

# InnerWorlds:

## A Videogame Journey Through Teen Depression and Social Pressures

Digital handbook on key mental health concepts tailored to adolescents

*Authors:* Dr. Markella Grigoriou (WP2 Leader - University of Limassol)

*Contributors:* Universitat Jaume I de Castellón (Spain - Project Leader), InterAktion (Austria), Innovation Education Lab (Romania), Sembrem (Spain), Center of Social Services “Saint John the Merciful” (Cyprus).



Co-funded by  
the European Union

Funded by the European Union. The views and opinions expressed in this publication are solely those of the author(s) and do not necessarily reflect those of the European Union or the Instituto de la Juventud (INJUVE). Neither the European Union nor the granting authority can be held responsible for them

# Table of Contents

<b>Disclaimer.....</b>	<b>4</b>
<b>1.Introduction.....</b>	<b>5</b>
1.1 About the <i>InnerWorlds</i> Project.....	5
1.2 Rationale and Objectives.....	5
1.3 The Adolescent Context: A Developmental Imperative.....	6
1.4 Mental Health Literacy: The Theoretical Framework.....	6
1.5 Integration with Digital Media and the <i>InnerWorlds</i> Videogame.....	7
1.6 Objectives and Structure of the Handbook.....	8
1.7 Target Audience and Usage.....	8
1.8 Final Thoughts.....	9
<b>2. Core Concepts of Mental Health.....</b>	<b>9</b>
2.1 Defining Mental Health in Adolescence.....	9
2.2 The Mental Health Continuum.....	10
2.3 Core Concepts Adolescents Should Understand.....	12
2.4 Cultural Framing of Mental Health: Language, Expression, and Stigma.....	13
2.5 Social Contexts in Mental Health: Family, Identity, and Peer Pressure.....	13
2.6 Digital Ecosystems and Mental Health: Algorithmic Triggers and Differential Vulnerabilities.....	13
2.7 Refugee and Multicultural Youth: Communication Barriers and Cultural Humility.....	13
2.8 Why Early Understanding Matters.....	14
2.9 Final Thoughts.....	14
<b>3. Common Mental Health Challenges in Adolescents.....</b>	<b>14</b>
3.1 About mental health challenges in adolescence.....	14
3.2 Global Burden and Trends.....	15
3.3 Depression.....	16
3.4 Anxiety Disorders.....	17
3.5 Attention-Deficit/Hyperactivity Disorder (ADHD).....	17
3.6 Eating Disorders.....	18
3.7 Self-Harm and Suicidal Behaviour.....	19
3.8 Intersectionality and Marginalized Youth.....	20
3.9 Comorbidity and Misdiagnosis.....	21
3.10 Final Thoughts.....	21
<b>4.Recognizing Early Signs and Symptoms.....</b>	<b>22</b>
4.1 About Early Signs and Symptoms.....	22
4.2 The Importance of Early Identification.....	22
4.3 Common Early Signs and Symptoms.....	22
4.3.1 Emotional Changes.....	23
4.3.2 Behavioural Changes.....	23
4.3.3 Cognitive Difficulties.....	23

4.3.4 Physical Symptoms.....	24
4.3.5 Social Withdrawal and Relationship Strain.....	24
4.4 Adolescent Self-Perception and Communication Barriers.....	24
4.5 Gender and Cultural Variability in Presentation.....	25
4.6 Role of Peers, Parents, and Schools.....	25
4.7 The Danger of Misinterpretation and Delay.....	25
4.8 Final Thoughts.....	26
<b>5. Preventative Measures and Healthy Habits.....</b>	<b>26</b>
5.1 About preventative measures and healthy habits.....	26
5.2 Lifestyle Behaviours That Protect Mental Health.....	27
5.2.1 Sleep Hygiene.....	27
5.2.2 Physical Activity.....	28
5.2.3 Balanced Nutrition.....	29
5.2.4 Social Connectedness.....	29
5.2.5 Screen-Time Regulation and Digital Literacy.....	30
5.2.6 Mindfulness and Self-Regulation.....	31
5.2.7 Philosophy and Coping Skills for Life.....	31
5.3 School and Family-Based Interventions.....	32
5.4 Final Thoughts.....	32
<b>6. Integration of the Digital Handbook with the Videogame.....</b>	<b>32</b>
6.1 About integration of the digital handbook with the videogame.....	32
6.2 Why Digital Games for Mental Health?.....	33
6.3 Design Philosophy of <i>InnerWorlds</i> .....	33
6.4 Role of the Handbook: Bridging Gameplay and Education.....	33
6.5 Core Integration Mechanisms and Reflection Prompts.....	34
6.6 Examples of Handbook–Game Integration.....	34
6.7 Youth-Engaged Co-Design.....	36
6.8 Technical Considerations: Designing Emotionally Intelligent Gameplay for Adolescents.....	36
6.9 Addressing Limitations and Ethical Considerations.....	38
6.10 Final Thoughts.....	38
<b>7. Conclusion and Key Takeaways.....</b>	<b>39</b>
7.1 Revisiting the Adolescent Mental Health Landscape.....	39
7.2 Key Conceptual Contributions.....	39
7.3 The Role of Interactive Education.....	40
7.4 Strengthening Adolescent Agency and Resilience.....	40
7.5 Addressing Barriers and Equity.....	41
7.6 Recommendations for Educators and Implementers.....	41
7.7 Final Thoughts.....	42
<b>8. Dictionary of Key Terms.....</b>	<b>42</b>
<b>References.....</b>	<b>46</b>
<b>Annex .....</b>	<b>52</b>

## Disclaimer

*This handbook is a deliverable of the ERASMUS+ project “InnerWorlds: A Videogame Journey Through Teen Depression and Social Pressures”. It intends solely for educational and mental health literacy purposes and for the successful completion of the project. It is not, and should not be interpreted as, a clinical or therapeutic tool. The content presented does not constitute medical, psychological, or therapeutic advice, nor is it a substitute for professional diagnosis or treatment by qualified healthcare providers.*

*All research findings, statistics, and references used in this handbook are drawn from previously published, peer-reviewed sources that are publicly available online. Citations and source links have been provided where possible to ensure transparency and encourage further exploration. The material has been curated and synthesized to reflect current best practices in adolescent mental health education, based on evidence available at the time of writing.*

*This handbook itself has undergone peer review to ensure the quality, credibility, and relevance of its content. However, the responsibility for how the information is interpreted and applied rests solely with the reader. The following people have contributed to the review of the handbook as external stakeholders: Raquel Flores Buils (Spain), Julia Fernández Geijo (Spain), Amparo Luján-Barrera (Spain), Rosa Mateu Pérez (Spain), Myrsianna Drakontaeidi (Cyprus), Magdalini Christodoulou (Cyprus), Helena Schuller (Austria), Majd Alhomsy (Austria), Ana Georgescu (Romania), Veronica Niste (Romania), Moustafa Kamel (Romania).*

*If you or someone you know is experiencing mental health difficulties, please consult a licensed mental health professional or contact appropriate emergency or crisis services. If you feel the need to talk to someone, please don’t hesitate to reach out to any of the free and accessible support services available across the EU.*

- **Child Helpline International**, <https://childhelplineinternational.org/helplines/> (Last access – 28/07/2025)
- **SANE (UK and European outreach)**, <https://www.sane.org.uk> (Last access – 28/07/2025)
- **StrongMinds Europe**, <https://strongminds.org> (Last access – 28/07/2025)
- **Papyrus UK / EU Youth Suicide Prevention Partners**, <https://www.papyrus-uk.org> (Last access – 28/07/2025)

## Language Disclaimer

*Portions of the language in this book have been reviewed and refined with the assistance of generative artificial intelligence (AI) tools to improve clarity, grammar, and style. All content and ideas remain the responsibility of the author and contributors.*

# 1. Introduction

## 1.1 About the *InnerWorlds* Project

This handbook is an integral output of the *InnerWorlds* project, a collaborative initiative dedicated to promoting adolescent mental health through innovative, youth-centred videogame as an educational and prevention tool. The handbook is designed to empower readers with practical knowledge and strategies around adolescent mental health. Drawing on evidence-based psychological methodologies and input from educators and mental health professionals and external stakeholders, the handbook functions as both an educational and preventive resource. *InnerWorlds* focuses on the development of an interactive, choice-driven mobile game where players navigate relatable emotional challenges (like peer exclusion, academic burnout, social pressures, anxiety etc) and practice coping skills, making mental health education and literacy relatable, and emotionally engaging.

The creation of this handbook reflects the collective expertise and commitment of the *InnerWorlds* consortium, which brings together a multidisciplinary group of partners from across Europe, including researchers, clinicians, educators, and software designers. Together, the consortium has implemented a co-design and co-creation approach involving mental health stakeholders to ensure that all project tools are accessible, culturally adaptable, and grounded in real-life experiences. In addition to the handbook and the videogame, the project will produce training packages, impact assessment reports, and learning materials targeted at key actors—youth, teachers, parents, and institutional leaders and professionals—thus reinforcing a shared, community-based responsibility for adolescent well-being.

This resource is a result of the collaborative work of the *InnerWorlds* project partnership which is comprised by diverse partners from Spain, Cyprus, Austria, and Romania. The consortium includes Universitat Jaume I de Castellón (Spain - Project Leader), University of Limassol (Cyprus), InterAktion (Austria), Innovation Education Lab (Romania), Sembrem (Spain), and the Centre of Social Services “Saint John the Merciful” (Cyprus).

## 1.2 Rationale and Objectives

Adolescent mental health is increasingly recognized as a critical domain within global health, education, and social development frameworks. The World Health Organization (2024) estimates that 10–20% of adolescents experience mental health conditions, yet many remain underdiagnosed and untreated due to stigma, limited access to services, or insufficient mental health literacy. This phenomenon is exacerbated by global and local stressors, including the psychosocial impacts of the COVID-19 pandemic, economic uncertainty, educational pressures, and the intensification of digital engagement and social comparison via social media (UNICEF, 2021; Marciano et al., 2022).

Despite the availability of empirical data on prevalence and risk, adolescents often lack the tools to conceptualize and articulate their mental health status. This handbook aims to improve adolescent mental health literacy by providing accessible and engaging foundational knowledge. It will support understanding, early recognition, and preventative measures related

to mental health challenges faced by adolescents. As part of the *InnerWorlds* project, this digital handbook serves as a manual for partners and readers to understand key mental health concepts tailored to adolescents, aiding in the creation of an educational and prevention tool in the form of a video game. This handbook will also reinforce key mental health concepts for young people. The handbook provides additional context and practical strategies to enhance the reader's understanding and engagement. The content is research-informed and relevant to current societal and global mental health needs in adolescents. Lastly, the current handbook aligns with Work Package 2 (WP2) of the *InnerWorlds* project, which aims to integrate mental health literacy into a gamified digital experience.

### **1.3 The Adolescent Context: A Developmental Imperative**

Adolescence is a unique neurodevelopmental stage characterized by heightened neuroplasticity in cognitive and emotional systems, increased sensitivity to social stimuli, and a simultaneous pursuit of autonomy and belonging (Sawyer et al., 2012). Neuroplasticity (the brain's ability to change and adapt through experience), thus simplifies an abstract concept by linking it to the idea of a “learning brain.”

As such, mental health in adolescence is not static; it evolves in response to social, biological, and environmental inputs. Adolescents experience dramatic changes in brain structure and function — particularly in the prefrontal cortex and limbic system — which regulate decision-making, emotional control, and risk assessment (Blakemore & Mills, 2014). These neurological changes, combined with social determinants such as school climate, peer dynamics, family relationships, and cultural expectations, create a landscape where small emotional or behavioural shifts can trigger “developmental cascades” — patterns that, if unaddressed, can amplify into significant mental health challenges over time. To address this, the *InnerWorlds* game integrates interactive scenarios that let players practice safe decision-making under emotional strain, such as managing peer pressure or anxiety, offering a virtual environment to model and strengthen the very skills adolescents are developing in real life.

The Lancet Commission on Adolescent Health and Wellbeing emphasizes that adolescence is “a foundation for future health,” and that investments in mental health literacy at this stage yield significant life-course benefits, including increased academic achievement, better employment outcomes, and reduced risk of substance abuse or suicide in adulthood (Patton et al., 2016). Thus, empowering adolescents with foundational mental health knowledge and coping tools is not merely beneficial — it is necessary.

### **1.4 Mental Health Literacy: The Theoretical Framework**

Mental health literacy is defined as “knowledge and beliefs about mental disorders which aid their recognition, management, or prevention” (Jorm, 2012). It encompasses several domains, including understanding how to maintain good mental health, recognizing mental disorders and their symptoms, reducing stigma, and knowing how and where to seek help. In today's digital age, it also involves the ability to critically assess media and online representations of mental health — such as social media portrayals, viral trends, and game or video narratives — to distinguish reliable information from harmful stereotypes or misinformation, a skill



particularly vital when mental health education is delivered through interactive, digital platforms.

In a 2022 systematic review, Kutcher et al. reaffirmed that school-based mental health literacy interventions significantly improve adolescents' ability to identify signs of depression and anxiety, increase help-seeking intentions, and reduce misconceptions related to mental disorders. Furthermore, research demonstrates that adolescents with higher mental health literacy are more likely to support peers in distress, promoting a culture of care and reducing the risk of crisis escalation (Wei et al., 2015).

The *InnerWorlds* digital handbook adopts this literacy framework while integrating visual supports, and interactive examples. It also includes strategies for critical reflection, support, and navigation, making it not only a source of information but also a tool for professional and parental development.

### 1.5 Integration with Digital Media and the *InnerWorlds* Videogame

Nowadays, adolescents live in an increasingly digitized environment. The average adolescent spends upwards of 7 hours per day on digital devices, with social media and gaming being the most prominent modes of interaction (Valkenburg et al., 2022). While excessive or maladaptive media use can negatively impact mental health — contributing to sleep disturbances, low self-esteem, and attention dysregulation — digital technologies also offer significant opportunities for education, self-expression, and therapeutic innovation (Marciano et al., 2022).

