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Effectiveness of Tetris as a clinical intervention after experiencing a traumatic event: A protocol for a systematic review

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Whitelaw, ANM; Mercer, T; Collings, R.

Corresponding author:

Alexandra Whitelaw

a.whitelaw@wlv.ac.uk

Author Affiliation:

University of Wolverhampton.

ADMINISTRATIVE INFORMATION

Support - N/A.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 February 2026 and was last updated on 27 February 2026.

INTRODUCTION

Review question / Objective This systematic review assesses the extent to which the game Tetris has been used in research on traumatic memories, with a focus on its effectiveness in reducing flashbacks at the onset of trauma and as a post-trauma treatment.

This review will identify the most relevant Tetris metrics, such as the reduction in flashbacks to the traumatic event and shifts in mood reported by participants. Linked to this, the review will evaluate the use of self-reported effects of the trauma, the longevity of the benefits of using Tetris, and the underpinning cognitive and psychological mechanisms that are involved.

The review will also consider wider literature on the impact of Tetris. In doing so, this review will provide a comprehensive overview of Tetris's use in flashback reduction research and highlight directions for future research.

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Rationale According to the World Health Organisation (2024), 70% of the world's population will be impacted by trauma. Yet according to Koenen et al. (2018), only half of the people who

need psychological intervention after trauma will receive it. Subsequent memories of the trauma are a source of concern as the APA (2013) highlight flashback memories as fundamental changes that happen to a person due to the impact of trauma. Research into the visuospatial aspects of trauma memory formation and into the potential disruption of such memories has been conducted (Stuart et al., 2006), including Holmes et al.'s (2009) idea of using Tetris as a cognitive vaccine to interfere with trauma flashbacks. Tetris is a digital game that takes four-piece blocks that need to be strategically rotated and placed to make horizontal rows without gaps. Completed rows disappear and points are awarded. Players aim to keep the blocks under the Skyline, or the game will then be over (Tetris 2025). The initial success of the Tetris intervention reported by Holmes et al. (2009) has led to continued research on its use as a cognitive vaccine (e.g., Butler et al., 2020; Iyadurai et al., 2017; James et al., 2015; Lau-Zhu et al., 2017). The use of Tetris as a cognitive vaccine could have real potential. Research during the COVID-19 pandemic on emergency department workers showed its real-life applications (Singh et al., 2022), and there are promising signs that it could be used as a part of clinical interventions (Butler et al., 2025). Currently, however, the extent to which Tetris can reduce flashback memories is unclear, as no systematic review is available that focusses directly on the uses of Tetris alone (though it has been considered alongside other interventions, e.g., Asselbergs et al. 2023). Moreover, some findings question the impact of Tetris on flashbacks (Broughill et al., 2025). Given this, the present systematic review will synthesise the available evidence and identify relevant metrics linked with the reduction of trauma memories. Through this, it will be able to identify the most important psychological processes and mechanisms that are involved when Tetris is played. Any gaps in the literature or inconsistent evidence will also be identified.

Condition being studied The conditions for this systematic review will be divided into three categories. 1) Research studies that focus on the use of the game Tetris after a trauma experience. 2) Research that focuses on the use of the game Tetris in the clinical treatment of post-traumatic stress disorder. 3) Any literature that is found commenting on the research uses of Tetris as a trauma vaccine.

METHODS

Search strategy This search strategy will follow the guidance of the PRISMA-S checklist

(Rethlefsen et al., 2021), addressing all the information sources. The appropriate literature will be identified through a range of databases (see below). The search will combine terms related to Tetris and its uses as a cognitive vaccine via the Boolean operator "AND". To capture the use of the Tetris game, the term "Tetris" will be used. To capture the reduction of post-traumatic memories, the terms "Post-traumatic stress disorder or PTSD or flashback memories" will be used. To capture the use of Tetris as a vaccine at the onset of trauma, phrases such as "Trauma film" or "emergency department" will be used. To capture the use of Tetris as a clinical intervention, the terms "clinical intervention or treatment" will be used. AW will independently screen the titles and Abstracts, then meet and discuss these with TM and RC. If there are any disagreements, amendments will be made to resolve these, then a screening of the full papers will follow.

