Scroll to Cope – The Relationship Between Problematic Social Media Use and Emotion Regulation

by

Tina (QiTong) Li

A capstone submitted in partial fulfillment

of the requirements for the Degree of

Master of Counselling (MC)

City University in Canada

Vancouver, BC

June 2024

APPROVED BY

Maria Stella, Ph.D., R.C.C., Capstone Advisor, Master of Counselling Faculty

Bruce Hardy, Ph.D., Faculty Reader, Master of Counselling Faculty

School of Health and Social Sciences

Abstract

As social media becomes increasingly embedded in our daily lives, it raises critical questions about its impact on mental health and well-being, particularly among adolescents and young adults who the most active users are. This capstone explores the psychological, physiological, and neurological effects of prolonged social media use, emphasizing the appeal and risks of short-form content and the relationship between problematic social media use and emotion regulation. By examining the neurobiological processes and utilizing the polyvagal theory framework, the paper elucidates how chronic social media use affects emotion regulation abilities. The capstone also reviews current interventions, focusing on acceptance and commitment therapy (ACT), mindfulness, and cognitive behavioural therapy (CBT), proposing tangible strategies to improve emotion regulation and alleviate symptoms of problematic social media use. Through comprehensive research, this study aims to increase awareness of social media's impact and provide actionable strategies for both individuals and mental health professionals to foster adaptive emotion regulation skills and reduce the negative effects of social media on mental health.

Keywords: problematic social media use, emotion regulation, polyvagal theory, acceptance and commitment therapy, somatic therapy

Acknowledgements

I would like to acknowledge my family. My mom, the queen of emotion regulation, taught me how to focus on the light during hard times. I would like to acknowledge my dad, who has shown me how to practice perseverance and courage. My sister, I'm constantly amazed by your creativity, humour, and wit. You all are my source of strength and comfort. Thank you for your love, support, and faith in me.

I would also like to acknowledge my cohort, BC24A, a group of kind, funny, loving, incredibly talented humans who inspired me to grow in many ways. You showed me how to be more vulnerable and more caring, how to think more critically, and how to be a better member of a community. Collectively you nourished my soul and my belly (shoutout to Michelle's baking!). I can't wait to witness you flourish in this field and work together again in the future.

I would also like to acknowledge my supervisor, Maria, who has a wealth of knowledge and has been so gracious to me. You've helped me build the foundation that allowed this capstone to come together. I hold deep gratitude for our Zoom meetings, which helped me grow both professionally and personally.

Last but not least, I would like to acknowledge my beloved friends and supporters along the way: GL, YYY, PF, RA, MS, JZ, DZ, XZY, and DM. Thank you for believing in me when I was struggling to, thank you for walking alongside me, thank you for your impeccable humour, and thank you for pushing me when I was procrastinating. I'm lucky to have you in my life.

Table of Contents

Chapter One: Introduction

In this modern society dominated by digital connectivity, the pervasive influence of social media has sparked growing concerns regarding its impact on mental health and well-being. This capstone explores the intricate relationship between problematic social media use and emotion regulation, delving into the nuanced interplay between excessive social media use and the ability to effectively regulate emotions. By examining the underlying factors that contribute to problematic social media use and its implications for emotion regulation, this capstone aims to shed light on the complex dynamics at play in digital environments. Furthermore, this capstone seeks to curate evidence-based strategies and interventions for addressing problematic social media use and enhancing emotion regulation skills, offering practical insights for promoting healthier digital habits and psychological resilience in an increasingly connected world.