In particular, quality games and gamified learning platforms have shown promise in delivering psychoeducation, supporting emotion regulation, and promoting mental health awareness in youth populations (Tuijnman et al., 2017). Projects such as *SPARX* (New Zealand) and *ScrollQuest* (Canada) demonstrate the feasibility and impact of incorporating cognitive behavioural strategies, narrative immersion, and peer modelling into digital games targeting adolescent well-being (Ferrari et al., 2022). These games also leverage core mechanics like challenge–reward systems, where completing tasks or overcoming obstacles leads to positive feedback and progress — a design that mirrors behavioural activation, a therapeutic approach that reinforces engagement in rewarding activities to counter withdrawal and low mood.

The *InnerWorlds* project builds upon this evidence by embedding mental health themes directly into the gameplay structure. The accompanying handbook provides the theoretical and pedagogical scaffolding for the game's narrative arcs and interactive elements. For example, characters in the game may experience “status effects” like anxiety fog, rejection fatigue, or confidence drain, which slow their progress or cloud their decision-making. Players are offered branching choices in how to respond — such as modelling empathy by supporting a struggling peer or practicing boundary-setting by declining harmful group pressures. These challenges often take the form of emotional “quests” (e.g., helping a character regain confidence before a school presentation), which tie back to handbook sections offering definitions, coping strategies, and reflective prompts so players can understand and apply these skills both in-game and in real life.

This dual format — video game + handbook — facilitates multimodal learning, allowing adolescents to engage cognitively and emotionally while also developing meta-awareness of their own mental health (the ability to observe our own emotions and thoughts without judging

them). Emotional regulation skills are reinforced across both platforms: in the game, players practice calming techniques and decision-making under pressure through interactive choices, while the handbook provides practical support and understanding for professionals, parents, caregivers and anyone who would like to support adolescents.

## 1.6 Objectives and Structure of the Handbook

This digital handbook is designed primarily for educators, youth workers, project partners, parents, caregivers and anyone working with or supporting adolescents aged 12–18. Its purpose is to help these adults deepen their understanding of adolescent mental health, gain evidence-based insights into common developmental challenges, and acquire practical tools and strategies to better support young people in their care.

The handbook is modular and evidence-based, allowing it to be read as a standalone resource or used within formal and informal training settings. Rather than being aimed directly at adolescents, it equips the adults around them with the knowledge and skills needed to foster resilience, recognize early signs of distress, and promote healthy lifestyle behaviours as protective factors.

The objectives of the handbook are as follows:

- Help professionals and parents understand the key aspects of adolescent mental health and development, including emotional, behavioural, and cognitive changes.
- Provide practical tools and strategies for early recognition of psychological distress and appropriate support pathways.
- Foster resilience and encourage healthy habits in young people through informed guidance and role modelling.
- Encourage the creation of supportive environments, including positive peer engagement, to reduce isolation and promote help-seeking behaviours.
- Enable professionals and parents to use these insights effectively in both standalone contexts and when paired with the *InnerWorlds* video game, reinforcing mental health concepts through narratives and interactive experiences.

## 1.7 Target Audience and Usage

This handbook is designed for professionals, parents and guardians of adolescents aged 12–18, providing them with evidence-based insights to understand the significance of mental health during this key developmental stage. Written in clear, accessible language and enriched with practical examples, it helps readers view mental health as an integral part of our daily lives—rather than something to address only in times of crisis. Specifically, it is designed for use by key individuals and groups who play a crucial role in adolescent well-being:

- **Educators** can use the handbook to enhance mental health discussions in classrooms, integrate it into life skills or social-emotional learning programs, or support students through mentoring.



- **Youth workers, school counsellors, and mental health professionals and other professionals** will find practical, age-appropriate content that supports individual or group sessions and early intervention work.
- **Parents and guardians** can turn to the handbook to better understand the emotional experiences of adolescents and learn how to offer informed and compassionate support.
- **Game developers and digital content creators**—whether professionals, educators, or students—are invited to use the handbook as a guide for developing youth-centred, emotionally intelligent games. It provides psychological insights and narrative direction that inform the design of the *InnerWorlds* videogame and similar digital projects. It also fosters ethical design practices that prioritize youth safety and inclusivity.

By addressing these multiple audiences, the handbook functions as a flexible and interdisciplinary resource—supporting mental health promotion across educational, clinical, familial, and digital spaces.

Each section is organized thematically, starting with foundational concepts (Section 2), followed by specific challenges (Section 3), early warning signs (Section 4), prevention (Section 5), and digital integration (Section 6). Sections conclude with reflective prompts and suggestions for in-game alignment.



### 1.8 Final thoughts

As societies navigate increasing mental health challenges among youth, particularly in the post-pandemic era, the need for developmentally tailored, research-informed mental health education has never been greater. This handbook positions mental health not as a crisis to be treated reactively, but as a domain of lifelong skill-building, social engagement, and psychological insight. It centres adolescent voices and experiences while grounding its content in established clinical and pedagogical frameworks.

By linking this educational tool to a video game experience, *InnerWorlds* models an innovative path forward: one where digital platforms and psychological science converge to foster emotional well-being, empathy, and resilience in the next generation.

## 2. Core Concepts of Mental Health

### 2.1 Defining Mental Health in Adolescence

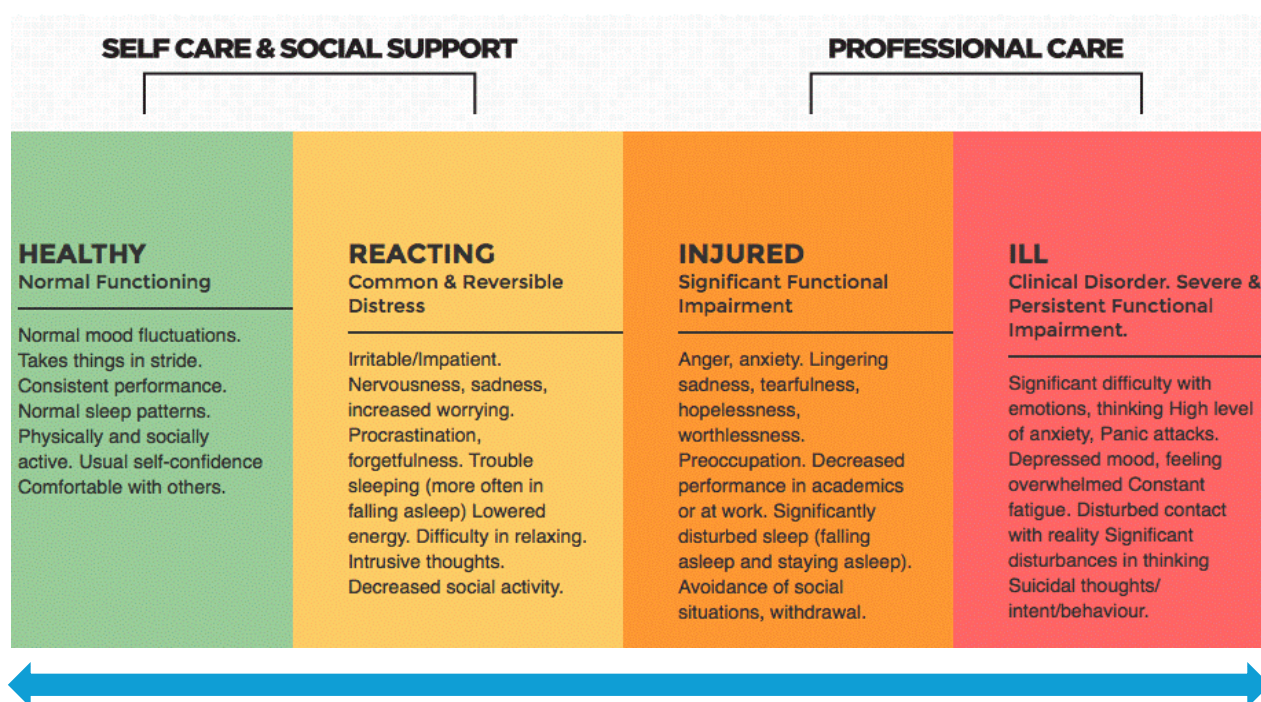
Mental health in adolescence refers to a multidimensional state of emotional, cognitive, and social functioning that allows individuals to navigate developmental transitions, form relationships, and cope with internal and external stressors (WHO, 2024). Unlike the traditional view of mental health as merely the absence of illness, modern frameworks emphasize it as a dynamic spectrum that fluctuates in response to individual, relational, and contextual variables (Kutcher et al., 2016).

According to the World Health Organization (2024), adolescence — spanning ages 11 to 19 — is a critical period for developing socio-emotional competencies, yet it also marks the onset of many mental health disorders. UNICEF’s Global Coalition for Youth Mental Well-being report *On Our Minds* (2023), that approximately 50 % of mental health conditions develop before age 14. This developmental window, therefore, presents both risk and opportunity: early distress may emerge, but early intervention can also produce lifelong benefits (De Girolamo et al., 2012).

The adolescent brain is undergoing rapid changes, particularly in the prefrontal cortex and limbic system, which regulate emotion, judgment, and impulse control (Blakemore & Mills, 2014). These changes occur alongside complex psychosocial demands, such as academic pressures, peer expectations, and evolving self-identity, making mental health literacy not only relevant but essential.

## 2.2 The Mental Health Continuum

Mental health exists on a continuum rather than a binary of “healthy” or “ill.” Adolescents move fluidly along this continuum depending on environmental stressors, coping skills, and access to support systems (Patton et al., 2016). Imagine an emotional thermometer: sometimes we are in the green zone (feeling good), other times in the yellow (stressed), and occasionally in the red (needing help). Understanding this model helps adolescents identify their current state and take steps toward emotional regulation and resilience.

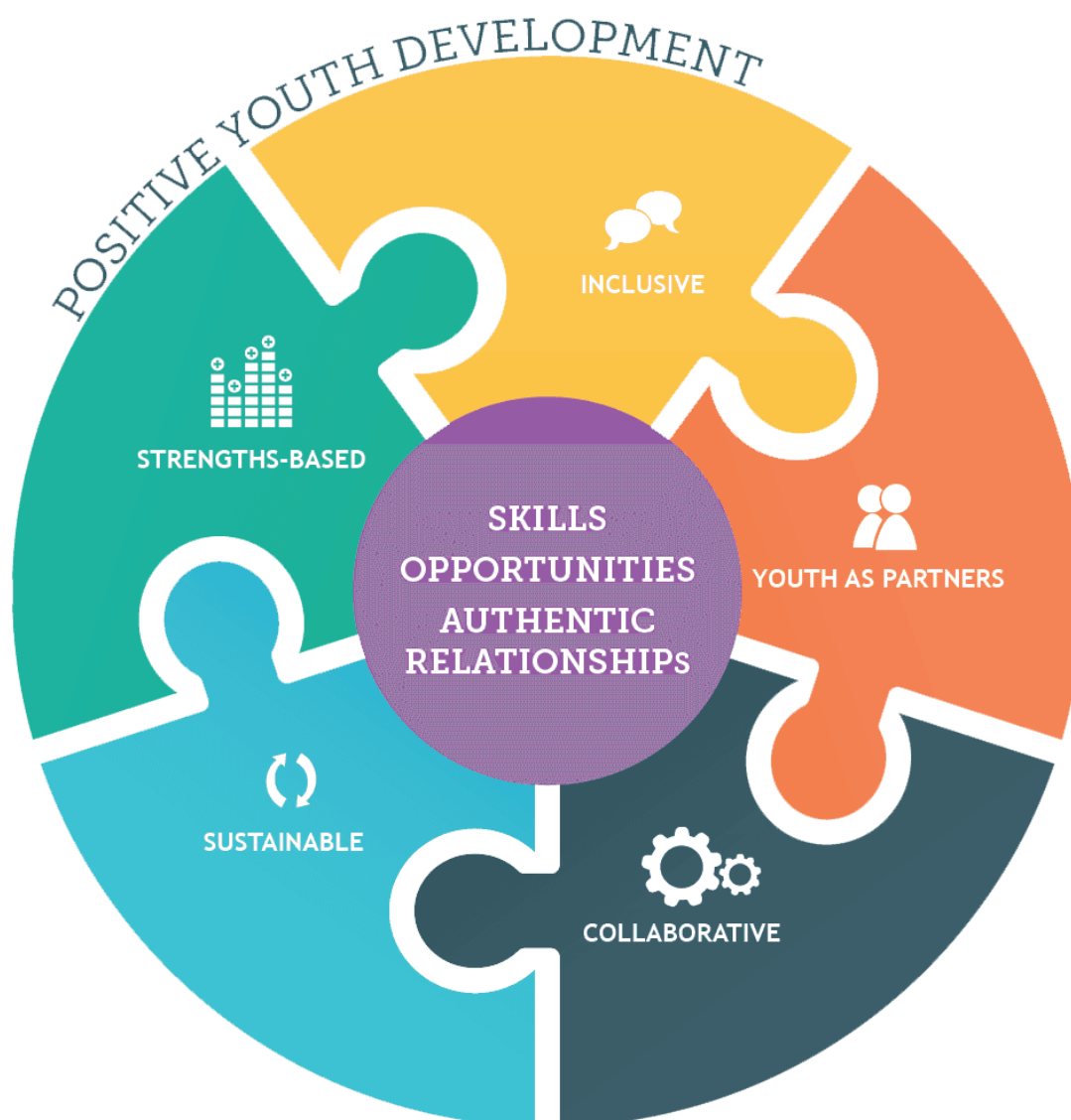


**Figure 1.** Mental health continuum in adolescents

Adolescents who demonstrate strong mental health typically exhibit strengths across five key areas of psychological and social functioning. First, emotional regulation refers to their ability to understand, express, and manage emotions in healthy ways. It is the ability to know how to manage your emotions so you can feel calmer. Second, cognitive flexibility reflects their

capacity to adapt their thinking and behaviour in response to new or challenging situations. Third, social connectedness involves maintaining positive and supportive relationships with peers, family members, and trusted adults. Fourth, identity formation represents the ongoing process of developing a coherent sense of self and future direction. Finally, help-seeking behaviour indicates an awareness of when to seek support and the confidence to reach out to peers, adults, or professionals when needed.

