiences was found to lead to higher prevalence of PTSD and other mental health difficulties than the general population (Engler et al., 2022) and attachment disruption (Vasileva & Petermann, 2018). These findings also extend to youth in adoptive, kinship and residential care (Anthony et al., 2022; Beyerlein et al., 2019; Brodzinsky et al., 2022; Collin-Vézina et al., 2011; Harris et al., 2025). In relation to attachment disruption and elevated PTSD symptoms, similar patterns were also observed among young people who experienced refugee displacement, war-related trauma, and parental bereavement due to AIDS.

Research assessing the mental health needs of care-experienced children and young people has largely concentrated on systemic, relational, and attachment-based approaches. Considering childhood trauma as a public health issue (Lambert et al., 2017), and the key role of relationships, parenting, and wider social factors in both the occurrence and impact of

trauma, this emphasis is well-founded (Magruder et al., 2017). Reviews in this area evaluated attachment-based parenting programmes (Dalgaard et al., 2022; David et al., 2024), trauma-informed psychoeducational group interventions for caregivers (Lotty et al., 2021), and broader relational health interventions (Tarren-Sweeney, 2021). System-level approaches were also evaluated, focusing on changes across socio-ecological areas and service delivery (MacDonald et al., 2024). These interventions were associated with important outcomes, such as enhanced attachment security (Carrera et al., 2021; Pace et al., 2014), and reduced risk of placement breakdown (Dubois-Comtois et al., 2021). However, existing reviews in care-experienced populations highlighted an important limitation: a relative scarcity of interventions directly targeting trauma-related symptoms. For instance, Teculeasa et al. (2023) reported that a review specifically focusing on PTSD-targeted interventions in care-experienced populations may not be feasible due to the limited number of available studies.

In contrast, psychotherapies targeting trauma-related symptoms, particularly TF-CBT, have well-established evidence base in general child and adolescent populations. A number of systematic reviews and meta-analyses, based on a substantial and partly overlapping body of randomised controlled studies and uncontrolled studies, consistently indicated that TF-CBT was effective in reducing PTSD symptoms across both individual and group formats (Cox et al., 2025; de Haan et al., 2024; Morelli et al., 2025; Thielemann et al., 2022; S. Xie et al., 2024). These findings are in line with NICE guidelines recommending TF-CBT as a first-line treatment for PTSD in children and young people (NICE, 2018). Despite this strong evidence base, care-experienced populations remain underrepresented. Although the above reviews included studies of children with experiences of maltreatment or those recruited from community trauma samples, only a small number of studies had predominantly care-experienced samples, and in most cases, no such samples were included at all, such as S. Xie et al., 2024. Furthermore, reviews showed that both EMDR and narrative exposure therapy

(NET) are effective in reducing PTSD symptoms in children, adolescents, and youth (Manzoni et al., 2021; Moreno-Alcazar et al., 2017; Y. Xie et al., 2024), but care-experienced populations continued to be under-represented in this evidence base as was the case for TF-CBT.

Given the limited representation of care-experienced populations within the evidence base for trauma-focused psychotherapies, it was important to examine the extent to which these interventions are effective for this particularly vulnerable group. While existing research appropriately emphasised relational and attachment-based approaches, this focus may have contributed to comparatively less attention being paid to interventions that directly target trauma-related symptoms. As such, the aim of this review was to examine the effectiveness of trauma-focused psychotherapies in reducing PTSD symptoms among care-experienced children, adolescents, and young people.

Method

Study protocol

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for reporting systematic reviews and meta-analyses were followed (Page et al., 2021), and the PRISMA checklist can be found in Appendix A. The review protocol was pre-registered with the PROSPERO database of systematic review protocols (registration number CRD420251239954).

Eligibility criteria

The inclusion criteria were:

1. Observational studies (including cross-sectional, cohort, case-control designs, uncontrolled pre-post studies), case series, or randomised controlled trials (RCTs).

2. Children, adolescents, and young people with current or past care experience, including those in or having been in foster care, kinship care (formal/statutory), residential care, adoptive placements, or reunified with biological families after a care episode. Studies that included children not in care were included provided that at least 50% of the sample comprised care-experienced individuals.
3. Studies where the mean, median, or modal age of participants was between 0 and 25 years. Care-experienced populations have notably higher likelihood of experiencing early adversity and trauma-related symptoms (Anthony et al., 2022; Kolko et al., 2010), which may disrupt or delay developmental trajectories across emotional regulation, cognitive, behavioural domains (De Bellis & Zisk, 2014; Hambrick et al., 2019; McLaughlin et al., 2019). The upper age limit of 25 was chosen to allow for a more developmentally appropriate assessment of the effectiveness of psychotherapies in care-experienced youth. Studies that included people older than 25 were included if separate age-specific analyses were reported.
4. Any trauma-focused psychotherapy targeting trauma-related or PTSD symptoms e.g., TF-CBT, EMDR, NET. Interventions delivered in individual, family/carer-involved, or group formats.
5. Reported statistical data on trauma-related outcomes using standardised measures (e.g., PTSD symptom severity, trauma-related distress, or trauma-specific symptoms such as re-experiencing, avoidance, hyperarousal).
6. Published in peer-reviewed journal studies and written in English, Greek, or Spanish.

The exclusion criteria were:

1. Case reports, single-case studies, conference abstracts, not peer-reviewed dissertations, editorials, commentaries, purely theoretical papers, narrative or systematic reviews.

2. Children in the general population without care experience. "Children in need" with child protection or CiN plans but never placed in care. Unaccompanied asylum-seeking/refugee minors (unless explicitly placed in foster, kinship, residential, or adoptive care as part of statutory care).
3. Interventions not targeting PTSD symptoms.
4. Studies not reporting trauma-related outcomes in children, adolescents, and young people.

Search strategy

Search terms were combined using the Boolean AND operator and focused on “young person*” and related terms (such as child*, and adolescent*), “care-experienced”, and “trauma-focused” (see Appendix B for full search terms). A comprehensive search strategy was used to capture a broad range of trauma-focused psychotherapies delivered in care-experienced populations; however, many studies did not include outcome measures explicitly evaluating changes in trauma symptomatology.

The following online bibliographic databases were searched on 24/11/2025 and included all years: PsycINFO, MEDLINE, CINAHL, Social Services Abstracts, Sociological Abstracts, ASSIA, Social Policy & Practice, SCOPUS. The search was repeated on 11/05/2026 to identify additional relevant papers. The reference lists of relevant reviews and included studies were also manually checked. Following de-duplication, abstracts and titles were screened for eligibility. Full-text screening followed to determine possible inclusion against the inclusion criteria. All stages of the screening were completed by one researcher (TK), with a proportion independently completed by a second researcher (RF). Both reviewers screened 40% of titles and abstracts independently. There was moderate agreement (McHugh, 2012) for the first 20% of screening ($\kappa = 0.741$, 95% CI 0.70 to 0.81) and strong agreement for the remaining 20% ($\kappa = 0.854$, 95% CI 0.81 to 0.89). Both reviewers

completed 25% of the full-text screening, from which one disagreement was identified and resolved through discussion.

Data Extraction

A structured, standardised form was used to extract data from relevant papers for evidence synthesis. Study characteristics were extracted: study, year, country, study design, care placement type, treatment condition, comparator/control condition(s), sample size, number of sessions, treatment duration, and follow-up duration. The following sample characteristics were extracted: mean age, % female, % white ethnicity, % dropout. PTSD outcome data were also extracted: PTSD measure, and mean PTSD severity scores at baseline, post-treatment, and follow-up. Data were extracted for 50% of studies (n = 8) by two researchers (TK and RF), with no discrepancies identified.

Assessment of study quality

The National Institutes for Health (NIH) Quality Assessment tools were used to assess the quality of the studies (NIH, 2014). Given that the studies identified were RCTs and uncontrolled pre-post studies, the specific NIH tools employed were the (1) Quality Assessment of Controlled Intervention Studies and the (2) Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group, respectively (Ma et al., 2020). For each study, individual criterion ratings were provided, along with an overall quality rating of good, fair, or poor. One researcher (TK) completed the critical appraisal, with 30% also completed independently by another researcher (RF). There was a percent agreement of 92% (McHugh, 2012), and any discrepancies were resolved through discussion.

Data Synthesis and Analysis

Narrative synthesis was informed by Popay et al. (2006), which advises of: i) the development of a theory of how the interventions work, why and for whom; ii) the

organisation of findings to describe shared patterns, iii) the exploration of relationships in the data; and iv) the evaluation of the evidence's strength. The synthesis was centred around study characteristics, sample characteristics, PTSD outcomes, and study quality.

In the meta-analysis, the effect size of interest was the standardised mean difference reflecting pre–post change in child-reported PTSD symptoms following TF-CBT within participants in uncontrolled pre-post studies. In two studies where multiple measures were reported (Dorsey et al., 2014; Herbert & Paton, 2024), the child-reported PTSD measure was chosen. The child self-report measure was selected as it was the most commonly reported measure of PTSD symptoms across studies. Furthermore, as the review focused on symptom reduction, self-reported measures were considered to provide the most direct assessment of internal experiences, such as intrusive memories, avoidance, and hyperarousal, which are best captured through the child's own account. One included study was described as an RCT (Dorsey et al., 2014), but it was included using a pre–post effect size. This was because both groups received the same TF-CBT intervention, with the only difference being additional engagement strategies provided to one group. The study did not include a between-group comparison, as there was no separate TF-CBT condition, and the authors pooled outcomes across groups. One study reported data separately for biological/kinship carers and foster/adoptive carers (Gusler et al., 2023). The foster/adoptive carer data were selected, as this placement type was most consistent with the majority of included studies and represented the larger sample. One study was excluded from the quantitative synthesis as insufficient data were available to calculate standardised mean differences or derive a pre–post treatment effect (Weiner et al., 2009).

Considering that included studies differed in characteristics, such as country, type of care experience, and delivery format of TF-CBT, a random-effects model was used to aggregate effect sizes (DerSimonian & Laird, 1986). For the calculation of studies' Cohen's *d*

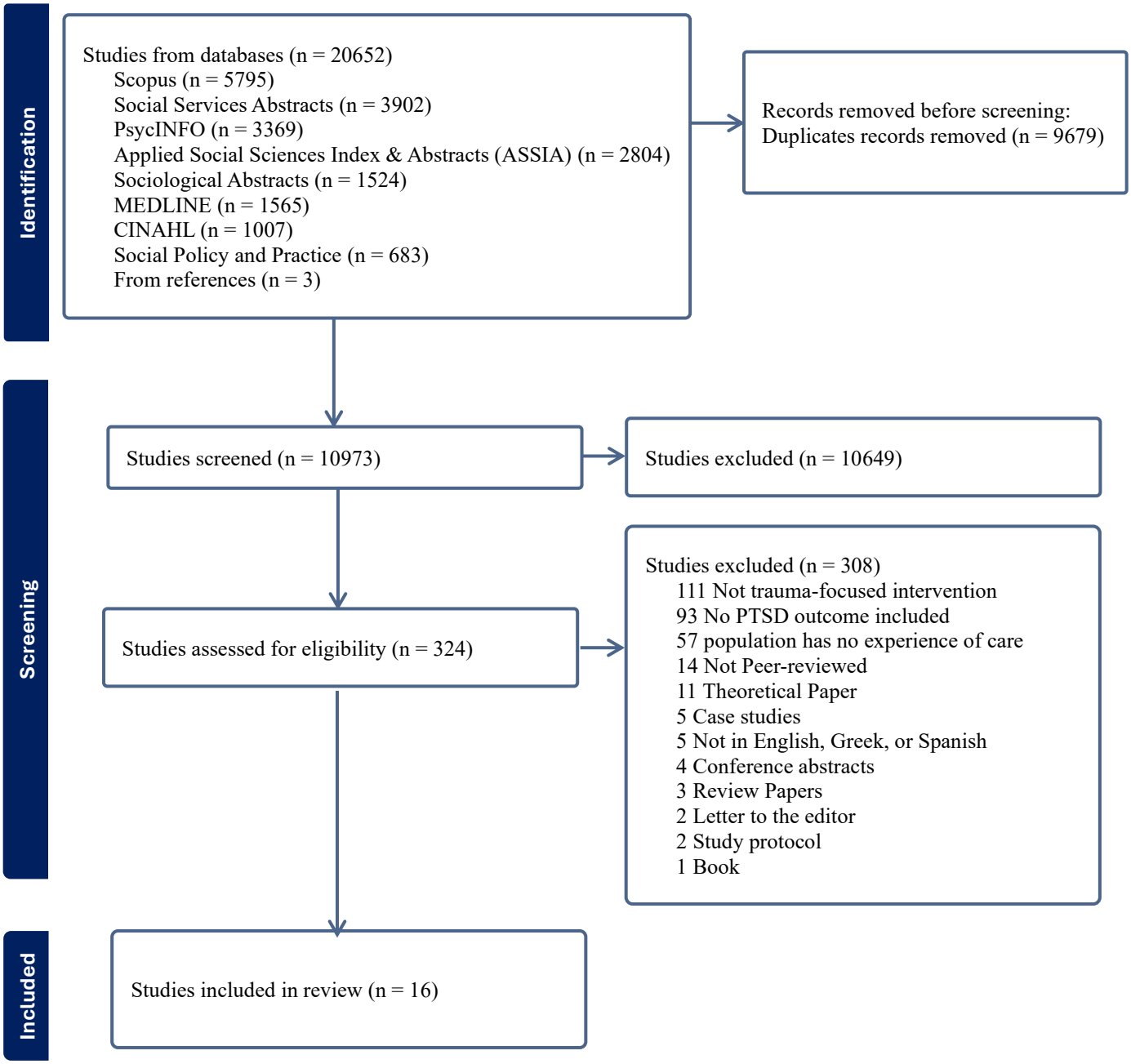
and the standard errors, a correlation between pre-treatment and post-treatment score was required (Becker, 1988; Gutermann et al., 2016; Kitchenham & Madeyski, 2020); (see Appendix C for formulae used). Pre-post correlations were not reported in any of the included studies; therefore, effect sizes were calculated assuming a correlation of $r = 0.5$. Effect sizes were then adjusted for small sample bias and converted to Hedges's g.

For interpreting the significance of the results, the authors used criteria which define an effect size of $g = .2$ as small, of $g = .5$ as medium, and of $g = .8$ as large (Cohen, 1992). The Q statistic was employed to assess the homogeneity assumption, and I^2 to assess heterogeneity between studies (Higgins et al., 2003). I^2 values of 25%, 50%, and 75% were considered to represent low, moderate, and high levels of heterogeneity, respectively. Publication bias was assessed by visually inspecting the (a)symmetry of funnel plots (Sterne & Egger, 2001).

As the true pre-post correlation was not reported, sensitivity analyses were conducted using $r = 0.3$ and $r = 0.7$ to assess the robustness of the findings (Morris, 2008; Schünemann et al., 2019). Data were analysed using R version 4.5.2 with RStudio.

Figure 1

PRISMA Flow Diagram



Results

Study Selection

As indicated in the PRISMA flow diagram (Figure 1), searches of the online databases resulted in 20,652 records. Following de-duplication, the titles and abstracts of 10,973 records were screened which resulted in full-text studies being retrieved for 324 records.

Following full-text screening, 308 records were excluded. The most frequent reasons for exclusion were that the intervention was not trauma-focused, no PTSD outcome measure was employed, and the population had no experience of being in care. This resulted in sixteen eligible studies to be included in the review.

Study characteristics

Study characteristics varied across the eligible studies (Table 1). Of the sixteen studies included, the majority were conducted in the US (8/16), followed by Tanzania (2/16), and one study each in the UK, Spain, Turkey, Netherlands and Rwanda. The studies were published from 2009 to 2025. The majority of studies adopted an uncontrolled pre-post design (13/16), and three were randomised-controlled trials (RCTs). It is noteworthy that Davis et al. (2025) and O'Donnell et al. (2014) employed mixed-method designs; however, only the quantitative designs were relevant to this review. Studies included participants from various care placements, with some studies including multiple placement types. Residential or institutional settings were most commonly represented (8/16), followed by foster care (7/16) and kinship care (6/16), and adoptive placements (4/16). Studies that included children living with their biological caregivers were eligible provided that at least 50% of the sample comprised care-experienced individuals, consistent with the inclusion criteria (Auslander et al., 2020; Gusler et al., 2023; Herbert & Paton, 2024; O'Donnell et al., 2014)

Nine studies examined TF-CBT in various formats, including group formats (O'Donnell et al., 2014), child–caregiver format (Gusler et al., 2023), virtual reality (Prieto-Larrocha et al., 2025), and integrating more therapeutic modalities (Herbert & Paton, 2024). Three studies examined EMDR including group-based (Perilli et al., 2019), and attachment-focused (Wesselmann et al., 2018) formats. Two studies investigated NET, and two studies evaluated group trauma interventions based on CBT techniques.

Among the three RCTs, one included a non-active control (usual care), and one included a treatment comparator (a group interpersonal therapy). The third RCT compared standard TF-CBT with TF-CBT supplemented by engagement strategies, therefore the study did not assess TF-CBT effectiveness against a non-TF-CBT control (Dorsey et al., 2014). Three uncontrolled pre-post studies included more than one condition; however, none of the additional conditions represented a true control condition. For instance, Martin et al. (2023) compared TF-CBT delivered via telehealth versus in-person, while Cohen et al. (2016) compared different levels of therapist trainings in delivering TF-CBT. Additionally, Weiner et al. (2009) reported outcomes across TF-CBT, SPARCS and CPP, without direct comparison, as the intervention offered depended on the participant's age.

Nine studies included fewer than 50 participants, two included between 50 and 100 participants, and three included between 101 and 150 participants. Two larger studies reported 249 and 399 participants. There was variability in how the number of sessions was reported. Six studies reported sessions according to protocol, ranging from short interventions (3-5 sessions) to longer ones (12-52 sessions). The remaining ten studies reported sessions delivered, with a mean of between 7 to 16 sessions. Mean treatment duration ranged from 1 to 12.7 months and was reported in four studies. Of the six studies reporting follow-up data, three had a three-month follow-up, two included a six-month follow-up, and one reported three-month and twelve-month follow-ups.

Sample characteristics

Samples varied across included studies (Table 2). Thirteen out of sixteen studies included samples with a mean age below 12 years, with the other three studies including adolescents and young adults between 13 and 19 years. The majority of studies reported samples with more than 50% female participants (11/16). Four studies conducted in Global South countries reported no White participants (0%), whereas six studies included

predominantly White samples (>50%). Four studies reported no treatment dropout (0%), while high attrition rates (>40%) were observed in several studies (5/16), often due to placement instability.

PTSD Outcomes

As observed in Table 3, the University of California at Los Angeles (UCLA) PTSD Reaction Index was the most frequently employed measure (8/16 studies). Among these studies, two reported baseline mean scores higher than the clinical cutoff of 35 (Kaplow et al., 2020). All three studies employing the Child PTSD Symptom Scale (CPSS) reported baseline scores above the cut-off of 15 for probable PTSD (Foa et al., 2001), and the two studies reporting total scores on the Trauma Symptom Checklist for Young Children (TSCYC) had scores higher than the cut-off of 70 (Briere, 2005). Across these studies, only one reported post-treatment scores higher than the respective clinical cut-off at post-treatment, and this was observed in the control group. Furthermore, six studies completed follow-up measurements.

Quality assessment

The Quality Assessment of Controlled Intervention Studies was used for the three included RCTs (Table 4); two studies were rated as good and one study was rated as fair. All studies were rated “Yes” for having comparable groups at baseline, high adherence to interventions, and use of valid and reliable outcome measures. However, none of the studies reported adequate allocation concealment or blinding of participants and providers to treatment assignment.

The Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group was used for the 13 uncontrolled pre-post studies (Table 5). It is important to note that Cohen et al. (2016), described as a randomised implementation study, was also assessed using

this tool, as the study authors pooled outcomes across groups. This was because all participants received the same TF-CBT intervention, with only therapists randomised to different training conditions. Three studies were rated as good and ten studies as fair. Nine studies met at least 50% of the quality criteria, as indicated by “Yes” ratings. All studies were rated as “Yes” for having the study’s objective clearly stated, using appropriate outcome measures, and employing suitable statistical methods to examine changes. Only one study reported a sufficiently large sample size to provide confidence in the findings. None of the studies reported blinding of outcome assessors, used an interrupted time-series design, or implemented the intervention at the group level.

Table 1

Study Characteristics

Author (Year), Country	Study Design	Care Placement (%)	Treatment Condition (format)	Comparator / Control (format)	Sample Size	Mean number of sessions (SD, range); type[c]	Duration in months; mean (SD or range)	Follow-up in months
Auslander et al. (2020), US	RCT	Kinship, adoptive, foster (49.0%) Residential (11.6%) Biological parent (39.4%)	CBITS (group)	Usual care	249	12; protocol	NR	6
Cohen et al. (2016), US	Uncontrolled pre-post	Residential (100%)	TF-CBT (standard therapist training)	TF-CBT (enhanced therapists training)	81	9.1 (1–40); [standard training], 11.2 (1–33) [enhanced training]; delivered	NR	N/A
Davis et al. (2025), UK	Uncontrolled pre-post	Foster (85.3%) Kinship (8.8%) Residential (5.9%)	TRT (group CBT-based)	N/A	34	5; protocol	NR	3
Dorsey et al. (2014), US	RCT	Foster (61.7%) Kinship (38.3%)	TF-CBT	TF-CBT (with engagement strategies)	47	15.0 (6.0) [TF-CBT + engagement], 12.3 (8.0); [standard TF-CBT]; delivered	NR	3
Esterer et al. (2023), US	Uncontrolled pre-post	Foster (100%)	TF-CBT	N/A	399	NR	NR	N/A
Gusler et al. (2023), US	Uncontrolled pre-post	Biological parent, kinship (35.4%) Foster (59.2%) Adoptive (5.4%)	TF-CBT (child-caregiver dyad)	N/A	130	34; delivered	8.5 (3.71)	N/A
Herbert & Paton (2024), Australia	Uncontrolled pre-post	Residential (38.4%) Biological parent (33.9%) Kinship (24.1%)	TF-CBT[b]	N/A	113	8y–16y: 16.1 (8.8), 3y–12y:16.0 (8.9); delivered	NR	N/A

Author (Year), Country	Study Design	Care Placement (%)	Treatment Condition (format)	Comparator / Control (format)	Sample Size	Mean number of sessions (SD, range); type[c]	Duration in months; mean (SD or range)	Follow-up in months
Hermenau et al. (2011), Tanzania	Uncontrolled pre-post	Residential (100%)	NET	N/A	38	5-6; delivered	NR	N/A
Prieto-Larrocha et al. (2025), Spain	Uncontrolled pre-post	Residential (67.4%) Kinship (23.9%) Foster (6.5%) Adoptive (2.2%)	TF-CBT (virtual reality)	N/A	46	16-22; delivered	(6-9)	N/A
Martin et al. (2023), US	Uncontrolled pre-post	Foster (67.4%) Kinship (28.3%) Emergency Shelter (4.3%)	TF-CBT (telehealth)	TF-CBT (in-person)	46	13.26 (8.45, 1–38); delivered	NR	N/A
O'Donnell et al. (2014), Tanzania	Uncontrolled pre-post	Biological parent (43.8%) Foster, kinship (56.2%)	TF-CBT (group), with grief component	N/A	64	12; protocol	NR	3, 12
Perilli et al. (2019), Turkey	Uncontrolled pre-post	Residential (100%)	EMDR (group)	N/A	14	3; protocol	1.5	N/A
Schaal et al. (2009), Rwanda	RCT	Child-headed household (46.15%)[a] Residential (53.85%)	NET	IPT (group)	26	4; protocol	1	6
Struik et al. (2017), Netherlands	Uncontrolled pre-post	Residential (85.7%) Foster (14.3%)	EMDR	N/A	14	7.57 (4–26); delivered	NR	N/A
Weiner et al. (2009), US	Uncontrolled pre-post	Foster (100%)	TF-CBT	CCP, SPARCS	133	TF-CBT: 12–20, CPP: 52 SPARCS: 16; protocol	NR	N/A
Wesselmann et al. (2018), US	Uncontrolled pre-post	Adoptive (100%)	EMDR (with IATP-C)	N/A	23	NR	12.7 (6–24)	3

Note. Where applicable, subgroup-specific data (e.g., treatment condition or age group) are presented using labels (e.g., "3y-12y", "TF-CBT:"). [a]A child-headed family or child-headed household is a family in which a minor has become the head of the household. [b]TF-CBT was primarily used; however, clinicians were free to draw from other modalities including Eye Movement Desensitisation Processing, Cognitive Behavioural Therapy, Acceptance and

Commitment Therapy, Imagery Rescripting, Dyadic Development Psychology, Dialectical Behaviour Therapy, Scheme Therapy, and Circle of Security.

[c]Session data are reported as mean (SD) and/or range, where available. "Type" indicates whether sessions refer to those planned according to the protocol ("protocol") or the actual number of sessions received ("delivered"), as reporting varied across studies.

Abbreviations: N/A = Not applicable. NR = Not reported. M = mean, SD = standard deviation, RCT = randomised controlled trial, CBITS = Cognitive Behavioural Intervention for Trauma in Schools, TF-CBT = Trauma-Focused Cognitive Behavioural Therapy, CBT-based TRT = Cognitive Behavioural Therapy-based Teaching Recovery Techniques, NET = Narrative Exposure Therapy, EMDR = Eye Movement Desensitisation Processing, IATP-C = Integrative Attachment Trauma Protocol for Children, IPT = Interpersonal Therapy, CPP = Child–Parent Psychotherapy, SPARCS = Structured Psychotherapy for Adolescents Responding to Chronic Stress.