Prevalence and Statistics

The extent to which social media is interwoven in our lives is astonishing. A comprehensive examination conducted by the Kepios team reveals a staggering global social media user base of 5.04 billion people as of January 2024, representing approximately 62.3% of the total global population (We Are Social & Meltwater, 2023). This remarkable figure underscores the continuous expansion of social media usage, with 266 million new users joining these platforms within the past 12 months alone, which reflects an annual growth rate of 5.6% (We Are Social & Meltwater, 2023). Furthermore, insights from GlobalWebIndex (GWI) shed light on the active engagement of social media users, with the typical user dedicating an average of 2 hours and 23 minutes daily to social media use (We Are Social & Meltwater, 2023). Considering the average sleep duration of 7 to 8 hours per day, this finding suggests that

individuals allocate roughly 15% of their waking hours to social media interaction (We Are Social & Meltwater, 2023). Globally, specific regions exhibit noteworthy trends in social media usage. For instance, in Taiwan, the social media user base exceeds 21.4 million individuals, equivalent to 89.4% of the total population, surpassing global statistics recorded in 2022 (Huang et al., 2023).

For adolescents the United Kingdom serves as a poignant example of the pervasive influence of digital media on adolescents, with data from Ofcom, the UK's communications regulator, indicating that 95% of individuals aged 16 to 24 own smartphones, checking them on average every 12 minutes (Korte, 2022). Moreover, estimates suggest that 20% of all young adults spend more than 40 hours per week online, highlighting the increasing significance of digital media in the present days (Korte, 2022). Furthermore, social media platforms have witnessed substantial user engagement, as evidenced by the considerable daily active user counts across various platforms (Korte, 2022). For instance, as of March 2016, Facebook boasted more than 1.09 billion daily active users, while Instagram recorded over 400 million monthly active users (Korte, 2022). Gender disparities are also evident, with a higher proportion of women utilizing social media compared to men, with women spending an average of 46 minutes per day on social media, compared to 31 minutes for men (Korte, 2022; We Are Social & Meltwater, 2023). In regard to the popularity of different social media platforms, the global top five are Instagram (16.5%), WhatsApp (16.1%), Facebook (12.8%), WeChat (12.8%), and TikTok (7.4%) (We Are Social & Meltwater, 2023). More young adults aged 16 to 34 choose Instagram as their preferred social media platform, whereas more adults aged 35 to 64 choose WhatsApp as their preferred social media platform (We Are Social & Meltwater, 2023).

The primary motivation behind social media usage varies across age groups, with connecting with family and friends emerging as the leading reason (We Are Social & Meltwater, 2023). However, for adolescents and young adults aged 16-30, the second most prevalent reason is to fill up spare time (We Are Social & Meltwater, 2023). Social media has ingrained itself into daily routines, becoming an irreplaceable component of modern life (We Are Social & Meltwater, 2023). Among the 45-64 age group, the second most common reason for social media engagement is to read news stories (We Are Social & Meltwater, 2023).

Purpose Statement

As social media becomes increasingly embedded in our daily lives, it raises important questions about its impact on mental health and well-being. The extensive time spent on these platforms invites scrutiny into whether prolonged social media use has psychological, physiological, and neurological effects. Psychologically, there are concerns about the potential for social media to contribute to issues such as anxiety, depression, and decreased self-esteem, particularly among younger users who are highly active online (Gioia et al., 2021; Sha & Dong, 2021). Physiologically, the effects of prolonged screen time on sleep patterns, eye health, and overall physical activity levels are areas of growing research interest (Skoblina et al., 2020). Neurologically, scientists are investigating how constant exposure to social media might influence brain development and cognitive functions, especially given the average user's significant daily engagement (Xie et al., 2023). Understanding these impacts is crucial as social media continues to shape our interactions, behaviours, and perceptions in unprecedented ways