These components are closely aligned with the Positive Youth Development (PYD) model, which outlines five core developmental goals: competence, confidence, connection, character, and caring (Lerner et al., 2005). Together, they form a foundation for resilience, emotional well-being, and healthy adolescent development.



**Figure 2.** Positive Youth Development (Lerner et al., 2005).

## 2.3 Core Concepts Adolescents Should Understand

Mental health literacy in adolescence is strongly predictive of help-seeking and resilience (Wei et al., 2013). Therefore, this handbook emphasizes the following five foundational concepts as critical to any youth-centred mental health education program.



### 1. Mental Health is Normal and Variable

Mental health is an everyday experience. Just as physical health changes due to diet, sleep, and exercise, mental health varies based on rest, relationships, and emotional stimuli. Adolescents should be taught that fluctuations are normal, and experiencing sadness, worry, or loneliness does not automatically imply a disorder (UNICEF, 2021).



### 2. Distress ≠ Disorder

Temporary emotional distress — for example, after a breakup or during exam season — is not necessarily pathological. Understanding the duration, severity, and interference of symptoms is critical in differentiating distress from mental illness (Kutcher et al., 2016).



### 3. Self-Awareness Enhances Self-Regulation

Adolescents benefit from developing a vocabulary for emotions and recognizing personal triggers. Increased self-concept clarity, especially during high-stress situations like the COVID-19 pandemic, is correlated with lower depressive symptoms and improved psychological functioning (Yang et al., 2024).



### 4. Stigma Inhibits Support

Fear of being judged prevents many adolescents from discussing their feelings. Peer norms that equate emotional expression with weakness must be actively dismantled. In a 2018 survey, only 30% of adolescents indicated they would talk to a friend if they experienced persistent sadness (OECD, 2018).



### 5. Seeking Help is a Strength

Accessing mental health resources, whether through trusted adults, peers, or digital platforms, should be framed as a positive and proactive choice. Programs that teach adolescents where and how to seek help consistently report increased service engagement and decreased symptomatology (Kutcher et al., 2016; Wei et al., 2013).



### 6. Resilience is the skill of 21<sup>st</sup> Century

Resilience helps adolescents navigate the challenges of growing up, including academic pressures, peer conflicts, and personal setbacks. It fosters emotional strength, self-confidence, and problem-solving abilities, enabling them to recover from difficulties and setbacks. Resilient adolescents are more likely to develop healthy relationships and pursue goals despite obstacles. This skill also protects against the development of anxiety, depression, and risky behaviours. Building resilience lays the foundation for lifelong well-being, adaptability, and success in an unpredictable world.



**Figure 3:** *The five foundational concepts as critical to any youth-centred mental health education program.*

## **2.4 Cultural Framing of Mental Health: Language, Expression, and Stigma**

Culture is a central lens through which adolescents interpret emotional distress. It shapes not only how mental health is talked about but also whether it is talked about at all. In collectivist cultures—such as many Asian, African, and Latin American societies—mental disorder is often stigmatized, leading adolescents to express psychological struggles through somatic complaints like fatigue, headaches, or stomach pain (Aggarwal et al., 2021). This can result in underdiagnosis or misdiagnosis when Western diagnostic frameworks dominate. Furthermore, migrant or refugee youth may carry culturally specific conceptualizations of trauma and coping, which professionals must recognize to avoid cultural invalidation.

## **2.5 Social Contexts in Mental Health: Family, Identity, and Peer Pressure**

Adolescence is a time of intense social reorientation, and family systems, peer dynamics, and identity development become major influences. In some cultural settings, adolescents may face a tension between traditional familial expectations and the host country's norms, especially among second-generation immigrants. For example, balancing collectivist values (e.g., family duty, modesty) with Western ideals of independence can cause acculturative stress, increasing anxiety or depressive symptoms. Additionally, peer pressure and social exclusion—particularly regarding gender norms, sexual orientation, or academic performance—can intensify mental health risks, especially when social support is limited or when adolescents feel culturally or socially "out of place" (Murphy et., 2014).

## **2.6 Digital Ecosystems and Mental Health: Algorithmic Triggers and Differential Vulnerabilities**

Digital media is a psychosocial amplifier—it can connect, educate, and support, yet also harm. As Marciano et al. (2022) observe, platforms like Instagram or TikTok offer adolescents both opportunities for identity exploration and exposure to harmful content. The algorithmic nature of these platforms can exacerbate vulnerabilities: for example, adolescents with body dissatisfaction may be shown more appearance-focused content, reinforcing insecurities. Valkenburg et al. (2022) note that while the overall correlation between social media use and poor mental health is small, it becomes significant for adolescents with traits like rejection sensitivity, low self-esteem, or prior trauma. This underscores the importance of digital literacy programs that not only teach youth to recognize harmful content but also build “algorithmic self-awareness” — helping them notice what the feed is showing them, how it affects their mood, and how to curate a healthier online experience.

## **2.7 Refugee and Multicultural Youth: Communication Barriers and Cultural Humility**

Refugee and multicultural adolescents often face unique challenges in expressing emotional distress, shaped by language barriers, differing cultural frameworks of mental health, and prior exposure to trauma (Ellis et al., 2019). In many cases, these youth lack the vocabulary—or

even the cultural permission—to articulate psychological struggles in the host country’s language. Mental health may not be openly discussed in their home countries or may be framed primarily through spiritual or somatic terms, leading to misunderstandings or under-recognition of symptoms (Moses & Holmes, 2022).

For professionals, cultural humility is essential: rather than imposing Western psychological models, youth workers should recognize these differences and adapt communication. Strategies such as using visual aids, simplified language, and professional interpreters, even for basic terms, can help ensure comprehension and trust. Interactive, visual tools—such as serious games or art-based activities—can serve as bridges, helping these adolescents explore their emotions safely while gradually developing the language and confidence to communicate openly about mental health.

## 2.8 Why Early Understanding Matters

Early education in mental health increases adolescents’ likelihood to recognize early warning signs in themselves and peers, reduces stigma, and improves coping. Yang et al., (2024) found that adolescents with greater self-concept clarity and coping skills during the COVID-19 pandemic reported significantly lower levels of perceived stress and depressive symptoms. Moreover, early exposure to mental health literacy enhances empathy and prosocial behaviour, which is especially important in peer-driven environments like schools (Wei et al., 2013). These benefits are not limited to psychological outcomes — studies link improved mental health to academic performance, physical health, and long-term economic productivity (Patton et al., 2016; OECD, 2018).



## 2.9 Final Thoughts

The foundational concepts of adolescent mental health extend far beyond diagnostic criteria. They encompass emotional literacy, developmental science, cultural context, and social influence — all underpinned by the recognition that adolescence is a formative, sensitive period in the human life course.

This section has defined mental health not as a fixed state, but as a continuum shaped by context, emotion, relationships, and resources. By understanding that mental health is universal, variable, and improvable, adolescents can build healthier lives and communities. These principles lay the groundwork for the next sections, which will explore common mental health challenges, early signs of distress, and protective habits in greater detail.

# 3. Common Mental Health Challenges in Adolescents

## 3.1 About mental health challenges in adolescence

Adolescence is developmental period marked by profound biological, cognitive, emotional, and social transformations. These changes — including identity exploration, heightened sensitivity to peer feedback, and maturation of neural circuits — render adolescents especially vulnerable



to mental health challenges (Mansour & Sagheer, 2024). According to the World Health Organization (2021), between 10% and 20% of adolescents globally experience a mental health disorder, yet many of these conditions remain undiagnosed and untreated due to stigma, low mental health literacy, or limited access to care (Kieling et al., 2011).

The adolescent brain, particularly regions involved in emotion regulation, impulse control, and executive function, is still developing. When this neurological maturation intersects with environmental pressures — such as academic stress, family conflict, social exclusion, trauma, or digital media exposure — the risk for mental health issues rises significantly (UNICEF, 2021; Meherali et al., 2022).

For many teens, these pressures feel very real and personal. *“I’m so burned out from exams I can’t even sleep,”* one 16-year-old shared. Others describe *“feeling invisible in group chats even though my phone is always buzzing,”* or *“walking on eggshells at home because my parents argue every night.”* These everyday experiences can build up, making adolescents feel isolated, anxious, or overwhelmed. Recognizing these moments as warning signs — and understanding the most common psychological conditions, their symptoms, risk factors, and impacts — is essential for timely intervention and prevention. This section provides a detailed overview of these conditions and emphasizes the importance of early recognition and systemic support.

Understanding the most common psychological conditions, their symptoms, risk factors, and impact is essential for timely intervention and prevention.

### 3.2 Global Burden and Trends

Mental health disorders represent a leading cause of illness and disability among adolescents (WHO, 2021). The global COVID-19 pandemic further amplified existing vulnerabilities, exacerbating symptoms of depression, anxiety, self-harm, and digital burnout (Bouza et al., 2023; Wolf, & Schmitz, 2024). These conditions frequently co-occur and are often misdiagnosed, especially in males or minority youth who may express distress through externalizing behaviours (Patton et al., 2016). Each of the challenges listed in the table below will be accompanied by an explanation, along with their early indicators and associated risk factors.

Disorder	Global Prevalence (Adolescents)	Peak Age (Years)	Primary Risk Factors
<b>Depression</b>	14–20%	12–18	Trauma, bullying, isolation, digital media
<b>Anxiety Disorders</b>	22–27%	10–19	Academic stress, perfectionism, social rejection
<b>Eating Disorders</b>	3–5% (20% disordered behaviors)	12–18	Body image concerns, social media
<b>ADHD</b>	5–8% (12% clinical symptoms)	8–16	Genetics, prenatal factors, family stress

<b>Self-Harm</b>	15–22% lifetime (10–12% annually)	13–17	Emotional dysregulation, identity stress
<b>Suicidal Ideation</b>	14–17% thoughts (4–8% attempts)	14–19	Depression, hopelessness, discrimination

**Table.1** Adolescent Mental Health Disorder Prevalence (2023–2025). (The table summarizes the recent prevalence, peak ages, and risk factors for major adolescent mental health disorders, based on 2023–2025 research findings including textbooks of Ahmad, (2023) and Dulcan, (2021).

### 3.3 Depression

Depression in adolescence goes beyond occasional sadness; it is a debilitating condition involving low mood, loss of interest, and cognitive or somatic symptoms that persist for at least two weeks (APA, 2024). It may manifest as irritability, academic decline, or withdrawal rather than sadness, making detection more challenging (Ferrari et al., 2022). It is also marked by persistent low mood or anhedonia (loss of interest or pleasure), cognitive and physical symptoms (e.g., changes in sleep, appetite, concentration, psychomotor activity). Recent updates emphasize the spectrum nature (from subthreshold symptoms to major episodes) and integration with biological and social factors (e.g., inflammation, stress exposure). (Franchini, et al., 2022).



#### Early indicators:

- ☐ Irritability or frequent mood swings
- ☐ Fatigue and low motivation
- ☐ Poor concentration or academic issues
- ☐ Physical complaints (e.g., headaches)
- ☐ Social withdrawal or changes in sleep/appetite



#### Risk Factors:

- ☐ Family history of depression
- ☐ Abuse, trauma, or neglect
- ☐ Cyberbullying or online comparison
- ☐ Discrimination and social exclusion



**Keep in mind:** Poor sleep quality and irregular sleep patterns are strongly linked to increased risk of depression in adolescents. Teens who get less than 6–7 hours of sleep per night or have inconsistent sleep schedules are significantly more likely to experience depressive symptoms. Sleep disruption affects mood regulation, stress response, and cognitive function. (Yeo, et al., 2019).

### 3.4 Anxiety Disorders

Anxiety disorders are among the most common adolescent mental health issues, with forms such as General Anxiety Disorder (GAD), social anxiety, panic disorder, and specific phobias. These conditions often present with somatic symptoms (e.g., stomach-aches) and avoidance behaviours that impair functioning (Zinbarg et al., 2015). Anxiety disorder is also defined as excessive, persistent worry about multiple domains of life, accompanied by symptoms such as restlessness, fatigue, concentration difficulties, irritability, muscle tension, and sleep disturbances. Newer definitions stress transdiagnostic overlap with mood and trauma-related disorders and highlight genetic/neurobiological underpinnings (e.g., amygdala hyperactivity) (Ruscio, et al., 2024).



#### Early indicators:

- ☐ Constant worrying or overthinking
- ☐ Avoiding school or public settings
- ☐ Restlessness, sleep problems
- ☐ Panic attacks or difficulty breathing
- ☐ Headaches, nausea, muscle tension



#### Risk Factors:

- ☐ Parenting style
- ☐ Academic and peer pressure
- ☐ Genetic predisposition
- ☐ Lack of social support



**Keep in mind:** High levels of screen time—especially passive use like scrolling through social media—have been linked to increased anxiety symptoms in adolescents. Teens who spend more than 3–4 hours per day on screens report higher levels of anxiety, potentially due to sleep disruption, social comparison, and reduced face-to-face interaction (Brand et al., 2024).

### 3.5 Attention-Deficit/Hyperactivity Disorder (ADHD)

While often diagnosed in childhood, ADHD symptoms persist in adolescence and evolve into challenges with focus, impulse control, and emotional regulation (Christiansen et al., 2019). ADHD is a neurodevelopmental disorder characterized by inattention (e.g., distractibility, forgetfulness) and/or hyperactivity-impulsivity (e.g., fidgeting, interrupting), beginning before age 12, and impairing function in multiple settings. Findings highlights adult persistence and links to suicidality and emotional dysregulation (Newcorn, et al., 2023). DSM-5 reports the requirement that symptoms must appear in at least two different settings (home and school)

to meet diagnostic criteria. ADHD often co-occurs with learning disabilities, depression, or conduct disorders, complicating treatment and diagnosis.



#### **Early Indicators:**

- ☐ Inattention and disorganization
- ☐ Restlessness or fidgeting
- ☐ Interrupting or blurting out
- ☐ Emotional lability and frustration



#### **Risk factors:**

- ☐ Having a blood relative (e.g., parent or sibling) with ADHD or another mental health condition.
- ☐ Exposure to environmental toxins such as lead, commonly found in paint and pipes in older buildings.
- ☐ Prenatal exposure to recreational drugs, alcohol, or tobacco during pregnancy.
- ☐ Being born prematurely (preterm birth).