Table 2

Sample Characteristics

Author (year)	Mean age (SD)	Female (%)	White (%)	Dropout (%)
Auslander et al. (2020)	14.89 (1.63)	100	75	6
Cohen et al. (2016)	Standard: 15.2 (1.4), Enhanced: 15.0 (1.5)	52	39	61
Davis et al. (2025)	13.4 (2.3)	53	66	32
Dorsey et al. (2014)	9.57 (2.8)	55	53	TF-CBT: 27, TF-CBT + engagement: 0
Esterer et al. (2023)	10.31 (3.79)	60	62	41
Gusler et al. (2023)	9.35 (1.89)	53	83	NR
Herbert & Paton (2024)	10.84 (2.86)	58	NR	NR
Hermenau et al. (2011)	8.64 (NR)	47	0	NR
Prieto-Larrocha et al. (2025)	11.0 (2.35)	48	76	74
Martin et al. (2023)	9.48 (3.58)	54	37	70
O'Donnell et al. (2014)	6.9y–11y: 9.28 (1.19), 11.1y–13.7y: 12.18 (0.80)	91	0	0
Perilli et al. (2019)	11.3 (2.4)	50	0	43
Schaal et al. (2009)	19.42 (3.59)	62	0	0
Struik et al. (2017)	5.1 (NR; 3–9)	43	NR	0
Weiner et al. (2009)[a]	TF-CBT: 8.4 (3.3), CPP: 3.7 (1.6), SPARCS: 13.8 (1.6)	TF-CBT: 49, CPP: 49, SPARCS: 64	TF-CBT: 57, CPP: 25, SPARCS: 21	18
Wesselmann et al. (2018)	10 (NR)	44	48	4

Note. Where applicable, subgroup-specific data (e.g., treatment condition or age group) are presented using labels (e.g., “Standard”, “6.9y-11y”, “TF-CBT”).

Abbreviations: NR = Not reported. SD = Standard Deviation. TF-CBT = Trauma-Focused Cognitive Behavioural Therapy. CPP = Child–Parent Psychotherapy. SPARCS = Structured Psychotherapy for Adolescents Responding to Chronic Stress. [a]Weiner et al. (2009) reported outcomes stratified by treatment condition, i.e., CPP, TF-CBT, SPARCS.

Table 3

PTSD outcomes

Author (year)	PTSD Measure(s)	Baseline (M, SD)	Post-treatment (M, SD)	Follow-up (M, SD)
Auslander et al. (2020)	CPSS	CBITS: 15.98 (10.37), UC: 17.57 (11.58)	CBITS: 12.92 (9.09), UC: 15.48 (11.41)	CBITS: 12.53 (10.14), UC: 15.11 (11.31)
Cohen et al. (2016)	UCLA PTSD-RI	51.5 (18.7)	37.0 (16.8)	N/A
Davis et al. (2025)	CATS CRIES-8 CPSS	CRIES-8: 22.12 (9.90), CPSS: 19.64 (13.34), Child CATS: 27.88 (13.77), Caregiver CATS: 30.21 (14.76)	CRIES-8: 20.35 (10.55) CPSS: 12.68 (8.51) Child CATS: 21.57 (12.94) Caregiver CATS: 26.90 (15.41)	CRIES-8: 17.96 (10.84) CPSS: 16.62 (14.60) Child CATS: 22.65 (15.01) Caregiver CATS: 27.88 (14.05)
Dorsey et al. (2014)	UCLA PTSD-RI	Child: 30.45, Caregiver: 28.57	Child: 15.59; Caregiver: 18.87	Child: 13.29, Caregiver: 17.97
Esterer et al. (2023)	UCLA PTSD-RI	39.56 (17.34)	32.00 (16.66)	N/A
Gusler et al. (2023)	UCLA PTSD-RI	Biological/kinship: 26.49 (15.03), Foster/adoptive: 21.94 (14.63)	Biological/kinship: 11.81 (10.81), Foster/adoptive: 10.83 (9.45)	N/A
Herbert & Paton (2024)	TSCC TSCYC	TSCC: 57.54 (11.26), TSCYC: 73.17 (16.72)	TSCC: 48.28 (9.24), TSCYC: 62.08 (15.24)	N/A
Hermenau et al. (2011)	UCLA PTSD-RI	21.95 (17.43)	14.65 (10.95)	N/A
Prieto-Larrocha et al. (2025)	CPSS	18.13 (12.5)	6.50 (8.7)	N/A
Martin et al. (2023)	CATS	25.64 (7.85)	13.57 (5.30)	N/A
O'Donnell et al. (2014)	UCLA PTSD-RI	Child: 26.15 (9.05), Caregiver: 19.61 (10.83)	Child: 10.19 (9.16), Caregiver: 7.83 (8.17)	Child: 7.84 (7.52), Caregiver: 6.44 (7.30)
Perilli et al. (2019)	CRIES-8	19.8 (5.1)	15.4 (4.9)	N/A
Schaal et al. (2009)	CAPS	NET: 67.17 (20.10), IPT: 66.00 (14.10)	NET: 50.25 (19.20), IPT: 54.93 (15.60)	NET: 39.08 (23.37), IPT: 66.50 (31.93)

Author (year)	PTSD Measure(s)	Baseline (M, SD)	Post-treatment (M, SD)	Follow-up (M, SD)
Struik et al. (2017)	TSCYC (subscales)	Intrusion: 61.0 (13.5), Avoidance: 72.8 (21.5), Arousal: 73.0 (13.5), Dissociation: 59.3 (14.3), Anxiety: 59.7 (15.6), Depression: 65.0 (19.2), Anger/Aggression: 66.0 (16.2), Sexual concerns: 49.5 (5.1)	Intrusion: 52.4 (9.1), Avoidance: 60.8 (18.4), Arousal: 64.9 (16.6), Dissociation: 55.2 (13.4), Anxiety: 51.5 (11.7), Depression: 50.6 (8.8), Anger/Aggression: 61.7 (20.3), Sexual concerns: 50.5 (7.2)	N/A
Weiner et al. (2009)[a]	CANS-TSS[c]	CPP: African American: 8.8 (5.1); Biracial: 9.6 (3.6); Hispanic: 7.3 (2.9); White: 9.9 (4.9) TF-CBT: African American: 8.5 (4.1); Biracial: 8.0 (2.0); White: 7.6 (2.6) SPARCS: African American: 6.5 (3.4); Hispanic: 5.5 (1.9); White: 9.7 (5.1)	CPP: African American: 6.1 (3.1); Biracial: 4.6 (6.3); Hispanic: 4.5 (2.6); White: 8.5 (5.2) TF-CBT: African American: 4.5 (5.0); Biracial: 5.3 (3.1); White: 5.1 (3.1) SPARCS: African American: 5.1 (2.9); Hispanic: 5.5 (1.0); White: 7.7 (5.3)	N/A
Wesselmann et al. (2018)	TSCYC	70.13 (16.28)	50.91 (8.71)	51.20 (7.08)

Note. [a]Weiner et al. (2009) report outcomes stratified by treatment condition, i.e., Child–Parent Psychotherapy (CPP), Trauma-focused Cognitive Behavioural Therapy (TF-CBT), Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS), and by racial/ethnic subgroup; no overall treatment means were provided. [c]UCLA data unavailable.

Abbreviations: N/A = Not Applicable. PTSD = Post-Traumatic Stress Disorder, M = mean, SD = Standard Deviation, CPSS = Child PTSD Symptom Scale, DSM = Diagnostic Manual Criteria, UCLA PTSD-RI = University of California at Los Angeles Post-Traumatic Stress Disorder Reaction Index, CATS = Child and Adolescent Trauma Screen, CRIES-8 = Children's Revised Impact of Event Scale, TSCC = Trauma Symptom Checklist for Children, TSCYC =

Trauma Symptom Checklist for Young Children, CAPS = Clinician-Administered PTSD Scale, CANS-TSS = Child and Adolescent Needs and Strengths-Traumatic Stress Symptoms Subscale, CBITS = Cognitive Behavioural Intervention for Trauma in Schools, UC = Usual Care, TF-CBT = Trauma-Focused Cognitive Behavioural Therapy, CPP = Child–Parent Psychotherapy, SPARCS = Structured Psychotherapy for Adolescents Responding to Chronic Stress.

Table 4

Quality assessment of Controlled Intervention Studies (n=3)

Criteria	Auslander et al. (2020)	Dorsey et al. (2014)	Schaal et al. (2009)
1. Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT?	Yes	Yes	Yes
2. Was the method of randomization adequate (i.e., use of randomly generated assignment)?	Yes	NR	CD
3. Was the treatment allocation concealed (so that assignments could not be predicted)?	NR	NR	NR
4. Were study participants and providers blinded to treatment group assignment?	No	No	No
5. Were the people assessing the outcomes blinded to the participants' group assignments?	No	NR	Yes
6. Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors)?	Yes	Yes	Yes
7. Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?	Yes	No	Yes
8. Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?	Yes	No	Yes
9. Was there high adherence to the intervention protocols for each treatment group?	Yes	Yes	Yes
10. Were other interventions avoided or similar in the groups (e.g., similar background treatments)?	CD	Yes	Yes
11. Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?	Yes	Yes	Yes
12. Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?	Yes	No	No
13. Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?	Yes	Yes	Yes
14. Were all randomized participants analyzed in the group to which they were originally assigned?	Yes	Yes	Yes
Quality Rating	Good	Fair	Good

Abbreviations: CD = Cannot Determine. NR = Not Reported.

Table 5

Quality assessment of before-after (Pre-Post) studies with no control group (n=13)

Criteria	Cohen et al. (2016)	Davis et al. (2025)	Esterer et al. (2023)	Gusler et al. (2023)	Herbert & Paton (2024)	Hermenau et al. (2011)	Prieto-Larrocha et al. (2025)	Martin et al. (2023)	O'Donnell et al. (2014)	Perilli et al. (2019)	Struik et al. (2017)	Weiner et al. (2009)	Wesselmann et al. (2018)
1. Was the study question or objective clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Were eligibility/selection criteria for the study population prespecified and clearly described?	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	CD	Yes	Yes
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Yes	Yes	Yes	Yes	Yes	CD	Yes	Yes	Yes	CD	Yes	Yes	Yes
4. Were all eligible participants that met the prespecified entry criteria enrolled?	Yes	Yes	CD	CD	CD	CD	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Was the sample size sufficiently large to provide confidence in the findings?	NR	NR	NR	NR	Yes	NR	NR	NR	NR	NR	NR	NR	NR
6. Was the test/service/intervention clearly described and delivered	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Criteria	Cohen et al. (2016)	Davis et al. (2025)	Esterer et al. (2023)	Gusler et al. (2023)	Herbert & Paton (2024)	Hermenau et al. (2011)	Prieto-Larrocha et al. (2025)	Martin et al. (2023)	O'Donnell et al. (2014)	Perilli et al. (2019)	Struik et al. (2017)	Weiner et al. (2009)	Wesselmann et al. (2018)
consistently across the study population?													
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?	No	No	No	No	No	No	No	No	No	No	No	No	No
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?	No	No	No	NR	NR	No	No	No	Yes	No	Yes	Yes	Yes
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they	No	No	No	No	No	No	No	No	No	No	No	No	No

Criteria	Cohen et al. (2016)	Davis et al. (2025)	Esterer et al. (2023)	Gusler et al. (2023)	Herbert & Paton (2024)	Hermenau et al. (2011)	Prieto-Larrocha et al. (2025)	Martin et al. (2023)	O'Donnell et al. (2014)	Perilli et al. (2019)	Struik et al. (2017)	Weiner et al. (2009)	Wesselmann et al. (2018)
use an interrupted time-series design)?													
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Quality Rating	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Good	Good

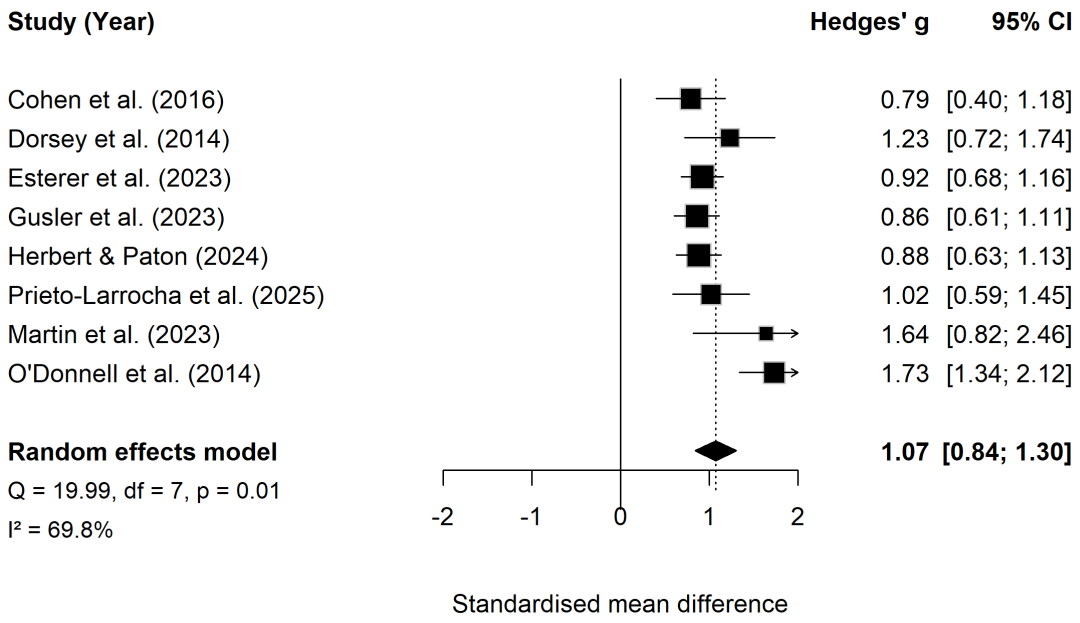
Abbreviations: CD = Cannot Determine. NR = Not Reported. N/A = Not Applicable.

Meta-analysis

In the random-effects meta-analysis of eight uncontrolled pre-post studies reporting child-rated outcomes, the pooled pre–post effect size following TF-CBT was large, g = 1.07 (95% CI 0.84 to 1.30), under the assumption of a pre-post correlation of r = 0.5 (Figure 2). Sensitivity analyses using r = 0.3 and r = 0.7 showed similar results (g = 1.08 and g = 1.06, respectively), suggesting that the findings were robust to assumptions regarding the pre-post correlation. The effect sizes were significantly heterogeneous as indicated by the Q statistic and by the interpretation of the I^2, Q = 19.99, df = 7, p = .01, and I^2 = 69.8%, suggesting variability across studies and confirming the use of the random-effects model. The funnel plot (Appendix D) showed a distribution of studies that was not perfectly symmetrical around the pooled effect size. Given the small number of included studies (n = 8), this finding should be interpreted cautiously as formal assessment of publication bias was limited (Schünemann et al., 2019).

Figure 2

Meta-analysis of the effect of TF-CBT based on child-reported PTSD outcomes.



Discussion

Main findings

This systematic review identified sixteen studies examining the effectiveness of trauma-focused psychotherapies in reducing PTSD symptoms among care-experienced children, adolescents, and young people. TF-CBT was the most frequently evaluated intervention and the pre-post meta-analysis of eight uncontrolled studies using child-reported outcomes showed reductions in PTSD symptoms between baseline and post-treatment following TF-CBT. Evidence for other trauma-focused therapies, including EMDR and NET, was more limited.

The TF-CBT effect size observed in this review aligned with previous reviews of broader trauma-exposed youth populations. For example, Thielemann et al. (2022) found large effects for PTSD symptoms when TF-CBT was compared with waitlist conditions, and small to medium effects when compared with active treatments. Similarly, Newman et al. (2014) reported a large pre-post effect size for PTSD symptom reduction across controlled and uncontrolled studies of children exposed to natural and man-made disasters. The present findings suggested that the effectiveness of TF-CBT may also extend to care-experienced children and young people.

However, the meta-analysis requires cautious interpretation. Because the pooled effect size was derived from uncontrolled pre–post studies, it reflects changes in PTSD symptoms between baseline and post-treatment and observed improvements cannot be attributable solely to TF-CBT (Cuijpers et al., 2017). Without control groups, improvements may also reflect spontaneous recovery, regression to the mean, or placement changes. Furthermore, high attrition (>40% in 5/16 studies) means that post-treatment estimates may have been based primarily on treatment completers, potentially inflating the pooled effect size if those

who discontinued treatment differed systematically from those who completed it (Andrade, 2022).

EMDR and NET findings were particularly limited. Three EMDR studies included small samples using varied formats (group, attachment-focused) across residential and adoptive settings, all reported PTSD reductions, while two NET studies also showed symptom reductions. These findings were consistent with broader youth PTSD literature where EMDR meta-analyses showed PTSD symptom reduction (Moreno-Alcazar et al., 2017), and NET demonstrated effectiveness (Siehl et al., 2021). However, care-experienced youth appeared to remain under-represented in EMDR and NET trials, which may reflect a gap in the literature.

There was also noticeable variation in intervention delivery and implementation contexts across included studies. Six of the nine studies employing TF-CBT were conducted in the US, all of which delivered TF-CBT individually. The predominance of individual TF-CBT may be partly explained by increased investment in clinician training and implementation support for TF-CBT in the US (Amaya-Jackson et al., 2018; Rivera Nales et al., 2024), and initiatives for enhanced reimbursement for TF-CBT delivery within Medicaid (Last et al., 2023).

On the contrary, the two included NET studies were conducted in Tanzania (Hermenau et al., 2011) and Rwanda (Schaal et al., 2009), involving children exposed to war, poverty, displacement, and HIV/AIDS-related adversity. This was in line with the initial development and ongoing application of NET for refugee populations and survivors of war and torture (Neuner, 2016). Moreover, NET's lifespan narrative approach permits individuals to contextualise traumatic experiences within wider autobiographical narratives rather than concentrating solely on individual traumatic experiences (Wright et al., 2020). NET was also

described as requiring relatively brief training for healthcare professionals (Fazel et al., 2020), which may support implementation within lower-resource settings. These characteristics may contribute to its suitability for populations exposed to repeated trauma. Similarly, delivering a group-based TF-CBT in Tanzania for children bereaved by the HIV/AIDS pandemic (O'Donnell et al., 2014), and a group-based EMDR for Syrian refugee children in care in Turkey (Perilli et al., 2019), may reflect efforts to maximise available resources to provide time-efficient and accessible support to larger numbers of trauma-exposed youth.

Several studies also explored different ways of delivering and adapting trauma-focused interventions, including the use of digital technologies and the incorporation of family therapy. For instance, Martin et al. (2023) in the US explored TF-CBT delivery through telehealth, while Prieto-Larrocha et al. (2025) in Spain integrated virtual reality components into TF-CBT. These adaptations may be indicative of how higher-resourced settings can provide greater opportunities for adaptation of established trauma-focused therapies through access to technological infrastructure. Moreover, Wesselmann et al. (2018) in the US delivered EMDR individually alongside family therapy, indicative of a more resource-intensive treatment that may require greater clinical time and therapeutic continuity. Together, these findings serve as a reminder of how implementation and adaptation of trauma-focused psychotherapies for care-experienced youth are influenced by a number of contextual factors including funding availability, technological resources, and the demands placed on local child mental health and welfare settings.

Research Implications

The findings emphasised a need for stronger evidence on trauma-focused psychotherapies for care-experienced youth. Only sixteen studies were identified, with most evaluating TF-CBT and few examining EMDR or NET. This contrasts with the more

established literature on relational and attachment-based interventions. Future research should prioritise adequately powered RCTs and longer-term follow-ups across these interventions. Given that the evidence for TF-CBT identified in this review was largely concentrated among children and adolescents in middle childhood and adolescence, future studies should also evaluate TF-CBT in younger care-experienced children and older adolescents and young adults to determine whether treatment effectiveness is consistent across developmental stages. Factors such as older age, low social support, and experiences of bereavement have previously been identified as risk factors for PTSD (Tamir et al., 2025). It would therefore be useful for future research to examine these factors, as potential predictors and moderators of treatment response. Such work would help to improve understanding of who is most likely to benefit from these interventions.

Although qualitative studies were not an explicit objective of this review, none were identified exploring care-experienced young people's lived experiences of receiving TF-CBT, EMDR, or NET suggesting a gap in qualitative research. While quantitative data showed symptom reductions, such data cannot capture acceptability, engagement barriers, or placement-related challenges, which is crucial given the high attrition rates in at least five of the studies. Qualitative research that focuses on young people’s experiences could help fill this gap, by showing how these interventions work in practice and what affects whether young people complete them. This bottom-up perspective is essential to complement the top-down quantitative literature and improve service delivery.

Clinical Implications

The preliminary findings of this review suggest that trauma-focused interventions, particularly TF-CBT, may have a role in reducing PTSD symptoms among care-experienced young people. However, the current evidence base remains limited, and it is considerably smaller than the evidence base for relational and attachment-based interventions.

Consequently, the current evidence limits the extent to which firm clinical recommendations can be made.

Nevertheless, the findings highlight the importance of recognising PTSD symptoms among care-experienced young people and considering trauma-focused interventions where clinically appropriate. McGuire et al. (2022) found that mental health professionals were less likely to diagnose PTSD in care-experienced children than in children living with their biological parents despite identical trauma histories. McGuire et al. (2025) also reported that specialist children-in-care teams rarely delivered individual trauma-focused therapies, while general Child and Adolescent Mental Health Services often had capacity to provide such interventions but received few referrals for care-experienced young people.

Although the current evidence remains preliminary, these findings suggest that improving recognition of PTSD and addressing barriers to accessing evidence-based trauma-focused interventions may be important considerations for services supporting care-experienced young people. If the review's findings are further confirmed by future studies, greater consideration should be given to how trauma-focused interventions can be realistically embedded within existing services alongside relational and systemic approaches.

Strengths and limitations

The present review had several strengths. To the authors' knowledge, it was the first to specifically examine trauma-focused psychotherapies for PTSD symptoms in care-experienced young people. The review also combined narrative synthesis with meta-analysis of TF-CBT child-reported outcomes, providing both descriptive overview and quantitative effect estimates.

However, several limitations should be taken into account. First, only sixteen eligible studies were identified, and most interventions other than TF-CBT were represented by very few

studies. Second, the majority of the studies used uncontrolled pre-post designs, limiting causal inference. Third, the included studies represented a broad developmental age range, including early childhood to young adulthood with mean participant ages ranging from 5 to 19 years. Developmental differences in trauma presentation, cognitive and emotional developmental and treatment response may therefore limit the generalisability of the findings across this age range. Additionally, although the review included this broad developmental age rage, the evidence supporting the effectiveness of TF-CBT was largely centred on children and adolescents with mean ages between 8 and 15 years, highlighting a relative lack of evidence for younger children and older adolescents with experience of care. Fourth, the quantitative synthesis was limited to child-reported pre–post outcomes, as these were the most commonly reported. As a result, the estimated pooled effect size did not account for perspectives from other informants in the young person's network. Finally, the included samples also reflected diverse trauma exposures (abuse/neglect, grief, displacement), highlighting care-experienced youth's clinical heterogeneity. This heterogeneity was also reflected in the interventions evaluated, with different trauma-focused psychotherapies being investigated in distinct trauma contexts. For example, NET and EMDR were primarily investigated among children who entered care following experiences of war, genocide, HIV/AIDS-related bereavement of parents, or forced displacement, whereas TF-CBT was evaluated predominantly in children who entered care following experiences of abuse and neglect. Consequently, differences in the populations in which each intervention was evaluated make it difficult to determine whether observed differences reflect the interventions themselves or the characteristics of the populations in which they were studied.

Conclusions

This systematic review provided preliminary evidence from predominantly uncontrolled pre–post studies that TF-CBT was likely to reduce PTSD symptoms among

care-experienced children and young people, with more limited findingsfor EMDR and NET. However, the evidence base remains constrained by methodological limitations, including small sample sizes, a reliance on uncontrolled designs, and the sparse representation of non–TF-CBT approaches. Future research should prioritise adequately powered controlled studies across a broader range of developmental stages and trauma contexts to determine the effectiveness of trauma-focused psychotherapies for care-experienced children and young people and to inform future clinical practice.

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Service Improvement Project

Integrating Social History into Psychological Formulations in a Community Intellectual Disabilities Service

The Oxford Institute of Clinical Psychology Training & Research

University of Oxford

Internal Supervisor: Dr. Alasdair Churchard

External Supervisor: Dr. Gemma Lumsdale

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Abstract

Background: Social history includes clients' cultural beliefs, historical trauma, and cohort experiences. However, its integration into psychological formulations in intellectual disability services has yet to be explored. This service improvement project aimed to examine how social history was considered within formulations and to develop recommendations to support inclusion.

Method: Following Patient and Public Involvement consultations, focus groups with psychologists from a community intellectual disability team explored current practice, barriers, and opportunities for integrating social history. Thematic analysis was completed, and recommendations were informed by behaviour change and skills development models.

Results*:* Psychologists noted that social history can contextualise clients' experiences, which then fosters empathy and understanding, but barriers can limit its use. Recommendations included short-term actions and medium-to-long-term actions requiring additional planning.

Conclusions: Recommendations guided by structured models may support more consistent and meaningful integration of social history into psychological formulations. Implementation and evaluation are important next steps.

AI Statement: No generative AI was used as part of this research project.

Introduction

What is a Formulation?

As defined by the British Psychological Society (2011), a formulation is a process that captures and incorporates a diverse range of biopsychosocial causal factors combining the psychologists' theoretical and practical knowledge with the service user's lived experience (Johnstone, 2018). Whilst all formulations share essential elements, like summarising the client's main difficulties, explaining the timing of these difficulties, and developing an intervention plan grounded in psychological theory (Johnstone & Dallos, 2013), a key distinction lies in the focus on cultural and historical information (Ridley et al., 2017).

Why should a formulation include cultural and social history when working with people with intellectual disabilities?

Social history refers to past events which continue to affect people's life chances and health experiences in the present day (Churchard, 2025). It includes factors such as cultural beliefs, social support, historical trauma, and cohort experiences (Henley & Schott, 1999). For people with intellectual disabilities, these social and historical influences can be particularly significant.

Individuals with intellectual disabilities have historically faced misunderstanding and devaluation, resulting in ongoing inequality. For example, the 1983 version of the Mental Health Act (Hamilton, 1983) allowed for the detention of individuals with "mental impairment" for "abnormally aggressive behaviour", reflecting a lack of understanding and discrimination. Alongside common factors that affect mental health in the general population, such as low income and minority status (Cumella, 2009), this group also faces extra challenges. These include neglect, rejection, social exclusion and even greater economic hardships (Rutter, 2005), as reflected in the higher rates of disability among poorer

households (Thompson, 2017). These intersecting inequalities often present differently across the lifespan, from exclusion in education during childhood, to barriers in employment during adulthood, and inadequate social or healthcare support in later life. Furthermore, such inequalities are not only shaped by life stage but are also influenced by wider socio-political and historical changes, including the institutionalisation of people with intellectual disabilities, subsequent deinstitutionalisation and community care movements, and later disability rights legislation such as the Disability Discrimination Act (1995) and Equality Act (2010). Taken together, these inequalities and socio-historical influences may have lasting effects on mental health by shaping the development and expression of mental illness, as well as beliefs about health and access to care, as demonstrated in Rathod and colleagues' formulation (2019).