This capstone aims to first examine the seemingly invisible and longitudinal effects of problematic social media use as well as short-form content. In addition, this paper will go into detail on the appeal of short-form content, the risk factors of problematic social media use and

the impact of chronic social media use on the neurobiological processes. Furthermore, this paper will describe the connection between problematic social media use and the abilities of emotion regulation. This capstone will then use the framework of polyvagal theory to explain the process of emotion regulation. Lastly, this capstone will introduce tangible strategies to improve emotion regulation skills and alleviate problematic social media use symptoms that are for both self-use as well as for professionals in the mental health field, more specifically, from an ACT, mindfulness, and CBT perspective. As for the target population, this capstone will focus on research with adolescents and young adults, as this is the population most impacted by social media use (Sacks, 2003). The consensus of the age range for adolescents and young adults is around 10 years old to 25 years old (Sacks, 2003). The research questions for this capstone are: What is the appeal of social media among adolescents and young adults? What is the relationship between problematic social media use and emotion regulation skills? What are the current interventions for adolescents and young adults for emotion regulation and problematic social media use?

Contribution to the Field

This capstone contributes to the field by emphasizing the pervasiveness of social media in modern society. By challenging the lack of regard associated with problematic social media use and recognizing its prevalence as a natural consequence of widespread digital connectivity, this capstone aims to foster a more empathetic and accepting perspective towards individuals struggling with excessive social media use. Furthermore, by delving into the factors contributing to problematic social media use, including societal norms and individual vulnerabilities, this capstone aims to offer a more comprehensive understanding of the broader context behind this issue. Additionally, this capstone initiates a crucial conversation about the development of a

healthy relationship with social media, emphasizing the need for balanced and mindful engagement with digital platforms. By introducing evidence-based strategies tailored for mental health professionals and individuals seeking to alleviate problematic social media use symptoms, this capstone equips readers with practical tools. Through a holistic approach and actionable insights, this capstone paves the way for understanding problematic social media use, promoting psychological well-being, and fostering digital resilience in an increasingly interconnected world.

Reflectivity and Positionality Statement

In this section, I would like first to acknowledge my position as a Chinese Canadian, cis-gender, heterosexual, and able-bodied female. I am also a 1.5-generation immigrant, having moved to Canada with my family when I was 12 years old. I was born on the tail of the millennial generation and the beginning of Generation Z; I experienced a childhood where I witnessed smartphones and social media being slowly integrated into my life.

One pivotal moment of the introduction of social media into my life was when I was registering for my Facebook profile. I remember the excitement and urgency as I entered my information into the website. I lied that I was a year older so I could be eligible (for legal purposes, this is a joke). I remember loving the novelty of connecting with my friends even after school, posting nonsense inside jokes on each other's Facebook wall. I downloaded Instagram shortly after, and as it gained popularity, I immersed myself in exercising my creative freedom in my online identity. Fast forward to the pandemic, TikTok gained popularity, Instagram reels was introduced, and YouTube shorts followed immediately after.

From my observation, social media is so much more than a place to stay connected with friends and family. Social media is also a search engine for information and a place for

entertainment. Especially during the pandemic, I find myself choosing my phone over other hobbies I was “supposed” to be exploring. I observed the same things with my parents, who were glued to WeChat, the most used Chinese social media application. The entertainment value of social media applications seemed to explain our obsession with it. At the same time, I questioned if there were more reasons that I attached myself to my phone as a body part. This collection of experiences motivated me to dive into the research behind problematic social media use.

Reflecting on my experience, I recognize the significant privilege that shaped my engagement with social media during the lockdown period. The ability to spend considerable time online without the pressing concerns of safety and health highlights a level of security and stability that many did not share. Unlike others who faced threats to their well-being, I was largely protected and well-resourced, with minimal worries about my physical health. This privileged position afforded me the opportunity to explore social media in ways that would not have been possible under less secure circumstances. Acknowledging this privilege is crucial in understanding the broader implications of my experiences and the perspectives I bring to this research.

My hope for this capstone is to create a platform that acquaints readers with the current research on problematic social media use and its relationship with emotion regulation skills. By presenting this information, I aim to raise awareness about the issues related to problematic social media use and destigmatize any preconceived notions about its value. My goal is to offer a practical understanding of how to foster a beneficial relationship with social media. In terms of emotion regulation, I aspire to present readers with identifying their own emotion regulation styles, thereby equipping them with the tools to manage their emotions more effectively.