**Keep in mind:** Sleep issues—such as insomnia, delayed sleep phase, and restless sleep—are common in teens with ADHD and may contribute to greater difficulties with emotional regulation and school functioning (Silk et al., 2018)

### **3.6 Eating Disorders**

Eating disorders such as anorexia nervosa, bulimia, and binge-eating disorder are rising among adolescents, especially girls, due to societal pressures and social media ideals (Rodgers, 2016). Persistent disturbance in eating or related behaviours may lead to altered food intake or absorption, resulting in significant physical health or psychosocial impairment. DSM-5-TR and recent studies emphasize: (1) compulsive behaviours (exercise or purging), (2) distorted body image, and (3) frequent comorbidity with mood, anxiety, and trauma-related disorders (Stover, et al., 2023).



#### **Early Indicators:**

- ☐ Obsessing over calories or weight
- ☐ Avoiding meals or eating in secret
- ☐ Overexercising or purging
- ☐ Severe dissatisfaction with body image



### Risk Factors:

- ☐ Exposure to thin-ideal media
- ☐ Perfectionism and low self-esteem
- ☐ Gender dysphoria or identity concerns
- ☐ Peer teasing or bullying



**Keep in mind:** Social media use is linked to an increased risk of eating disorders in adolescents, particularly among girls. Frequent exposure to idealized body images and appearance-focused content on platforms like Instagram and TikTok can contribute to body dissatisfaction, which is a key risk factor for the development of eating disorders such as anorexia nervosa, bulimia nervosa, and binge-eating disorder (Dane, A., & Bhatia, 2023).

## 3.7 Self-Harm and Suicidal Behaviour

Self-harm involves deliberate physical injury without suicidal intent. However, it's a major predictor of suicide attempts, and often co-occurs with mood disorders or trauma histories (Hawton et al., 2012). Self-harm refers, also, to intentional self-inflicted injury without suicidal intent (NSSI), while suicidal behaviour involves intent or attempts to end life. Current definitions (ICD-11, 2024 research) stress a continuum of self-destructive acts, overlapping with depression, ADHD, eating disorders, and borderline traits. Risk factors include impulsivity, trauma, and social isolation (López et al., 2023).



### Early Indicators:

- ☐ Wearing long sleeves in warm weather
- ☐ Sudden mood swings
- ☐ Obsession with pain/punishment
- ☐ Giving away possessions or expressing hopelessness



### Risk Factors:

- ☐ Mental health disorders
- ☐ Childhood trauma or abuse particularly during early years
- ☐ Bullying and peer victimization particularly during adolescent
- ☐ Family conflict or dysfunction
- ☐ Substance use



**Keep in mind:** Many adolescents who engage in self-harm do not seek professional help, instead turning to peers or keeping their struggles entirely secret. Studies show

that up to 60–70% of young people who self-harm never access formal support, often due to stigma, shame, or fear of not being taken seriously (Michelmores & Hindley, 2012). To help bridge this gap, the *InnerWorlds* game can simulate reaching out to a peer or trusted adult, allowing players to explore how to start difficult conversations, navigate fears of judgment, and experience positive, supportive responses — all within a safe environment.

### 3.8 Intersectionality and Marginalized Youth

Adolescents at the intersection of multiple marginalized identities—such as those who identify as LGBTQ+, are refugees, or live with disabilities—face disproportionately high mental health risks due to the compounded nature of their social disadvantages. Rather than experiencing these challenges in isolation, these youth encounter overlapping forms of discrimination that intensify psychological distress and limit access to care. For example, LGBTQ+ adolescents frequently report elevated levels of depression, anxiety, and suicidal ideation, often linked to minority stress and social rejection. Transgender youth in particular face systemic barriers, such as exclusion from gender-affirming health care and unsupportive school environments, which can leave them feeling unsafe and invisible. As Lee et al. (2022) highlight, mental health systems often lack the cultural competence and inclusivity needed to meet the specific needs of gender-diverse adolescents.

The situation is similarly urgent for refugee and conflict-affected youth, many of whom have endured extreme adversity including violence, family separation, and forced displacement. In conflict zones, the prevalence of post-traumatic stress disorder (PTSD) among adolescents can exceed 35%, with long-term effects on development, trust, and emotional regulation (UNHCR, 2023). After migration, adolescents continue to face significant stressors such as cultural dislocation, racism, and socioeconomic instability. These ongoing challenges are rarely addressed adequately by mental health systems in host countries, which may be ill-equipped to offer trauma-informed or culturally sensitive support. Additionally, legal uncertainty or fear of deportation can deter refugee youth from seeking help even when services are technically available.

Youth with disabilities, too, confront layered vulnerabilities in mental health. They often experience social exclusion and bullying, while institutional ableism results in systemic neglect and diagnostic overshadowing—where emotional distress is mistakenly attributed solely to their disability. Adolescents with intellectual or communication challenges may struggle to express mental health concerns, making them more susceptible to undetected depression or anxiety (Totsika et al., 2022). Moreover, mental health services frequently lack accessible infrastructure, from physical barriers to a shortage of trained professionals who understand disability-specific needs. The concept of intersectionality reminds us that these youths' experiences cannot be reduced to one factor; rather, their mental health outcomes are shaped by the interlocking effects of exclusion, invisibility, and systemic inequity. However, intersectionality is also a space of unique resilience and insight. Many adolescents navigating these overlapping challenges develop early emotional intelligence, adaptability, and advocacy skills, which can serve as powerful assets in coping and community-building. Addressing disparities requires not only targeted interventions but a structural commitment to inclusive,



trauma-informed, and culturally grounded care that recognizes and builds upon these strengths.

### 3.9 Comorbidity and Misdiagnosis

Adolescent mental health challenges frequently co-occur, with conditions such as depression, anxiety, ADHD, and eating disorders often overlapping in complex ways that challenge clear diagnosis. This comorbidity increases the risk of misdiagnosis or partial recognition of a young person's psychological distress—particularly when influenced by gender norms that shape symptom expression. For instance, ADHD in girls may manifest as inattentiveness rather than hyperactivity, leading to underdiagnosis, while depression in boys may appear as irritability or aggression, often misattributed to behavioural issues (Tighe, 2021). Such misinterpretations can delay effective intervention, especially when clinical evaluations focus on surface behaviours rather than underlying emotional patterns. These diagnostic gaps are compounded by siloed care systems and inadequate training in adolescent-specific psychopathology. Without holistic assessments that account for intersecting symptoms and contextual factors, adolescents are at risk of receiving fragmented or inappropriate care that fails to address the full scope of their needs (Peressotti, 2021).



### 3.10 Final Thoughts

Adolescence is a formative stage of life where mental health vulnerabilities often emerge. Young people in this age group are particularly at risk of developing a variety of psychological conditions, including depression, anxiety, ADHD, eating disorders, substance misuse, and behaviours related to self-harm or suicide. While each of these conditions has distinct features, they frequently overlap and can significantly disrupt an adolescent's learning, relationships, and emotional development. Depressive and anxiety symptoms in teens may appear as physical discomfort, irritability, and social withdrawal. ADHD often presents through persistent inattention, impulsivity, and difficulty managing emotions. Eating disorders are deeply connected to social and cultural body image pressures, and substance use frequently arises as a coping mechanism for emotional pain or peer influence. Self-harm and suicidal behaviours are especially serious among youth who have experienced trauma, family conflict, or rejection based on their identity.

Often, these issues do not occur in isolation and may be made worse by stressful environments or limited access to mental health support. Supporting adolescents requires a unified approach that brings together families, schools, healthcare providers, and communities. Therefore, early recognition, de-stigmatization, and collaborative interventions can mitigate risks and promote recovery.

## 4. Recognizing Early Signs and Symptoms

### 4.1 About Early Signs and Symptoms

Early recognition of mental health challenges in adolescence is critical to enabling timely intervention, reducing long-term psychological burden, and preventing the escalation of distress into chronic dysfunction or crisis. Yet, due to developmental, cultural, and systemic barriers, symptoms of emerging mental health problems in adolescents are frequently misinterpreted or overlooked (Kutcher et al., 2016; UNICEF, 2021).

In the adolescent population, early symptoms often present subtly and heterogeneously, influenced by age, gender, culture, neurodiversity, and context. Emotional changes may be dismissed as moodiness and social withdrawal may be mistaken for introversion. In addition to this, clinicians often distinguish between *intentional solitude* - which can be healthy - and *defensive withdrawal* - which signals distress. Furthermore, declining academic performance may be attributed to laziness. The ability to detect and correctly interpret these signs — both in oneself and others — is a foundational competency of mental health literacy (Jorm et al., 1997).

This section outlines the emotional, behavioural, cognitive, physical, and social indicators most commonly associated with the onset of adolescent mental health conditions, including depression, anxiety, trauma-related stress, and self-harming tendencies. It also explores the empirical and neuropsychological evidence behind these indicators, and the importance of culturally sensitive interpretation.

### 4.2 The Importance of Early Identification

Mental health problems that emerge during adolescence can persist into adulthood if left untreated, significantly impairing educational, occupational, and relational outcomes (Patton et al., 2016). Conversely, early intervention is associated with reduced symptom severity, improved functioning, and lower suicide risk (WHO, 2021).

Yet, global data indicates that only 20–25% of adolescents experiencing a diagnosable mental health disorder ever receive professional care (OECD, 2023). One primary reason is failure to recognize early signs — either by the adolescent themselves, or by parents, teachers, and peers. In a global survey conducted by UNICEF (2021), nearly 45% of adolescents reported that they would not talk to anyone about mental health concerns due to fear of stigma or being misunderstood.

Hence, there is an urgent need to normalize the monitoring of mental well-being with the same urgency as physical health. Schools, families, and youth environments must become spaces where emotional check-ins and mental health conversations are routine.

### 4.3 Common Early Signs and Symptoms

Below are five primary domains where early warning signs typically appear:

### 4.3.1. Emotional Changes

Emotional dysregulation is often the earliest and most noticeable sign of psychological difficulty, yet it is easily misattributed to normal adolescent mood swings. When emotions become intense, prolonged, or inconsistent with developmental expectations, further investigation is warranted. Chronic emotional distress is commonly associated with major depressive disorder and generalized anxiety disorder (CDC, 2023).

Examples
<i>Persistent sadness or hopelessness</i>
<i>Irritability or explosive anger</i>
<i>Excessive guilt or shame</i>
<i>Sudden emotional numbness</i>

### 4.3.2. Behavioural Changes

Shifts in behaviour — particularly those that involve withdrawal, risk-taking, or avoidance — are critical indicators of distress. Behavioural changes can be both active (e.g., aggression, defiance) or passive (e.g., apathy, disengagement). Such behaviours may reflect internalized distress or attempts to manage difficult emotions without healthy coping mechanisms (Ferrari et al., 2022).

Examples
<i>Avoidance of school or social events</i>
<i>Decline in personal hygiene or grooming</i>
<i>Increased irritability or aggression</i>
<i>Substance use or reckless behaviour</i>

### 4.3.3. Cognitive Difficulties

Changes in thought patterns, including rumination, poor concentration, or negative self-talk, can signify the onset of mental health issues, particularly in disorders such as depression, anxiety, and PTSD. Neuropsychological studies during COVID-19 found increased cognitive impairment in adolescents with emotional disorders, underlining the link between affective and executive functioning (Meherali et al., 2022).

Examples
<i>Trouble focusing or completing tasks</i>
<i>Self-critical or catastrophic thoughts</i>
<i>Forgetfulness and indecisiveness</i>
<i>Distorted body image or delusional thinking</i>

#### 4.3.4. Physical Symptoms

Somatic symptoms often precede or accompany mental health challenges. These are particularly prevalent in cultures where emotional expression is discouraged, or in younger adolescents with limited emotional vocabulary (Lee et al., 2022). Psychosomatic presentations require careful interpretation to distinguish between physical and emotional origins.

Examples
<i>Frequent headaches or stomach-aches</i>
<i>Fatigue and low energy</i>
<i>Changes in appetite or sleep</i>
<i>Unexplained aches or dizziness</i>

#### 4.3.5. Social Withdrawal and Relationship Strain

When adolescents begin to retreat from friendships or family interactions, or display hostility in previously supportive relationships, this often signals an underlying emotional struggle. This behaviour is especially linked to depression, trauma, and social anxiety, and may serve as both a symptom and a defence mechanism (UNICEF, 2021).

Examples
<i>Isolating in rooms for long periods</i>
<i>Reduced communication or eye contact</i>
<i>Disengagement from previously enjoyed activities</i>
<i>Avoidance of group settings or team activities</i>

### 4.4 Adolescent Self-Perception and Communication Barriers

Adolescents often have difficulty recognizing or articulating their own distress. Cultural expectations around independence and toughness — particularly among boys — further suppress help-seeking behaviours (Valkenburg et al., 2022). Early symptoms are often internalized, leading to underreporting. According to Zhou and Yu (2023), adolescents with low self-concept clarity during COVID-19 were less likely to acknowledge emotional problems, despite elevated stress levels.

To counteract this, mental health education must teach emotional vocabulary, emotional granularity, cognitive reflection, and peer recognition strategies. Emotional granularity — the ability to distinguish between specific feelings (e.g., anger vs. frustration, sadness vs. loneliness) — has been shown to improve emotional regulation and communication. To make this skill engaging, games like *InnerWorlds* can include “emotion card” quests, where players unlock words and visual cues for different emotions by completing story challenges, helping them build the language and awareness to express their feelings both in-game and in real life.

#### 4.5 Gender and Cultural Variability in Presentation

Research indicates that early signs of mental health challenges in adolescents often differ by gender. In boys, these signs commonly present as irritability, aggressive behaviour, and refusal to attend school (Ogundele, 2018). These externalizing symptoms may be misinterpreted as behavioural issues rather than emotional distress. In girls, early indicators are more likely to include anxiety, changes in eating habits, and somatic complaints such as frequent headaches or stomach-aches. These internalizing symptoms can be easily overlooked or attributed to physical illness rather than emerging mental health concerns (Liu et al., 2023).