Thus, considering culture and social history in a formulation allows clinicians to recognise the multi-layered identities of people with intellectual disabilities seeking support (Ade-Serrano & Nkansa-Dwamena, 2016) and adopt a holistic and social model of disability (Douglas et al., 2016). Incorporating values, lived experiences, and explanatory beliefs that are socially and culturally meaningful to individuals (Bernal et al., 2009) enables clinicians to offer culturally adapted and trauma-informed care (Fallot & Harris, 2009), whilst also assessing needs and identifying strengths in a manner consistent with the client's cultural patterns, values, and meanings (Hays, 2009). Research by Pert et al. (2013) and Stenfert-Kroese et al. (2013) demonstrated that service users feel more valued when staff take an interest in their home life, culture, and personal history. This approach creates a safe environment where clients feel at ease to build therapeutic rapport and share previously unvoiced experiences (Evans & Randle-Phillips, 2020).

Although psychological assessments often involve gathering information about a person's social history as part of developing a broader understanding of the person's

difficulties (Johnstone & Dallos, 2013), the extent to which this information is explored, what specific questions are asked, with whom it is shared, and how such contextual knowledge is subsequently integrated into formulation and care planning within intellectual disability settings remains unclear.

Service Context

The Oxfordshire community intellectual disability service provides specialist care for individuals with intellectual disabilities whose needs exceed those of mainstream services. The psychology team includes nine qualified psychologists, three assistant psychologists and up to five trainee clinical psychologists. Currently, no standardised formulations are used; instead, psychologists create personalised formulations based on each client's difficulties, strengths, and needs. Whilst most psychologists in the team received anti-racism training, emphasising the importance of incorporating social and cultural history, there is no mandatory requirement to do so, leaving it to individual clinician judgment. Consequently, there is limited information regarding current practices for how historical context is gathered and shared within teams and with clients, suggesting a need for greater attention to this area.

Incorporating social history and cultural context into psychological formulations aligns with the NHS Long Term Plan's aims to improve community-based support and deliver high-quality care for all patients (NHS England, 2019). This approach ensures that clients' cultural patterns and values are respected and integrated into the work, improving the quality of the work as a result. Furthermore, this approach supports the plan's goal of embracing the insights and strengths of individuals with lived experiences and their families.

Theories of Behaviour Change and Skill Development

This study used two frameworks to guide its recommendations: the Capability, Opportunity, Motivation – Behaviour (COM-B) model (Michie et al., 2011) and the Declarative-Procedural-Reflective (DPR) model (Bennett-Levy, 2006; Churchard, 2022).

The COM-B model states that for a behaviour to occur, in this case the integration of social history into psychological formulations, three areas should be considered: 1) Capability (psychological or physical skills and knowledge), 2) Opportunity (external factors, such as physical and social opportunities, that enable the behaviour), and 3) Motivation (automatic and reflective processes). This framework has previously informed healthcare recommendations, such as social prescribing (Aughterson et al., 2020) and digital risk assessment (Lau-Zhu et al., 2023).

The DPR model suggests that therapist skill development is based on three areas: 1) Declarative knowledge (knowing what to do e.g., understanding the role of social history), 2) Procedural skills (knowing how to do it e.g., how to ask about and integrate social history), and 3) Reflective ability (thinking about one's own practice e.g., what went well, and what could be improved). This framework has previously informed the development of self-reflection courses facilitating clinical skills learning for therapists (Kolts et al., 2018).

The COM-B model helps recognise where change can happen to allow for increased integration of social history in psychological formulations, while the DPR model helps explain how that change can lead to clinical skill development.

Aims

- To explore psychologists' current use of social history in psychological formulations, and which aspects of social history are considered within an intellectual disabilities community service.

- To identify factors and challenges influencing psychologists' integration of social history into formulations.
- To make recommendations that allow for more consistent inclusion of social history in formulations, thereby adapting therapy to better address the client's intersecting identities.

Method

Participants

Fourteen psychologists working in a community intellectual disabilities service took part in this study. This included seven qualified clinical psychologists, four trainee clinical psychologists, and three assistant psychologists. All participants were female and identified as White British (Table 6). All participants were engaged in formulation work within their roles and had varying levels of experience in integrating social history into their practice.

Table 6

Participants' characteristics

Characteristic	n (%)	Years of experience within the service
Sex		
Female	14 (100)	–
Ethnicity		
White British	14 (100)	–
Professional role		
Qualified Clinical Psychologist	7 (50.0)	Six had >3 years' experience within the service; one had <3 years' experience
Trainee Clinical Psychologist	4 (28.6)	Approximately 3 months in post
Assistant Psychologist	3 (21.4)	Between 1 and 3 years in post

Procedure

Initial conversations were held with an individual with intellectual disability, guided by a document co-produced with the Patient Experience Lead for Intellectual Disability

Services. These conversations helped identify the areas that felt most important and meaningful from the individual's perspective and informed the development of the survey and focus group questions used in the study. A survey was then shared with the psychology team in the community intellectual disabilities service. The aim was to gather some initial reflections on the importance, understanding, and challenges of integrating social history.

Insights from the earlier steps informed the design of the focus group questions, which focused on three key areas: how social history was explored within their practice, what helps or limits its integration into psychological formulation, and ideas for increasing its inclusion. The fourteen participants were divided across three focus groups, each facilitated by one of the study authors, two qualified clinical psychologists and one trainee clinical psychologist. Before the focus group sessions, participants were given with a short presentation on what is social history, and were asked to respond to three questions:

1. In your most recent five formulations, how many included social history?
2. How confident do you feel in integrating social history into psychological formulations?
3. How important do you consider it to be?

At the end of the focus group, participants were invited to re-rate their confidence and the perceived importance of integrating social history. While no formal teaching was delivered, this allowed for exploration of whether the reflective space of the group may have prompted self-reported shifts in perspective. The focus groups were conducted in May 2025. The questions asked in the survey and in the focus groups were guided by the COM-B model.

All participants provided written or verbal consent to take part. Ethical approval was granted by the Oxford Health NHS Foundation Trust Audit and Service Improvement team, who considered the project as a service evaluation.

Analysis

All focus groups were transcribed verbatim and anonymised. Transcripts were analysed using Reflexive Thematic Analysis following Clarke and Braun (2021). Familiarisation involved repeated reading of transcripts, and a reflexive journal was kept. Initial codes were generated from words and phrases in the transcripts and were later reviewed, grouped, and developed into candidate themes. Data coding primarily followed an inductive approach, whereby data was open-coded, and the analysis focused on meanings grounded in participants' perspectives. It is important to acknowledge that, due to the active interpretive role of the researcher, their position as a Cypriot, male therapist working clinically in the NHS Trust may have influenced the analysis (Braun & Clarke, 2019). A deductive element was also incorporated to ensure that the coding remained aligned with the research questions (Byrne, 2022). The COM-B and DPR models was later used to guide potential recommendations. All authors, including a psychologist within the community intellectual disabilities service, reviewed the candidate and final themes to support coherence.

Quantitative data from the pre- and post-focus group ratings of confidence and perceived importance were analysed descriptively. Given the small sample size and exploratory nature of the data, no statistical testing was conducted; instead, the responses were used to illustrate possible changes that may had been prompted by the focus group discussions.

Results

Descriptive Survey Findings

Prior to the focus group, psychologists were asked how many of their last five formulations had included social history. On average, participants reported 2.2 in the last five cases.

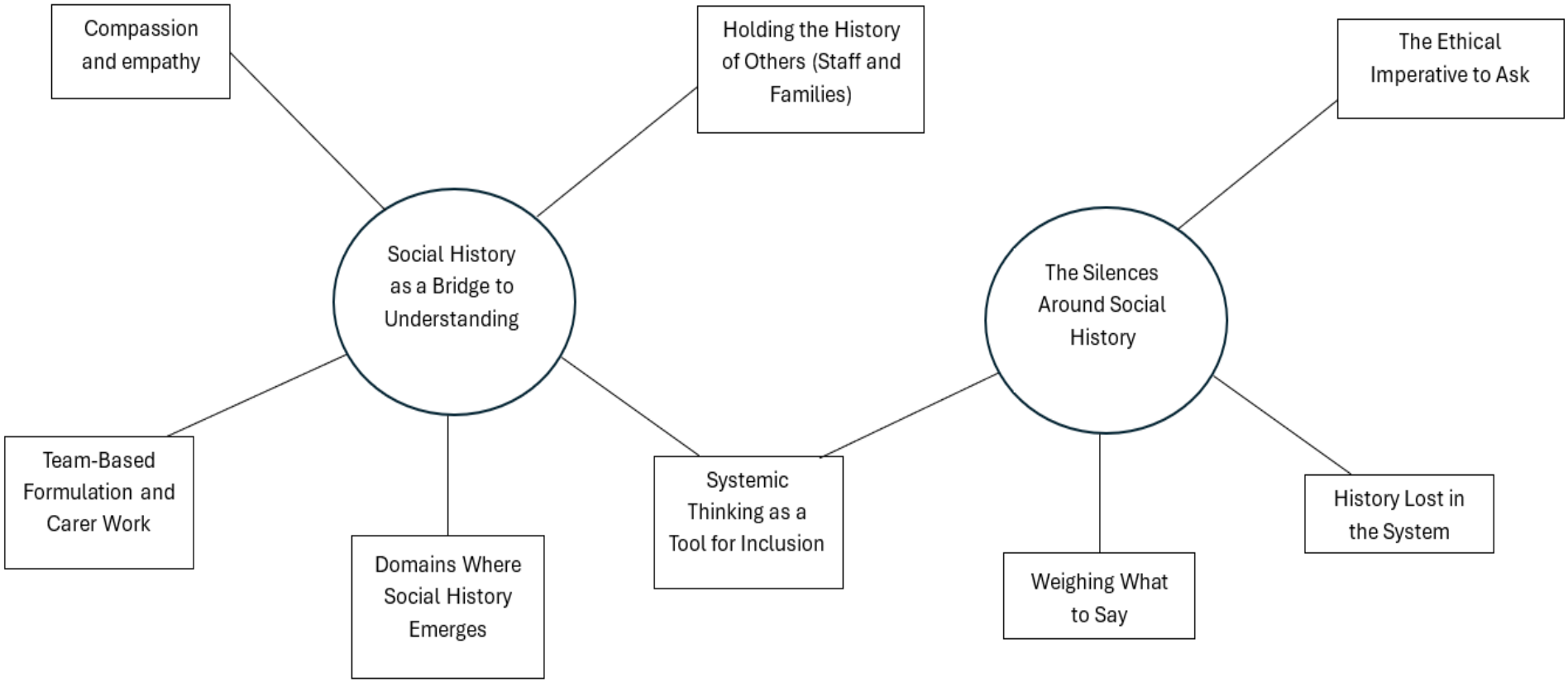
Participants also rated their confidence and the perceived importance of integrating social history in psychological formulations, both before and after the presentation and focus group discussion. Confidence scores increased from an average of 5.3 (out of 10) pre-focus group to 6.1 post-focus group. Perceived importance showed a larger shift, rising from 6.1 to 8.0 out of 10.

Thematic Analysis

Two overarching themes and seven subthemes were identified through thematic analysis (see Figure 3). The results below are supported by illustrative participant quotes.

Figure 3

Thematic Map



Social History as a Bridge to Understanding

Compassion and Empathy. Several psychologists described how incorporating social history into their work helped *bring back the compassion* and enhance empathy. It was seen as a way to validate clients' experiences and help them *feel understood*, especially when confronting longstanding or complex difficulties. For some, social history also helped *take away blame* by providing explanatory context for clients' challenges.

Team-Based Formulation and Carer Work. Psychologists reflected on how social history could be integrated into team formulations *more naturally* when working alongside support staff and family carers. Sharing these contextually informed formulations could help situate the client's difficulties within a meaningful context. For staff teams, holding in mind a client's *broader social history* helped clarify how present challenges may be shaped by past experiences which can ultimately improve understanding and thus empathy and support provided. One psychologist reflected that involving carers in this process not only provided valuable contextual knowledge but also encouraged carers to begin thinking more systemically about the clients and how social history may have influenced their present needs.

Holding the History of Others (Staff and Families). Several psychologists emphasised the importance of understanding the social histories not only of clients, but also of family carers and paid support staff. These histories were seen as shaping each group's *relationship to help* and how psychological input was received. Clinicians distinguished between paid support staff and family carers: for paid support staff, systemic trauma, migration backgrounds, and cultural norms could influence engagement. One psychologist noted, *lots of our care teams are really systemically traumatised,* while another reflected on power dynamics, describing themselves as *a grand white psychologist marching in*. Family carers, meanwhile, were shaped by intergenerational beliefs and changing views on disability, which could foster mistrust of

services or differing expectations. As one psychologist put it, *how the parents might see white British [clinicians]* could significantly impact therapeutic relationships.

Domains Where Social History Speaks Loudest. Most psychologists noted that certain domains, such as education, schooling, institutionalisation, COVID treatment, benefits and government policy, were more easily linked to social history within clinical formulations. However, the ease of integration varied, with certain topics, such as education, being talked about more than the other areas.

Silences Around Social History.

Weighing What to Say. Some psychologists expressed reluctance to explore social history in depth, fearing it might overwhelm or retraumatise clients. One psychologist shared that it can be *emotionally challenging* for some clients. Others worried that focusing too heavily on the past could become an *excuse not to do anything differently* or create or maintain beliefs that *nothing's ever going to get better*. There were also concerns about making incorrect assumptions about relevance. One psychologist noted that *some people are very connected to their communal history… some are not*. In addition, another psychologist noted that clients have *differing levels of awareness of wider social and cultural factors* and another psychologist shared that social history is approached *differently depending on cognitive ability*. Several respondents emphasised the importance of balancing complexity with clarity, ensuring the client's main therapeutic message and goals were not lost. Overall, there was a recurring question of where to *draw the line*, and on how to *deliver quite a concentrated version of our more diluted and complex formulation* in order to stay attuned to the clients' needs and readiness.

History Lost in the System. A few psychologists reflected on how valuable historical information is often lost over time, particularly as teams change or clients move across services

and geographical areas. This loss was compounded in cases where clients had limited verbal communication and no available family members to fill in the gaps. A psychologist shared that even when *we've got notes that we think they were in an institution, but we're not actually sure what exactly the person has experienced* noting that records may not accurately reflect the client's lived experience.

The Ethical Imperative to Ask. Two psychologists discussed the ethical responsibility of psychologists to explore social history, framing it as a professional duty to gather and safeguard this history. They emphasised that even when clients cannot share their own stories, teams often hold fragments of that history, and it is essential that this information is documented, preserved and passed on.

Systemic Thinking as a Tool for Inclusion. Two psychologists talked about the value of systemic tools in making social history more visible within formulations. Approaches such as timelines, genograms, and Bronfenbrenner's ecological systems model were mentioned as practical ways to explore *intergenerational stories* and the *wider socio-cultural context* in which a client is embedded. One psychologist reflected on how Bronfenbrenner's model, in particular, could help conceptualise the layers of influence, from the microsystem to the macrosystem, offering insight into the family and cultural narratives that shape a client's psychological and social development and current difficulties.

Discussion

This service improvement project explored psychologists' use of social history in psychological formulations within an Intellectual Disability service. While psychologists clearly recognised the importance of social history, which was reflected both in the theme "Social History as a Bridge to Understanding" and in the self-reported importance rating of 8/10 post-focus group, this value was not always matched in practice. Confidence in

integrating social history remained modest (5.3/10 pre-focus group, rising only slightly to 6.1/10), and on average, psychologists reported including social history in just 2.2 of their last five formulations. These findings suggested a possible gap between what clinicians value and intend, and what feels possible or practical to implement in day-to-day practice (Johnstone & Dallos, 2013).

Participants described how incorporating social history into their practice helped enhance empathy by connecting their understanding in clients lived experiences. This was in line with trauma-informed and formulation-led approaches that value personal narratives and promote epistemic justice (Reddy et al., 2021; Sweeney et al., 2016). Participants also reflected that recognising shared collective experiences, such as discrimination, or disability rights, and reframing behaviours within wider sociocultural contexts resulted in less pathologised, more contextualised understandings of distress (Harper & Moss, 2003), and reduced blame (Spencer et al., 2023).

Psychologists noted that social history was easier to consider and integrate when working within the broader systems surrounding the client, particularly with paid support staff and family carers. Participants shared that team formulations which incorporated social history could help those around the person to better understand both the clients' difficulties and strengths within the social-historical context. Some psychologists also suggested that these reflective conversations could encourage carers to begin thinking more systemically themselves. While there is no universally agreed definition of team formulation in intellectual disability practice, nor a standardised approach to its use (Sidhu, 2020), research in intellectual disability settings (Whitton et al., 2016) and beyond (Herhaus, 2014; Hollingworth & Johnstone, 2014) supported these findings by demonstrating that team formulations can enhance collaborative understanding and foster greater empathy toward the individual. Moreover, research demonstrated a negative association between burnout and

empathy in healthcare professionals (Wilkinson, 2016), suggesting that team formulations may play a valuable role in reducing burnout, and promoting staff wellbeing and team cohesion (Bealey et al., 2021; Ingham, 2011).

Team formulation with carers, both paid staff and family members, was also seen as an opportunity to consider the carers' own social histories. Participants reflected on how carers' migration backgrounds, cultural norms, and experiences of trauma, shaped beliefs around intellectual disability (Dorozenko et al., 2015) and how they engaged with psychological ideas and services (Ahad et al., 2023; Selkirk et al., 2014). Attending to these factors aligned with growing emphasis on cultural formulations (Arshad et al., 2022) and cultural reflexivity (Aronowitz et al., 2015), and with the principles of whole-family, person-centred care outlined in the Care Act 2014 (UK Government, 2014). Recognising the way carers' experiences intersect with wider systems is essential not only for co-producing meaningful psychological work but also for understanding how carers themselves make sense of the client's difficulties, as their perceptions can influence how they support the person, and, ultimately for enhancing carers' wellbeing. For example, accessible and consistent support from the wider team was shown to reduce burnout and improve wellbeing among care staff, highlighting the importance of attending to carers' social histories and needs (Klaver et al., 2021).

Participants consistently described education as among the more familiar and accessible domains to explore when exploring social history in the context of current difficulties. These areas often emerged naturally in formulation, along with institutionalisation, when relevant. Other areas, such as healthcare discrimination, the benefits system, or immigration policy were mentioned only once across the three focus groups. This difference seemed to reflect psychologists' thoughts about how much of a client's social history to explore and when. For instance, psychologists spoke about needing to strike a

balance: wanting to validate and contextualise distress while also being mindful of cognitive ability, trauma, and not assuming that certain events impacted clients, when clients had not made explicit links to these events themselves.

This need for balance was reflected in systematic reviews on psychological formulation (Stewart, 2014; Thrower et al., 2024), which noted that while detailed or complex formulations could at times feel overwhelming or difficult to engage with, their impact depends on how they are shared. The researchers emphasised the importance of clinical skill, sensitivity, and pacing when sharing complex formulations with clients. These findings were in line with Dallos and Draper (2015) where it was argued that what gets included in a formulation was shaped by a clinician's ability to hold complexity while adapting to the needs of the individual. With the aim of enhancing psychologists' skills, research has also outlined how to meaningfully include the voices of people with an intellectual disability into formulations, whilst accounting for complex communication difficulties (Rowe & Nevin, 2014).

Psychologists also reflected on how historical knowledge was often lost when clients have limited verbal communication or have moved between services, which partially explained earlier concerns about uncertainty around what was relevant, and what assumptions were safe to make. The loss of history also reflected barriers in intellectual disability services to offering person-centred care (Leoncio & Martin, 2022). Importantly, this was framed not only as a clinical task but as an ethical responsibility: to actively seek out, record, and preserve people's social histories. This aligned with the British Psychological Society's Code of Ethics and Conduct (British Psychological Society, 2018), which outlined a duty of care to persons and peoples, and with the principles of the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006), which emphasised the right to continuity, participation, and recognition of the stories of people with intellectual disabilities.

Although participants briefly mentioned systemic tools such as timelines, genograms, and Bronfenbrenner's ecological systems model, their inclusion suggested some awareness of practical methods that could support the integration of social history into formulation work. However, there was limited elaboration on how routinely these tools are used in clinical settings.

Research demonstrated that such tools may offer structured ways to surface and organise aspects of a client's social history. Timelines, for example, could support collaborative life-story work, helping clients and teams map key events and transitions over time (Barnes & Summers, 2012). Genograms could provide a symbolic representation of family and social networks, and when adapted to reflect cultural identity and migration histories, can prompt reflection on intergenerational patterns and belief systems (Jones & Haydon-Laurelut, 2019). Bronfenbrenner's ecological model could offer a wider lens, enabling psychologists to locate clients within broader systems, such as family, community, organisational environments, and societal structures. In intellectual disability contexts, it has been used to understand the relationship between the environment of residential services and behaviours labelled as challenging (Olivier-Pijpers et al., 2018), to explore the experiences of disabled women facing intimate partner violence (Ruth & Lund, 2017), and to support transition planning for young people (Small et al., 2013). These examples demonstrate how systemic tools help link individual experiences to wider social, organisational, and structural contexts, supporting more inclusive and contextually informed practice in intellectual disability work.

While these tools were not always implemented in practice, their potential to support reflective, systemic, and person-centred formulation was well documented. As Thrower et al. (2024) argued, psychological formulations should aim to integrate sociocultural factors,

personal meaning, and the individual's strengths, and these tools can provide meaningful ways to do so.

Recommendations

Based on the findings from the thematic analysis, including some direct suggestions, recommendations were developed to support greater consideration of social history within psychological formulations. These recommendations were reviewed using the COM-B model and the DPR model to guide action.

The recommendations section begins with those identified as being more feasible for short-term implementation within current practice (Table 6), following discussions with the service lead and team members. Table 7 then presents the rest of the recommendations, building on those in Table 6 and extending them to include medium- to longer-term goals that may require additional planning, resources, or service development.

Table 7

Recommendations for Immediate or Short-Term Implementation grouped by (sub)themes, COM-B Domains, and DPR Components

Recommended Interventions		**Relevant (sub)theme**	**COM-B Component(s)**	**DPR Model Component(s)**
Develop a Social History Formulation Toolkit	The Tree of Life was already widely used within the team and could be strengthened by adding structured prompts that encourage exploration of social history.	History Lost in the System & Systemic Thinking as a Tool for Inclusion	Psychological Capability, Physical Opportunity, Reflective Motivation	Procedural, Reflective
Reflective Practice	Reflective practice sessions are typically facilitated by trainee clinical psychologists within the team, where they ask a member of the team to present a case of someone they have worked with. In these sessions, prompts can be introduced to encourage consideration of the person's social history throughout the therapeutic process.	Compassion and Empathy Holding the History of Others (Staff and Families)	Social Opportunity, Reflective Motivation	Reflective
Provide Training	Update teaching around social history in intellectual disabilities in Clinical Psychology Doctorate Training. To refresh existing teaching content with practical examples and concrete prompts to explore social history.	Domains Where Social History Speaks Loudest & History Lost in the System	Psychological Capability, Reflective Motivation	Declarative, Reflective

Note. Abbreviations: COM-B = Capabilities, Opportunities, Motivations and Behaviour Model, DPR= Declarative-Procedural-Reflective model

Table 8

Recommendations for Medium or Long-Term Implementation grouped by (sub)themes, COM-B Domains, and DPR Components

Recommended Interventions		**Relevant (sub)theme**	**COM-B Component(s)**	**DPR Model Component(s)**
Incorporate a flexible set of prompts into existing formulation templates, supervision frameworks, and MDT agenda templates.	To explore client's social history, prompts can include: - Key transitions - Shared cohort experience relevant to this client To consider carers' histories and cultural context. Prompts can include: - Are there key experiences in the carer's/staff's background that might influence how they make sense of the client's needs? To consider systemic influences, prompts can include: - What parts of this person's social history might shape their distress?	Team-Based Formulation and Carer Work Holding the History of Others (Staff and Families) Systemic Thinking as a Tool for Inclusion	Reflective Motivation, Social Opportunity	Reflective, Declarative

Recommended Interventions		Relevant (sub)theme	COM-B Component(s)	DPR Model Component(s)
Develop a Social History Formulation Toolkit	Its format can include a visual or written toolkit listing relevant domains of social history (e.g., housing, education, immigration, benefits, family dynamics) for use in supervision, formulation prep, or during assessment planning. Prompts to guide the creation of the toolkit: - Which domains of social history feel most relevant here? - Are there areas we typically overlook? It can also include visual templates of systemic tools, (timelines, eco-maps, genograms), case examples of how these tools have been applied in intellectual disability services.	Domains Where Social History Speaks Loudest History Lost in the System Systemic Thinking as a Tool for Inclusion	Psychological Capability, Reflective Motivation Psychological Capability, Physical Opportunity	Declarative, Procedural Procedural, Reflective
Reflective Practice These reflections can be built into existing supervision frameworks or existing CPD slots, integrated into broader cultural competency.	Reflections around identity and power Prompts can include: - What might I represent to this client or carer? - How has learning this history changed how I feel? - How might my background shape my understanding? Reflections around how learning about a client's life history can shape one's emotional responses and understanding of distress. Prompts can include: - How understanding this person's social history influence how we view the person's distress?	Holding the History of Others (Staff and Families) Compassion and Empathy	Reflective Motivation, Social Opportunity	Reflective, Declarative

Recommended Interventions		**Relevant (sub)theme**	**COM-B Component(s)**	**DPR Model Component(s)**
Incorporate a "Social History" section in Reports and Handover Notes	When clients move teams or geographical areas, create a simple, structured section in psychological reports or internal transfer summaries that briefly captures known social history (e.g., institutionalisation, family separation, trauma). This can make social history visible to future teams and reduces reliance on memory or informal transmission.	The Ethical Imperative to Ask History Lost in the System	Physical Opportunity, Psychological Capability	Declarative, Procedural
Provide information to new clinicians joining the service, including qualified and trainee psychologists.	Develop a short orientation document outlining key historical events, institutional legacies, and systemic traumas relevant to the service's geographical area and client group (e.g., past hospital closures, public inquiries, or patterns of service reform, any local advocacy efforts or campaigns that led to better community care). This can help new clinicians contextualise the client groups and staff's histories and understand the broader sociopolitical landscape of care in the services' catchment area. It can be shared in team induction, or early supervision.	History Lost in the System	Psychological Capability, Reflective Motivation	Declarative
Provide CPD training. Training could include clinical vignettes, dilemmas, and hands-on practice with tools. Integration into existing CPD time or reflective practice sessions.	Provision of CPD on "*formulating with uncertainty on the relevance of social history*" Prompts can include: – How to talk about social history when its relevance is unclear? Provision of CPD or hands-on workshops on using systemic tools in formulation work within intellectual disability services	Weighing What to Say Systemic Thinking as a Tool for Inclusion	Psychological Capability, Reflective Motivation Psychological Capability, Physical Opportunity	Procedural, Reflective Procedural, Declarative

Note. Abbreviations: COM-B = Capabilities, Opportunities, Motivations and Behaviour Model, DPR= Declarative-Procedural-Reflective model

Dissemination

Key findings and recommendations were disseminated through a meeting with the service lead and another psychologist from the team, followed by presentations to the community intellectual disability team involved in the study and to a team from another geographical area. The meeting and the presentation generated discussion around feasibility and areas for improvement. Ideas for further service improvement projects focusing on implementing some of the recommendations were also discussed.