Through this capstone, I hope to contribute to a more nuanced and constructive discourse on social media use and emotional well-being.

Definition of Terms

Acceptance and Commitment Therapy (ACT)

ACT is a therapeutic intervention approach focused on acceptance, mindfulness, and behavioural change strategies to help individuals effectively cope with negative emotions and live meaningful lives (Hayes & Strosahl, 2004). It can be applied to a wide range of mental health issues with all populations (Hayes & Strosahl, 2004). ACT is primarily based on a proliferating line of behavioural research on human language and cognition called Relational Frame Theory (RFT) (Hayes & Strosahl, 2004).

Autonomic Nervous System

A part of the nervous system that controls involuntary bodily functions, including heart rate, digestion, and respiratory rate (Guyton & Hall, 2010).

Bergen Facebook Addiction Scale (BFAS)

A self-report questionnaire designed to assess addiction-like symptoms related to Facebook use (Andreassen et al., 2012). The scale consists of six items, each corresponding to the core components of addiction: salience, mood modification, tolerance, withdrawal, conflict, and relapse (Andreassen et al., 2012). Respondents rate their agreement with statements on a Likert scale, typically ranging from "very rarely" to "very often." Higher scores indicate a higher level of Facebook addiction (Andreassen et al., 2012). The BFAS is used in research and clinical settings to identify problematic Facebook use and to explore its psychological and social impacts (Andreassen et al., 2012).

Bergen Social Media Addiction Scale (BSMAS)

A scale adapted from the Bergen Facebook Addiction Scale to assess addiction-like symptoms associated with the use of various social media platforms (Andreassen et al., 2017).

Cognitive and Behavioral Therapy (CBT)

A structured, time-limited, and evidence-based psychotherapeutic approach aimed at treating a variety of mental health disorders (Beck, 1976). It focuses on the interconnection between thoughts, emotions, and behaviours (Beck, 1976). CBT operates on the principle that negative patterns of thought and behaviour contribute to psychological distress and that modifying these patterns can lead to improvements in emotional regulation and overall functioning (Beck, 1976).

Default Mode Network (DMN)

A network of brain regions that are active when an individual is at rest or engaged in internally focused tasks implicated in self-referential thoughts, mind wandering, and task-unrelated thoughts (Raichle, 2015). The default mode network is divided into roughly three major subdivisions: the ventral medial prefrontal cortex, the dorsal medial prefrontal cortex, and the posterior cingulate cortex and adjacent precuneus plus the lateral parietal cortex (Raichle, 2015).

Emotion Dysregulation

Emotion dysregulation is difficulty managing and controlling one's emotions, often characterized by intense and unstable emotional responses (Gross & Jazaieri, 2014). It is due to either emotion-regulation failures (e.g., not engaging regulation when it would be helpful to do so) or emotion misregulation (e.g., using a form of emotion regulation that is poorly matched to the situation) (Gross & Jazaieri, 2014).

Emotion Regulation

Emotion regulation is the ability to consciously or implicitly modify emotions (Gross & Jazaieri, 2014). This process can take various forms depending on the situation, such as regulating one's own emotions (intrinsic/intrapersonal) or regulating someone else's emotions (extrinsic/interpersonal) (Gross & Jazaieri, 2014). Despite the diversity of emotion regulation strategies, three key factors contribute to effective regulation—awareness, goals, and strategy. Awareness of emotions and their context enhances the ability to regulate emotions adaptively (Gross & Jazaieri, 2014). Emotion-regulation goals determine the desired outcome, whether it is increasing or decreasing the intensity of emotions (Gross & Jazaieri, 2014). Finally, specific strategies are employed to achieve the emotion-regulation goals, providing a means to reach the desired emotional state (Gross & Jazaieri, 2014).