Cultural background also affects symptom expression. In collectivist cultures, psychological distress may manifest more through bodily symptoms or family-centred narratives than individual emotional language (Rad et al., 2023). Thus, effective early detection requires culturally responsive frameworks and flexible diagnostic thresholds that respect variability in expression

#### 4.6 Role of Peers, Parents, and Schools

Given that adolescents often confide more in peers than adults, peer awareness is crucial. Youth must be trained to recognize:

- Sudden behavioural changes in friends
- Expressions of hopelessness or worthlessness
- Withdrawal from social circles or online platforms

Meanwhile, educators and parents should monitor attendance, academic performance, and relational behaviour, and create environments where emotional dialogue is encouraged.

Stakeholder	Suggestions on what to watch for
Parents	<i>Appetite, sleep, communication</i>
Teachers	<i>Focus, participation, discipline</i>
Friends	<i>Mood shifts, social behaviour, expressions of distress</i>

#### 4.7 The Danger of Misinterpretation and Delay

Misinterpreting early signs of mental health struggles in adolescents as mere rebellion, laziness, attention-seeking, or typical “hormonal” behaviour can have severe consequences, often delaying timely intervention and increasing the risk of escalation (Kobe, 2023). When adults—whether parents, educators, or caregivers—dismiss or minimize these signs, adolescents frequently internalize blame for their struggles, believing their distress is a personal flaw rather than a legitimate health concern.

This dynamic can intensify feelings of isolation and shame, placing young people at greater risk for self-harm, substance misuse, and suicidal ideation. For example, adolescents who

engaged in self-harm reported that their distress had previously been dismissed or misunderstood by adults, delaying their access to professional support (Waller et al., 2023).

Research underscores the urgency of early recognition, emphasizing that early intervention is critical. According to the National Institute of Mental Health (NIMH, 2022), adolescents who receive appropriate support within the first 12 months of symptom onset are 40% less likely to develop chronic or severe mental health conditions.

To mitigate these risks, a developmentally sensitive approach must replace punitive or dismissive responses. Early education and awareness should focus on understanding the context of behaviour—acknowledging that withdrawal, irritability, or academic decline may signal underlying depression, anxiety, or trauma rather than mere defiance. By training parents, teachers, and youth workers to recognize these indicators, we can reduce stigma, encourage help-seeking, and improve long-term outcomes for adolescents.



#### **4.8 Final Thoughts**

Early signs of mental health disorders in adolescence span emotional, behavioural, cognitive, physical, and social domains. Recognizing these signs — especially when they deviate from developmental norms or persist over time — is critical to timely support and prevention of long-term outcomes. Empowering adolescents, families, and educators with the tools to detect early symptoms fosters resilience, facilitates access to care, and nurtures environments where mental health is understood as an integral part of adolescent development.

The next section of this handbook will present preventative strategies and healthy habits, building on the knowledge gained here to support ongoing well-being.

## **5. Preventative Measures and Healthy Habits**

### **5.1 About Preventative Measures and Healthy Habits**

Adolescence represents a critical window for mental health prevention. During this stage, the brain is still developing, emotional regulation skills are forming, and lifelong behavioural patterns are being established. Preventive strategies aim not just to ward off mental illness, but to build self-awareness, inner resilience, and emotional wellbeing that can last into adulthood (Patton et al., 2016).

An effective prevention framework must be ecological, addressing individual behaviours like sleep and exercise, while also considering relational dynamics (e.g., family and peer relationships) and institutional systems (e.g., schools, digital environments, and community programs) that influence adolescent development (UNICEF, 2021).

In addition to behavioural interventions, young people benefit greatly from opportunities to reflect on life's meaning, their values, and their emotional experiences. This is where philosophy and life-skills education become critical. Teaching adolescents to engage with age-appropriate philosophical questions—such as "What matters most in life?", "What is a good



friend?", or "How can I cope with uncertainty?"—builds critical thinking, ethical reasoning, self-reflection, and coping capacity. These cognitive-emotional tools provide long-term protection against anxiety, low self-worth, and social stress (Păunescu et al., 2024).

This section synthesizes current global research and practical tools to highlight evidence-based lifestyle habits and reflective practices that improve adolescent mental health and prepare youth to meet life's challenges with insight, balance, and strength.

## 5.2 Lifestyle Behaviours That Protect Mental Health

Research consistently shows that adopting simple, consistent habits can significantly improve emotional wellbeing and reduce psychological distress. These habits enhance biological regulation, social connectedness, and cognitive-emotional balance. Adolescents who regularly engage in at least three of the habits below report lower distress scores and greater overall life satisfaction (Jiao, 2025).

Habit	Mental Health Benefits
<b>Physical activity</b>	Reduces anxiety and depression; improves sleep and cognitive flexibility
<b>Consistent sleep routines</b>	Enhances mood, memory, and emotional regulation
<b>Balanced nutrition</b>	Supports brain function, energy levels, and mood stability
<b>Social connectedness</b>	Buffers against loneliness; enhances identity and belonging
<b>Mindfulness practices</b>	Lowers stress response; strengthens attention and self-awareness
<b>Digital literacy and screen-time management</b>	Reduces overstimulation; improves sleep and social comparison control
<b>Philosophical reflection and life skills</b>	Fosters resilience, moral reasoning, self-worth, and coping with uncertainty

**Table 2.** Lifestyle behaviours and habits that protect Mental Health (inspired by Jiao, 2025).

Encouraging these proactive, daily behaviours—alongside deeper reflective practices—can create a foundation for lifelong mental wellness and personal growth. Each of the domains outlined above will now be explained in more detail to enhance understanding.

### 5.2.1 Sleep Hygiene

Adolescents often experience disrupted sleep due to biological changes, academic demands, and digital distractions. Sleep deprivation is associated with mood swings, reduced concentration, impulsivity, and increased risk for anxiety and depression (CDC, 2023).

### Recommended Duration:

- Ages 10–13: 9–11 hours/night
- Ages 14–17: 8–10 hours/night



### Effective Strategies:

- Keep consistent sleep and wake times (even on weekends)
- Avoid screens at least one hour before bed
- Use blue-light filters and nighttime settings
- Establish calming bedtime routines (e.g., reading or breathing exercises)
- Reduce caffeine intake in the evening



### Practical Tools:

- *SleepTown* (gamifies building a digital “town” by keeping phone off at night).
- *Headspace Sleepcasts* (guided relaxation).
- *Pzizz* (for guided naps and sleep sounds).
- CDC (2023). *Sleep Guidelines for Adolescents*. [Link](#)



**Keep in mind:** Gamified sleep tracking tools and school-based education programs have shown promise in improving adolescent sleep behaviour (Gkintoni et al., 2024).

## 5.2.2 Physical Activity

Exercise supports mental health through the release of endorphins and the improvement of executive function, sleep, and mood. It also promotes a sense of accomplishment and social inclusion (Pujari, 2024).



### Effective Strategies:

- Promote informal and enjoyable activities (e.g., dancing, cycling)
- Integrate emotional health into physical education
- Use apps and team-based step challenges to boost motivation
- Ensure access for all fitness levels and interests



### Practical Tools:

- *Nike Training Club* (free guided workouts).
- *WHO Active* (track steps and active minutes).

- WHO (2023). *Global Recommendations on Physical Activity for Health*. [WHO PDF](#)



**Keep in mind:** Moderate physical activity 3 times a week is associated with lower stress and clearer self-concept (Schneider et al., 2008).

### 5.2.3 Balanced Nutrition

Nutrition significantly affects adolescent mood, energy, and cognitive performance. Diets high in sugar, caffeine, and processed foods are linked to increased emotional volatility and fatigue (Magesh, 2022).

#### Key Nutrients:

- Omega-3s: Brain development, mood regulation
- Complex carbs: Stable energy and serotonin support
- Iron & B-vitamins: Reduce fatigue, enhance cognition
- Protein: Aids neurotransmitter production



#### Effective Strategies:

- Family meal planning workshops
- Interactive nutrition education in schools
- Gamified challenges that reward healthy food choices
- Emphasis on eating for energy, care, and balance—not restriction



#### Practical Tools:

- *Eatwell Guide App* (UK NHS) for balanced plate planning; *Cronometer* for tracking nutrients.
- **Interactive resources for schools/families:** *WHO Healthy Diet Fact Sheets* ([WHO Resource](#))



**Keep in mind:** A study of Swedish adolescents linked regular meals, fruits, and vegetables with fewer psychosomatic complaints and greater life satisfaction (Jonsson et al., 2024).

### 5.2.4 Social Connectedness

High-quality social relationships—friendships, family bonds, mentors—protect against mental distress and promote identity formation and self-esteem (Keaveney, (2024). Social relationships also build a sense of temporal coherence — helping adolescents understand their past, present, and future self-narrative.



### Effective Strategies:

- Peer mentoring and group activities
- Family storytelling and shared rituals
- Volunteering and service-learning projects



### Practical Tools:

- *Headspace for Teens* ([link](#)).
- *Smiling Mind* (free for youth and schools), <https://www.smilingmind.com.au/>
- *Insight Timer* (guided meditations).
- MindUp curriculum: <https://www.mindup.org>



**Keep in mind:** Teens who feel connected to their peers, family, and school community tend to have higher self-esteem, greater motivation, and better academic outcomes, even in the face of stress (Jose et al., 2012).

## 5.2.5 Screen-Time Regulation and Digital Literacy

Digital tools offer connection and learning—but overuse, especially late at night, can harm sleep, self-esteem, and emotional regulation (George, et al., 2023).



### Effective Strategies:

- Set digital curfews (no screens an hour before bed)
- Teach media literacy and help identify harmful content
- Use tracking tools for self-monitoring digital habits
- Promote a balance of offline and online activities



### Practical Tools:

- *RescueTime* (monitors app use).
- *Common Sense Media Curriculum* for educators, <https://www.commonsense.org/education>



**Keep in mind:** Helping adolescents reflect on their digital life builds autonomy and reduces screen-related stress.

### 5.2.6 Mindfulness and Self-Regulation

Mindfulness strengthens adolescents' capacity to handle stress, regulate emotions, and focus attention. Mindfulness could be explained as “mental cooldown” after high-emotion events in-game, reinforcing a feedback loop of rest and readiness. Structured programs like *MindUp* (<https://www.mindup.org/>) and *Headspace for Teens* (<https://www.headspace.com/teens>) show consistent results in reducing anxiety and improving well-being.



#### Effective Strategies:

- Short breathing exercises before school or tests
- Guided imagery or progressive muscle relaxation
- Journaling for self-reflection and gratitude



**Keep in mind:** Practicing mindfulness has been shown to reduce stress, anxiety, and depressive symptoms in adolescents, while also improving focus and emotional regulation (Zenner et al., 2014).

### 5.2.7 Philosophy and Coping Skills for Life

Philosophy offers adolescents tools to navigate emotional complexity, think critically, and make sense of their inner and outer worlds. Reflecting on questions like “*What makes life meaningful?*” or “*How do I know what’s right?*” supports the development of moral reasoning, identity, and psychological resilience (Dano, 2023). When paired with emotion regulation strategies, philosophical inquiry can become a grounding tool — for example, pausing to ask, “*When I feel overwhelmed, what do I truly value right now?*” can help adolescents shift focus, regulate emotions, and reconnect with personal priorities. This cognitive–affective integration is a key developmental task during adolescence, promoting self-understanding and balanced decision-making.



#### Effective Strategies:

- Engage in Reflective Journaling
- Practice Socratic Dialogue
- Explore Existential Questions in Safe Spaces
- Apply Stoic Techniques
- Use Ethical Reflection for Decision-Making



#### Practical Tools:

- *The Philosophy Toolkit* <https://www.plato-philosophy.org/philosophy-toolkit/>
- *The Philosophy Foundation* for lesson plans. <https://www.philosophy-foundation.org/>



**Keep in mind:** These capacities—when introduced through dialogue, storytelling, or philosophy-in-education programs—help adolescents not only cope but grow through life’s inevitable challenges (Lone & Burroughs, 2016).

### 5.3 School and Family-Based Interventions

Prevention is most effective when anchored in the environments where adolescents live and learn. Programs combining mental health literacy, skill-building, and family involvement have proven highly effective (Zimm, 2024). These principles form the foundation of the game’s structure, ensuring that it is both engaging and psychologically meaningful and lead to valuable outcomes.

Program Component	Outcomes
Mental health literacy	<i>Improved awareness and reduced stigma</i>
Skill-building modules	<i>Strengthened coping, reflection, and problem-solving</i>
Family engagement	<i>Stronger relationships and sustained behaviour change</i>



### 5.4 Final Thoughts

Mental health prevention during adolescence must go beyond symptom avoidance—it must cultivate agency, balance, and self-knowledge. Promoting good sleep, nutrition, physical activity, mindfulness, and social connection—while also nurturing critical reflection and life-coping skills—can create lifelong protective patterns.

When these habits are supported by families, schools, and digital tools, prevention becomes engaging, sustainable, and deeply transformative for youth. Equipping adolescents not just to survive but to understand and shape their lives is among the most impactful investments we can make.

## 6. Integration of the Digital Handbook with the Videogame

### 6.1 About Integration of the Digital Handbook with the Videogame

In the digital era, adolescents interact with technology not merely as a utility but as a primary site for socialization, identity exploration, and emotional processing. With global data showing that teens spend an average of 6–8 hours daily on digital media — much of it in gaming or social platforms (OECD, 2022) — there is increasing momentum toward harnessing digital tools for psychological education and intervention.

The *InnerWorlds* project represents an innovative response to this imperative, combining interactive gameplay with evidence-informed mental health content. This section describes



how the digital handbook integrates into and complements the *InnerWorlds* videogame, providing theoretical grounding, emotional context, and practical strategies that extend beyond the screen.

## 6.2 Why Digital Games for Mental Health?

Digital games are uniquely positioned to engage adolescents through immersive environments, nonlinear storytelling, and interactive decision-making (Khan, 2025). According to a survey conducted by OECD, over 80% of adolescents in Europe report daily video game use, with many citing emotional immersion and identity experimentation as key reasons for play (2022). While historically viewed with scepticism, research now highlights the therapeutic potential of game-based environments when deliberately designed (Kelly, 2022).