Strengths and Limitations

A strength of this service improvement project was the application of the COM-B model to address behaviour change and the DPR model to support clinical skills development, providing a theory-driven rationale for each recommendation. Involving an expert by experience helped refine focus group questions to ensure relevance, and involving the service lead in discussions allowed recommendations to be refined in line with current service priorities, feasibility, and capacity. Dissemination to a second community intellectual disability team also enabled wider consideration of findings across geographical areas.

However, some limitations should be noted. The transferability of the findings should be considered in light of the characteristics of the participating team. For example, psychologists within this service had previously received anti-racism training, which may have increased awareness of social and cultural factors compared with other services. Furthermore, the team comprised entirely White British female psychologists, with most qualified psychologists having substantial experience within the service. The relatively homogeneous demographic profile of the team may have shaped how issues relating to culture and social history were understood and discussed. As such, other teams may identify different priorities or have alternative perspectives on feasibility, and there may be additional

factors that need to be considered. Although the COM-B and DPR frameworks were applied to structure the recommendations, they have not yet been implemented, and therefore their impact on the implementation of recommendations within formulation practice was not evaluated in this study. Furthermore, there was no input from family members, care staff, the wider multidisciplinary team and service users themselves on their views on the recommendations made, which could have provided valuable insight into what they would find most useful and might have led to different first-step and later-step recommendations. Future work should aim to incorporate these perspectives more fully to ensure recommendations are shaped by, and responsive to, the needs of all stakeholders, including clients, carers, and multidisciplinary colleagues. Extending this work across multiple services and geographical areas would also help establish the broader generalisability of these findings.

Conclusion

This service improvement project identified a set of recommendations, in line with the COM-B and DPR models, to support integration of social history within psychological formulations in an intellectual disability community service. By identifying both short-term and medium-to-long-term recommendations, the project provides a clearer pathway for expanding formulation practice in ways that are responsive to service priorities and capacity. It is hoped these recommendations will guide the service in integrating social history more systematically with clients and carers, enhancing understanding and improving the quality of psychological support.

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Theoretically Driven Research Project

An Experimental Study to Weaken "Flashforwards" in Anxious Young Adults: Initial Steps Adapting an Online Paradigm to Explore Boundary Conditions with Intervention Timings

The Oxford Institute of Clinical Psychology Training & Research

University of Oxford

External Supervisor: Dr. Alex Lau-Zhu

Internal Supervisor: Dr. Annabel David

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Abstract

Objectives: To evaluate the effectiveness of a self-administered, online Tetris-based intervention in weakening flashforward imagery in anxious young adults, and to examine whether a 10-minute delay following an imagery reminder is necessary for its effectiveness (i.e., potential boundary condition).

Design: A randomised experimental study using a self-administered online paradigm comparing four intervention conditions with different intervention durations.

Methods: A UK-based sample of young adults aged 18-25 (N=130 powered to detect medium effects) with elevated anxiety symptoms was recruited via Prolific. Participants were randomly assigned to four conditions: reminder +20-min Tetris (R+T20), reminder only (20-min music control), reminder +10-min Tetris (R+T10), or reminder +10-min filler +10-min Tetris (R+F10T10). The procedure involved flashforward recall, randomisation, flashforward vividness and distress ratings (before and after randomisation), and an intrusion provocation task to explore flashforward frequency. Vividness and distress were analysed using mixed-design ANOVAs, and frequency was analysed using a one-way non-parametric test.

Results: Analyses indicated no significant differences between conditions in changes in vividness, distress, or in frequency. Only distress decreased significantly from pre- to post-intervention. Post-hoc power analyses suggested the study may have been underpowered.

Conclusions: The findings do not support the effectiveness of a self-administered Tetris-based intervention in weakening flashforward imagery in anxious young adults, but likely due to limited power to detect potential small effects in online studies. The study cannot conclude whether the 10-min delay following imagery reminder could be omitted. Methodological recommendations are provided to strengthen the online paradigm and further assess this intervention approach in weakening anxiety flashforwards.

AI Statement: No generative AI was used as part of this research project.

Introduction

Youth Anxiety and Flashforwards

Late adolescence and young adulthood represent critical phases of development marked by significant physical, cognitive, and psychosocial changes (Mondin et al., 2013). Transitions during this time, such as leaving home or starting work or university (Koehn et al., 2016), can increase vulnerability to anxiety disorders (Paus et al., 2008), which impact educational, social, and health functioning, and contribute to the global health burden (Erskine et al., 2015). Anxiety can persist into adulthood (Copeland et al., 2014), carrying substantial economic consequences (Fineberg et al., 2013). This emphasises the need for early and effective interventions to prevent unhelpful response patterns from becoming ingrained (Spence et al., 2000) and decrease distress and burden on families and services.

A Cognitive approach: Focusing on Mental Imagery

A report commissioned by the Wellcome Trust recently suggested that focusing on mental imagery can be a promising route to clinical innovations for youth mental health (Pile et al., 2021). Mental imagery refers to the internal perception of sensory stimuli when external stimuli are absent, and in psychopathology images also carry affective and threat-related information (Holmes & Mathews, 2010). Owing to its multisensory nature it enables us to experience events in our minds as if they were occurring in reality. Within psychiatric disorders, intrusive images are prevalent, can be from both past and future orientations, and are characterised by heightened emotional intensity and sensory vividness. For instance, people with post-traumatic stress disorder may experience flashbacks (Brewin, 2015), depressed individuals may have intrusive images of future suicidal behaviour (Crane et al., 2012), and people with anxiety may experience a greater number of intrusive future images (Pile & Lau, 2020).

In the context of anxiety, the term ‘flashforwards’ can signify intrusive imagery of anticipated events often depicting worst-case scenarios (Engelhard et al., 2011). There is growing interest in exploring the role of mental imagery in anxiety among youth. For instance, Burnett Heyes et al. (2017) demonstrated that mental imagery-based training can modify negative interpretation bias in adolescents with social anxiety. Additionally, reviews Pile et al. (2021) and Schwarz et al. (2020) highlighted that using emotional mental imagery in psychological interventions significantly reduces anxiety symptoms in youth. The flashforwards present promising intervention targets because they are hypothesised to drive overly threatening appraisals and maladaptive avoidance, fuelling symptomatology across anxiety disorders.

A Simple Technique to Modify Problematic Mental Imagery

There is a growing interest in investigating the use of Tetris gameplay as an intervention to reduce the occurrence of intrusive images, with a major focus on imagery-based memories commonly known as flashbacks of past traumas (Holmes et al., 2009; Kessler et al., 2018). Tetris is a visually-rich video game where players arrange falling blocks of various shapes at the bottom of the screen. Analogue research has demonstrated that individuals who engaged in Tetris-based interventions, relative to control conditions, reported fewer intrusive images associated with an experimental trauma (Hagenaars et al., 2017; Lau-Zhu et al., 2019) or real-world traumas, including motor vehicle accidents (Iyadurai et al., 2018), complex abuse/neglect histories (Kessler et al., 2018), and intensive care unit staff exposed to repeated trauma during the COVID-19 pandemic (Iyadurai et al., 2023). Given these promising results on past-based imagery, it is also worth exploring the potential effect of such Tetris-based interventions in addressing future-based imagery. Digital interventions such as this approach show potential in optimising outcomes and engagement for young

people, e.g., Hill et al. (2018). By bridging the access gap to treatment for this demographic, such technological advancements could enable the benefits to be realised on a broader scale.

Underpinning Intervention Mechanisms

To understand the potential effects of Tetris-based interventions on flashforwards, it is crucial to explore the underlying mechanisms. Currently proposed mechanisms lie in the working memory model (Baddeley, 2000) and the principles on memory malleability (Dudai, 2004; McGaugh, 2000). Working memory theory suggests that maintaining a memory or mental imagery requires capacity-limited working memory resources. These resources can be strained by engaging in demanding concurrent tasks (Baddeley, 2012), playing Tetris being one example. Initially, Tetris is thought to temporarily weaken the mental image (Skorka-Brown et al., 2014), which could then be stored in long-term memory in a degraded fashion (Engelhard, van Uijen, et al., 2010; van den Hout et al., 2014). Whether Tetris may work due to its visuospatial nature or more general working memory load remains an area of ongoing debate and is not the focus of the current thesis.

The focus here is instead on timing parameters derived from memory malleability principles. While it was previously thought that a memory became unmodifiable once consolidated (within the first six hours; Nader, 2003; Walker et al., 2003), reconsolidation literature suggests that even established memories can become malleable again following reactivation from long-term memory (Nader & Hardt, 2009; Walker et al., 2003). Consistent with this hypothesis, the effects of 10-min Tetris gameplay on flashbacks (in laboratory and real-world studies) have been observed after several lengths of post-trauma delay, including 24 hours or more after (James et al., 2015), as long as the memory is appropriately "reactivated", for example, using reminder cues. Further, based on fear conditioning studies in animals and humans, it is thought to require around 10 minutes after the initial reactivation to return the memory into a malleable state again (Monfils et al., 2009; Schiller et al., 2010),

and this malleability then lasts at least an hour or more (so-called the "reconsolidation window"; (Monfils & Holmes, 2018). Therefore, any memory intervention should be effective only when applied after this 10-min window.

Based on this assumption, the Tetris-based studies (for trauma memories) have applied a 10-minute delay after a reminder cue to maximise success. Most studies require participants to either complete a filler task, for example listen to excerpts of classical music and rate pleasantness for 10 minutes following memory reactivation and before playing Tetris in laboratory contexts with analogue samples (James et al., 2015; Kessler et al., 2018), or playing Tetris during the first 10 minutes following memory reactivation and continue to play for at least another 10 minutes, ending up with 20 minutes of game play in initial translations with clinical populations (Iyadurai et al., 2018; Iyadurai et al., 2023). Critically, whether this 10-minute window is indeed necessary has not been directly tested which could be a potentially important boundary condition of the intervention approach. Clinically, procedural variation can lead to lengthier administration, which can add an additional burden as it may need to be repeated for multiple intrusive images. Concentrating on gameplay can also be challenging in some contexts, for example for younger or older individuals, those with neurodiversity, or when trying to find time to apply this technique in everyday life (e.g., seeking an uninterrupted time period at workplace or in school following an intrusive image). Therefore, ways to optimise this gameplay parameter, including reducing the duration of the intervention are crucial to facilitate later translations to real-world contexts, beginning with experimental research.

Relevance of Memory Theory for Future Mental Imagery

Across psychological disorders, including social anxiety (Schreiber & Steil, 2013; Thunnissen et al., 2024), health anxiety (Muse et al., 2010), and depression (Holmes et al., 2016), flashforwards are often shown to be linked to a particular autobiographical memory or

to memories of past fearful events (Thunnissen et al., 2022). This fits with recent research demonstrating that future and past thinking rely on similar cognitive processes and neural circuitry, and that the past is proposedly used to simulate prospective events (Schacter et al., 2007). Flashforwards in clinical disorders are also repetitive experiences (Brewin et al., 2010), thus can be conceived as memories of simulated future events. Moreover, working memory theory implies that it is irrelevant whether mental images are related to the past or the future. Emerging studies have found that the vividness of mental images related to feared outcomes (social fears or other fears) can be effectively damped by dual-task procedure (Engelhard, van den Hout, et al., 2010; Homer et al., 2016).

Aims and Hypotheses

Following promising preliminary findings supporting the use of a Tetris-based intervention in reducing flashforwards in an anxious adult as part of a clinician-guided intervention (Lau-Zhu et al., 2026), this study investigated whether this approach can be effectively delivered as a fully self-administered online intervention in a general population of young adults. Furthermore, this experimental study aimed to inform the possibility of producing a time-efficient technique by possibly obviating the 10-min delay presumably needed to induce malleability. To achieve this, the study (1) examined whether a Tetris-based approach (i.e., reminder cue followed by 20 minutes of Tetris gameplay; R+T20), originally developed for intrusive trauma memories, could also weaken anxiety-related flashforward images; and (2) evaluated the necessity of the commonly recommended 10-minute interval following a reminder cue.

Hypothesis 1: The Tetris-based approach (reminder cue + 20-min Tetris gameplay) would significantly reduce the vividness and distress of flashforward images at post-intervention, compared to an active control condition (i.e., reminder cue + 20 min of filler activities).

Hypothesis 2: The 20-min reminder + Tetris condition (which includes a 10-min delay) would result in greater reductions in flashforward dimensions compared to a shorter reminder + 10-min Tetris condition (without an additional 10-min delay), if such a delay is indeed necessarily to induce malleability to enable intervention effectiveness.

Method

Participants

Participants were 130 young people (M = 22.78, SD = 1.65) recruited via the Prolific platform. 61 were identified as male at birth, 66 as female, and 3 preferred not to say. Inclusion criteria were: (1) age 18-25; (2) ability to speak and read English; (3) access to a computer and a private space; (4) a stable internet in a quiet environment; (5) mild anxiety, indicated by a score of 5 or higher on the Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer et al., 2006); and (6) ability to identify a significant anxiety-related flashforward image using adapted Yale–Brown Obsessive Compulsive Scale (Y-BOCS) items. Exclusion criteria were: (1) receiving psychological treatments at the time; (2) taking medication for anxiety without a stable dose for at least two months; (3) self-report diagnosis of a learning disability or neurological disorders; (4) self-report diagnosis of psychotic disorders or experiencing distressing psychotic symptoms; (5) alcohol or drug dependence.

Materials

At screening, anxiety was assessed using the GAD-7. Consistent with Engelhard et al. (2011), flashforward frequency and distress were assessed using two adapted Y-BOCS items, with eligibility requiring scores of 2 or higher on both: (1) frequency of flashforwards (1 = not at all or only once; 2 = once a week or less/occasionally; 3 = 2–4 times a week/about half the time; 4 = 5 or more times a week/almost always), and (2) level of distress (1 = not at all

distressing; 2 = somewhat distressing; 3 = moderately distressing; 4 = very distressing). Depressive symptoms were assessed using the PHQ-2 (Kroenke et al., 2003).

For the flashforward identified by the participant, vividness and distress were assessed using visual analogue scales ranging from 0% ("not at all vivid/distressing") to 100% ("extremely vivid/distressing"). Flashforward frequency was measured using a single-item self-report "How many times did this flashforward pop into mind without you expecting it?". Calmness was assessed using a single-item rating ("How calm do you feel in this moment?").

Procedure

Ethical approval was obtained from the University of Oxford's Central University Research Ethics Committee (reference: MS IDREC 775289).

The study was conducted online and was completely self-administered and lasted approximately 45 minutes. Participants were reimbursed £7.50 for their time.

As shown in Figure 4, following screening, participants completed the PHQ-2, and demographics. Participants then received Tetris instructions, including an explanation of the concept of mental rotation (used to maximally engage working memory), followed by a three-minute practice.

Next, participants identified a significant or frequently occurring flashforward image that would be used throughout the experiment and provided a brief label. Participants then completed an initial calmness rating. Participants were then randomly assigned to one of four conditions:

1. Reminder + 20 minutes of Tetris (R+T20): consistent with widely used clinical protocols, including a proposed 10-minute window to ensure imagery malleability followed by 10-minute gameplay.

2. Reminder only (R; control condition): no Tetris; participants instead completed 20 minutes of filler tasks, i.e., listening to classical music excerpts, to assess the basic effect of the reminder. These fillers were used in prior studies and shown to be "inert" relative to Tetris.

3. Reminder + 10 minutes of Tetris (R+T10): a more time-efficient condition testing whether the 10-minute post-reminder window could be omitted.

4. Reminder + 10-minute filler task + 10 minutes of Tetris (R+F10T10): this condition was added to explore whether the initial 10-minute delay (without active interference, i.e., no Tetris) was necessary, as suggested by prominent accounts on memory malleability, rather than because it may alternatively provide an additional 10 minutes of active interference by Tetris gameplay (i.e., higher dose of working memory taxation). If the latter, then this condition, like R+T20, would be more effective than R+T10.

All participants then engaged in the reminder step: participants were shown the provided label for their chosen flashforward and were asked to briefly bring the image to mind (i.e., "reminder"). This was followed by a second calmness rating and initial ratings of flashforward vividness and distress. Then, depending on each of the four conditions, participants played Tetris and/or performed filler task (listening to excerpts of classical music) for the specified duration and order. Afterwards, participants completed a third calmness rating. Participants were then asked to rate how enjoyable they found the activity and (for the Tetris-based conditions, also to the extent to which they used mental rotation during gameplay).

Finally, participants completed an intrusion provocation task (IPT), which was intended to explore how frequent flashforwards popped up modelling how these are experienced in daily life. In this task, digits from 1 to 9 were presented sequentially in the

centre of the screen, and participants were instructed to press the spacebar whenever the number 3 appeared. Each digit was displayed for 250ms, followed by a 1500ms blank screen. This was intended as a low-demand mind-wandering task, which has previously been used Lau-Zhu's (2019) in-person study to provoke intrusions. Prior to the IPT task and to further increase likelihood of intrusions, participants were given one minute to engage in verbal worry about their flashforward, using words, sentences, and questions (rather than images), as if talking to themselves about the meaning of the worry. This procedure was based on research suggesting that verbal worry increases the frequency of intrusive imagery (Stokes & Hirsch, 2010). Participants then rated the extent to which they were able to think about the flashforward in verbal form during the one-minute period. After a 30-second practice round, participants subsequently completed the IPT for six minutes, shorter than the nine-minute duration used by Lau-Zhu et al. (2019), to reduce the likelihood of participant disengagement in the self-administered online format. Afterward, participants reported the frequency with which flashforwards had intruded into their minds during the task. Participants then briefly recalled the flashforward and completed a final set of vividness and distress ratings before debriefing.

Statistical analysis

The primary analyses involved mixed ANOVA, with experimental group (four levels; between-subjects) and timepoint (pre and post; within-subjects) as independent variables, and flashforward vividness and distress as dependent variables. Assumptions of normality and homogeneity of variance were assessed for all variables.

Exploratory analyses examined flashforward frequency, measured at a single post-intervention timepoint. As this variable violated normality assumptions, a non-parametric Kruskal–Wallis test was used to compare the four experimental groups.

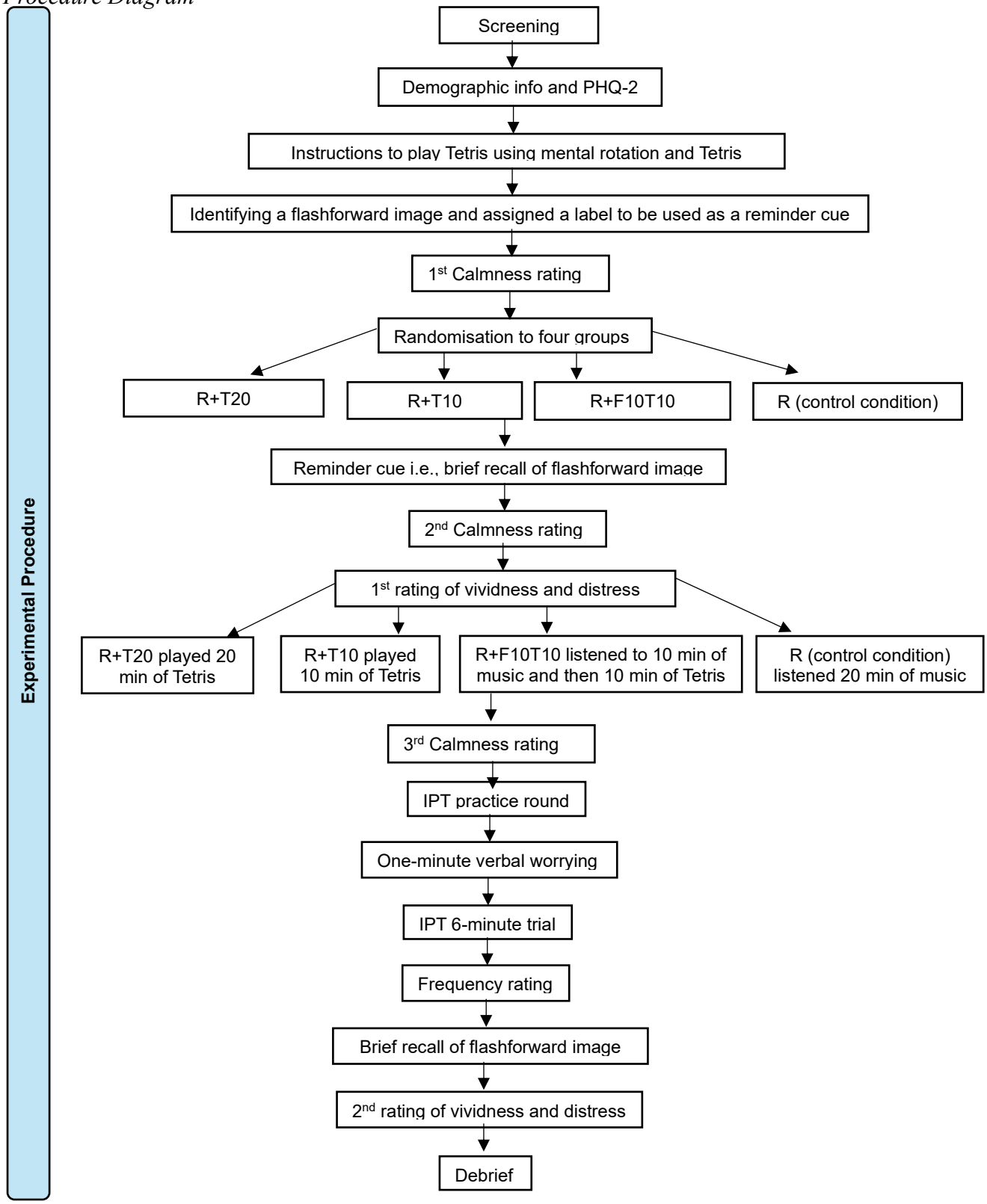
Manipulation check analyses involved mixed ANOVAs to assess changes in calmness across two phases (pre- to post-flashforward recall, and post-flashforward recall to post-intervention), with experimental group as a between-subjects factor, and one-way between-subjects ANOVAs to assess verbal worry and mental rotation use. All analyses were conducted using SPSS Statistics 31.0.

Power analysis

Using GPower 3.1, a priori power analysis was conducted for a mixed-design ANOVA with four groups and two timepoints (pre- and post-intervention), assuming a medium effect size (Cohen's $f = 0.25$), $\alpha = .05$, and power = .95, based on existing laboratory studies using similar intervention approaches to influence autobiographical memories. This indicated that a minimum of 76 participants was required. Given the self-administered and online nature of the study, and the potential of non-compliance with task instructions (e.g., participants taking substantially longer to move between tasks), the target recruitment was set to 130 participants.

Figure 4

Procedure Diagram



Note. Abbreviations: PHQ = Patient-Health Questionnaire. R = Reminder. T = Tetris. F = Filler. IPT = Intrusion Provocation Task

Results

Of the 130 participants recruited, 10 were excluded due to excessively long completion times (>3 SD above the mean): five on the Tetris task, three on the IPT, and two on both tasks. The final sample consisted of 120 participants.

Table 8 presents the sample characteristics across the four experimental conditions, with no significant differences observed between groups.

Table 9

Sample Characteristics

	R+Control (n = 27)	R+F10T10 (n = 30)	R+T10 (n = 32)	R+T20 (n = 31)
Age (M ± SD)	22.6 ± 1.8	23.2 ± 1.5	22.9 ± 1.4	22.3 ± 1.8
GAD-7 (M ± SD)	11.3 ± 4.3	11.5 ± 4.2	11.1 ± 4.2	10.5 ± 3.9
PHQ-2 (M ± SD)	2.9 ± 1.5	2.8 ± 1.3	3.1 ± 1.7	2.7 ± 1.6
	N (%)	N (%)	N (%)	N (%)
Sex assigned at birth				
Male	12 (44.4%)	15 (50.0%)	15 (46.9%)	15 (48.4%)
Female	13 (48.1%)	14 (46.7%)	17 (53.1%)	16 (51.6%)
Prefer not to say	2 (7.4%)	1 (3.3%)	0	0
Gender identity				
Cisgender man	11 (40.7%)	15 (50.0%)	14 (43.8%)	15 (48.4%)
Cisgender woman	12 (44.4%)	14 (46.7%)	16 (50.0%)	14 (45.2%)
Gender diverse	2 (7.4%)	1 (3.3%)	1 (3.1%)	2 (6.5%)
Prefer not to say	2 (7.4%)	0	1 (3.1%)	0
Sexual orientation				
Heterosexual	15 (55.6%)	27 (90.0%)	19 (59.4%)	21 (67.7%)

	R+Control (n = 27)	R+F10T10 (n = 30)	R+T10 (n = 32)	R+T20 (n = 31)
Sexual minority	10 (37.0%)	2 (6.6%)	13 (40.6%)	9 (29.0%)
Prefer not to say	2 (7.4%)	1 (3.3%)	0	1 (3.2%)
Ethnicity				
White	21 (77.8%)	22 (73.3%)	19 (59.4%)	22 (71.0%)
Non-White	6 (22.2%)	8 (26.7%)	13 (40.6%)	9 (29.0%)
Frequency of flashforward at screening*				
Once a week or less	7 (25.9%)	7 (23.3%)	12 (37.5%)	13 (41.9%)
2–4 times/week	16 (59.3%)	14 (46.7%)	16 (50.0%)	12 (38.7%)
≥5 times/week	4 (14.9%)	9 (30.0%)	4 (12.5%)	6 (19.4%)
Distress of flashforward at screening*				
Somewhat distressing	12 (44.4%)	9 (30.0%)	16 (50.0%)	12 (38.7%)
Moderately distressing	13 (48.1%)	15 (50.0%)	13 (40.6%)	16 (51.6%)
Very distressing	2 (7.4%)	6 (20.0%)	3 (9.4%)	3 (9.7%)

Note. N/A = Not Applicable. *Frequency and distress of flashforward were measured using the Yale–Brown Obsessive Compulsive Scale measure (see Methods) at screening to ensure eligibility.