Digital Goldilocks Hypothesis

The Digital Goldilocks hypothesis posits a curvilinear correlation between adolescents' engagement in digital activities and their well-being, highlighting the significance of moderate usage (Przbylski & Weinstein, 2017).

Internet Addiction

Internet addiction, also known as problematic internet use or compulsive internet use, is characterized by an excessive or poorly controlled preoccupation, urges, or behaviours regarding computer use and internet access that led to impairment or distress (Aksoy, 2018). This condition can significantly interfere with daily life, including academic, occupational, social, and personal functioning (Aksoy, 2018).

Interoceptive Awareness

The ability to have subjective awareness to notice inner body experience (Price & Weng, 2021). This includes awareness of physiological signals such as heart rate, respiration, hunger,

thirst, and the sensation of various emotions as they manifest in the body (Price & Weng, 2021). Interoceptive awareness plays a crucial role in emotional regulation, physical health, and overall well-being, as it helps individuals recognize and respond appropriately to their body's needs and emotional states (Price & Weng, 2021). Enhanced interoceptive awareness can contribute to better self-regulation, improved stress management, and a greater sense of bodily and emotional coherence (Price & Weng, 2021).

Parasympathetic Nervous System

The parasympathetic nervous system is a branch of the autonomic nervous system responsible for promoting relaxation, conserving energy, and regulating bodily functions during restful states (Guyton & Hall, 2010).

Polyvagal Theory

A neurobiological theory proposes that the autonomic nervous system plays a crucial role in mobilization (e.g., fight-or-flight response), physiological states (e.g., rest and digest), and social behaviour (e.g., facial expression, listening, and vocalization) (Porges, 2009).

Problematic Social Media Use

A compulsive and excessive use of social media platforms that could lead to negative consequences in various aspects of life, such as personal relationships, work or school performance, and mental well-being (Aksoy, 2018). Individuals with problematic social media use may exhibit symptoms such as spending excessive amounts of time on social media, feeling a strong urge to use social media despite negative consequences, and experiencing withdrawal symptoms when unable to access social media (Aksoy, 2018). Withdrawal symptoms can include irritability. boredom, anxiety, and depression (Miller, 2024).

Social Media

An online environment where individuals gather to exchange information, connect with others, and share content via internet-based communication platforms (Aksoy, 2018). Social media platforms encompass a variety of formats, including forums, microblogs, social networks, wikis, and web applications (Aksoy, 2018). Among the most widely used social media tools are Facebook, Twitter, Instagram, Snapchat, WhatsApp, Google+, Wikipedia, LinkedIn, and Reddit (Aksoy, 2018).

Sympathetic Nervous System

The sympathetic nervous system is a branch of the autonomic nervous system responsible for activating the "fight or flight" response, preparing the body for action in response to stress or danger (Guyton & Hall, 2010).

TikTok

TikTok is a social media platform for sharing short-form videos known for its wide user base and engaging content (Bhandari & Bimo, 2022). The Chinese version of TikTok, which offers similar features and functionalities, is called DouYin (Bhandari & Bimo, 2022).

Vagus Nerve

The vagus nerve is the tenth cranial nerve in the human body involved in regulating many autonomic functions, such as heart rate, digestion, and respiratory rate (Guyton & Hall, 2010). Porge's polyvagal theory suggests that the vagus nerve functions to facilitate social interactions and fulfill ongoing social demands from the environment by dynamically modulating cardiac output (Porges, 2007). The vagus nerve also helps to promote a state of calm and provide support for social engagement behaviours by maintaining and increasing the parasympathetic nervous system's (PNS) inhibitory influence (Porges, 2007). In stressful situations, the vagus nerve withdraws its parasympathetic inhibitory influence to enable the sympathetic nervous system

(SNS) to increase heart rate and to prepare the body for the fight or flight response (Shaffer et al., 2014).