Therapeutic videogames such as *SPARX*, *Mightier*, and *ScrollQuest* have demonstrated efficacy in reducing depressive symptoms, enhancing emotional regulation, and promoting help-seeking behaviours (Choi et al., 2022). These platforms employ cognitive-behavioural mechanisms, such as exposure, self-reflection, and cognitive reappraisal — components increasingly validated in adolescent treatment settings.

## 6.3 Design Philosophy of *InnerWorlds*

The *InnerWorlds* videogame draws on these principles, embedding adolescent mental health content within narrative arcs, character development, and player choices. Rather than presenting psychoeducation as static or didactic, the videogame enables players to:

- Encounter challenges (e.g., peer pressure, mood dysregulation, rejection) through character-driven scenarios
- Practice coping strategies (e.g., deep breathing, boundary-setting, cognitive restructuring)
- Reflect on emotional triggers and decisions in a non-judgmental space
- Receive feedback and in-game support from AI companions or peer characters

This experiential learning model is grounded in social cognitive theory, which asserts that knowledge is internalized more effectively through observation, simulation, and feedback loops (Del Ser et al., 2025).

## 6.4 Role of the Handbook: Bridging Gameplay and Education

While immersive games promote affective engagement, the handbook serves as an anchoring resource — providing factual knowledge, real-life applications, and scientific validation for concepts encountered in the game (Palmquist et al., 2024). The relationship between the game and handbook is bidirectional. This dual-format model ensures that emotional and experiential learning is reinforced by structured cognitive frameworks — a combination proven to enhance retention and behaviour change.

## 6.5 Core Integration Mechanisms and Reflection Prompts

After key in-game events — such as making a difficult decision, helping (or avoiding) a peer in distress, or navigating rejection — players are invited to explore reflection prompts. These prompts are designed to appear after narrative tension peaks, when players are most engaged and reflective.

Example prompts include:

- *“What does it feel like when you shut down during stress?”*
- *“How do you know when you need support?”*
- *“Have you seen this behaviour in someone you care about?”*

To deepen engagement, the game offers the opportunity for the players to earn emotional experience points by completing these reflections and building a visible “Insight Level.” This feedback loop rewards emotional self-awareness and ties personal growth to the game’s progression, making reflection both meaningful and immersive.

These prompts are grounded in narrative therapy and emotional intelligence pedagogy, fostering self-concept clarity — a protective factor for adolescent resilience (Mulvenna et al., 2023).

## 6.6 Examples of Handbook–Game Integration

The digital handbook and the accompanying videogame are designed to work together to enhance learning and engagement around adolescent mental health. While the handbook provides structured knowledge, the videogame offers an interactive space where players can explore these concepts in action. By integrating key themes from the handbook into game-based scenarios, adolescents can experience realistic challenges—such as academic burnout—in a relatable and immersive format. Two examples will illustrate how integrated scenarios within the videogame can act as practical applications of the handbook’s content, helping to strengthen emotional skills and support decision-making through interactive gameplay.



### Scenario 1 (Low-Threshold – Building Relationships & Social Connectedness)

#### Game Sequence:

The player’s character (student) feels isolated after moving to a new neighbourhood and notices the world around them turning grey (symbolizing loneliness and lack of motivation). The AI mentor introduces a visual, simplified reflection on the importance of social connections—friendship, teamwork, and reaching out for support. To restore colour to the world, the character must complete mini-games such as:

- Starting a conversation with a peer during a group activity.

- Helping another character with a simple task to build trust.
- Joining a community event (e.g., a sports game or youth club) to gain "connection points" that recharge their energy and motivation.

### **Handbook Connection (Section 5):**

Section 5: Preventative Measures and Healthy Habits: In this section, we explore how social connectedness—building and maintaining supportive relationships—acts as a vital protective factor for adolescent well-being and the steps need to undertake in real life. These principles are integrated into the game, helping players see how positive social interactions can help them navigate and overcome challenges in each scenario. For example, actively engaging with peers, joining group activities, or seeking support from trusted friends and mentors can reduce feelings of isolation and buffer the effects of stress.

### **Game-based Coping Skill:**

Connection Builder Mini-Game – players practice initiating interactions, collaborating in group activities, and identifying support systems within the game environment.

### **Reflection Prompt in the videogame:**

*"Who are two people you could talk to or spend time with this week to feel more supported? How could connecting with them make challenges feel easier to manage?"*



## **Scenario 2 (High-Threshold – Academic Pressure & Behavioural Changes)**

### **Game Sequence:**

The player's character is a student in Brightspire Academy, where challenges like missed deadlines, procrastination, and mood changes begin to lower their "Focus Meter." The character faces branching choices: prioritize tasks, seek help, or fall into avoidance (e.g., binge-watching or social withdrawal). AI-driven prompts encourage self-reflection and independent decision-making, asking the player to identify causes (stress, poor time management, lack of motivation) and test personalized solutions like restructuring their schedule or implementing study breaks. Successfully making independent choices restores focus and unlocks new study tools.

### **Handbook Connection (Section 5):**

Section 5: Preventative Measures and Healthy Habits: In this section, we examine the key lifestyle habits adolescents can adopt to support their well-being. These habits will be integrated into the game, helping players understand how such choices can be applied to overcome the challenges presented in each scenario. For example, maintaining a regular sleep schedule (8–10 hours per night, as recommended by the American Academy of Paediatrics) helps regulate mood, improve concentration, enhance memory and prevents academic burnout.

### **Game-based Coping Skill:**

Self-Guided Reflection Module (interactive questions prompting root-cause analysis) + Focus Builder Mini-Game (players experiment with task scheduling, break timing, and stress reduction techniques).

### **Reflection Prompt:**

*"Think about the last time your studies felt overwhelming. What specific behavior (like procrastinating, skipping meals, or staying up late) contributed most to the stress? What's one step you could take this week to break that cycle?"*

## **6.7 Youth-Engaged Co-Design**

The *InnerWorlds* platform is built on a youth-participatory framework, in which adolescents will inform both game narrative and handbook structure. In multiple phases of co-design workshops, young people will express preferences for:

- Non-linear story progression
- "Choose your path" interactions with emotional consequences
- Representation of marginalized identities (e.g., LGBTQI+, neurodiverse)
- Relatable slang, humour, and character dialogue that mirrors real peer interaction

These insights will ensure that the handbook is not a detached academic document, but a relevant, adaptive, and inclusive tool aligned with adolescent lived experience.

## **6.8 Technical Considerations: Designing Emotionally Intelligent Gameplay for Adolescents**

Creating a digital mental health game for adolescents demands careful attention to ergonomics, emotional design, and psychological accessibility. From the user interface to the character behaviour, each element must support both engagement, psychological safety and breaks when needed. To achieve this balance, *InnerWorlds* integrates in-game "pause points" where players can step back, breathe, or access grounding tools (such as guided breathing exercises, calming music, or visual grounding prompts) before resuming gameplay. These mechanics not only maintain safety but also teach players how to regulate emotions in real time, reinforcing coping skills as part of the play experience. Furthermore, *InnerWorlds* considers the follow points:



### Ergonomic Design

Navigation should be intuitive and responsive. Font sizes, iconography, and interaction feedback should be tailored to adolescent cognitive load and reading preferences (Emma, 2024).



### Colour Psychology

Colours should be chosen deliberately to evoke calming or emotionally appropriate responses. Cool tones (blues, purples) are often associated with reflection and calmness, while warm tones (oranges, yellows) can be used to mark moments of social energy or optimism. Avoid overly saturated reds in anxious scenes, as they may elevate arousal or discomfort (Andersson, 2021).



### Emotional Expressiveness

Character design should reflect a range of nuanced emotions, not just extremes. Subtle facial expressions, posture changes, and vocal tone are key in helping adolescents recognize emotional states—both in others and themselves. Emotional realism in non-playable characters (NPCs) can model healthy social interactions, such as conflict resolution or emotional disclosure.



### Safe Narrative Spaces

Scenarios involving bullying, trauma, or self-doubt should include clear boundaries, debriefing content in the handbook, and optional opt-outs to respect players' emotional needs. To make this feature engaging rather than disruptive, the game can include an "Emotional Settings" menu, where players set their own comfort levels — for example, toggling narrative intensity, adjusting content difficulty, or selecting between "Supportive Mode" (gentler prompts and extra guidance) and "Exploration Mode" (deeper, more challenging story paths).



### Cultural Sensitivity and Inclusion

Characters should reflect diverse identities in terms of gender, race, disability, and neurodiversity. Inclusive narratives help marginalized players feel seen and supported, reinforcing the intersectional relevance of mental health care (Cabral, 2021).



### Audio and Haptic Feedback

Background music, ambient soundscapes, and subtle controller vibrations can enhance emotional immersion while supporting emotional regulation and resilience. Music can act as a regulatory tool and teaching mechanism, subtly helping players recognize and label emotional states without explicit dialogue. For example, a shift to a minor chord progression after a social rejection event can reflect sadness or tension, while a gradual build to harmonic resolution after problem-solving can signal relief and resilience. By linking the emotional tone of music to different psychological states, players build awareness of how emotions feel and shift over time.

**Figure 4.** Technical Considerations for InnerWorlds video game

## 6.9 Addressing Limitations and Ethical Considerations

While gamification can significantly enhance adolescent engagement with mental health content, it also brings with it unique ethical challenges. Serious psychological issues must not be oversimplified or misrepresented in a way that undermines their complexity or seriousness. To address this, the *InnerWorlds* project is designed with rigorous ethical oversight and clinical accountability to ensure that it supports, rather than harms, young users.

Universities included in the projects have received full ethical approval from the national ethics committee bodies in all participating countries, affirming that the research, development, and deployment of the game and handbook meet national and international standards for adolescent mental health work. All components of the project strictly adhere to the General Data Protection Regulation (GDPR), ensuring that users' personal data is never collected without explicit informed consent and is managed with the highest standards of privacy and security. Furthermore, we have developed and operationalized a comprehensive safeguarding protocol, risk management plan and informed consent materials tailored for both minors and guardians.

To prevent emotional overload or misinterpretation, the game includes clear disclaimers, visible from the opening screens, outlining the limitations of the tool and providing guidance on what users should do in moments of crisis. These are supported by narrative check-in points and visual distress indicators that allow players to self-regulate or opt out of intense sequences. The handbook reinforces these safeguards by offering practical debriefing tools and suggestions for adult facilitation, encouraging educators, therapists, or group leaders to guide young users through emotionally charged material. Recognizing that not all adolescents may benefit from screen-based interventions—particularly those with trauma triggers or neurodiverse sensitivities—during the data collection sessions with adolescents (part of the project), we will provide non-gamified alternatives that replicate the psychoeducational value of the game through printable exercises, stories, and role-play scenarios.

Importantly, all psychological content within both the game and the handbook has been reviewed and validated and are in alignment with the clinical best practices, including frameworks for trauma-informed care, adolescent cognitive development, and cultural adaptation. This ensures that characters, scenarios, and mental health literacy content are presented in a culturally sensitive and developmentally appropriate manner. To further ensure participant well-being, the project includes a risk management and monitoring protocol that continuously evaluates player feedback, emotional response data (where ethically permitted), and contextual risk factors. Through these combined efforts, *InnerWorlds* maintains a high standard of ethical integrity, ensuring the safety, inclusivity, and effectiveness of this innovative mental health literacy and educational tool for youth.



## 6.10 Final Thoughts

The integration of this handbook with the *InnerWorlds* game exemplifies an emerging paradigm in adolescent mental health: one where education, prevention, and engagement converge through interactive media. By grounding gameplay in scientific evidence, and supplementing emotion-based learning with cognitive reflection and practical tools, the handbook ensures that adolescents do not merely play — they learn, process, and grow.



As we transition into the final sections — key takeaways and a mental health dictionary — we aim to consolidate these insights into long-term habits, empowering adolescents to carry this knowledge into real life, both on and offline.

## 7. Conclusion and Key Takeaways

### 7.1 Revisiting the Adolescent Mental Health Landscape



Adolescence is a developmental period marked by intense neurobiological, emotional, and social transformations. While it offers significant opportunities for growth, it also constitutes a vulnerable window for the emergence of psychological disorders (Patton et al., 2016; WHO, 2021). As demonstrated in earlier sections of this handbook, adolescents are increasingly exposed to risk factors such as chronic stress, cyberbullying, performance pressure, body dissatisfaction, and systemic inequities. These factors intersect with developmental changes in identity formation, cognitive maturation, and social belonging, rendering mental health a dynamic and pressing concern.





Despite the recognized need for early identification and support, mental health literacy among adolescents remains limited (Kutcher et al., 2016). Prevailing stigma, misinformation, and under-resourced school systems contribute to a systemic failure to detect and respond to emerging signs of distress. According to UNICEF (2021), over 60% of adolescents with mental health needs do not receive any form of professional support, often due to fear of judgment or lack of access to culturally appropriate care.

The *InnerWorlds* mental health digital handbook was developed in response to this challenge. Its goal is to provide professionals and caregivers with the knowledge, insight, and tools necessary to engage with their mental health proactively and reflectively. By integrating clinical research, neurodevelopmental theory, and youth-centred pedagogy, this handbook aims to serve as both an educational guide and a companion to the *InnerWorlds* video game, which brings these lessons to life through experiential digital storytelling.

### 7.2 Key Conceptual Contributions

Across the preceding chapters, this handbook has explored the multifaceted nature of adolescent mental health. The following core concepts emerged as foundational pillars of understanding:

-  **Mental health is universal, dynamic, and influenced by both internal and external contexts.** It exists on a continuum, fluctuating in response to individual behaviour, relational experiences, and environmental conditions (WHO, 2021).
-  **Mental health literacy empowers early recognition, destigmatization, and proactive support-seeking.** Adolescents equipped with language, frameworks, and empathy are more likely to respond constructively to their own distress and that of others (Jorm et al., 1997).

