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Interactions between pain and psychopathology in pediatric and adult patient populations

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Publication date

2025

[Link to publication](#)

Citation for published version (APA):

van der Heijden, H. C. (2025). *Wired for pain, shaped by the mind: Interactions between pain and psychopathology in pediatric and adult patient populations*. [Thesis, fully internal, Universiteit van Amsterdam].

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Wired for Pain, Shaped by the Mind

Interactions between Pain and Psychopathology

in Pediatric and Adult Patient Populations

Hanne C. van der Heijden

Wired for Pain, Shaped by the Mind
Interactions Between Pain and Psychopathology in Pediatric and Adult Patient Populations

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. P.P.C.C. Verbeek
ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Aula der Universiteit
op woensdag 7 mei 2025, te 11.00 uur

door Hanne Caroline van der Heijden
geboren te Sittard

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PREFACE

Childhood is a critical period of development when the central nervous system (CNS) is still maturing, and its structures and circuitry are particularly vulnerable to disruption. During this time, external insults—such as disease, trauma, or environmental stressors—can have profound effects on neural circuitry. These harmful influences can result in maladaptive changes that impair emotional regulation, elevate the risk of developing psychiatric disorders, including anxiety, depression or psychosis, and increase susceptibility to chronic or exasperated pain.

Through a multifaceted exploration of the neural substrates and psychological aspects of pain, psychopathology and cognitive dysfunction, this dissertation provides insights into how inflammatory processes, structural changes, and functional disruptions within the CNS contribute to the development of complex symptom profiles. To that end, neuroimaging findings have been integrated with behavioral and clinical endpoints in patient populations. The research spans across both childhood and adult populations, offering perspective on how developmental stages and disease relate to CNS vulnerability and disease related outcomes. By mapping the neurobiological and psychological intersections between pain and psychopathology, this work highlights the importance of integrated approaches for understanding and treating pain and neuropsychiatric symptoms in diverse patient populations. Ultimately, this dissertation underscores the interconnected nature of pain, cognitive impairments, and emotional dysregulation.

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