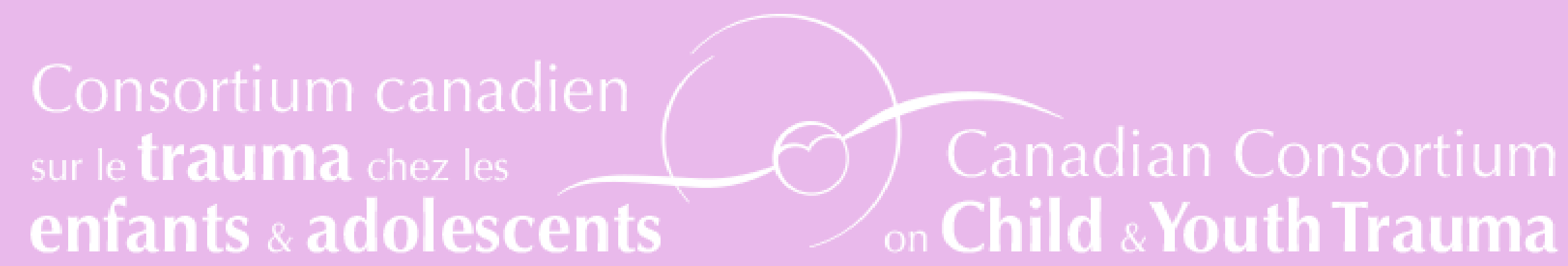


From Childhood Trauma to Chronic Pain: A Scoping Review and Conceptual Model of Biological and Psychological Mechanisms



Camille E. DIEU, Giovanni BRIGANTI

Computational Medicine and Neuropsychiatry Department, University of Mons (UMONS), Belgium



Introduction

While the link between PTSD and Chronic Pain (CP) in adulthood is increasingly recognized, the link between **Childhood Trauma (CT) and Chronic Pain** in adulthood remains **underexplored** (Karimov-Zwienenberg et al., 2024).

However, **childhood trauma are more damaging than adult trauma** due to ongoing neurological and psychological development (DeBellis et al., 2014). Specifically, early trauma disrupts the hypothalamic-pituitary-adrenal (HPA) axis involved in stress response and **pain modulation**, potentially leading to heightened pain sensitivity (Burke et al., 2019).

Methodology

Aims of the study:

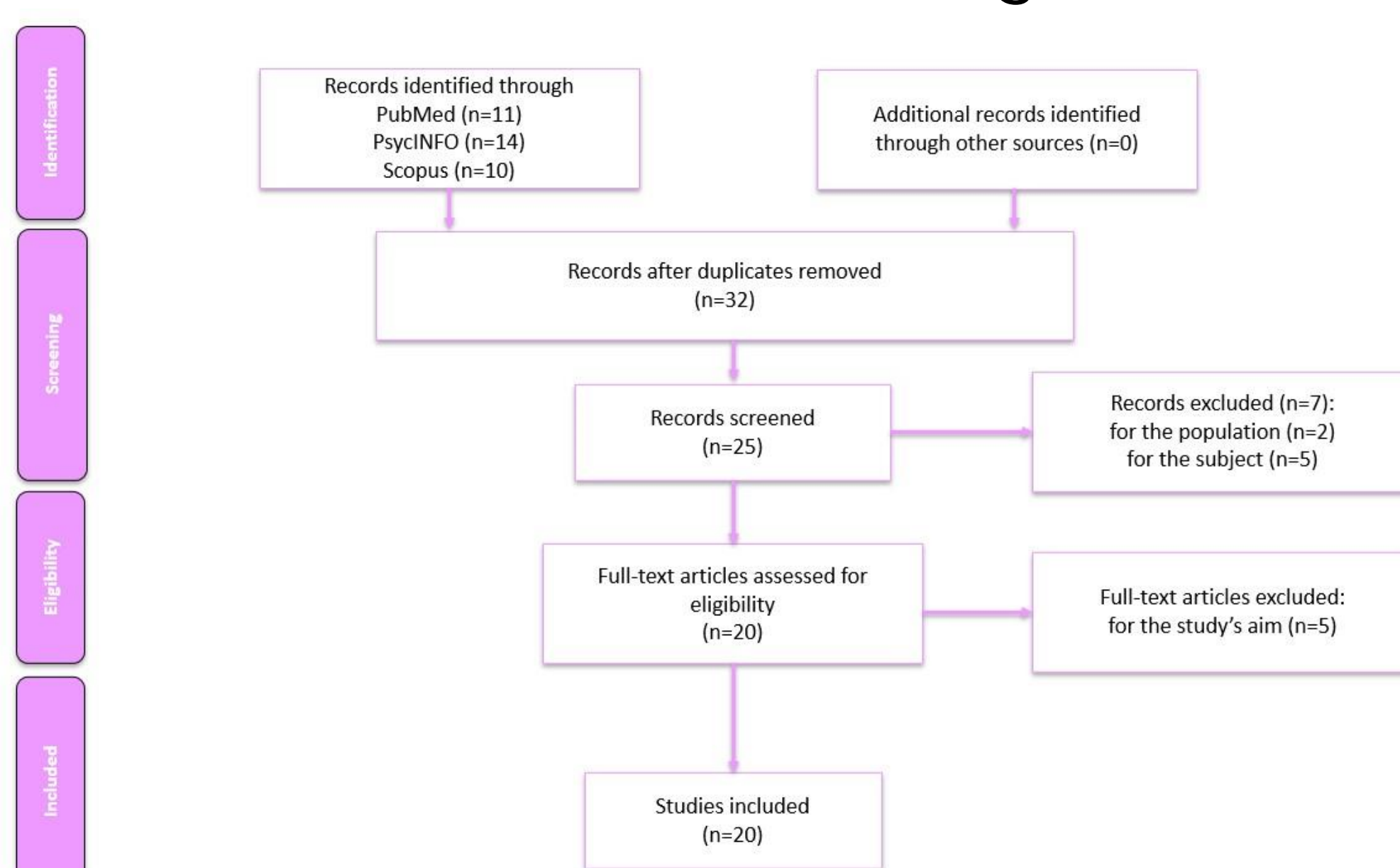
- 1) To map the evidence on the relationship between childhood trauma and chronic pain in adulthood;
- 2) To identify the **trauma subtypes** most consistently associated with pain outcomes;
- 3) To propose a **conceptual model of the biological and psychological mechanisms** involved.