-  **The most common adolescent challenges — including depression, anxiety, self-harm, eating disorders, and suicidality — are manageable and treatable.** However, recognition and intervention must begin early, with informed peers, parents, and educators positioned as allies.
-  **Early signs of distress are often misinterpreted.** Emotional, cognitive, social, and behavioural changes must be understood within a developmental and cultural context to avoid pathologization, overdiagnosis or minimization (Lee et al., 2022).
-  **Preventative strategies rooted in lifestyle, social connection, family stability, and skill-building reduce psychological risk.** Sleep hygiene, digital literacy, social belonging, and communication skills are all scientifically supported as protective habits (Marciano et al., 2022; Zhou & Yu, 2023).
-  **Digital tools, when intentionally designed, can deliver psychoeducation and self-analysis in engaging formats.** Videogames like *InnerWorlds* provide environments where adolescents can simulate, process, and reflect on complex emotional experiences in a safe and structured way (Ferrari et al., 2022).

### 7.3 The Role of Interactive Education

By combining a digital handbook with an educational videogame, this project represents a forward-thinking approach to adolescent mental health education. Unlike conventional manuals that simply convey information, this resource promotes active, experiential learning through its integration with the game. This multimodal format supports both independent exploration and guided discussions—enabling parents, educators, and mental health professionals to use the handbook and game together as tools for shared learning and meaningful dialogue.

### 7.4 Strengthening Adolescent Agency and Resilience

Central to the philosophy of this handbook is the belief that adolescents are not passive recipients of care but active participants in their own mental health development. The framework of Positive Youth Development (PYD) and strengths-based psychology underpins the entire handbook (Lerner et al., 2005), encouraging young people to identify their internal resources — including emotional insight, empathy, creative problem-solving, and persistence — and apply them in adaptive ways. This approach aligns with the construct of youth agency, which emphasizes that adolescents thrive when they are given meaningful choices and opportunities to act — both in real life and, as mirrored here, through thoughtful game design. Empowerment is not only a psychological principle but also a design strategy, where gameplay allows teens to practice decision-making, advocacy, and self-reflection in engaging, low-stakes environments.

By unlocking mental health concepts and embedding them within relatable, culturally responsive narratives, the *InnerWorlds* handbook support professionals and parents to understand and validate adolescents' experiences. Furthermore, the videogame equips adolescents with a Resilience Toolkit — a set of flexible tools they can practice, sharpen, and choose depending on the moment. These include:

- **Recognizing fluctuations in emotional states** and noticing early signs of stress or overwhelm.
- **Naming their needs and communicating assertively**, even in challenging situations.
- **Setting boundaries and practicing coping techniques** to protect their mental well-being.
- **Supporting peers while respecting their own emotional limits**, balancing empathy with self-care.
- **Understanding when and how to seek professional support** without stigma or hesitation.

By integrating these steps into the video game, resilience is presented as a set of skills that can be developed rather than fixed traits, empowering adolescents to see emotional growth as an active, ongoing process they can build through both real-life practice and the interactive experiences offered in *InnerWorlds*.

## 7.5 Addressing Barriers and Equity

While the content is research-informed, this handbook also acknowledges existing disparities. Structural and cultural barriers — such as racism, ableism, homophobia, migration trauma, and socioeconomic inequality — shape how mental health is experienced and addressed. Adolescents from minoritized or conflict-affected populations may express distress differently or face significant obstacles to accessing support (Lee et al., 2022; UNICEF, 2021).

Thus, the handbook has prioritized:

- Inclusive language
- Culturally competent terminology
- Non-pathologizing and trauma-informed frameworks
- Digital access equity (e.g., mobile-compatible handbook formats)

## 7.6 Recommendations for Educators and Implementers

Educators, youth workers, professionals and project partners using this handbook are encouraged to approach it as a modular, adaptable resource. For better use the following recommendations are offered:

1. **Incorporate handbook readings into curricula** on health, social-emotional learning (SEL), or digital citizenship.
2. **Use game-handbook integration points** to facilitate group discussions or writing prompts that deepen reflection.
3. **Train peer mentors or student leaders** to guide younger players in co-using the handbook and modelling help-seeking behaviours.

4. **Develop interdisciplinary projects** where students co-create content — such as art, poetry, or media — based on handbook themes.
5. **Track engagement and progress** using self-assessment tools and feedback forms embedded in both the game and handbook.



## 7.7 Final Thoughts

Mental health is not a test people pass or fail. It is a lifelong process of tuning into people's thoughts, feelings, needs, and relationships — and learning how to navigate them with care. The earlier we begin this journey, the more resilient, empathetic, and self-aware we become.

We would like to conclude this work with a message we hope stays with every reader:

*WE ARE NOT MEANT TO SEEK UNDERSTANDING IN ISOLATION; OUR INSIGHTS GROW DEEPER WHEN SHARED. WISDOM OFTEN BLOOMS THROUGH DIALOGUE — IN THE VOICES OF EXPERIENCE, THE INSPIRING STORIES WE HEAR, AND THE PEOPLE WE ENCOUNTER. THIS HANDBOOK INVITES YOU TO BETTER UNDERSTAND OUR SHARED NATURE BY WALKING ALONGSIDE OTHERS, REFLECTING TOGETHER, AND DISCOVERING THAT GROWTH IS MOST POWERFUL WHEN IT IS COLLECTIVE. THIS IDEA OF CONNECTION IS CALLED “PHILIA” (PROXIMITY) — THE DEEP FRIENDSHIP AND HARMONY ARISTOTLE DESCRIBED AS ESSENTIAL TO A GOOD LIFE, WHERE WE GROW NOT APART FROM OTHERS BUT THROUGH THEM, LEAVING NO GAPS BETWEEN US!*

## 8. Dictionary of Key Terms

### Adolescent Development

A phase of human growth that spans roughly from ages 10 to 19, marked by significant physical, emotional, and cognitive changes. This period is crucial for identity formation, emotional regulation, and the development of autonomy.

### Anxiety

A mental and emotional state characterized by excessive worry, fear, or nervousness. While occasional anxiety is a normal response to stress, anxiety disorders involve chronic and disproportionate fear responses that interfere with daily functioning.

### Behavioural Change

The process of altering patterns of behaviour, often as a result of education, reflection, motivation, or support. In mental health, behavioural change may refer to adopting healthier habits or discontinuing harmful ones.

### Cognitive Distortion

Irrational, biased, or exaggerated thought patterns that negatively affect one's perception of reality. Common distortions include catastrophizing, overgeneralization, and black-and-white thinking, often found in anxiety and depression.

**Comorbidity**

The co-occurrence of two or more mental health conditions in the same individual. For example, depression and anxiety often appear together, and recognizing comorbidity is important for accurate diagnosis and treatment.

**Coping Strategy**

A behaviour, thought, or action used to manage stress, conflict, or emotional discomfort. Adaptive coping strategies include seeking support or practicing mindfulness, while maladaptive ones might include avoidance or substance use.

**Cultural Competence**

The ability to understand, respect, and respond appropriately to cultural differences in attitudes, behaviours, and communication. Cultural competence is essential in mental health care and education, ensuring inclusivity and relevance.

**Depression**

A mood disorder marked by persistent sadness, fatigue, irritability, and loss of interest in previously enjoyable activities. It may affect sleep, appetite, and concentration and is one of the most common mental health challenges among adolescents.

**Digital Game-Based Intervention**

An evidence-informed digital game designed to improve emotional awareness, resilience, or psychological functioning. These interventions embed mental health education into immersive, interactive formats for learning and behaviour change.

**Digital Literacy**

The capacity to navigate, evaluate, and create information using digital technologies responsibly and critically. In mental health, digital literacy includes recognizing the emotional effects of online content and managing screen time.

**Early Intervention**

A strategy to identify and address emerging mental health symptoms as soon as they appear. Timely intervention can prevent symptom escalation and improve long-term outcomes in adolescence and adulthood.

**Emotional Regulation**

The ability to monitor, evaluate, and modulate one's emotional reactions in adaptive ways. Effective emotional regulation helps adolescents respond to stress, frustration, and social conflict without becoming overwhelmed.

**Help-Seeking Behaviour**

The act of seeking assistance from trusted sources — such as friends, family, or professionals — for emotional, psychological, or mental health concerns. Encouraging help-seeking is a key goal of mental health literacy.

**Intersectionality**

A framework for understanding how overlapping social identities—such as race, gender, class, sexuality, and ability—interact to shape individuals' experiences and opportunities. It highlights that people can face multiple, interconnected forms of discrimination or privilege simultaneously, rather than separately.

## **Mental Health**

A multidimensional state of psychological, emotional, and social well-being. It affects how individuals think, feel, and act, and is foundational to functioning, coping, and contributing meaningfully to community life.

## **Mental Health Literacy**

The knowledge and skills needed to understand, manage, and promote mental health. It includes recognizing signs of mental illness, knowing when and how to seek help, and reducing stigma associated with mental disorders.

## **Mindfulness**

A practice that involves intentionally focusing attention on the present moment with curiosity and without judgment. Mindfulness can enhance emotional regulation, reduce stress, and improve focus in adolescents.

## **Neuroplasticity**

The brain's ability to change and adapt in response to experience. During adolescence, neuroplasticity is particularly strong, offering opportunities for learning and recovery from emotional distress.

## **Psychoeducation**

An approach that provides individuals with scientifically grounded knowledge about mental health conditions, treatment options, and coping strategies. It empowers adolescents and families to make informed decisions.

## **Positive Youth Development**

A strengths-based approach to adolescent development that emphasizes personal assets such as competence, confidence, connection, character, and caring. PYD models promote mental health by building protective factors and community engagement.

## **Protective Factor**

Any attribute, behaviour, or condition that reduces the likelihood of mental illness or emotional distress. Examples include strong social support, positive school climate, and good sleep habits.

## **Reflection Prompt**

A guided question or statement designed to help adolescents explore their emotions, beliefs, or behaviours more deeply. Reflection prompts are used throughout the *InnerWorlds* game and handbook to promote self-analysis.

## **Resilience**

The psychological capacity to bounce back from adversity. Resilience enables adolescents to adapt to stress, overcome challenges, and continue functioning despite emotional or environmental difficulties.

## **Risk Factor**

Any variable that increases the likelihood of developing a mental health disorder. Common risk factors include trauma, social isolation, family conflict, and academic stress.

## **Self-Concept Clarity**

The extent to which individuals have a clearly defined and stable understanding of



themselves. High self-concept clarity is linked to better coping and lower rates of depression in adolescence.

### **Self-Harm**

The intentional infliction of physical injury on oneself, often as a way to cope with overwhelming emotional pain. It may include cutting, burning, or hitting oneself and is often misunderstood or hidden.

### **Sleep Hygiene**

A set of behavioural and environmental practices that support healthy sleep. For adolescents, maintaining sleep hygiene — including limiting screen time before bed — is critical to emotional regulation and cognitive function.

### **Social Withdrawal**

The reduction or cessation of social interactions, often due to emotional distress, depression, or anxiety. It is a common early warning sign of mental health problems in adolescence.

### **Stigma**


Negative stereotypes, judgments, or discrimination directed toward people with mental health challenges. Stigma can prevent adolescents from seeking help and lead to isolation or shame.

### **Suicidal Ideation**

Thoughts about ending one's life, ranging from fleeting ideas to specific planning. It is a serious indicator of distress and requires immediate attention from trusted adults or professionals.

### **Trauma**

A deeply disturbing or distressing experience that overwhelms an individual's ability to cope. Trauma may result from abuse, neglect, violence, or disaster and can have long-lasting psychological effects.

 Additional terms and definitions can be explored through the American Psychological Association's Mental Health Dictionary, available at: <https://dictionary.apa.org/mental-health>.

## **References**

- Aggarwal, N. K. (2024). The Cultural Formulation Interview in Case Formulations: A State-of-the-Science Review. *Behavior Therapy*.
- Aggarwal, P., Raval, V. V., Chari, U., Raman, V., Kadnur Sreenivas, K., Krishnamurthy, S., & Visweswariah, A. M. (2021). Clinicians' perspectives on diagnostic markers for

depression among adolescents in India: An embedded mixed-methods study. *Culture, Medicine, and Psychiatry*, 45, 163-192.

- Ahmad, S. (2023). *Kaplan and Sadock's pocket handbook of psychiatric drug treatment*. Lippincott Williams & Wilkins.
- American Psychiatric Association. (2024). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.; DSM-5-TR). American Psychiatric Publishing.
- Andersson, F. (2021). *Color and games. The effect of colors in the video game multimodality* (Master's thesis, The University of Bergen).
- Baams, L. (2018). Disparities for LGBTQ+ and gender nonconforming adolescents: Mental health risk factors and protective resources. *Pediatrics*, 141(5), e20173004. <https://doi.org/10.1542/peds.2017-3004>
- Blakemore, S. J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing?. *Annual review of psychology*, 65(1), 187-207.
- Bouza, E., Arango, C., Moreno, C., Gracia, D., Martín, M., Pérez, V., ... & Gil-Monte, P. R. (2023). Impact of the COVID-19 pandemic on the mental health of the general population and health care workers. *Revista Española de Quimioterapia*, 36(2), 125.
- Brand, C., Fochesatto, C. F., Gaya, A. R., Schuch, F. B., & López-Gil, J. F. (2024). Scrolling through adolescence: unveiling the relationship of the use of social networks and its addictive behavior with psychosocial health. *Child and Adolescent Psychiatry and Mental Health*, 18(1), 107.
- Cabrales, E. (2021). Normalizing the Representation of Marginalized Communities (the Physically and/or Mentally Disabled LGBTQ+) Ethnic Minorities and People of Colour in Video Games. *Diss. Auckland University of Technology*.
- Casey, B. J., Getz, S., & Galvan, A. (2008). The adolescent brain. *Developmental review*, 28(1), 62-77.
- CDC. (2023). Youth Risk Behavior Survey. <https://www.cdc.gov/healthyyouth/data/yrbs/index.htm>
- Choi, E., Yoon, E. H., & Park, M. H. (2022). Game-based digital therapeutics for children and adolescents: their therapeutic effects on mental health problems, the sustainability of the therapeutic effects and the transfer of cognitive functions. *Frontiers in Psychiatry*, 13, 986687.
- Christiansen, H., Hirsch, O., Albrecht, B., & Chavanon, M. L. (2019). Attention-deficit/hyperactivity disorder (ADHD) and emotion regulation over the life span. *Current psychiatry reports*, 21, 1-11.
- Dane, A., & Bhatia, K. (2023). The social media diet: A scoping review to investigate the association between social media, body image and eating disorders amongst young people. *PLOS Global Public Health*, 3(3), e0001091.
- Dano, G. C. (2023). Socratic Wisdom for the Modern Youth: Relevance and Application in Contemporary Society. *Journal of Studies in Social Sciences*, 22.