Table 10

Manipulation Checks

	R+Control (n = 27)	R+F10T10 (n = 30)	R+T10 (n = 32)	R+T20 (n = 31)
1st calmness rating	48.5 ± 26.3	48.9 ± 26.8	51.3 ± 26.5	49.0 ± 23.9
2nd calmness rating	35.3 ± 22.2	31.1 ± 24.2	37.6 ± 23.7	34.0 ± 21.4
3rd calmness rating	69.3 ± 20.6	59.7 ± 23.8	62.8 ± 22.3	55.3 ± 25.9
Mental rotation use during Tetris	N/A	64.6 ± 25.4	69.8 ± 24.3	61.2 ± 25.9
Verbal worrying	65.3 ± 15.9	65.3 ± 15.9	60.0 ± 23.2	60.5 ± 21.3

Note. N/A = Not Applicable

Table 11

Outcome Measures

	R+Control (n = 27)	R+F10T10 (n = 30)	R+T10 (n = 32)	R+T20 (n = 31)
Baseline vividness (M ± SD)	65.9 ± 18.6	72.7 ± 19.9	69.0 ± 20.5	65.6 ± 22.0
Second vividness (M ± SD)	67.6 ± 20.5	67.4 ± 21.3	69.2 ± 20.6	58.9 ± 25.0
Baseline distress (M ± SD)	64.2 ± 23.4	72.5 ± 19.4	72.3 ± 18.3	66.9 ± 25.0
Second distress (M ± SD)	61.2 ± 22.1	61.8 ± 24.5	68.4 ± 19.9	56.3 ± 29.8
Flashforward frequency (Median [IQR])	3.0 [4.0]	2.0 [3.0]	2.0 [3.0]	2.0 [4.0]

As shown in Table 9, calmness decreased following flashforward recall compared to baseline, $F(1, 116) = 84.31$, $p < .001$, $\eta p^2 = .42$, and increased following the intervention, $F(1, 116) = 124.13$, $p < .001$, $\eta p^2 = .517$. There were no significant differences between conditions in calmness at any time point. Additionally, groups did not differ in verbal worry or mental rotation use.

Table 10 presents vividness, distress, and frequency. Baseline ratings of vividness and distress were comparable across conditions, indicating similar engagement in flashforward recall across conditions at baseline.

Main Analyses: Vividness and Distress Ratings

As illustrated in Figure 5, vividness showed small increases in the R+Control and R+T10 groups and decreases in the R+F10T10 and R+T20 groups. The main effect of time was not significant: vividness did not significantly change from pre- to post-intervention, $F(1, 116) = 1.86$, $p = .175$, $\eta p^2 = .016$, nor the main effect of group: vividness ratings did not differ between conditions, $F(3, 116) = 1.18$, $p = .319$, $\eta p^2 = .030$. The time × group interaction was also not significant: changes in vividness over time did not differ between groups, $F(3, 116) =$

1.09, p = .358. These findings demonstrated that all four conditions had a similar effect on flashforward vividness.

In contrast, for distress, there was a main effect of time: distress decreased from pre- to post-intervention overall, $F(1, 116) = 13.55$, $p < .001$, $\eta p^2 = .105$, as illustrated in Figure 6. However, there was no significant time x group interaction, i.e., the reduction in distress did not significantly differ across all groups, $F(3, 116) = 1.19$, $p = .316$, $\eta p^2 = .030$; and there was also no main effect of group, $F(3, 116) = 1.20$, $p = .314$.

Exploratory post-hoc power analyses were conducted to estimate how many participants would be needed to replicate these findings in a future study. Assuming a small effect size based on the current findings (Cohen's $f = 0.10$), $\alpha = .05$, and power = .80, the estimated required sample sizes were 256 participants for vividness and 228 participants for distress, almost double the current sample size.

Figure 5

Changes in flashforward vividness across time by condition.

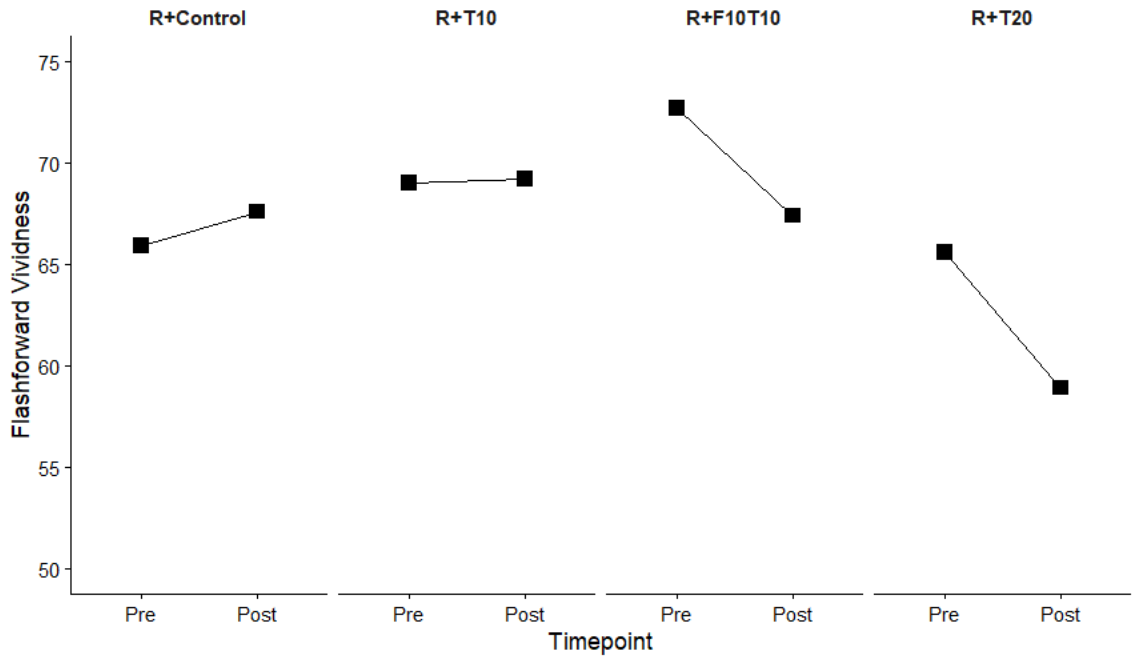
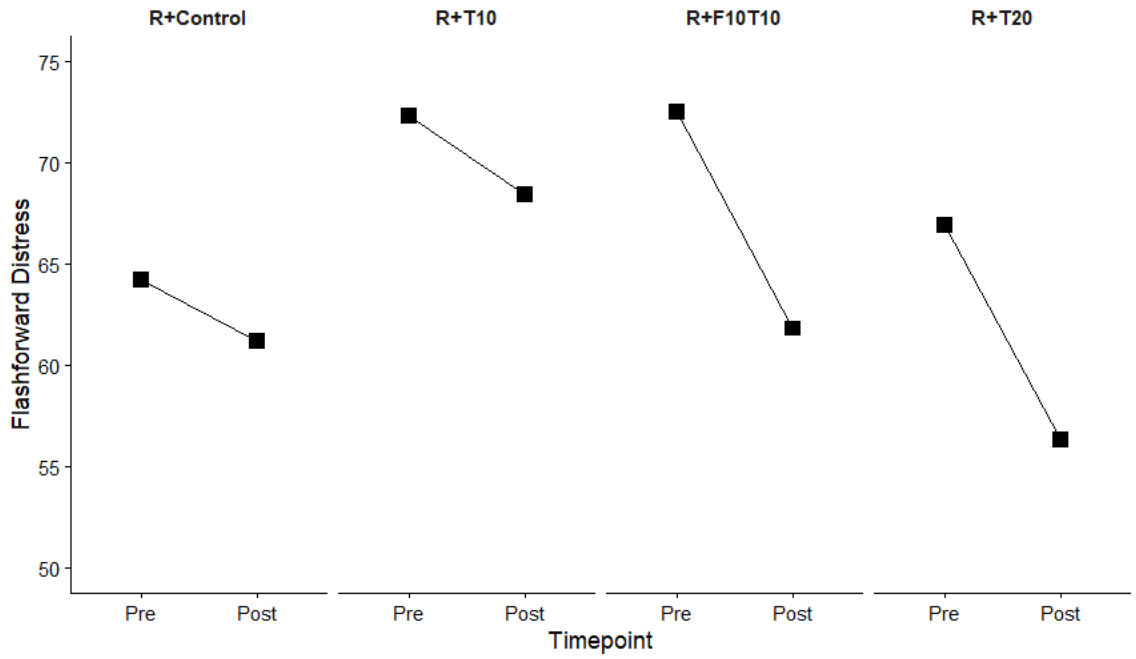


Figure 6

Changes in flashforward distress across time by condition

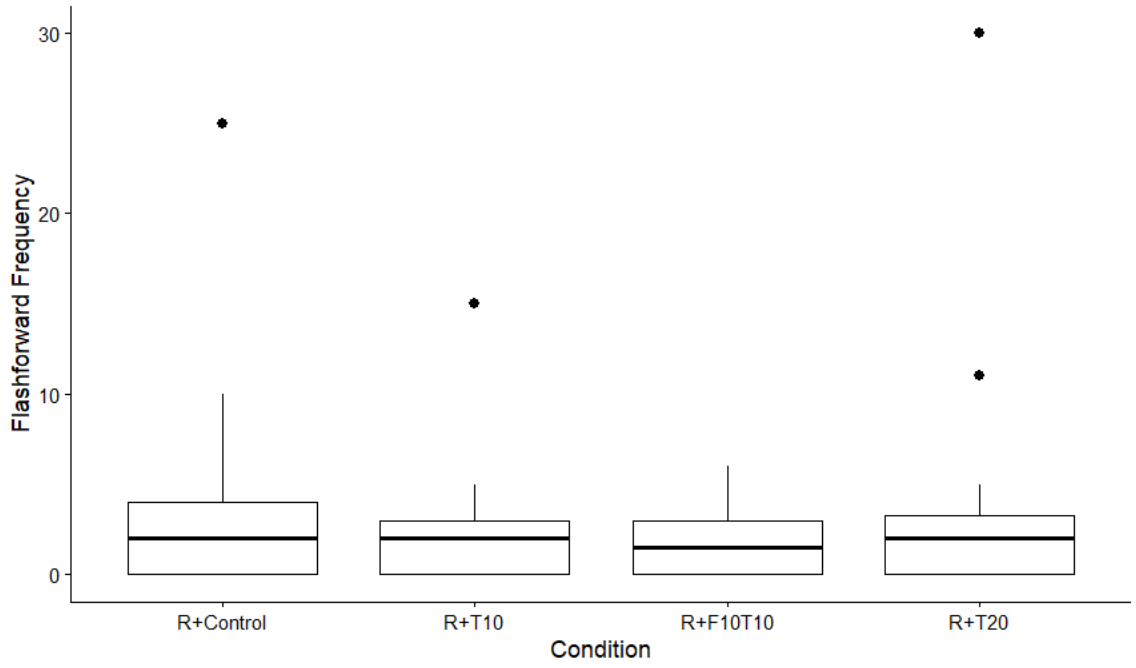


Exploratory Analyses: Frequency Ratings

As shown in Figure 7, frequency ratings were low and comparable across conditions, with a positively skewed distribution and a small number of higher-value outliers. A Kruskal–Wallis test revealed no significant differences in flashforward frequency across the four experimental conditions, $\chi^2(3) = 0.10$, $p = .992$, as median values (Table 10) were comparable across groups. Exploratory pairwise comparisons with Bonferroni correction also confirmed that there were no significant differences between any of the groups.

Figure 7

Flashforward frequency following Intrusion Provocation Task by condition



Discussion

The present study aimed to use an online paradigm to test whether a Tetris-based intervention, previously shown to weaken flashbacks, could also weaken flashforwards in an experimental setting, and if so, it explored an important boundary condition - whether it could be made more time efficient (i.e., reducing Tetris gameplay duration from 20 to 10 min). Findings did not provide evidence that this specific self-administered online version of the 20-min Tetris-based intervention (noting previous work is all administered via researchers' guidance) reduced the vividness, distress, or frequency of flashforward images in anxious young adults, relative to a 20-min control condition with music filler tasks, likely due to lack of power to detect small effects. Furthermore, given this initial null finding, there was unsurprisingly also no support that the 20 minutes of Tetris gameplay would be more effective than a shorter 10-minute gameplay. However, this study is the first to examine a Tetris-based approach for flashforwards in a fully self-administered online format in the

general population. It builds on previous work on flashbacks (Holmes et al., 2009; James et al., 2015; Kessler et al., 2018) and on flashforwards in a young adult population with the initial case series (Lau Zhu et al., 2026) providing preliminary evidence that this intervention may be feasible and beneficial for help-seeking young people with anxiety. Nevertheless, the present study did not replicate these findings in a fully self-administered community sample. Therefore, further research is needed to determine whether this intervention generalises to young people actively seeking treatment, including those accessing formal mental health services, where it has not yet been evaluated. The findings are discussed in relation to both the proposed underlying mechanisms and methodological considerations for future research.

The present study adapted reconsolidation-based principles to flashforwards on the basis that recurrent flashforwards can be understood as stored memories of previously simulated events (Cole & Kvavilashvili, 2021), and that remembering the past and imagining the future share substantially overlapping cognitive and neural processes (Schacter & Addis, 2007). However, future event simulation also requires more intensive and constructive processes to imagine events that have not yet occurred, which differs from retrieval of past events (Schacter & Addis, 2007). Therefore, although there is a strong theoretical rationale for applying reconsolidation-based principles to flashforward imagery, the extent to which these mechanisms transfer to future-oriented anxious imagery remains to be firmly established and may represent one possible explanation for the present null findings.

For distress and vividness, no significant differences were found between conditions. However, distress decreased significantly over time across all four conditions irrespective of whether participants completed the Tetris intervention or the control task. It is possible that habituation following repeated recall of the flashforward may explain this finding. However, it is also important to consider that recall alone often produces only modest reductions in emotional memory characteristics, whereas larger reductions are generally observed when

recall is combined with a dual-task intervention (Mertens et al., 2021), indicating that habituation alone may not fully account for the present findings. Descriptively larger decreases were observed in distress in the R+20T and R+F10T10 conditions (approximately 10-point reductions) compared to the R+10T and control conditions (approximately 3–4-point reductions). A similar pattern was observed for vividness: the R+20T and R+F10T10 conditions showed reductions in vividness, whereas the R+10T and control conditions showed small increases. These descriptive patterns appear consistent with previous research suggesting that a 10-min delay following memory reactivation may be required for Tetris to be effective (Iyadurai et al., 2018; Iyadurai et al., 2023; James et al., 2015; Kessler et al., 2018). However, these differences did not reach statistical significance and should therefore be interpreted with caution. The initial power calculation was based on medium effects from previous in-person research-guided laboratory studies, typically involving adults older than 25 and focusing on trauma-related flashbacks, whereas the present study examined anxiety-related flashforwards in young adults using a fully self-administered paradigm, and the observed effects were small. Indeed, post hoc power analyses indicated that larger samples (N=228 for distress, N = 256 for vividness) would be required to reliably detect effects of this magnitude, suggesting that the study may have been underpowered and that a more conservative a priori power calculation based on a small effect size may have been more appropriate given these methodological differences.

This issue of limited statistical power may also be particularly relevant given that the study was conducted entirely online using a fully self-administered format via the Prolific platform. While this enhanced scalability and recruitment, it may also have increased noise and reduced engagement compared to researcher-guided implementations (Iyadurai et al., 2020; Lau-Zhu et al., 2019; Lau-Zhu et al., 2026). Participants recruited through such platforms are often experienced in completing paid studies, which may have influenced their

level of engagement with cognitively and emotionally demanding tasks such as mental rotation during Tetris gameplay, verbal worry, and flashforward recall. Such variability in engagement and the difficulty in measuring engagement may have contributed to the present null findings, as any intervention effect would be harder to detect if some participants did not fully engage with the active components of the task. Additionally, demand characteristics cannot be ruled out, as participants' expectations regarding the study procedures were not assessed and may have influenced self-reported ratings across conditions (McCambridge et al., 2012).Thus, adequately powered studies accounting for potential smaller effect sizes (for online experiments) may be needed to determine whether Tetris-based interventions can be effective in weakening flashforward imagery or alternatively run the experiment in person where in vivo observations can help maximise engagement. But given the potential for more efficient studies with online recruitment, future experiments could aim to continue to optimise intervention delivery in self-administered formats, for example by incorporating more stringent manipulation checks to ensure participant engagement, such as requiring a minimum change in calmness rating following the reminder cue, or higher baseline self-report of distress and vividness to ensure that flashforward selected are adequately vivid and distressing to allow for measurable change, and additional ways to ensure that Tetris gameplay was done as instructed for 10-20 min in the absence of any monitoring. These methodological directions could clarify the mechanisms underlying imagery-based interventions and support their translation into effective and scalable tools for young people, including a stronger test of whether the more time-efficient versions of this intervention approach can be useful.

Flashforward frequency was exploratorily assessed using an IPT, and no significant differences were observed between experimental conditions. The IPT parameters were informed by previous work (Lau-Zhu et al., 2019), although the duration was shorter (6

minutes compared to approximately 9 minutes in the prior study). The overall intrusions induced were also very low (i.e., just median of 2, lower than in previous studies such as Lau-Zhu et al. (2019). Thus, this task may have lacked sensitivity. Possible explanations are that the shorter duration may have decreased the possibility of reporting sufficient intrusions across participants, and that the task introduced a high level of perceptual load (with rapid presentation of digits), leaving limited opportunity for intrusive imagery to occur consistent with working memory accounts suggesting that concurrent task demands can reduce the accessibility of mental imagery (Van den Hout & Engelhard, 2012). Another important consideration is that frequency was assessed at a single time point. This decision was made to avoid expectancy effects, as repeated measurement may have led participants to anticipate being asked about intrusions and consequently monitor or count them more consciously whilst engaging in the IPT. However, this approach may have further contributed to a limited sensitivity to change. Moreover, prior studies Lau-Zhu et al. (2019) had allowed participants to pause the task to record intrusions in real time, which may have provided a more accurate measure.

Several further limitations should be considered. First, although participants reported a mean GAD-7 score of 11.1, indicating moderate anxiety, this was a community-based sample and may not be directly comparable to help-seeking samples observed in clinical studies, where Tetris-based interventions may have stronger effects (Lau-Zhu et al., 2026, Iyadurai et al., 2020). Second, although baseline vividness and distress ratings were relatively high on average, there was notable variability across participants e.g., 20% rated their flashforward below 50 on both vividness and distress. This suggests that some chosen flashforwards may not have been sufficiently vivid or distressing to allow for strong intervention-related change. Third, vividness and distress were assessed using unvalidated single-item visual analogue scales following 25s of holding the flashforward in mind.

Although similar visual analogue scales with comparable durations of holding the image in mind have been widely used in experimental imagery research (Engelhard et al., 2010; Engelhard et al., 2011; Van den Hout et al., 2011), single-item measures may be less reliable and more susceptible to random measurement variability than multi-item validated instruments. Fourth, participants were free to select any personally relevant anxiety-related flashforward (e.g., social situations, illness, or accidents), resulting in heterogeneity in flashforward content. Although previous research demonstrated that dual-task procedures can reduce the vividness and emotionality of irrespective of the flashforward content (Engelhard et al., 2010), it remains possible that different types of flashforwards vary in their responsiveness to this intervention. Finally, the study was not pre-registered. Future studies would benefit from pre-registration to enhance transparency.

Conclusion

The present study found no evidence that a self-administered online Tetris-based intervention reduced vividness, distress, or frequency of flashforwards compared to a control condition, but it may have been underpowered to detect potential small effects. These findings highlight the challenges of back-translating imagery-based interventions from researcher-guided or clinical settings into scalable, self-administered formats for the general population. Ways to optimise engagement in online settings would be important. Nonetheless, the study provides an important first step in extending this line of research to flashforwards and non-clinical samples. Further work is needed to optimise intervention parameters in the online self-administered format and use adequately powered studies to evaluate Tetris gameplay potential in influencing the characteristics of flashforwards, so additional boundary conditions can be appropriately tested.

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Executive Summary

Why Was the Study Conducted?

Changes and transitions during adolescence and early adulthood can increase vulnerability to anxiety disorders which highlights the need for early and accessible interventions to reduce distress and prevent anxiety difficulties from becoming more persistent.

One promising area of research is mental imagery, which could lead to new treatments for youth mental health. People with anxiety often experience distressing involuntary mental images, referred to as "flashforwards." These are vivid, intrusive images of feared future events. For instance, a young person with social anxiety may have an image of failing during a presentation popping up into their mind. These images can be emotionally intense and may contribute to ongoing anxiety and avoidance behaviours.

Previously, it was believed that once a memory was formed, it could not be changed. However, research has shown that memories can sometimes be modified after being triggered by a reminder related to that memory. Researchers have explored this idea particularly in relation to intrusive past traumatic memories, commonly known as flashbacks. Researchers have explored this idea particularly in relation to intrusive traumatic memories, commonly known as flashbacks. In particular, researchers have used the widely accessible game Tetris and demonstrated that playing Tetris after briefly recalling a traumatic memory may reduce characteristics such as the frequency and distress of these intrusive images.

However, less is known about whether the Tetris-based approach could also show similar effects on flashforwards. Therefore, the current study explored whether an online Tetris-based intervention could reduce the vividness, distress, and frequency of flashforward images in young adults, compared to a control condition involving listening to classical music

instead of playing Tetris. The study also examined whether a shorter version of the intervention (10 minutes) could be as effective as a longer version (20 minutes), which may improve practicality and accessibility in real-world settings. Furthermore, the study was conducted in a fully self-administered online format, unlike the researcher-guided format used in previous studies.

What Was Done?

To investigate this, a total of 130 young adults aged 18–25 with at least mild anxiety symptoms and experience of distressing flashforwards were recruited online. Participants were instructed to choose one flashforward that they experience, and to assign it a label. The label was used an imagery reminder during the study. Participants were then randomly assigned to four different study conditions involving different tasks completed at various lengths of time:

- Group 1 – (Reminder + 20-min Music; control condition): Participants were shown the flashforward label serving as a reminder followed by 20 minutes of listening to classical music excerpts. This group served as the control condition.
- Group 2 - (Reminder + 20-min Tetris): Participants were shown the flashforward label as a reminder, followed by 20 minutes of Tetris. The duration of 20 minutes is consistent with widely used clinical protocols.
- Group 3 - (Reminder + 10-min Tetris): Participants were shown the flashforward label as a reminder, followed by 10 minutes of Tetris. This time-efficient condition whether 20 minutes are necessary or whether 10 minutes of gameplay is sufficient.
- Group 4 – (Reminder + 10-min Music + 10-min Tetris): Participants were shown the flashforward label as a reminder, followed by 10 minutes of classical music and then 10 minutes of Tetris. This condition tests whether Tetris is specifically needed during the first

10 minutes, or whether any task is sufficient during the first 10 minutes after the reminder.

What Was Found?

The study did not find evidence that the self-administered online Tetris intervention reduced the vividness, distress, or frequency of flashforward images more than the control condition involving listening to classical music. The study also did not find significant differences between the shorter (10-minute) and longer (20-minute) versions of the Tetris intervention. Although participants playing Tetris for 20 minutes showed slightly larger reductions in distress and vividness than other participants, these differences were not statistically significant.

What can explain the findings?

Several factors may help explain these findings. Firstly, the effects observed in the study were smaller than expected, suggesting that the study may not have included enough participants to reliably detect subtle changes. Secondly, because the study was completed entirely online without researcher support, levels of engagement with the tasks may have varied considerably between participants. For example, some individuals may not played Tetris following the instructions provided, which may have reduced the potential effectiveness of the intervention.

What Does This Mean?

The study provides an important first step in exploring whether techniques previously used for traumatic memories can be adapted to target anxiety-related future imagery in young people. The research also highlights some of the practical challenges involved in translating researcher-guided interventions into scalable, self-administered digital approaches.

The findings also suggest that further research is needed before this type of intervention could be considered for wider implementation. Future studies may benefit from larger sample sizes, and improved methods for monitoring participant engagement i.e., playing Tetris as instructed. This work contributes to the growing interest in accessible digital mental health interventions for young people. If future research demonstrates effectiveness, imagery-based interventions such as this could potentially offer low-cost and scalable tools to reduce distressing mental imagery associated with anxiety.

Connecting Narrative

Throughout the completion of all three research projects, there was a clear connecting element for me: the number of areas that, as psychologists, we can target, influence, and hold in mind simultaneously.

Theoretically Driven Research Project

My theory-driven research project particularly highlighted the "scientist" within the scientist-practitioner role of a clinical psychologist. What stood out to me was the ability to investigate something seemingly small, whether 10 minutes of Tetris gameplay might be enough to weaken flashforwards instead of 20, in order to make an intervention more time efficient. It made me appreciate how much careful and rigorous work goes into refining interventions. The project also gave me insight into the realities of conducting online research. While platforms such as Prolific provide access to large participant samples, I realised that online participants can become "experts" at being research participants. By this, I mean that participants may complete tasks in ways that ensure payment, rather than necessarily engaging with the study as meaningfully as intended. This made me think more carefully about the balance between making recruitment faster and protecting the quality and integrity of what we are trying to understand.

At the same time, the project made me think about imagery-focused work in a more practical and hopeful way. I had already seen through clinical work how powerful it can be when intrusive images are worked with directly through imagery rescripting. I started thinking about how Tetris gameplay could be used in the therapy room in the future, but also how it might one day sit alongside other strategies that clients can use for themselves, in the same way that some people use relaxation exercises, grounding techniques, or bilateral music. There was something meaningful to me in that: the possibility that an intervention

could give someone another small way of responding to experiences that otherwise feel sudden, intrusive, and outside of their control.