Outline of Capstone Project Chapters

Chapter two of this capstone embarks on an in-depth exploration of TikTok's appeal among adolescents, synthesizing existing literature to elucidate the various factors contributing to its widespread popularity. Additionally, this chapter delves into the impact of problematic social media use on both physical and mental well-being. By examining the intricate relationship between problematic social media use and emotion dysregulation, this chapter unveils how difficulties in managing emotions can fuel problematic social media usage patterns. Furthermore, the chapter introduces the theoretical framework underpinning emotion regulation processes, providing insights into the mechanisms by which emotions are regulated and discussing key risk factors contributing to emotion dysregulation. Drawing upon principles from Acceptance and Commitment Therapy (ACT), this chapter offers evidence-based emotion regulation strategies alongside a review of current research on effective interventions for reducing problematic social media use.

Chapter three expands on the discussion to address the limitations and knowledge gaps identified in this capstone, paving the way for future research endeavours. Additionally, three introduces the curriculum and objectives of a workshop designed to assist adolescents and young adults in developing healthier relationships with social media and enhancing their emotion regulation skills.

Chapter Two: Literature Review

This literature review explores the factors behind social media's widespread popularity and its impact on physical and mental well-being. It examines the link between problematic social media use and emotion dysregulation, revealing how challenges in managing emotions can drive excessive use. The review introduces the theoretical framework of emotion regulation, highlighting key risk factors and mechanisms. It also presents evidence-based strategies from Acceptance and Commitment Therapy (ACT) and somatic therapy and reviews current research on effective interventions to reduce problematic social media use.

Measuring Problematic Social Media Use

Problematic social media use is defined as the compulsive and excessive use of social media to the extent of impairing the individual's everyday life tasks (Dalvi-Esfahani, Niknafs, Kuss, Hilashi, & Afrough, 2019). Currently, problematic social media use is most commonly measured by the Bergen Social Media Addiction Scale (BSMAS) after being adapted from the Bergen Facebook Addiction Scale (BFAS). The BSMAS also demonstrates reliability when used with world populations such as Iranian, Italian, and Hong Kong (Hou, Xiong, Jiang, Song, & Wang, 2019).

The Appeal of Social Media

The appeal of social media among adolescents is driven by three main key factors that cater to their developmental and social needs (Van Der Wal et al., 2024). Platforms like TikTok, Instagram, and Snapchat offer immediate gratification through instant feedback, likes, and comments, which fulfill their desire for social validation and peer connection (Van Der Wal et al., 2024). The personalized content algorithms on these platforms ensure that adolescents are

continually engaged with content that resonates with their interests and preferences, making their experiences more enjoyable (Van Der Wal et al., 2024). Additionally, social media provides a space for self-expression and identity exploration, allowing adolescents to experiment with different personas and connect with like-minded peers (Van Der Wal et al., 2024). The ease of communication and the ability to constantly connect with friends also enhance its appeal, creating a sense of belonging and community (Van Der Wal et al., 2024). Overall, social media satisfies adolescents' need for connection as well as the need for entertainment. These factors, combined with the ubiquitous presence of smartphones and the culture of digital connectivity, make social media an integral part of adolescent life (Van Der Wal et al., 2024).

Short Form Content

Short-form content is a type of digital media that is typically concise and designed to be consumed quickly. Examples of short-form content include social media posts, blog posts, infographics, and short videos on Instagram, YouTube, and Facebook. One notable type of short-form content on the rise in popularity is TikTok, which is a video-sharing application garnering over 2.6 billion downloads worldwide since February 2021 (Bhandari & Bimo, 2022). The foundation of TikTok is entirely based on allowing users to create, connect, share, and discover videos that range from 2 seconds to 3 minutes long (Bhandari & Bimo, 2022; Radesky et al., 2023).