- De Girolamo, G., Dagani, J., Purcell, R., Cocchi, A., & McGorry, P. D. (2012). Age of onset of mental disorders and use of mental health services: needs, opportunities and obstacles. *Epidemiology and psychiatric sciences*, 21(1), 47-57.
- Del Ser, J., Lobo, J. L., Müller, H., & Holzinger, A. (2025). World Models in Artificial Intelligence: Sensing, Learning, and Reasoning Like a Child. *arXiv preprint arXiv:2503.15168*.
- Dulcan, M. K. (Ed.). (2021). *Dulcan's textbook of child and adolescent psychiatry*. American Psychiatric Pub.
- Ellis, B. H., Winer, J. P., Murray, K., & Barrett, C. (2019). Understanding the mental health of refugees: Trauma, stress, and the cultural context. *The Massachusetts General Hospital textbook on diversity and cultural sensitivity in mental health*, 253-273.
- Emma, L. (2024). User-centered design to enhance accessibility and usability in digital systems.
- Ferrari, M., Sabetti, J., McIlwaine, S. V., Fazeli, S., Sadati, S. H., Shah, J. L., ... & Iyer, S. N. (2022). Gaming my way to recovery: a systematic scoping review of digital game interventions for young people's mental health treatment and promotion. *Frontiers in digital health*, 4, 814248.
- Franchini, L., Barbini, B., Zanardi, R., Fregna, L., Martini, F., Manfredi, E., ... & Colombo, C. (2022). Mood disorders. In *Fundamentals of Psychiatry for Health Care Professionals* (pp. 49-84). Cham: Springer International Publishing.
- George, A. S., George, A. H., Baskar, T., & Shahul, A. (2023). Screens steal time: How excessive screen use impacts the lives of young people. *Partners Universal Innovative Research Publication*, 1(2), 157-177.
- Gkintoni, E., Vantaraki, F., Skoulidi, C., Anastassopoulos, P., & Vantarakis, A. (2024). Promoting physical and mental health among children and adolescents via gamification—A conceptual systematic review. *Behavioral Sciences*, 14(2), 102.
- Hawton, K., Saunders, K. E., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *The lancet*, 379(9834), 2373-2382.
- Jiao, Y. (2025). Psychological & Mental Health Education. *Psychological Reports*, 128(1), 12-227.
- Jonsson, K. R., Bailey, C. K., Corell, M., Löfstedt, P., & Adjei, N. K. (2024). Associations between dietary behaviours and the mental and physical well-being of Swedish adolescents. *Child and Adolescent Psychiatry and Mental Health*, 18(1), 43.
- Jorm, A. F. (2012). Mental health literacy. *American psychologist*, 67(3), 231-243.
- Jose, P. E., Ryan, N., & Pryor, J. (2012). Does social connectedness promote a greater sense of well-being in adolescence over time?. *Journal of research on adolescence*, 22(2), 235-251.
- Keaveney, E. (2024). *Cultivating Connections: Understanding the Impact of Mentors on Young Adult's Flourishing* (Doctoral dissertation, ResearchSpace@ Auckland).

- Kelly, M. (2022). Playing with Perspective: Examining the Role of Ethos, Empathy, and Environmental Storytelling in Video Game-Based Writing Projects. *College English*, 85(2), 133-154.
- Khan, B. (2025). Interactive Digital Narrative in Video Gaming: A multimodal investigation.
- Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., ... & Rahman, A. (2011). Child and adolescent mental health worldwide: evidence for action. *The lancet*, 378(9801), 1515-1525.
- Kobe, R. (2023). Mental health and wellbeing. Richmond Kobe.
- Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. *The Canadian Journal of Psychiatry*, 61(3), 154-158.
- Lerner, R. M. (2005). Promoting positive youth development: Theoretical and empirical bases. In *White paper prepared for the workshop on the science of adolescent health and development, national research council/institute of medicine. Washington, DC: National Academies of Science* (pp. 1-90).
- Liu, K., Thompson, R. C., Watson, J., Montena, A. L., & Warren, S. L. (2023). Developmental trajectories of internalizing and externalizing symptoms in youth and associated gender differences: a directed network perspective. *Research on child and adolescent psychopathology*, 51(11), 1627-1639.
- Lone, J. M., & Burroughs, M. D. (2016). Philosophy in education: Questioning and dialogue in schools. Rowman & Littlefield.
- López, P. V., Pedreira, P. A., Martínez-Sánchez, L., Cruz, J. M. G., Luna, C. B., Herrero, F. N., ... & Suárez, A. D. (2023). Self-injury and suicidal behavior in children and youth population: Learning from the pandemic. *Anales de Pediatría (English Edition)*, 98(3), 204-212.
- Magesh, P. (2022). Food And Mood-The Interplay Between Nutrition, Mood, Brain, And Behavior. *IJO-International Journal of Social Science and Humanities Research* (ISSN 2811-2466), 5(12), 01-12.
- Mansour, N., & Al Sagheer, D. (2024). ADOLESCENCE AGE GROUP.
- Marciano, L., Ostroumova, M., Schulz, P. J., & Camerini, A. L. (2022). Digital media use and adolescents' mental health during the COVID-19 pandemic: a systematic review and meta-analysis. *Frontiers in public health*, 9, 793868.
- Micheltore, L., & Hindley, P. (2012). Help-seeking for suicidal thoughts and self-harm in young people: A systematic review. *Suicide and Life-Threatening Behavior*, 42(5), 507-524.
- Moses, S., & Holmes, D. (2022). What mental illness means in different cultures: perceptions of mental health among refugees from various countries of origin. *Mental Health: Global Challenges*, 5(2), 6-16.
- Mulvenna, M., O'Neill, T., Ramsey, C., O'Neill, S., Bond, R. R., & Ennis, E. (2023, September). Our Generation app: Co-designing a digital intervention engendering

resilience and self-awareness in children and young people. In *European Conference on Mental Health*.

- Murphy, M. A. (2014). *How Social Support and Sexuality-Based Expectations Shape Former Students' Perspectives on Being Out in High School*. State University of New York at Buffalo.
- Newcorn, J. H., Krone, B., Coghill, D., & Halperin, J. M. (2023). Neurodevelopmental disorders: attention-deficit/hyperactivity disorder. *Tasman's Psychiatry*, 1-40.
- OECD, (2023) Measuring Population Mental Health [https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/03/measuring-population-mental-health\\_154eb40b/5171eef8-en.pdf](https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/03/measuring-population-mental-health_154eb40b/5171eef8-en.pdf)
- OECD. (2018). Children and young people's mental health in the digital age, [https://www.oecd.org/en/publications/children-and-young-people-s-mental-health-in-the-digital-age\\_488b25e0-en.html](https://www.oecd.org/en/publications/children-and-young-people-s-mental-health-in-the-digital-age_488b25e0-en.html)
- Ogundele, M. O. (2018). Behavioural and emotional disorders in childhood: A brief overview for paediatricians. *World journal of clinical pediatrics*, 7(1), 9.
- Palmquist, A., Jedel, I., & Goethe, O. (2024). Attainable Game-Based-Artifacts—A Introspection of the Intersection of Fun and Function. In *Universal Design in Video Games: Active Participation Through Accessible Play* (pp. 207-244). Cham: Springer International Publishing.
- Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., ... & Viner, R. M. (2016). Our future: a Lancet commission on adolescent health and wellbeing. *The Lancet*, 387(10036), 2423-2478.
- Păunescu, C., & McDonnell-Naughton, M. (2024). Education for future skills development: Cognitive, collaborative and ethical skills. In *Creating the University of the Future: A Global View on Future Skills and Future Higher Education* (pp. 241-260). Wiesbaden: Springer Fachmedien Wiesbaden.
- Peressotti, M. L. (2021). A Systematic Review of Diagnosing Adolescent Personality Disorders: Developmental Considerations, Barriers, and Implications. *Medaille College*.
- Pujari, V. (2024). Moving to Improve Mental Health-The Role of Exercise in Cognitive Function: A Narrative Review. *Journal of Pharmacy and Bioallied Sciences*, 16(Suppl 1), S26-S30.
- Rad, M. M., Nasiri, E., & A'laei, H. (2023). Cultural and Familial Factors Affecting Mental Health in Immigrant Communities. *Mental Health and Lifestyle Medicine Journal*, 1(1), 12-23.
- Rc, K. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey replication. *Arch Gen Psychiatry*, 62, 593-602.
- Rodgers, R. F. (2016). The relationship between body image concerns, eating disorders and internet use, part II: An integrated theoretical model. *Adolescent Research Review*, 1, 121-137.
- Ruscio, A. M., Rassaby, M., Stein, M. B., Stein, D. J., Aguilar-Gaxiola, S., Al-Hamzawi, A., ... & Kessler, R. C. (2024). The case for eliminating excessive worry as a requirement

for generalized anxiety disorder: a cross-national investigation. *Psychological medicine*, 54(12), 3447-3458.

- Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezech, A. C., & Patton, G. C. (2012). Adolescence: a foundation for future health. *The lancet*, 379(9826), 1630-1640.
- Schneider, M., Dunton, G. F., & Cooper, D. M. (2008). Physical activity and physical self-concept among sedentary adolescent females: An intervention study. *Psychology of sport and exercise*, 9(1), 1-14.
- Silk, J. S., Tan, P. Z., Ladouceur, C. D., Meller, S., Siegle, G. J., McMakin, D. L., ... & Ryan, N. D. (2018). A randomized clinical trial comparing individual cognitive behavioral therapy and child-centered therapy for child anxiety disorders. *Journal of Clinical Child & Adolescent Psychology*, 47(4), 542-554.
- Stover, P. J., Field, M. S., Andermann, M. L., Bailey, R. L., Batterham, R. L., Cauffman, E., ... & Angelin, B. (2023). Neurobiology of eating behavior, nutrition, and health. *Journal of Internal Medicine*, 294(5), 582-604.
- Tighe, A. (2021). A Neglected and Untreated Population: Addressing the Systemic Underdiagnosis of Females with ADHD.
- Totsika, V., Liew, A., Absoud, M., Adnams, C., & Emerson, E. (2022). Mental health problems in children with intellectual disability. *The Lancet Child & Adolescent Health*, 6(6), 432-444.
- Tuijnman, A., Granic, I., Whitkin, J., & Engels, R. C. (2017). Developing and testing scrollquest: a video game targeting rejection sensitivity in adolescents. In *Extended Abstracts Publication of the Annual Symposium on Computer-Human Interaction in Play* (pp. 213-221).
- UNICEF. (2021). *The State of the World's Children 2021: On My Mind – Promoting, protecting and caring for children's mental health*.  
<https://www.unicef.org/reports/state-worlds-children-2021>
- Valkenburg, P. M., Meier, A., & Beyens, I. (2022). Social media use and its impact on adolescent mental health: An umbrella review of the evidence. *Current opinion in psychology*, 44, 58-68.
- Waller, G., Newbury-Birch, D., Simpson, D., Armstrong, E., James, B., Chapman, L., ... & Ferguson, J. (2023). The barriers and facilitators to the reporting and recording of self-harm in young people aged 18 and under: a systematic review. *BMC public health*, 23(1), 158.
- Wei, Y., Hayden, J. A., Kutcher, S., Zygmunt, A., & McGrath, P. (2013). The effectiveness of school mental health literacy programs to address knowledge, attitudes and help seeking among youth. *Early intervention in psychiatry*, 7(2), 109-121.
- Wolf, K., & Schmitz, J. (2024). Scoping review: longitudinal effects of the COVID-19 pandemic on child and adolescent mental health. *European child & adolescent psychiatry*, 33(5), 1257-1312.



- World Health Organization. (2024). *Adolescent mental health*.  
<https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>
- Yang, Z., Luo, Y., Chen, F., Qi, M., Luo, R., Li, Y., & Wang, Y. (2024). Environmental unpredictability and self-concept clarity in Chinese adolescents during the COVID-19 pandemic: the mediating role of depressive symptoms. *Current Psychology*, 43(29), 24159-24167.
- Yeo, S. C., Jos, A. M., Erwin, C., Lee, S. M., Lee, X. K., Lo, J. C., ... & Gooley, J. J. (2019). Associations of sleep duration on school nights with self-rated health, overweight, and depression symptoms in adolescents: problems and possible solutions. *Sleep medicine*, 60, 96-108.
- Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Frontiers in psychology*, 5, 603.
- Zimm, T. J. (2024). Family and adolescent balanced education and leisure occupations (FABELO): a training program for therapeutic group interventions with adolescents and parents (Doctoral dissertation, Boston University).
- Zinbarg, R. E., Anand, D., Lee, J. K., Kendall, A. D., Nuñez, M., Blaney, P. H., ... & Millon, T. (2015). Generalized anxiety disorder, panic disorder, social anxiety disorder, and specific phobias. *Oxford textbook of psychopathology*, 133-162.

## Annexes

### Figures

- **Figure 1.** *Mental health continuum in adolescents.*
- **Figure 2.** *Positive Youth Development (Lerner et al., 2005).*
- **Figure 3.** *The five foundational concepts as critical to any youth-centred mental health education program.*
- **Figure 4.** *Technical Considerations for InnerWorlds video game*

### **Tables**

- **Table.1** *Adolescent Mental Health Disorder Prevalence (2023–2025). (The table summarizes the recent prevalence, peak ages, and risk factors for major adolescent mental health disorders, based on 2023–2025 research findings including textbooks of Ahmad, (2023) and Dulcan, (2021).*
- **Table 2.** *Lifestyle behaviours and habits that protect Mental Health (Jiao, 2025).*