Systematic Review of Literature

When I began exploring potential gaps in reviews for care-experienced populations, I was reassured to find that there were already substantial recent reviews on attachment-based and systemic interventions. This felt important for the services and populations they may inform, and it also shaped the direction of my own review towards trauma-focused psychotherapies. Throughout the review, I found myself thinking about the relationship between systemic, attachment-based and trauma-focused approaches, and trying to hold two things in mind: too much focus on the individual and you miss the wider picture; too much focus on the wider picture and the distress of the person in front of us risks becoming lost. Completing this review reinforced my belief that care-experienced young people should not be offered a single way of making sense of, or working with, their distress. Support is required to be responsive to their needs and context, while also recognising that psychological intervention sits within a much wider societal responsibility to prevent child maltreatment in the first place.

Service Improvement Project

My service improvement project focused on including social history within psychological formulations for people with learning disabilities, a population whose voices have been marginalised both historically and presently. Whilst developing and completing this project, I realised how closely social and personal histories are intertwined, how difficult it can be to separate the two, and how there is an ongoing interaction between personal experience and wider social and political contexts. This further reinforced the importance of keeping wider context visible within clinical work, while also highlighting how difficult it

can be to do this in practice. The clinicians interviewed described dilemmas that I often find myself holding too: what should we ask, how should we ask it, is it appropriate to ask, and what assumptions shape what we consider relevant? For me, conversations on social history allows for a lifespan perspective that situate distress within personal, social, and historical contexts, rather than reducing it to isolated incidents or symptoms. I genuinely hope clinicians within that team and beyond (including myself) find time to reflect on these dilemmas and feel increasingly comfortable sitting with uncertainty and not always knowing what the right questions are.

Conclusion

Across the projects, I moved from trying to understand specific mechanisms involved in imagery, which at times felt like being a scientist in a lab, to exploring the effectiveness of trauma-focused psychotherapies for care-experienced young people, which highlighted the scientist-practitioner role as a whole more directly, to thinking about how we can create more space for stories and voices that are not always listened to within healthcare systems. Taken together, these projects made it even more obvious to me that meaningful change can take many forms, and that psychological work often involves holding more than one kind of change in mind at once.

As I continue developing as a clinical psychologist, I hope to hold onto the idea that interventions can and should be multifaceted. Effective support rarely comes from considering factors in isolation. Instead, meaningful change often emerges when biological, psychological, social, relational, and systemic influences are held together rather than separated. I think we are stronger, both as clinicians and within systems of care, when we allow ourselves to hold complexity, tolerate not always knowing what to do with it, and remain curious in trying to understand it further.

In times of limited resources and increasing pressures on services, I hope to continue approaching clinical work ethically, collaboratively, reflexively and with an awareness that care extends beyond any single intervention or professional role. Above all, I hope to continue seeing the person in front of me, their story, their context, and the many possible avenues through which support and change can occur.

Acknowledgments

I recently reread the personal statement I wrote when applying for my undergraduate degree, I described human psychology as being formed by countless small blocks, and wrote that by understanding and improving those small, separate blocks, I hoped to contribute, in however small a way, to improving quality of life. Reading it back now, I realise my understanding of those "blocks" has changed. What once felt like an abstract way of describing human psychology has come to represent the people encountered along the way, the conversations shared, and the ways we learn to think, care, and act alongside others.

Throughout training, I have met supervisors who created space to think beyond the immediate limits of services, and who encouraged hope, curiosity, and ethical responsibility. I have met colleagues and friends who, despite living in a world that often leaves us emotionally and politically overwhelmed, continue to choose the extraordinary act of caring for others. I leave this training with a deep belief in solidarity, collective action, and the reminder that meaningful change is always relational and never achieved alone.

DClinPsych Research

Thank you to the DClinPsych course team, especially Alex Lau-Zhu, Alasdair Churchard, Ciorsdan Anderson, Alice Quinton, and Annabel David, who were closely involved in my work throughout the course.

In particular, I want to thank my TDRP supervisor, Alex Lau-Zhu, for inspiring me to think about research differently. Being part of Alex's lab showed me the immense thought, care, and ethical consideration that goes into every stage of research. I learnt that research is rarely linear; rather, it is circular, interconnected, and relational, where pulling on one thread inevitably moves many others around it. I am deeply grateful for the opportunities to discuss,

reflect on, and critically engage with research in ways that allowed me to grow intellectually and personally.

Clinical Placements

Thank you to Claire Husbands, Ranjeeta Lota, Ian McCubbin, Patrick Kuhn, Minh-Lieu D'Antonio, Jo Hadfield, and Ellie Horton for supervising my clinical placements. Your supervision continually reminded me that ethical psychological practice requires humility, critical reflection, and a willingness to keep learning from the people and systems we work alongside.

DClinPsych Friends

There are people from this course whom I hold very closely in my heart: Yuhan, Hazel, Sophie, Nadia, Celia, Tami, Hira, and Grace, thank you for all the discussions about the present, the future, the past, politics, technology, emotions, and the state of the world; for the shared worries and shared joy; for the walks in the park, the games, the laughter, and the immense support during these years. You reminded me repeatedly that thinking deeply, caring deeply, and imagining change collectively are all possible.

People Outside of Training

Finally, I want to thank the people in my life outside of training, without whom this journey would not have been possible.

To my lifelong friends, Panayiotis, Ioannis, Katerina, Mikaella, Nicole, and Tala, thank you for the closeness, care, and support you have given me over the past three years and far beyond. Your presence in my life has continually restored my hope and reminded me of who I am outside of training. Life would have been unimaginably different without you.

To my mum, dad, brother, grandparents, and Bernat: thank you for your love and support throughout all the ordinary, difficult, and extraordinary moments of these years. Thank you for bringing warmth and humour into my life, and for embodying hope. A special thank you to my parents and grandparents for passing on to me a love for growing food and caring for the land, and for nurturing that part of me throughout these years. It unexpectedly became a source of calm, perspective, and stability in both training and life more broadly. Bernat, thank you especially for your unwavering love,, and day-to-day support, and for being alongside me through all that these years have held. I could not have asked for more.

Ευχαριστώ σας τζαι moltes gràcies y thank you, for being part of those building blocks along the way!

Appendices

Systematic Review Appendices

Appendix A: PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	p. 7
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	p. 8
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	p. 9-11
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	p. 11
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	p. 11-13
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	p. 13
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	p. 13
Selection	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many	p. 13-14

Section and Topic	Item #	Checklist item	Location where item is reported
process		reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	p. 13-14
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	p. 14
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	p. 14
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	p. 14
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	p. 14-16
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	p. 14-16
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	p. 14-16
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	p. 14-16
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	p. 14-16
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	p. 14-16

Section and Topic	Item #	Checklist item	Location where item is reported
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	p. 14-16
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	p.16
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	n/a
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	p. 17-18
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	n/a
Study characteristics	17	Cite each included study and present its characteristics.	p. 18-20, 22-28
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	p. 20-21, 29-32
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	p. 26, 33
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	p. 22-32
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	p. 33
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	n/a
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	p. 33
Reporting	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	p. 33

Section and Topic	Item #	Checklist item	Location where item is reported
biases			
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	n/a
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	p. 34-36
	23b	Discuss any limitations of the evidence included in the review.	p. 35-39
	23c	Discuss any limitations of the review processes used.	p. 35-39
	23d	Discuss implications of the results for practice, policy, and future research.	p. 37-38
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	p. 11
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	p. 11
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	n/a
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	p. 7
Competing interests	26	Declare any competing interests of review authors.	p. 7
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	n/a

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

Appendix B: Search Terms

(child* OR infant* OR toddler* OR adolescent* OR teen* OR youth* OR "young person*" OR "young people" OR "young adult*")

AND

(care-experienced OR "care experienced" OR "looked after child*" OR "children we care for" OR "children looked after" OR LAC OR CWCF OR CLA OR "in care" OR "state care" OR "out-of-home care" OR "out of home care" OR foster* OR "residential care" OR "residential placement*" OR "institutional* care" OR orphan* OR "child protection" OR "kinship care" OR "relative care" OR "adopt* placement*" OR "special guardian*" OR "reunif* family" OR "care leaver*")

AND

("trauma-focused" OR "trauma focused" OR "trauma-focused CBT" OR "trauma focused CBT" OR TF-CBT OR "trauma-focused cognitive behavio* therap*" OR EMDR OR "eye movement desensiti*" OR CPP OR "child parent psychotherapy" OR DDP OR "dyadic developmental psychotherap*" OR PCIT OR "parent child interaction therap*" OR "trauma-adapted PCIT" OR "trauma-adapted parent child interaction therap*" OR "cognitive processing therap*" OR "prolonged exposure" OR "narrative exposure therap*" OR NET OR "famil* therap*" OR "family intervention*" OR "systemic therapy" OR "relational intervention*" OR "attachment* intervention*" OR VIG OR "video interact* guid*" OR "video information" OR "video-information" OR "Functional Family Therapy" OR FFT OR "Multi-Systemic Therapy" OR MST OR "psycho* intervention*" OR "parenting intervention*" OR "parenting skill*" OR "parent* train*" OR "parent* programme*" OR "parent* educat*" OR "parent effectiveness train*" OR "parent sensitivity" OR "parent mentalis*ing" OR "parent* self-efficacy" OR "parent* stress" OR "parent child relation*" OR "parents under pressure")

Appendix C: Formulae for effects sizes and standard errors

Within-group effect sizes (ESs) were calculated using the following formula (Gutermann et al., 2016):

Within-group effect sizes were calculated as the difference between the pre-treatment and post-treatment means divided by a within-subject standard deviation. Specifically, the effect size *d* was computed by subtracting the post-treatment mean from the pre-treatment mean and dividing this value by S_{within}; $d = \left(\frac{\overline{Y_1} - \overline{Y_2}}{S_{within}} \right)$. The within-subject standard deviation was derived from the pre- and post-treatment standard deviations, adjusted for the correlation between measurements, using the formula: $S_{within} = \frac{\sqrt{SD_1^2 + SD_2^2 - 2r \times SD_1 \times SD_2}}{\sqrt{2(1-r)}}$ where SD_1 and SD_2 represent the standard deviations at pre- and post-treatment, respectively, and *r* represents the correlation between these two time points.

To correct for small sample bias, Cohen's d was converted to Hedges' g by applying a correction factor *J (df)*, calculated as: $1 - \frac{3}{4df - 1}$, where *df* corresponds to the degrees of freedom used in estimating the within-group standard deviation.

The standard errors were calculated by the following formula (Becker, 1988; Kitchenham & Madeyski, 2020):

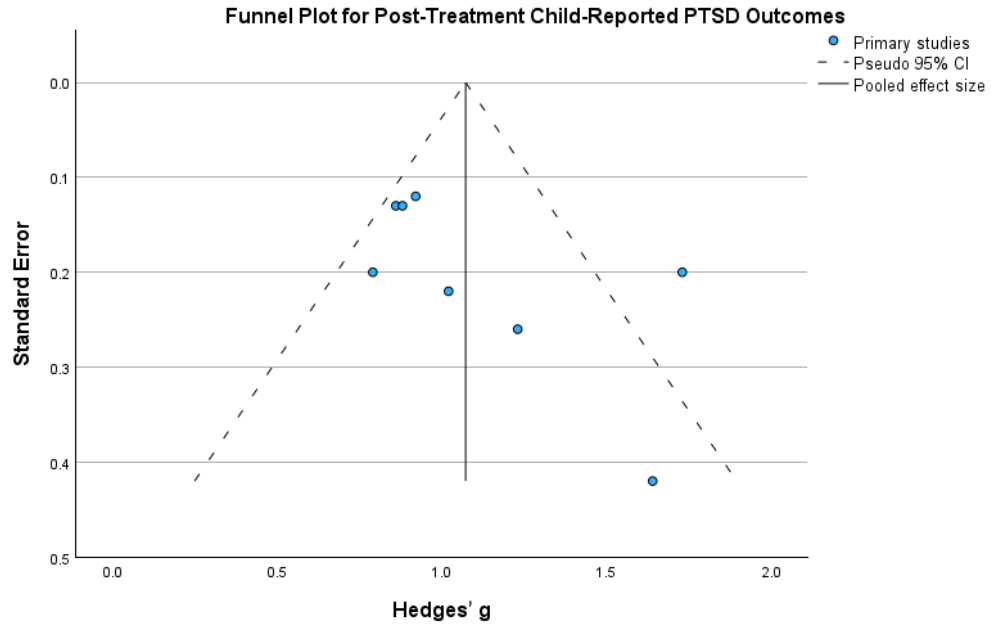
$$SE(SMD) = \sqrt{\frac{2(1-Corr)}{N} + \frac{SMD^2}{2f}}$$

Note. References: Becker, B. J. (1988). Synthesizing standardized mean-change measures. *British Journal of Mathematical and Statistical Psychology*, *41*(2), 257-278; Gutermann, J., Schreiber, F., Matulis, S., Schwartzkopff, L., Deppe, J., & Steil, R. (2016). Psychological treatments for symptoms of posttraumatic stress disorder in children, adolescents, and young adults: A meta-analysis. *Clinical child and family psychology review*, *19*(2), 77-93; Kitchenham, B., & Madeyski, L. (2020). Inconsistencies with formulas for the standard error of the standardized mean difference of repeated measures experiments. *Statistics in Medicine*, *39*(27), 4101-4104.

Appendix D: Funnel Plot of Child-Reported PTSD Outcomes

Figure D1

Funnel Plot of Child-Reported PTSD Outcomes



Note. The plot shows study effect sizes plotted against standard error; pseudo 95% confidence limits are shown by dashed lines.

Appendix E: Journal Author Guidelines – Child Abuse & Neglect

The author guidelines have been copied directly from the Journal website.

About the journal

Aims and scope

Official Publication of the International Society for Prevention of Child Abuse and Neglect

Child Abuse & Neglect is an international and interdisciplinary journal publishing articles on **child welfare, health, humanitarian aid, justice, mental health, public health and social service systems.** The journal recognizes that child protection is a global concern that continues to evolve. Accordingly, the journal is intended to be useful to scholars, policymakers, concerned citizens, advocates, and professional practitioners in countries that are diverse in wealth, culture, and the nature of their formal child protection system. *Child Abuse & Neglect* welcomes contributions grounded in the traditions of particular cultures and settings, as well as global perspectives. Article formats include empirical reports, theoretical and methodological reports and invited reviews.

Article types

1. Research Article

Child Abuse and Neglect publishes quantitative, qualitative, and mixed-method research. Particular focus will be placed on thorough and appropriate methods, strong data analysis and discussion of implications for the field. Abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions. Download the template here.

2. Reviews

Abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance) and Conclusions. Download the template here.

3. Medical Report

Child Abuse and Neglect publishes clinically-relevant original research using a more structured medical format. Medical Reports should include a structured abstract of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions. Manuscript length is limited to 3,000 words (excluding the abstract, tables and figures, and references or appendices) and up to 5 figures or tables (additional figures or tables may be considered as online appendices). Medical reports should include the following sections: Introduction: In 1-2 pages, state the objective of the study and provide adequate background that a reader can determine whether they should read the paper in its entirety. Methods: Provide sufficient detail that the study could be repeated by another investigator. Results: Provide main and secondary results. Discussion: Summarize the most important

results and provide the authors' interpretation of relevance in the context of any relevant prior literature. The discussion section should include a section on the article's strengths and limitations, and suggested next steps. Conclusion: In 1-2 sentences, summarize the authors? final conclusions. Medical Reports should include 2 sections highlighting the importance of the paper; `What is known? and `What this study adds?. Each section is limited to 40 words.

4. Discussion Article

These may discuss a policy or legal / philosophical framework or a brief data report. The article must present a critical analysis of areas of gap in practice or research, current critical or emergent issues, with an expectation of utilizing an integration and discussion of empirical research.

Special Issue Proposals

For special issue proposals, contact chiabu@elsevier.com

Child Abuse and Neglect does not publish case reports or small case series in any of its article types. **Please note: The Discussion type article requires an unstructured abstract that clearly outlines to issue or gap, the discussion approach, key messages and implications. It follows the same word length.**

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This journal follows a double anonymized review process. Your submission will initially be assessed by our editors to determine suitability for publication in this journal. If your submission is deemed suitable, it will typically be sent to a minimum of one reviewer for an independent expert assessment of the scientific quality. The decision as to whether your article is accepted or rejected will be taken by our editors.

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All authors should have made substantial contributions to all of the following:

1. The conception and design of the study, or acquisition of data, or analysis and interpretation of data
2. Drafting the article or revising it critically for important intellectual content.
3. Final approval of the version to be submitted.

All authors are accountable for all aspects of the work, to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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The editors of this journal generally will not consider changes to authorship once a manuscript has been submitted. It is important that authors carefully consider the authorship list and order of authors and provide a definitive author list at submission.

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All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence or bias their work. Examples of potential competing interests include:

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- Patent applications or registrations
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The resulting Word document containing your declaration should be uploaded at the "attach/upload files" step in the submission process. It is important that the Word document is saved in the .doc/.docx file format. Author signatures are not required.

Funding sources

Authors must disclose any funding sources who provided financial support for the conduct of the research and/or preparation of the article. The role of sponsors, if any, should be declared in relation to the study design, collection, analysis and interpretation of data, writing of the report and decision to submit the article for publication. If funding sources had no such involvement this should be stated in your submission.

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants, scholarships and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

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- age
- gender
- race
- ethnicity
- culture
- sexual orientation
- disability or health condition

We recommend avoiding the use of descriptors about personal attributes unless they are relevant and valid. Write for gender neutrality with the use of plural nouns ("clinicians, patients/clients") as default. Wherever possible, avoid using "he, she," or "he/she."

No assumptions should be made about the beliefs of readers and writing should be free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions.

These guidelines are meant as a point of reference to help you identify appropriate language but are by no means exhaustive or definitive.

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There is no single, universally agreed-upon set of guidelines for defining sex and gender. We offer the following guidance:

- Sex and gender-based analyses (SGBA) should be integrated into research design when research involves or pertains to humans, animals or eukaryotic cells. This should be done in accordance with any requirements set by funders or sponsors and best practices within a field.
- Sex and/or gender dimensions of the research should be addressed within the article or declared as a limitation to the generalizability of the research.
- Definitions of sex and/or gender applied should be explicitly stated to enhance the precision, rigor and reproducibility of the research and to avoid ambiguity or conflation of terms and the constructs to which they refer.

We advise you to read the Sex and Gender Equity in Research (SAGER) guidelines and the SAGER checklist (PDF) on the EASE website, which offer systematic approaches to the use of sex and gender information in study design, data analysis, outcome reporting and research interpretation.

For further information we suggest reading the rationale behind and recommended use of the SAGER guidelines.

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We ask authors to define how sex and gender have been used in their research and publication. Some guidance:

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Powertech Systems. (2022). Lithium-ion vs lead-acid cost analysis. Retrieved from *http://www.powertechsystems.eu/home/tech-corner/lithium-ion-vs-lead-acid-cost-analysis/.* Accessed January 6, 2022.

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Reference to a conference paper or poster presentation:

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Reference to software:

Coon, E., Berndt, M., Jan, A., Svyatsky, D., Atchley, A., Kikinzon, E., Harp, D., Manzini, G., Shelef, E., Lipnikov, K., Garimella, R., Xu, C., Moulton, D., Karra, S., Painter, S., Jafarov, E., & Molins, S. (2020). *Advanced Terrestrial Simulator (ATS) (Version 0.88) [Computer software].* Zenodo. https://doi.org/10.5281/zenodo.3727209.

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Service Improvement Project Appendices

Appendix F: Focus Group Questions

1. How do you think historical factors (e.g., past cohort experiences, discrimination, institutionalisation) are/should be considered in your work with people with learning disabilities?
2. When do you find it is appropriate for you to share how social history affects a client's difficulties with clients? How might you do it?
3. Are there times that you find it not to be appropriate to share how social history affects a client's difficulties? If so, how do you still consider these factors in your work?
4. What challenges do you face when integrating social history into psychological formulations?
5. Are there any questions that you feel should be asked but are not currently asked? If so, what gets in the way of this?
6. What steps can be taken to better consider and include the social history of the clients you work with?

Appendix G: Lay Summary

- This project explored how psychologists in intellectual disability services consider a person's social history, such as culture, past trauma, and life experiences, when making psychological formulations.
- Psychologists felt that social history can help them understand people more fully, build empathy, and reduce blame.
- Several barriers made it difficult to include social history consistently, including limited time, uncertainty about relevance, and the loss of historical knowledge when people move between services.
- The study produced practical recommendations, such as adding a social history prompt section to formulation templates and introducing reflective practice or training sessions to help psychologists feel more confident discussing and using social history in their work.

Appendix H: Anonymised representation of tabulated verbatim quotes corresponding to each subtheme

Subtheme	Extracts from Transcript
Compassion and Empathy	▪ "Of course you're feeling like that, given what you've been through." ▪ "It makes sense that you'd react this way after being excluded from school." ▪ "Linking current behaviour to past trauma helps the client feel understood." ▪ "It just sheds a different light on it or brings back the compassion in those situations." ▪ "It is hugely relevant in how people develop very strongly held beliefs about themselves…" ▪ "I find myself quite often saying, 'of course', 'of course you're thinking that', 'of course you're feeling that based on that discrimination, that bullying…"
	▪ "…to help depersonalise this, take away shame/blame… It's not to do with them... but that it was the social, that's the social history." ▪ "It's trying to, like, take any sense of blame or shame off of their shoulders and just... put it on kind of the systems of society at the time." ▪ "…there are like other explanations for things... like the thought challenging or a difficult experience they've had that's stuck with them."
Team-Based Formulation and Carer Work	▪ "Team formulation model where you're working with the staff team... that would probably come in quite naturally." ▪ "Helpful for staff teams to hold those kinds of things in mind... impact that that might have had on someone." ▪ "Trying to help a staff team... hold their formulation in mind and think about... why social history is sometimes relevant to that kind of difficulty."
	▪ "Often it's about sharing that broader social history with the support team... because this is the context that our clients exist within." ▪ "I think it's much easier to include the big history stuff when doing formulations with kind of staff teams or family carers."
	▪ "Hang on a second, there's this whole institutionalised history... let's have a think together as a team about how that might have impacted them..." ▪ "May or may not be possible to talk about that directly with the client, so it only can be hypothesising."
Domains Where Social History Speaks Loudest	▪ "There's definitely some clients… way of thinking about kind of government policy and benefits, entitlements and their experiences…" ▪ "Experiences of discrimination or at school or through work or through interactions with others…" ▪ "Living, working within an institution or supported within an institution…" ▪ "For people with a learning disability not being prioritised for COVID treatment…" ▪ "I often do think about it in terms of like schooling and education… previously we might have thought one diagnosis was enough…" ▪ "I've had clients raise things in sessions about being excluded from school… then in the formulation help them make links…"
Holding the History of Others (Staff and Families)	▪ "Lots of our care teams are really systemically traumatised…" ▪ "Group of people who are culturally... have never been supported in this way at all." ▪ "Lots of them are people who've moved to the UK in adulthood... different styles of emotional language…" ▪ "…you've got me, grand white psychologist marching in... I have failed you in this."
	▪ "Who's come from Africa... see whether this did impact them or whether they didn't realise it was going on..." ▪ "Is it something that is more relevant to the sort of relationship to help that the family members have..."

Subtheme	Extracts from Transcript
	▪ "Changing views of disability or understandings of autism... how that sort of affected how that person's been supported over the course of their life…" ▪ "…how the parents might see white British in context of someone coming into their house…"
Systemic Thinking as a Tool for Inclusion (Shared with Theme 2)	▪ "She always does a timeline with clients... something which I sort of did do recently with a client." ▪ "The intergenerational stories and how stories get passed on... I was thinking about genograms." ▪ "To think more about the wider socio-cultural context that a family's situated in... so yeah, exactly, Bronfenbrenner."
Weighing What to Say	▪ "Are you going down a path that they are happy to go down with you? Is that something that is helpful to them?" ▪ "It's also very much the questions you ask that you don't offend someone as well." ▪ "There were a few traumatic things that happened. And the dad wasn't sure that he wanted to share that…" ▪ "You don't want to trigger something that you didn't even realise was there."
	▪ "I find challenging in LD is that there's always like a whole long history of... discrimination... but they may or may not be aware of that." ▪ "It is knowing when to stop, where to kind of draw the line." ▪ "I think it's hard to know without... they might not realise it had an effect." ▪ "Some people are really connected to that communal history... some people really aren't." ▪ "When is it going to be the most help? When would it be the most helpful to?" ▪ "I found that sometimes it makes me make assumptions... when I talked to him about it... actually wasn't as big a thing…"
	▪ "Feels like too tricky a conversation, cognitively." ▪ "Differing levels of awareness of... wider social and cultural factors."- "Without confusing the client or making it emotionally or cognitively really difficult." ▪ "The client couldn't remember certain things…" ▪ "Translate it differently depending on cognitive ability…" ▪ "Too many steps and too complex... may need to hold for ourselves. ▪ "Depends on the client... how reflective they are…"
	▪ "Maybe it makes it for some clients too easy to say... I don't need to do anything differently." ▪ "It might make it feel almost too hard and too unchangeable to move forward with." ▪ "Seeing things like that as an explanation but not using them as an excuse…" ▪ "Some clients... latch on to that, as a reason why nothing's ever going to get better…" ▪ "I would still include it, but with a very explicit conversation..."
	▪ "Worry about including too much complexity... keeping it simple is going to be more useful." ▪ "Would not want to detract from one's main message… I can hold [social history] in mind…" ▪ "Delivering quite a concentrated version of our more diluted and complex formulation."
History Lost in the System	▪ "We don't know what the person has experienced. We've got, we've got notes that we think they were in an institution, but we're not actually sure what exactly the person has experienced."