Participant or population All studies with human participants are eligible for inclusion in this systematic review.

Intervention Any interventions that have used Tetris to reduce trauma memories are relevant.

Comparator In all the experimental literature reviewed, any comparator will be allowed if it is used as a baseline against which Tetris is measured. All controls will be under scrutiny and critiqued as part of the review.

Study designs to be included All quantitative study designs employing Tetris as an intervention to reduce trauma memories, such as experiments, quasi-experiments and correlational designs. Both cross-sectional and longitudinal studies are eligible for inclusion. All qualitative study designs using Tetris to reduce trauma memories are eligible for inclusion.

Eligibility criteria Sources will include full journal articles that describe research on the use of Tetris as a cognitive vaccine (e.g., abstracts, incomplete summaries, and raw data without discussion or conclusion will not be included). Due to limited research, grey literature will be considered to add depth (including theses and conference papers). Studies may contain primary data collection with quantitative data analysis or qualitative data analysis. Studies must use the Tetris game as a cognitive vaccine or treatment for trauma memories, and trauma memories can come from experimental manipulations of trauma (e.g., the trauma film paradigm) or real-life trauma. Studies using Tetris for any other reason but trauma

memory reduction will not be included. The studies need to be written in English. The founding study in this area is noted as Holmes et al. (2009), so 2009 will be the earliest search date.

Information sources The electronic databases to be used include ABI/INFORM Global, ACM Digital Library, Cambridge Core, CORE, EBSCO Host Databases, Education Research Complete, Europe PMC, Google Scholar, IngentaConnect, JSTOR, Oxford Journals, ProQuest Databases, Psychology and Behavioral Sciences Collection, PsycINFO, PubMed, SAGE Journals, ScienceDirect, Scopus, Semantic Scholar, SocINDEX with Full Text, Taylor & Francis Online, UlrichWeb, Web of Science and Wiley Online Library. All journal references collected will be downloaded onto the reference sorter, Mendeley. Once sourced, the references will be transported into an Excel spreadsheet for analysis and documentation.

Main outcome(s) 1. Identify research using Tetris to reduce the production of trauma memories after experiencing a trauma 2. Identify research that uses Tetris to treat trauma memories that a person is already experiencing 3. Identify reviews of this literature available to address the further impact of this research. 4. Identify differing methodological approaches and critically analyse gaps in the literature and directions for future research. 5. Identify some relevant cognitive processes like consolidation and/or reconsolidation.

Data management This literature review process will manage its references through the programmes Mendeley and Excel.

Quality assessment / Risk of bias analysis This systematic review will assess all included studies and articles using the Appraisal Tool for Cross-Sectional Studies (AXIS; Downes et al., 2016). The Appraisal Tool is a 20-item tool that examines the studies through a process of “Yes” or “No” or “Don’t Know” responses. The scores will be calculated, and the higher the score, the higher the quality of the study. AW will assess study quality and calculate a mean, and review this with TM and RC.

Strategy of data synthesis Information will be extracted from each study, including sampling details, participant characteristics and methodological details (such as measures used, the design and the self-report/ metrics). Key information will be extracted regarding the trauma memories and how they are measured in each study, and where possible Cohen’s d will quantify

the flashback reduction caused by Tetris, compared to a control.

Subgroup analysis N/A.

Sensitivity analysis N/A.

Language restriction English language only.

Country(ies) involved United Kingdom.

Keywords Post-traumatic stress disorder; Flashback memories; Trauma; Cognitive vaccine; Tetris.

Dissemination plans This systematic review will be submitted for publication in a peer-reviewed journal. This will also be chapter 2 of AW’s PhD thesis.

Contributions of each author

Author 1 - Alexandra Whitelaw.

Email: a.whitelaw@wlv.ac.uk

Author 2 - Tom Mercer.

Email: t.mercer2@wlv.ac.uk

Author 3 - Rosalyn Collings.

Email: r.collings@wlv.ac.uk