In a U.S. study conducted by Radesky and colleagues (2023) on smartphone use habits among adolescents, the researchers found TikTok to be the most popular and the highest in screen time among major social media platforms such as Instagram, Snapchat, and Facebook. Out of 200 preteen and youth participants, more than 50% use TikTok for nearly two hours per day (Radesky et al., 2023). The longest number of hours spent on Snapchat and Instagram was

around three hours a day, whereas TikTok users were more likely to spend several hours per day, with the highest up to seven hours (Radesky et al., 2023).

Several studies have analyzed the reason behind TikTok's popularity from different theories. In the above study on teenage smartphone use, Radesky and colleagues (2023) summarized three key reasons contributing to the TikTok craze. First, TikTok is an application designed for easy navigation to maximize user screen time (Radesky et al., 2023). Users can quickly get used to the swiping motion to skip from one video to the next (Radesky et al., 2023). Second, the TikTok algorithm provides personalized video recommendations that have a higher likelihood of catching user interest (Radesky et al., 2023). Finally, the short nature of the videos facilitates quick topic-switching for users until they find videos that are more engaging (Radesky et al., 2023). This is supported by temporal motivation theory, which theorizes that people prefer tasks that offer quicker rewards and put off tasks that require a longer timeframe to complete when time is limited (Xie et al., 2023; Radesky et al., 2023).

Another research study conducted to assess the motivation for using DouYin, which is the Chinese version of TikTok, found that DouYin’s diverse catalogue of videos can cater to the entertainment needs of people of different age groups (Qiu, 2022). The comprehensive video offering of TikTok is built upon the understanding of the Uses and Gratifications (U&G) theory, which posits that people actively seek out media content that aligns with their interests (Qiu, 2022). Therefore, by catering the video recommendation to a diverse age group and their different interests, TikTok has a higher chance of winning over more people’s attention (Qiu, 2022).

Social Media on the Brain

The current research on the impact of TikTok usage on functions of differing brain parts is limited. However, there are a handful of studies examining the relationship between internet addiction and functional brain connectivity. For the purpose of this capstone, internet addiction will be used interchangeably with problematic social media use, as research shows that higher levels of problematic social media use are positively correlated with internet addiction (Chen et al., 2022). Although internet addiction is not yet a classified disorder in the DSM, it is currently included in Section 3, Emerging Measures and Models, of DSM-5, as a condition requiring further research (Darnai et al., 2019). Recent studies have found similar trends in the effect of internet addiction on functional brain networks (Darnai et al., 2019). Amongst the collection of research on social media use and its impact on brain activity, DMN took up a significant part of the findings (Darnai et al., 2019; Mak et al., 2017).

The default mode network (DMN) is a large-scale functional brain network that generates more activity at rest than during task performance (Zhang & Volkow, 2019). The DMN includes a collection of brain regions located in the frontal, temporal, and parietal cortex (Mak et al., 2017). DMN becomes most active during periods of rest, daydreaming, introspection, and mind wandering (Mak et al., 2017). Up to 90% of the energy consumed by the brain is used to support the DMN (Mazzoni et al., 2013). It is often associated with internally directed mental processes, such as autobiographical memory, envisioning the future, social cognition, and self-referential thinking (Mak et al., 2017). These regions often decrease in activity during attention-demanding and goal-oriented tasks but increase in activity during resting state, self-related introspective state, and social cognition (Mak et al., 2017).

The default mode network (DMN) is intricately involved in addiction, playing a multifaceted role in the development, maintenance, and perpetuation of addictive behaviours (Zhang & Volkow, 2019). Research indicates that individuals with addiction often exhibit alterations in DMN activity, including hyperconnectivity within the network (Zhang & Volkow, 2019). This hyperconnectivity may contribute to heightened self-referential processing, rumination, and craving associated with addiction (Zhang & Volkow, 2019). Additionally, dysfunctions within the DMN can disrupt its relationship with task-positive networks involved in cognitive control, leading to impaired decision-making and inhibitory control, which are hallmark features of addiction (Zhang & Volkow, 2019). Furthermore, DMN is implicated in reward processing, and dysregulated DMN activity may contribute to the reinforcement of addictive behaviours by influencing the valuation of addictive substances or activities (Zhang & Volkow, 2019).