Subtheme	Extracts from Transcript
	▪ "People are not always able to tell us what they've been through, and that information might have been lost." ▪ "Hard to know where to look for information... Google's great, but it's not enough" ▪ "Some of the history gets lost over time if teams change…" ▪ "Being newer to the area... that's not something I'm aware of." ▪ "Sometimes with family members... there isn't always that opportunity. You're not always sitting down with them and having that space to formulate." ▪ "Especially people who come from out of county... but you can't get a feel for what the care was like."
The Ethical Imperative to Ask	▪ "It's like it's kind of on us, the psychologists, to ask the questions." ▪ "Made me think about who holds the history and when you hold some history, what's your responsibility to document it and to share it?" ▪ "And we are reflecting that some of the history of the people we work with gets lost over time if teams change, how do we stop this?"
Systemic Thinking as a Tool for Inclusion (Shared with Theme 1)	▪ "She always does a timeline with clients... something which I sort of did do recently with a client." ▪ "The intergenerational stories and how stories get passed on... I was thinking about genograms." ▪ "To think more about the wider socio-cultural context that a family's situated in... so yeah, exactly, Bronfenbrenner."

Appendix I: Journal Author Guidelines – Journal of Applied Research in Intellectual Disabilities

The author guidelines have been copied directly from the Journal website.

JARID Author Guidelines

Sections

1. Submission
2. Aims and Scope
3. Manuscript Categories and Requirements
4. Preparing the Submission
5. Editorial Policies and Ethical Considerations
6. Author Licensing
7. Publication Process After Acceptance
8. Post Publication
9. Editorial Office Contact Details

1. SUBMISSION

Authors should kindly note that submission implies that the content has not been published or submitted for publication elsewhere except as a brief abstract in the proceedings of a scientific meeting or symposium.

Once the submission materials have been prepared in accordance with the Author Guidelines, new submissions should be made via the Research Exchange submission portal: **https://authors.wiley.com/journal/JAR**. Should your manuscript proceed to the revision stage, you will be directed to make your revisions via the same submission portal. You may check the status of your submission at anytime by logging in to authors.wiley.com and clicking the "My Submissions" button. For technical help with the submission system, please review our **FAQs** or contact **submissionhelp@wiley.com**.

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This journal participates in the Wiley Special Education publishing network and the **Wiley Developmental Science Publishing Network**. This exciting collaboration amongst our Special Education and Developmental journals simplifies and speeds up the publication process, helping authors find the right home for their research. At the Editors' judgement, suitable papers not accepted by one journal may be recommended for referral to another journal(s) in the network. Authors decide whether to accept the referral, with the option to transfer their paper with or without revisions. Once the referral is accepted, submission happens automatically, along with any previous reviewer reports, thereby relieving pressure on the peer review process. While a transfer does not guarantee acceptance, it is more likely to lead to a successful outcome for authors by helping them to find a route to publication quickly and easily.

2. AIMS AND SCOPE

JARID is an international, peer-reviewed journal which draws together findings derived from original applied research in intellectual disabilities. The journal is an important forum for the dissemination of ideas to promote valued lifestyles for people with intellectual disabilities. It reports on research from the UK and overseas by authors from all relevant professional disciplines. It is aimed at an international, multi-disciplinary readership.

In order for a paper to be considered for publication, it must be about people with intellectual disabilities. Manuscripts which focus upon autism will be considered only when the focus is also upon intellectual disabilities. Papers which focus upon autism and exclude people with intellectual disabilities will not be considered.

The topics it covers include community living, quality of life, challenging behaviour, communication, sexuality, medication, ageing, supported employment, family issues, mental health, physical health, autism, economic issues, social networks, staff stress, staff training, epidemiology and service provision.

Theoretical papers are also considered provided the implications for therapeutic action or enhancing quality of life are clear. Both quantitative and qualitative methodologies are welcomed. All original and review articles continue to undergo a rigorous, peer-refereeing process.

3. MANUSCRIPT CATEGORIES AND REQUIREMENTS

Original Articles, including Clinical Trials (see guidance within section 5), ***Review Articles*** and ***Brief Reports*** are accepted by the Journal. ***Theoretical Papers*** are also considered, provided the implications for therapeutic action or enhancing quality of life are clear. Both quantitative and qualitative methodologies are welcomed. Articles are accepted for publication only at the discretion of the Editor. Authors who are submitting original articles where qualitative methods have been used must ensure that their choice of method is well justified and issues relating to methodological rigor are effectively addressed.

Articles and ***Theoretical Papers*** should not exceed 6000 words;

Review Articles should not exceed 7000 words;

Brief Reports should not exceed 2000 words.

All word limits are inclusive of the abstract. References, Words in Tables, Captions/Legends, Figure and Figure captions/legends are excluded from the word limits.

Please note that papers submitted for Special Issues should also not exceed 6000 words.

4. PREPARING THE SUBMISSION

Use of Language

The language used to describe disability differs across countries, cultures and disciplinary fields, and continues to evolve. All manuscripts submitted to JARID must use language that promotes the value of all people as full members of our shared society. Pejorative language inclusive of euphemisms must not be used. For JARID this includes the use of older language that has been used to describe people with intellectual disabilities such as “retarded”, "special needs", "disease", “handicapped”, or “mentally handicapped”. Using any terms which are offensive, or patronising may lead to rejection of your submitted manuscript.

JARID recommends using person-first and/or identity-first language thoughtfully and appropriately. For example, the language used to describe both people with intellectual disabilities and autistic people has evolved based on recent advocacy efforts. When referring to people with autism, it is acceptable to use either identity-first language (e.g., “autistic people”) or person-first language (e.g., people with autism”), while identity-first language is not used to describe people with intellectual disabilities, where person-first language is preferred. Thus, people with intellectual disabilities should be referred to as people with intellectual disabilities.

We have consulted with over 40 self-advocates through Learning Disability England which included the North West Self-Advocacy Group, as well as Self-Advocacy Together and asked them what language we should use when writing about people with intellectual disabilities.

People with intellectual disabilities said that they do not like to be referred to by acronyms or abbreviations. Authors must therefore not use an abbreviation to describe intellectual disabilities such as "ID" or "LD". Instead, use person-first language such as children, teenagers, adults, or people with intellectual disabilities, avoiding acronyms or abbreviations.

The terms "learning disabilities" and "learning difficulties", though used in some countries to refer to people with intellectual disabilities, can cause confusion among readers. These terms are not used by the journal to refer to people with intellectual disabilities. Authors must only use the term "learning disabilities or difficulties" where this refers to a specific learning disability/disorder– such as a specific learning difficulty in reading, written expression or mathematics. **If "learning disabilities" or "learning difficulties" are used, authors must not use an abbreviation.**

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- Your manuscript: this should be an editable file including text, figures, and tables, or separate files – whichever you prefer. All required sections should be contained in your manuscript, including titles, keywords, abstract, lay summary, introduction, methods, results, discussion/conclusions and acknowledgements.
- Figures and tables should have legends. Figures should be uploaded in the highest resolution possible.
- References may be submitted in any style or format, as long as it is consistent throughout the manuscript.
- Supporting information should be submitted in separate files. Click here for Wiley's FAQs on supporting/supplemental information.
- Note: if data, scripts, or other artefacts used to generate the analyses presented in the paper are available via a publicly available data repository, authors should include a reference to the location of the material within their paper
- An ORCID ID, freely available at https://orcid.org (Why is this important? Your article, if accepted and published, will be attached to your ORCID profile. Institutions and funders are increasingly requiring authors to have ORCID IDs.)
- The title page of the manuscript, including:
    - Your co-author details, including affiliation and email address. (Why is this important? We need to keep all co-authors informed of the outcome of the peer review process.)
    - Statements relating to our ethics and integrity policies, which may include any of the following (Why are these important? We need to uphold rigorous ethical standards for the research we consider for publication):
        - data availability statement

- funding statement
- conflict of interest disclosure
- ethics approval statement
- patient consent statement
- permission to reproduce material from other sources
- clinical trial registration

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Abstract
All papers should have a structured abstract (maximum 150 words) as follows: Background, Method, Results, and Conclusions. The abstract should provide an outline of the research questions, the design, essential findings and main conclusions of the study. We kindly request that authors place the abstract and title at the beginning of the main manuscript document.

Lay Summary
Please provide 3 or 4 bullet points summarizing the main finding of your work, the impact of it for people with intellectual disabilities and for the research community.

Authorship
On initial submission, the submitting author will be prompted to provide the email address and country for all contributing authors.

The Research Exchange submission system will extract listed affiliations from the manuscript and then ask the submitting author to verify each author's affiliation institution(s). Authors are encouraged to include the complete affiliation addresses in the manuscript (Institution Name, Country, Department Name, Institution City, and Post Code). When verifying their institution, authors will also be asked to locate their base institution only (not necessarily the department or school).

Please refer to the journal's authorship policy in the Editorial Policies and Ethical Considerations section for details on eligibility for author listing.

Acknowledgments
Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be mentioned. Thanks to anonymous reviewers are not appropriate.

Conflict of Interest Statement
Authors will be asked to provide a conflict of interest statement during the submission process. For details on what to include in this section, see the section 'Conflict of Interest' in the Editorial Policies and Ethical Considerations section below. Submitting authors should ensure they liaise with all co-authors to confirm agreement with the final statement.

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Manuscripts are judged on the significance of the contribution to the literature, the quality of analysis and the clarity of presentation. Papers are expected to demonstrate originality and meaningful engagement with the global literature.

Except where otherwise stated, manuscripts are double-anonymized peer reviewed by anonymous reviewers in addition to the Editor. Ensure that all personally identifiable information is removed from your manuscript before you upload it to help protect your identity through the peer review process. Authors are asked not to post information about their submitted manuscripts to social media or websites until a final decision about the paper has been made; again, the reason for this is to help protect the double- anonymized peer review process. Authors who do not work in such a way as to help maintain the double- anonymized peer review process may have their manuscript rejected.

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Patient anonymity should be preserved. Photographs need to be cropped sufficiently to prevent human subjects being recognized (or an eye bar should be used). Images and information from individual

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Authors are asked to include the name of the trial register and the clinical trial registration number at the end of the abstract. If the trial is not registered, or was registered retrospectively, the reasons for this should be explained.

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

Authorship
The list of authors should accurately illustrate who contributed to the work and how. All those listed as authors should qualify for authorship according to the following criteria:

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3. Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and
4. Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section (for example, to recognize contributions from people who provided technical help, collation of data, writing assistance, acquisition of funding, or a department chairperson who provided general support). Prior to submitting the article all authors should agree on the order in which their names will be listed in the manuscript.

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  • The corresponding author and co-authors can nominate up to ten colleagues to receive a publication alert and free online access to the article.

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9. EDITORIAL OFFICE CONTACT DETAILS

For queries about submissions, please contact the *JARID* Editorial Office.
jarid.office@wiley.com

Theoretically Driven Research Project Appendices

Appendix J: Participant Information Sheet

Experiments with "flashforward" mental images

PARTICIPANT INFORMATION SHEET

Central University Research Ethics Committee Reference: [MS IDREC 775289]

You are being invited to take part in a research project. Before you decide whether you wish 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 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. Take time to decide whether you wish to take part.

Why is this research being conducted?

People who experience anxiety problems often spontaneously imagine their worst fears happening in the future – these are known as "flashforward" mental images. These images seem to keep anxiety going. We are interested in understanding factors that influence the experience of flashforward mental images among young adults.

Why have I been invited to take part?

We are looking for young adults who fulfil the following criteria.

Inclusion criteria (we will do a screening for this):

- Aged 18-25 years old
- Have access to a computer and private space to be alone for the duration of the study
- Have stable internet connection in a quiet space uninterrupted
- Speak and read English
- Live in the UK
- Experience anxiety problems
- Experience flashforward mental images

Exclusion criteria

- Currently receiving psychological treatments for mental health problems
- Currently taking medication for anxiety and have not been on a stable dose for at least two months.
- Diagnosis of a learning disability or neurological disorders
- Diagnosis of psychotic disorders or experiencing distressing psychotic symptoms
- Alcohol or drug dependence

Do I have to take part?

No. It is up to you to decide whether to take part. You are free to withdraw by exiting the browser at any point *before completing the full study*, without giving a reason. If you exit the browser before completing the study, your data will be removed. However, once you finish the study, your responses will be anonymised and cannot be identified or removed. This means that after completing the study, your data cannot be withdrawn.

What will happen to me if I take part in the research?

The entire process will be conducted online.

You will begin by reading the information sheet and completing the consent form. You will then answer a set of screening questions to determine your eligibility.

If you are eligible, you will proceed to complete some online questionnaires, including questions about demographics and mental health. You will also be asked to bring to mind a specific flashforward mental image and answer a few questions about it.

Next, you will complete a few activities, which may include listening to music, playing a game, etc. After these activities, you will revisit the flashforward image discussed earlier and answer a few more questions about it. Please note that once you move to another page, you will not be able to go back to the previous one. This online session is expected to take approximately 45 minutes.

You will be free to pause or withdraw at any point before completing the full study, without giving a reason. However, once you complete the study, your responses will be anonymised and cannot be linked back to you, so at that point, it will no longer be possible to withdraw your data.

What are the possible disadvantages and risks in taking part?

As this study involves discussing flashforward images linked to anxiety, it could be distressing to think about these topics. However, the lead researcher is a trainee clinical psychologist, and you are welcome to contact them for support if needed. Contact details are provided in this document. Information on additional support resources will also be provided.

Your data will be anonymised when the findings are published, ensuring that you cannot be identified from the information shared.

Are there any benefits in taking part?

No, however the results of the study will help inform future interventions to support young people with anxiety problems.

Expenses and payments

You will receive payment for your time at a rate consistent with Prolific's standard payment guidance for online research. Payment will be made after you complete the study.

What information will be collected and why is the collection of this information relevant for achieving the research objectives?

Broadly we are interested in your experiences of flashforward mental images related to anxiety and how they might be changed. The information you provide will help us understand how to alter these images, which could support the development of future tools for managing anxiety in young adults. The research team will have access to the research data. If you choose to provide your email address to receive the study findings in the future, these identifiable data will be stored in secured and password-protected electronic folders. These will be deleted three years after study completion. Other research data will be stored in online databases for five years so other researchers can use them. You will not be identifiable from these data.

Will the research be published? Could I be identified from any publications or other research outputs?

The findings from the research may be written up for academic publication in scientific magazines. You will not be identifiable from this.

Data Protection

The University of Oxford is the data controller with respect to your personal data, and as such will determine how your personal data is used in the research. The University will process your personal data for the purpose of the research outlined above. Research is a task that is performed in the public interest. Further information about your rights with respect to your personal data is available from the University's Information Compliance website at https://compliance.admin.ox.ac.uk/individual-rights.

Who is funding the research?

NHS England and the Oxford Institute of Clinical Psychology Training and Research, and the Oxford Health Biomedical Research Centre.

Who has reviewed this research?

This research has received favourable opinion from a subcommittee of the University of Oxford Central University Research Ethics Committee. (Ethics reference: MS IDREC 775289**)**.

Who do I contact if I have a concern about the research or I wish to complain?

If you have a concern about any aspect of this research, please contact Theofanis Kyriacou, 01865 271444, theofanis.kyriacou@hmc.ox.ac.uk, and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the University of Oxford Research Governance, Ethics & Assurance (RGEA) team at rgea.complaints@admin.ox.ac.uk or on 01865 616480.

Further Information and Contact Details

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact:

Theofanis Kyriacou
Department of Experimental Psychology

Anna Watts Building, Radcliffe Observatory Quarter, Woodstock Road, Oxford OX2 6GG
University tel: 01865 271444
University email: theofanis.kyriacou@hmc.ox.ac.uk

Appendix K: Demographics Form

1. What sex were you assigned at birth?

Male
Female
Other (specify)
Prefer not to say

2. How would you describe your gender identity?

Cisgender man
Cisgender woman
Transgender man
Transgender woman
Non-binary
Other (specify)
Prefer not to say

3. Which of the following best describe your sexual orientation?

Straight or heterosexual
Gay or lesbian
Bisexual
Other (specify)
Prefer not to say

4. Which of the following best describe your ethnicity?

Asian or Asian British (Indian, Pakistani, Bangladeshi, Chinese Any other Asian background)
Arab, Arab Scottish or Arab British
Black, Black British, Caribbean or African (Caribbean, African, Any other Black, Black British, or Caribbean background)
Mixed or multiple ethnic groups (White and Black Caribbean, White and Black African, White and Asian, Any other Mixed or multiple ethnic background)
White (English, Welsh, Scottish, Northern Irish or British, Irish, Gypsy or Irish Traveller, Roma, Any other White background)

Other ethnic group (Any other ethnic group, please describe)

5. Do you have a diagnosis related to neurodiversity (e.g., autism, ADHD) given by a professional?

Yes (specify)
No
Prefer not to say

6. Do you have a diagnosis of an anxiety disorder (e.g., Generalised Anxiety Disorder, Panic Disorder, Social Anxiety Disorder, Obsessive Compulsive Disorder, Post-traumatic Stress Disorder) given by a professional?

Yes (specify)
No
Prefer not to say

Appendix L: Flashforward Screening for Eligibility (based on Yale Brown – Obsessive Compulsive Scale)

Flashforwards are "unwanted mental images about things you fear **could** happen but have yet to happen". These images are frequent, repetitive, and when you have them, they make you feel anxious. They often have strong visuals, like a mental picture or a brief film of worse-case scenarios.

For example, flashforward images could be about you or someone else:

- becoming seriously ill
- being in a fatal car or plane crash
- fainting, dying, or having a heart attack
- being humiliated or embarrassed in a situation with friends, colleagues, or strangers
- failing an important exam
- falling out with others
- something bad happening in future (could be near or distant future)

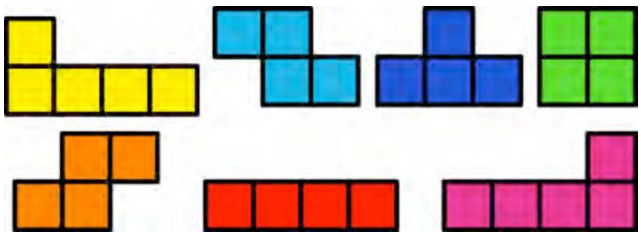
- **Question 1:** " Do you experience similar unpleasant, flashforwards?"
  (Options: Yes / No)
- **Question 2:** " How often do these flashforwards occur?"
  (Options: 1 = not at all or only one time, 2 = once a week or less/once in a while, 3 = 2 to 4 times a week/half the time, 4 = 5 or more times a week/almost always)
- **Question 3:** " How much do they upset you? "
  (Options: 1=Not at all distressing / 2=Somewhat distressing / 3=Moderately distressing / 4=Very distressing)

(Participants must answer Yes to Q1, select 2 or higher for Q2 and Q3)

Appendix M: Tetris Practice Instructions

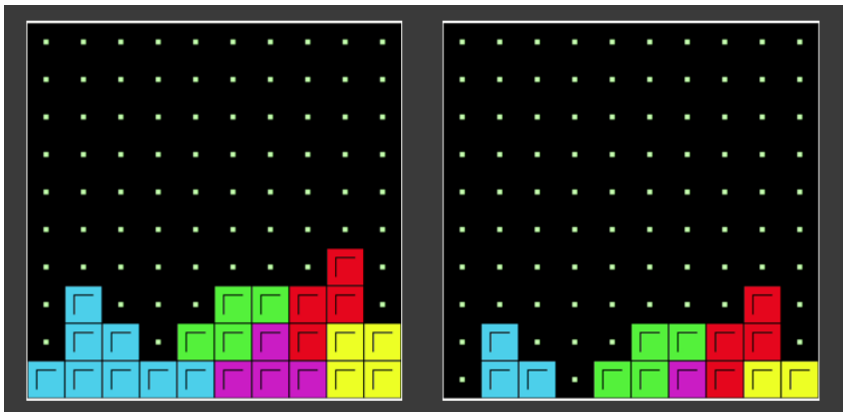
1. Now, you will practice playing Tetris for a few minutes. Even if you have played this game before, there are specific guidelines that we would like you to follow.

The game has seven differently shaped blocks that fall from the top of the screen one at a time.



2. Forming Complete Horizontal Lines

You will have to use the shapes shown earlier to form horizontal lines without gaps, so the lines disappear. In the example (see picture below), the bottom row is complete (picture on the left), so it disappears; then all blocks above it will move down by one row (picture on the right).



3. Using the arrow keys to play Tetris

- Use the Left and Right Keys to move the block
- Use the Down Key to speed up
- Use the Up Key rotate the block

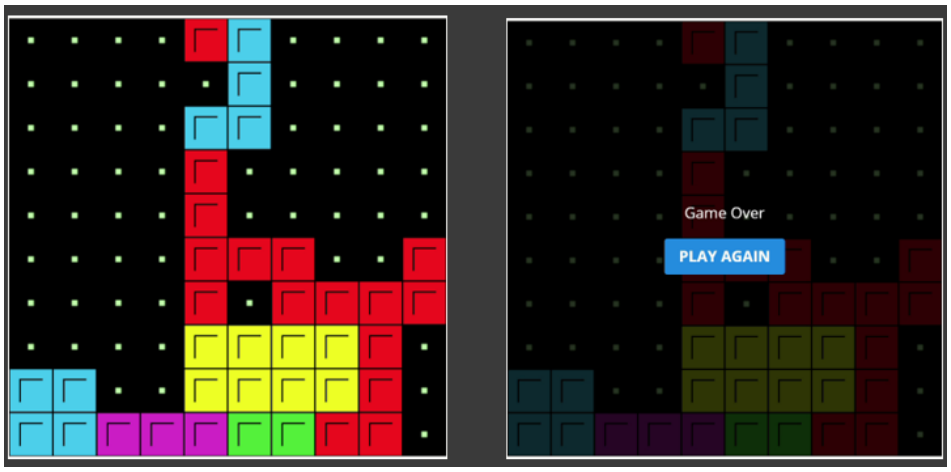
4. What should you do when a new block appears?

1. Pause for a moment.
2. Look at the shape on the screen.
3. In your head, imagine turning it until it matches where you want it to go.
4. Then press the rotate and move keys to place it there.

In short, as you can see in the image below, **plan ahead before rotating the falling block.**

5. When does the game end?

Once the blocks reach the top of the screen (as in the image below), the game will end and restart on its own. This may take a few seconds, so please be patient.



6. Manipulation Check

What is the key thing to consider before placing the falling block?

Match the block with another block of the same colour.
Mentally rotate the falling block to determine its most efficient fit.
Randomly place the block without considering its orientation.
Move blocks as fast as possible

7. Mental Rotation Reminder

Before you move the falling block,

1. Pause for a moment.
2. Look at the shape on the screen.
3. In your head, imagine turning it until it matches where you want it to go.
4. Then press the rotate and move keys to place it there. Do not just rely on manually rotating it with the arrow keys.

8. You will now have 3 minutes to try out Tetris using the instructions explained.

Don’t worry so much about the score – just have fun and try your best!

Appendix N: Identifying flashforward mental image

" Flashforwards are “unwanted mental images about things you fear could happen but have yet to happen”. These images are frequent, repetitive, and when you have them, they make you feel anxious. They often have strong visuals, like a mental picture or a brief film of worse-case scenarios.

We will focus on one key flashforward image you experience. Pick your most frequent or significant **flashforward** and give it a short label representing it (e.g., "car accident" or "public speaking fear") and write it down in the space provided below. You do not need to share lots of details.

Please write the label here:

Appendix O: Generation of Flashforward & Rating Vividness and Distress

"Form an image of … (label) now. Remember where it happens, who is present, and anything else you can think of. Bring it to mind as vividly as if it were happening right now". Participants will be asked to recall the image for 25 s

Rating Vividness & Distress

On two 100 mm visual analogue scales (VASs):

- Vividness: How vivid was the flashforward image? 0 (not vivid at all) to 100 (extremely vivid)
- Distress: How distressing was the flashforward image? 0 (not distressing/unpleasant at all) to 100 (extremely distressing/unpleasant)

Appendix P: Generation of Flashforward & Rating Vividness and Distress

Generation of Flashforward

"Form an image of … (label) now. Remember where it happens, who is present, and anything else you can think of. Bring it to mind as vividly as if it were happening right now". Participants will be asked to recall the image for 25 s

Rating Vividness & Distress

On two 100 mm visual analogue scales (VASs):

- Vividness: How vivid was the flashforward image? 0 (not vivid at all) to 100 (extremely vivid)
- Distress: How distressing was the flashforward image? 0 (not distressing/unpleasant at all) to 100 (extremely distressing/unpleasant)

Appendix Q: Intervention Manipulation Checks

Before image recall/ After image recall/After Experimental Phase

In this moment, how calmed do you feel? 0 (very calm) to 100 (maximum arousal; not calm at all, e.g. very on edge, anxious, or stressed)

After Tetris gameplay – for 3 out of 4 conditions:

'Please answer the following questions. Your feedback is valuable'

*1. How **enjoyable** did you find playing Tetris?*

0	*10*	*20*	*30*	*40*	*50*	*60*	*70*	*80*	*90*	*100*

Not at all enjoyable *Somewhat enjoyable* *Extremely enjoyable*

*2. To what extent were you able to use **mental rotation** whilst playing Tetris as instructed?*

0	*10*	*20*	*30*	*40*	*50*	*60*	*70*	*80*	*90*	*100*

Not at all *Somewhat* *The whole time*

After listening to pieces of classical music– for 1 condition (control condition)

'Please answer the following questions. Your feedback is valuable'
*1. How **enjoyable** did you find listening to classical music? 0 (not at all) to 100 (extremely)*

0	*10*	*20*	*30*	*40*	*50*	*60*	*70*	*80*	*90*	*100*

Not at all enjoyable *Somewhat enjoyable* *Extremely enjoyable*

*2. To what extend were you able to **follow the given instructions** on listening to classical music? 0 (not at all) to 100 (extremely)*

0	*10*	*20*	*30*	*40*	*50*	*60*	*70*	*80*	*90*	*100*

Not at all *Somewhat* *Extremely*

Appendix R: Intrusion Provocation Task & Frequency Measure

Intrusion Provocation Task

Thank you for selecting the label [X] for the flashforward you have chosen.

Practice round:

You will be presented with the digits 1 to 9 in the centre of the screen.
Your task is press the SPACEBAR when number 3 is shown on the screen.
The numbers will come on screen in a random order
We are going to start with a practice round. This will last about 30 seconds.
Well done! You have completed the practice round.

Actual round:

As before, you will be presented with the digits 1 to 9 in the centre of the screen.
Your task is to press the SPACEBAR when number 3 is shown on the screen.
Focus equally on both speed and accuracy.
It should take you about 6 minutes to complete.