A **scoping review** was conducted in accordance with the PRISMA-ScR guidelines using PubMed, PsycINFO, and Scopus databases.

Peer-reviewed empirical studies in adults published between 2005 and 2025 in French or English were considered.

Twenty studies met inclusion criteria.

PRISMA-ScR flow diagram:



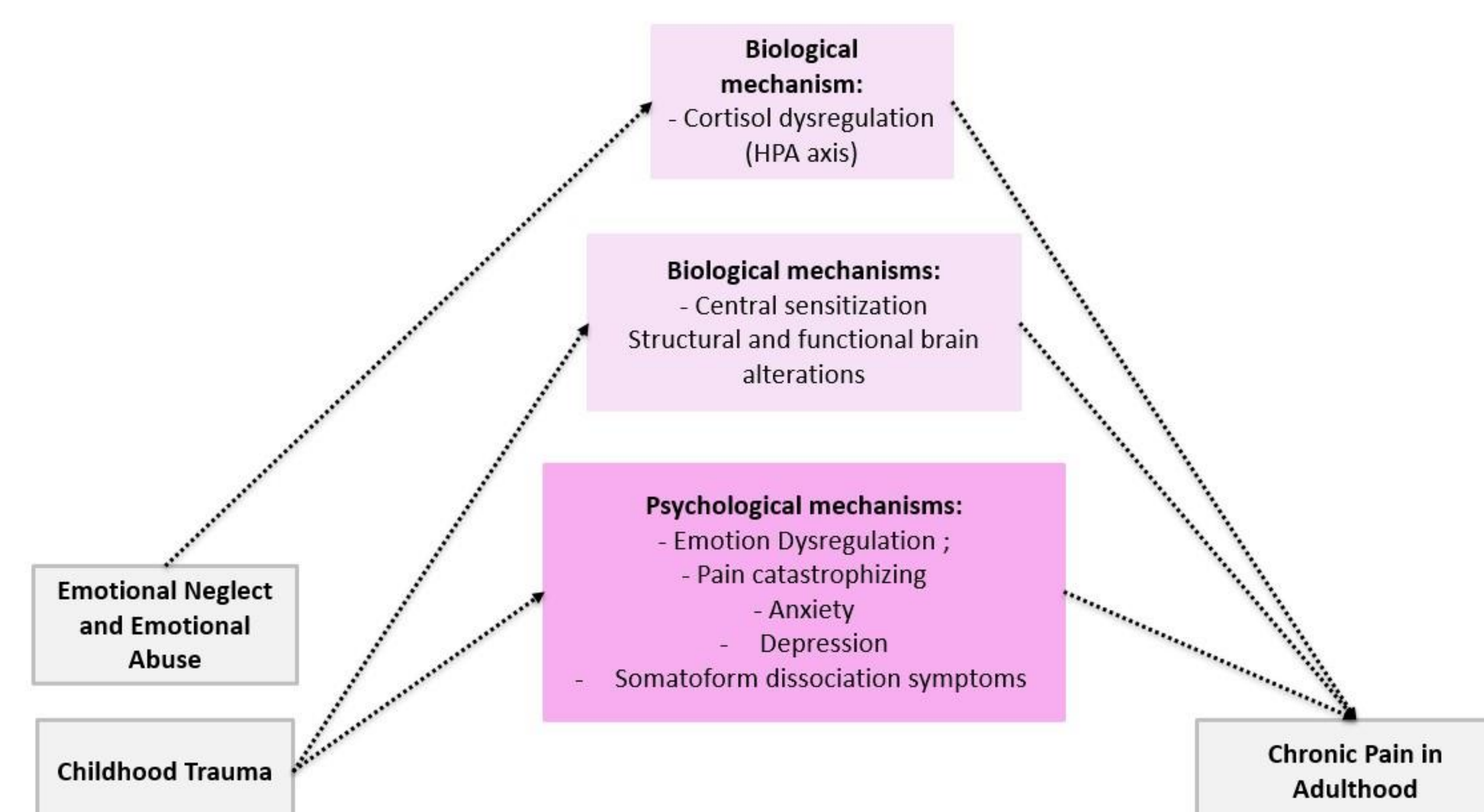
Results

Six themes emerged from the review:



- 1) **Cumulative childhood trauma burden**
 - Higher cumulative adversity was consistently associated with greater risk of chronic pain in adulthood. Several studies suggested dose-response patterns (≥ 3 ACEs).
- 2) **Across populations**
 - The association was observed not only in **general population** samples, but also in **clinical populations**, including fibromyalgia, depression, psychosis, and musculoskeletal pain samples.
- 3) **Complex PTSD (CPTSD) and pain chronification**
 - **CPTSD** was more closely related to persistent pain than PTSD.
- 4) **Specific role of emotional maltreatment**
 - When trauma subtypes were examined, **emotional neglect** and **emotional abuse** emerged as the **strongest trauma subtypes associated with adult chronic pain**.
- 5) **Pain typologies**
 - Some studies linked childhood trauma to specific **pain phenotypes**, including back pain, headaches, dysmenorrhea, fibromyalgia, pelvic pain, and pain interference.
- 6) **Psychological and biological mechanisms involved**
 - Converging evidence highlighted **HPA-axis dysregulation, central sensitization, brain alterations, emotion dysregulation, anxiety/depression, dissociation, threat appraisal, and pain catastrophizing**.

Conceptual model of the mechanisms linking childhood trauma to chronic pain in adulthood:



Interpretation of the model:

The findings suggest that childhood trauma may influence chronic pain through both **biological** and **psychological pathways**. While cumulative adversity appears important, emotional maltreatment may be especially relevant because of its links with emotion regulation difficulties, affective symptoms and stress-system dysregulation.

Discussion

Clinical implications:

- Assess childhood trauma history in chronic pain settings
- Consider **emotional neglect** and **emotional abuse**, not only physical and sexual maltreatment
- Target emotion regulation and trauma-related affective processes in intervention
- Promote **trauma-informed** and **biopsychosocial pain care**

Limitations:

- Most studies assessed **cumulative childhood trauma** rather than specific **trauma subtypes**
- Emotional neglect and emotional abuse were not consistently measured
- **Pain phenotypes** were often insufficiently differentiated

➤ This scoping review supports a **robust association** between **childhood trauma and chronic pain in adulthood**.

➤ The results align with **allostatic load theory** which describes how allostatic load can produce pro-inflammatory and pro-nociceptive states contributing to the development and **maintenance of pain** (Simons et al., 2014).

➤ The strongest association between emotional maltreatment and chronic pain can be explained by **emotional maltreatment predicting affective disorders** (Cloud et al., 2012), which in turn **predict chronic pain** (Egloff et al., 2017).



Take-home message: Beyond the cumulative burden of childhood adversity, the final synthesis suggests that **emotional maltreatment** and **emotion-related mechanisms** may play a central role in chronic pain chronification.

References



Scan me!

Contact:
camille.dieu2@umons.ac.be