Frequency Measure

After the three minutes, participants will be asked the following:

- How many times was number 3 shown?
- Earlier, you provided this label for your flashforward [label that was provided earlier by the participant]. While you were shown the digits from 1 to 9 and had to press the spacebar for number 3, how often did this flashforward pop into mind without you expecting it?
- A space will be provided for participants to write down the exact number rather than providing options

Appendix S: Debrief & Signposting

Debrief

We appreciate your time and participation. This study explores experiences of flashforward mental images and how they can be modified more effectively. Please do not share the details of this session with others to help maintain the integrity of our research. Thanks again for your contribution!

If you would like to receive a copy of the group results in the future, please click on the link below to leave your email address.

Resources That Could Be Helpful

If you would like to end the study by watching a film that makes you smile or doing a ground exercise, please click on any of the links below. Some people find it helpful to have a relaxing moment before returning to the rest of their day.

Here are a few options you might like to try:

- A baby laughing at dandelions.
- Cats jumping at toasters.
- Grounding exercise – A short-guided activity that often helps people feel more relaxed

You can also save these links and return to them at any time.

Signposting

Support and Resources If You Need to Talk

Here is also information about several free services that offer support and advice. These services are readily available to help you and may be helpful if you are feeling worried, experiencing a low mood, or simply need someone to talk to. These include:

1. General Support:
   Your GP, NHS 111 (or your local crisis team)
   Self-referral to Talking Therapies
   https://www.nhs.uk/nhs-services/mental-health-services/find-nhs-talking-therapies-for- anxiety-and-depression/

2. In Case of Emergencies:
   Call 999 for immediate assistance.
   Visit your nearest A&E department.

3. Out-of-Hours Support (Non-Emergency):
   Nightline (Confidential listening service): https://nightline.ac.uk/listening-services/
   Samaritans (Available 24/7): Call 116 123 or email jo@samaritans.org.

4. Text SHOUT to 85258 for confidential, anonymous mental health support

5. Papyrus: Confidential suicide prevention advice for under 35's on 0800 068 4141 or text 07860 039967

We would also encourage you to reach out to friends or someone else you trust for informal support if you can.

If you would like additional information, or a confidential discussion with a member of the research team, please contact Theofanis Kyriacou at theofanis.kyriacou@hmc.ox.ac.uk.

Appendix T: Journal Author Guidelines - Journal of Behavior Therapy and Experimental Psychiatry

The author guidelines have been copied directly from the Journal website.

About the journal

Aims and scope

A Journal of Experimental Psychopathology

The Journal welcomes contributions to the understanding and treatment of **psychopathology**. Such contributions may stem from various theoretical perspectives. The Journal primarily focuses on (quasi)experimental tests of **psychological** approaches to psychopathology, though contributions from medicine, biology, sociology, or epidemiology may be considered. The same holds for non-experimental approaches (e.g., prospective approaches), which may occasionally be published if deemed relevant for the field of experimental psychopathology.
Papers to be published generally focus on:

- Theoretically or clinically relevant differences between specific patient groups and other groups, if experimentally tested;
- (Transdiagnostic) mechanisms that cause, perpetuate or reduce disorders;
- Diagnostic or therapeutic procedures

Participants in the studies may be patients, healthy subjects, or animals, depending on the relevance of the subject characteristics for the question to be answered. We encourage the investigation of transdiagnostic constructs. Relatedly, we strongly encourage studies testing hypotheses on characteristics of a disorder to not only include a non-patient control group, but also at least one appropriate clinical control group, to assess the specificity of the effect. We cannot guarantee acceptance of studies missing an appropriate clinical control group.

Pre-registration of all studies is strongly encouraged and justification of statistical power required. We ask authors who submit studies that were not pre-registered to provide a motivated justification in their cover letter. Clinical trials (RCTs and others) should be registered in an official trial register and the registration number should be reported. These studies should include a flow diagram according to the most recent CONSORT guidelines and a CONSORT checklist should accompany the submission. See http://www.consort-statement.org for the guidelines and forms. Any changes in the submitted study as compared to the pre-registered study (e.g., intended sample size, primary and secondary outcome variables, method) should be stated explicitly in the manuscript.

Case studies, open trials, and pilot studies may be considered for publication in the Journal if they are unusually innovative Consecutive case series with appropriate designs (i.e., contrasting at least two conditions; e.g. multiple baseline design) and appropriate statistical analyses are considered for publication.

Theoretical contributions on topics relevant to the field of experimental psychopathology are also considered as well as systematic reviews and meta-analyses, given that they meet the appropriate

guidelines for reporting. Replications are essential in science and are, to the present editors' opinion, often undervalued. Short reports of attempts to replicate experimental studies, whether successful or failed, and whether applied or fundamental, are considered for publication, if appropriately powered. The maximum number of words is 2500 for these reports.

All submissions will first be screened on the degree to which they match the Aims and Scope of the Journal.

Article types

- **Regular manuscripts** should not exceed 5500 words (15-20 pages) of body text.
- **Short reports** should have a maximum of 3000 words.
- **Reviews** should not exceed 9,000 words.

The word count does not include tables or figures. All submissions will first be screened on the degree to which they match the Aims and Scope of the Journal.

Peer review

This journal follows a double anonymized review process. Your submission will initially be assessed by our editors to determine suitability for publication in this journal. If your submission is deemed suitable, it will typically be sent to a minimum of two reviewers for an independent expert assessment of the scientific quality. The decision as to whether your article is accepted or rejected will be taken by our editors.

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- have been written by family members or colleagues.
- relate to products or services in which they have an interest.

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To verify compliance with our journal publishing policies, we may check your manuscript with our screening tools.

Authorship

All authors should have made substantial contributions to all of the following:

1. The conception and design of the study, or acquisition of data, or analysis and interpretation of data
2. Drafting the article or revising it critically for important intellectual content.
3. Final approval of the version to be submitted.

All authors are accountable for all aspects of the work, to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Changes to authorship

The editors of this journal generally will not consider changes to authorship once a manuscript has been submitted. It is important that authors carefully consider the authorship list and order of authors and provide a definitive author list at submission.

The policy of this journal around authorship changes:

- All authors must be listed in the manuscript and their details entered into the submission system. Changes can only be made prior to acceptance, and only if approved by the journal editor. This includes additions, deletion, or rearrangement of author names.
- Requests to change authorship must be made by the corresponding author using the Authorship Change Request form. The corresponding author must provide the reason for the request to the journal editor with written confirmation from all authors, including any

authors being added or removed, that they agree with the changes. Requests which do not comply with the instructions outlined in the form will not be considered.

- This journal does not allow authorship changes after acceptance. This includes additions, deletions, or the rearrangement of author names, including changes to the corresponding author.
- The review process may be paused while a change in authorship request is being considered.
- Change requests made by the authors without the Authorship Change Request form or editor approval may result in the rejection of the manuscript, or retraction if the article has already been published.

Declaration of competing interests

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence or bias their work. Examples of potential competing interests include:

- Employment
- Consultancies
- Stock ownership
- Honoraria
- Paid expert testimony
- Patent applications or registrations
- Grants or any other funding
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The declarations tool should always be completed.

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Authors with no competing interests to declare should select the option "I have nothing to declare".

The resulting Word document containing your declaration should be uploaded at the "attach/upload files" step in the submission process. It is important that the Word document is saved in the .doc/.docx file format. Author signatures are not required.

Funding sources

Authors must disclose any funding sources who provided financial support for the conduct of the research and/or preparation of the article. The role of sponsors, if any, should be declared in relation to the study design, collection, analysis and interpretation of data, writing of the report and decision to

submit the article for publication. If funding sources had no such involvement this should be stated in your submission.

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants, scholarships and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, it is recommended to include the following sentence:

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- Title of new section: *Declaration of generative AI and AI-assisted technologies in the manuscript preparation process.*
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- age
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- race
- ethnicity
- culture
- sexual orientation
- disability or health condition

We recommend avoiding the use of descriptors about personal attributes unless they are relevant and valid. Write for gender neutrality with the use of plural nouns ("clinicians, patients/clients") as default. Wherever possible, avoid using "he, she," or "he/she."

No assumptions should be made about the beliefs of readers and writing should be free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions.

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There is no single, universally agreed-upon set of guidelines for defining sex and gender. We offer the following guidance:

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- Sex and/or gender dimensions of the research should be addressed within the article or declared as a limitation to the generalizability of the research.
- Definitions of sex and/or gender applied should be explicitly stated to enhance the precision, rigor and reproducibility of the research and to avoid ambiguity or conflation of terms and the constructs to which they refer.

We advise you to read the Sex and Gender Equity in Research (SAGER) guidelines and the SAGER checklist (PDF) on the EASE website, which offer systematic approaches to the use of sex and gender information in study design, data analysis, outcome reporting and research interpretation.

For further information we suggest reading the rationale behind and recommended use of the SAGER guidelines.

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We ask authors to define how sex and gender have been used in their research and publication. Some guidance:

- Sex generally refers to a set of biological attributes that are associated with physical and physiological features such as chromosomal genotype, hormonal levels, internal and external anatomy. A binary sex categorization (male/female) is usually designated at birth ("sex assigned at birth") and is in most cases based solely on the visible external anatomy of a newborn. In reality, sex categorizations include people who are intersex/have differences of sex development (DSD).
- Gender generally refers to socially constructed roles, behaviors and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society.

Depending on the focus of a paper, sex and/or gender may or may not be relevant to the content of the paper. We recognize that beliefs, attitudes, and laws relating to sex and gender may vary. These articles do not attempt to dictate author beliefs but rather require that, where relevant to an author's research or paper, the author must provide clear explanations of how the paper and research define and use sex and gender.

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Authors must follow ethical guidelines for studies carried out in humans.

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Manuscripts should follow the International Committee of Medical Journal Editors (ICMJE) recommendations for the conduct, reporting, editing and publication of scholarly work in medical journals and aim to be representative of human populations in terms of sex, age and ethnicity. Sex and gender terms should be used correctly, as outlined by WHO (World Health Organization).

Manuscripts must include a statement that all procedures were performed in compliance with relevant laws and institutional guidelines and have been approved by the appropriate institutional committee(s). The statement should contain the date and reference number of the ethical approval(s) obtained.

Manuscripts must also include a statement that the privacy rights of human subjects have been observed and that informed consent was obtained for experimentation with human subjects.

This journal will not accept manuscripts that contain data derived from unethically sourced organs or tissue, including from executed prisoners or prisoners of conscience, consistent with recommendations by Global Rights Compliance on Mitigating Human Rights Risks in Transplantation Medicine. For all studies that use human organs or tissues, sufficient evidence must be provided that these were procured in line with WHO Guiding Principles on Human Cell, Tissue and Organ Transplantation. For clinical studies, a statement of informed consent having been obtained from a patient or their nominated representative, paired with ethical approval for the study from a suitable institution, as required by the policies of the journal, may be considered sufficient evidence, but the journal reserves the right to request additional evidence in cases where it feels this is not sufficient. The source of the organs or tissues used in clinical research must be transparent and traceable. If your manuscript describes organ transplantation you must additionally declare within the manuscript that:

- autonomous consent free from coercion was obtained from the donor(s) or their next of kin.
- organs and/or tissues were not sourced from executed prisoners or prisoners of conscience.

Studies in animals

Authors must follow ethical guidelines for studies carried out in animals.

All animal experiments should comply with ARRIVE (Animal Research: Reporting of In Vivo Experiments) guidelines.

Studies should be carried out in accordance with Guidance on the operation of the Animals (Scientific Procedures) Act 1986 and associated guidelines, EU Directive 2010/63 for the protection of animals used for scientific purposes or the NIH (National Research Council) Guide for the Care and Use of Laboratory Animals (PDF).

A statement should be included in your manuscript that such guidelines as listed above have been followed.

The sex of animals, and where appropriate, the influence (or association) of sex on the results of the study must be indicated.

Delayed publication

If you need to delay the publication of your article for any reason, please contact the editorial office of the journal or our Journal Article Publishing Support Center at the earliest possible opportunity. While we will try to ensure that your article is not published before a certain date if you make your request on a timely basis, we cannot guarantee this. Please also note that once the agreed period of delay has expired the article may be published at any time thereafter.

Writing and formatting

File format

We ask you to provide editable source files for your entire submission (including figures, tables and text graphics). Some guidelines:

- Save files in an editable format, using the extension .doc/.docx for Word files and .tex for LaTeX files. A PDF is not an acceptable source file.
- Format Word files in a single-column layout. Double-column formatting is only permitted for LaTeX submissions.
- Remove any strikethrough and underlined text from your manuscript, unless it has scientific significance related to your article.
- Use spell-check and grammar-check functions to avoid errors.

We advise you to read our Step-by-step guide to publishing with Elsevier.

Title page

You are required to include the following details in the title page information:

- Article title. Article titles should be concise and informative. Please avoid abbreviations and formulae, where possible, unless they are established and widely understood, e.g. DNA.
- Author names. Provide the given name(s) and family name(s) of each author. The order of authors should match the order in the submission system. Carefully check that all names are accurately spelled. If needed, you can add your name between parentheses in your own script after the English transliteration.
- Affiliations. Add affiliation addresses, referring to where the work was carried out, below the author names. Indicate affiliations using a lower-case superscript letter immediately after the author's name and in front of the corresponding address. Ensure that you provide the full

postal address of each affiliation, including the country name and, if available, the email address of each author.

- Corresponding author. Clearly indicate who will handle correspondence for your article at all stages of the refereeing and publication process and also post-publication. This responsibility includes answering any future queries about your results, data, methodology and materials. It is important that the email address and contact details of your corresponding author are kept up to date during the submission and publication process.
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Double anonymized peer review

As this journal follows a double anonymized review process, author identities are concealed from reviewers and vice versa. To facilitate this process, submit your title page (including author details) and anonymized manuscript (excluding author details) as separate files. Next to the items mentioned in the title page section of this guide, the title page should also include:

- Acknowledgements. Include any individuals who provided you with help during your research such as help with language, writing or proof reading in the acknowledgements section. Include acknowledgements only in the title page, do not add them as a footnote to your title, or anywhere else in your article.
- Declaration of competing interests (when a separate declaration of interest file is not submitted)
- Corresponding author address (full address is required)
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The anonymized manuscript should contain the main body of your paper, including references and tables. It is important that your manuscript does not contain any identifying information such as author names or affiliations, or acknowledgements.

Read more about peer review.

Abstract

You are required to provide a concise and factual abstract which does not exceed 250 words. The abstract should briefly state the purpose of your research, principal results and major conclusions. Some guidelines:

- Abstracts must be able to stand alone as abstracts are often presented separately from the article.
- Avoid references. If any are essential to include, ensure that you cite the author(s) and year(s).
- Avoid non-standard or uncommon abbreviations. If any are essential to include, ensure they are defined within your abstract at first mention.

Keywords

You are required to provide 1 to 7 keywords for indexing purposes. Keywords should be written in English. Please try to avoid keywords consisting of multiple words (using "and" or "of").

We recommend that you only use abbreviations in keywords if they are firmly established in the field.

Highlights

You are required to provide article highlights at submission.

Highlights are a short collection of bullet points that should capture the novel results of your research as well as any new methods used during your study. Highlights will help increase the discoverability of your article via search engines. Some guidelines:

- Submit highlights as a separate editable file in the online submission system with the word "highlights" included in the file name.
- Highlights should consist of 3 to 5 bullet points, each a maximum of 85 characters, including spaces.

We encourage you to view example article highlights and read about the benefits of their inclusion.

Graphical abstract

You are required to provide a graphical abstract at submission.

The graphical abstract summarizes the contents of your article in a concise, pictorial, professional form, highlighting important aspects of the research. It is designed to appeal to an interdisciplinary audience, and draw more attention to your online article. Some guidelines:

- Ensure you have obtained the necessary permission to include any third party owned material in a graphical abstract.
- Use of generative AI or AI-assisted tools in the production of graphical abstracts must align with Elsevier’s GenAI Policies for Journals.
- Submit your graphical abstract as a separate file in the online submission system.
- Ensure the image is 531 x 1328 pixels (h x w) or proportionally more, and is readable at a size of 5 x 13 cm.
- Preferred file types for graphical abstracts are TIFF, EPS, PDF or MS Office files.

More information, examples and a template can be found in the graphical abstract guidelines.

Math formulae

- Submit math equations as editable text, not as images.
- Present simple formulae in line with normal text, where possible.
- Use the solidus (/) instead of a horizontal line for small fractional terms such as X/Y.
- Present variables in italics.
- Denote powers of e by exp.
- Display equations separately from your text, numbering them consecutively in the order they are referred to within your text.

Tables

Tables must be submitted as editable text, not as images. Some guidelines:

- Place tables next to the relevant text or on a separate page(s) at the end of your article.

- Cite all tables in the manuscript text.
- Number tables consecutively according to their appearance in the text.
- Please provide captions along with the tables.
- Place any table notes below the table body.
- Avoid vertical rules and shading within table cells.

We recommend that you use tables sparingly, ensuring that any data presented in tables is not duplicating results described elsewhere in the article.

Figures, images and artwork

Figures, images, artwork, diagrams and other graphical media must be supplied as separate files along with the manuscript. We recommend that you read our detailed artwork and media instructions. Some excerpts:

When submitting artwork:

- Cite all images in the manuscript text.
- Number images according to the sequence they appear within your article.
- Submit each image as a separate file using a logical naming convention for your files (for example, Figure_1, Figure_2 etc).
- Text graphics may be embedded in the text at the appropriate position. If you are working with LaTeX, text graphics may also be embedded in the file.

Figure captions

All images must have a caption. A caption should consist of a brief title (not displayed on the figure itself) and a description of the image. We advise you to keep the amount of text in any image to a minimum, though any symbols and abbreviations used should be explained.

Read how to add captions to your submission here.

Artwork formats

When your artwork is finalized, "save as" or convert your electronic artwork to the formats listed below taking into account the given resolution requirements for line drawings, halftones, and line/halftone combinations:

- Vector drawings: Save as EPS or PDF files embedding the font or saving the text as "graphics."
- Color or grayscale photographs (halftones): Save as TIFF, JPG or PNG files using a minimum of 300 dpi (for single column width: min. 1063 pixels, full page width: 2244 pixels).
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Please do not submit:

- Files that are too low in resolution.
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Please ensure that color images are accessible to all, including those with impaired color vision. Learn more about color and web accessibility.

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- The use of generative AI or AI-assisted tools in the production of artwork such as for graphical abstracts is not permitted. The use of generative AI in the production of cover art may in some cases be allowed, if the author obtains prior permission from the journal editor and publisher, can demonstrate that all necessary rights have been cleared for the use of the relevant material, and ensures that there is correct content attribution.

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We encourage the use of supplementary materials such as applications, images and sound clips to enhance research. Some guidelines:

- Supplementary material should be accurate and relevant to the research.
- Cite all supplementary files in the manuscript text.
- Submit all supplementary materials at the same time as your manuscript.
- Include a concise, descriptive caption for each supplementary file, describing its content.
- After submission supplementary files can only be added or replaced in the revision stage of the editorial process.
- Be aware that all supplementary materials provided will appear online in the exact same way as received. These files will not be checked, formatted or typeset by the production team.

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This journal accepts video material and animation sequences to support and enhance your scientific research. We encourage you to include links to video or animation files within articles. Some guidelines:

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- Clearly label files ensuring the given file name is directly related to the file content.
- Provide files in one of our recommended file formats. Files should be within our preferred maximum file size of 150 MB per file, 1 GB in total.
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We publish all video and animation files supplied in the electronic version of your article.

For more detailed instructions, we recommend that you read our guidelines on submitting video content to be included in the body of an article.

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We are committed to supporting the storage of, access to and discovery of research data, and our research data policy sets out the principles guiding how we work with the research community to support a more efficient and transparent research process.

Research data refers to the results of observations or experimentation that validate research findings, which may also include software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Please read our guidelines on sharing research data for more information on depositing, sharing and using research data and other relevant research materials.

Research data deposit, citation and linking

For this journal, **Option C** instructions from our research data guidelines apply. This means that you are **required** to:

- Deposit your research data in a relevant data repository.
- Cite and link to this dataset in your article.
- If this is not possible, make a statement explaining why research data cannot be shared.

Data statement

To foster transparency, you are encouraged to state the availability of any data at submission.

Ensuring data is available may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you can state the reason why (e.g., your research data includes sensitive or confidential information such as patient data) during the submission process. This statement will appear with your published article on ScienceDirect.

Read more about the importance and benefits of providing a data statement.

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Linking to the data underlying your work increases your exposure and may lead to new collaborations. It also provides readers with a better understanding of the described research.

If your research data has been made available in a data repository there are a number of ways your article can be linked directly to the dataset:

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- You can also link relevant data or entities within the text of your article through the use of identifiers. Use the following format: Database: 12345 (e.g. TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

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You are encouraged to publish a description of your research data, methods, or protocols related to your regular article as a co-submission article in *Data in Brief* or *MethodsX*.

This co-submission can be submitted at the same time as your regular manuscript submission to this journal. If both your regular and co-submitted manuscripts are accepted for publication, they will be linked together on ScienceDirect, thereby promoting research reproducibility, interoperability, and open science.

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- For associated Article Processing Charge (APC) details, please visit:
    - MethodsX
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Please note: Due to the automated process of submitting to *Data in Brief* or *MethodsX*, only after acceptance will you be presented with a personalized OA Article Publishing Charge based on your individual context (your country, institutional affiliation, and any society membership for example).

Please visit **co-submission Researcher Support page** for more information on how to submit a co-submission.

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- Divide your article into clearly defined and numbered sections. Number subsections 1.1 (then 1.1.1, 1.1.2, ...), then 1.2, etc.
- Use the numbering format when cross-referencing within your article. Do not just refer to "the text."
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- Do not include the article abstract within section numbering.

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We ask you to use the following format for appendices:

- Identify individual appendices within your article using the format: A, B, etc.
- Give separate numbering to formulae and equations within appendices using formats such as Eq. (A.1), Eq. (A.2), etc. and in subsequent appendices, Eq. (B.1), Eq. (B. 2) etc. In a similar way, give separate numbering to tables and figures using formats such as Table A.1; Fig. A.1, etc.

References

References within text

Any references cited within your article should also be present in your reference list and vice versa. Some guidelines:

- References cited in your abstract must be given in full.
- We recommend that you do not include unpublished results and personal communications in your reference list, though you may mention them in the text of your article.

- Any unpublished results and personal communications included in your reference list must follow the standard reference style of the journal. In substitution of the publication date add "unpublished results" or "personal communication."
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Before submission, check that all data provided in your reference list are correct, including any references which have been copied. Providing correct reference data allows us to link to abstracting and indexing services such as Scopus, Crossref and PubMed. Any incorrect surnames, journal or book titles, publication years or pagination within your references may prevent link creation.

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This journal does not set strict requirements on reference formatting at submission. Some guidelines:

- References can be in any style or format as long as the style is consistent.
- Author names, journal or book titles, chapter or article titles, year of publication, volume numbers, article numbers or pagination must be included, where applicable.

Our journal reference style will be applied to your article after acceptance, at proof stage. If required, at this stage we will ask you to correct or supply any missing reference data.

Reference style

Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the *Publication Manual of the American Psychological Association,* Seventh Edition (2020) ISBN 978-1-4338-3215-4.

The reference list should be arranged alphabetically and then chronologically. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:

Reference to a journal publication:

Van der Geer, J., Handgraaf T., & Lupton, R. A. (2020). The art of writing a scientific article. *Journal of Scientific Communications, 163*, 51–59. https://doi.org/10.1016/j.sc.2020.00372.

Reference to a journal publication with an article number:

Van der Geer, J., Handgraaf, T., & Lupton, R. A. (2022). The art of writing a scientific article. *Heliyon, 19,* Article e00205. https://doi.org/10.1016/j.heliyon.2022.e00205.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). *The elements of style (4th ed.)*. Longman (Chapter 4).

Reference to a chapter in a book:

Mettam, G. R., & Adams, L. B. (2020). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). E-Publishing Inc.

Reference to a website:

Powertech Systems. (2022). Lithium-ion vs lead-acid cost analysis. Retrieved from *http://www.powertechsystems.eu/home/tech-corner/lithium-ion-vs-lead-acid-cost-analysis/.* Accessed January 6, 2022.

Reference to a dataset:

Oguro, M., Imahiro, S., Saito, S., & Nakashizuka, T. (2015). Mortality data for Japanese oak wilt disease and surrounding forest compositions [dataset]. *Mendeley Data, v1.* https://doi.org/10.17632/xwj98nb39r.1.

Reference to a conference paper or poster presentation:

Engle, E.K., Cash, T.F., & Jarry, J.L. (2019, November). *The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales.* Poster session presentation at the meeting of the Association for Behavioural and Cognitive Therapies, New York, NY.

Reference to software:

Coon, E., Berndt, M., Jan, A., Svyatsky, D., Atchley, A., Kikinzon, E., Harp, D., Manzini, G., Shelef, E., Lipnikov, K., Garimella, R., Xu, C., Moulton, D., Karra, S., Painter, S., Jafarov, E., & Molins, S. (2020). *Advanced Terrestrial Simulator (ATS) (Version 0.88) [Computer software].* Zenodo. https://doi.org/10.5281/zenodo.3727209.

Web references

When listing web references, as a minimum you should provide the full URL and the date when the reference was last accessed. Additional information (e.g. DOI, author names, dates or reference to a source publication) should also be provided, if known.

You can list web references separately under a new heading directly after your reference list or include them in your reference list.

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We encourage you to cite underlying or relevant datasets within article text and to list data references in the reference list.

When citing data references, you should include:

- author name(s)
- dataset title
- data repository
- version (where available)
- year
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Add [dataset] immediately before your reference. This will help us to properly identify the dataset. The [dataset] identifier will not appear in your published article.

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We ask you to mark preprints clearly. You should include the word "preprint" or the name of the preprint server as part of your reference and provide the preprint DOI.

Where a preprint has subsequently become available as a peer-reviewed publication, use the formal publication as your reference.

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Most Elsevier journals have their reference template available in popular reference management software products. These include products that support Citation Style Language (CSL) such as Mendeley Reference Manager.

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If a template is not available for this journal, follow the format given in examples in the reference style section of this Guide for Authors.

Submitting your manuscript

Submission checklist

Before completing the submission of your manuscript, we advise you to read our submission checklist:

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- Spelling and grammar checks have been carried out.
- All references in the article text are cited in the reference list, and vice versa.
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We encourage you to share and promote your article to give additional visibility to your work, enabling your paper to contribute to scientific progress and foster the exchange of scientific developments within your field. Read more about how to responsibly share and promote your article.

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