Wang and colleagues (2019) investigated the relationship between internet addiction and the functional connectivity of DMN and cognitive control networks among university students. The researchers found that heightened functional connection within the default mode network (DMN) and reduced functional connectivity of the visual attention network in individuals with internet addiction (Wang et al., 2019). These findings provide a direct neuroscientific explanation for the symptoms of impaired attention span associated with internet addiction (Wang et al., 2019).

Furthermore, Hu and colleagues (2022) investigated brain activity while participants are reading social network services (SNS) on a smartphone. Reading social media posts caused a decrease in functional connectivity between the default mode network (DMN) and frontoparietal network (FPN) and an increase in connectivity between the DMN and visual network (Hu et al.,

2022). Though this decrease in connectivity is observed in the short term, research shows that long-term decreased connectivity between DMN and FPN is associated with cognitive impairments such as shortened attention span, working memory, and executive function (Wang et al., 2019).

Few studies conducted on the difference in brain activity when watching personalized TikTok versus generalized TikTok videos also support the above findings. The research group that watched personalized videos was found to have enhanced connectivity within the DMN network compared to the control group, which was subjected to a randomly generated series of videos (Su et al., 2021). However, the researchers found that both types of videos resulted in a decreased coupling between the cortical network and DMN (Su et al., 2021). Although the results on the long-term impact of chronic TikTok use is inconclusive, the current research has shown that long-term use of TikTok could introduce alterations to the DMN connectivity with other neuronal networks in the brain, which could have implications for cognitive processing abilities, rumination, and executive functioning (Su et al., 2021).

Adverse Impact of Problematic Social Media Use

This section delves into the negative consequences of problematic social media use, which encompasses a range of issues such as deteriorating eyesight, shortened attention spans, and poor sleep quality (Chen et al, 2022; Skoblina et al., 2020; Sha & Dong, 2021; Xie el al., 2023). It is essential to acknowledge that even though the relationship between problematic social media use and mental health outcomes may not be unidirectional and causal, the findings provide crucial insight regarding the range of adverse mental health outcomes experienced by individuals. In addition, despite the undeniable positive aspects of social media, such as facilitating communication and fostering community engagement, the negative effects derived

from the overuse of social media warrant close examination to inform strategies for mitigating addiction-related risks and promoting healthier digital habits.

Impact on Eyesight

Excessive screen time, particularly on smartphones and computers, poses significant risks to visual health, as evidenced by the prevalence of computer vision syndrome (CVS) among individuals spending prolonged periods behind digital displays (Skoblina et al., 2020). Studies consistently highlight the negative impact of excessive screen exposure on eye health, particularly among schoolchildren and university students (Skoblina et al., 2020). Symptoms associated with CVS, such as redness, blurred vision, double vision, and eye strain, are commonly reported by those who spend extensive time on electronic devices (Skoblina et al., 2020). In a recent study, it was found that 75% of users spending more than 5 hours a day on electronic devices reported visual complaints, indicating a strong correlation between prolonged screen exposure and the onset of ocular symptoms (Skoblina et al., 2020). Despite varying perceptions of visual health among respondents, with some rating their vision as excellent or good, one-fourth out of 768 participants reported subjective signs of eye discomfort and strain after prolonged device use (Skoblina et al., 2020). This emphasizes the urgent need to address the potential consequences of excessive screen time on visual health and to promote strategies for mitigating CVS symptoms among heavy device users (Skoblina et al., 2020).

Impact on Attentional Control

Findings from three studies highlight the impact of problematic social media use on attentional control and cognitive function among adolescents and college students (Chen et al, 2022; Sha & Dong, 2021; Xie et al., 2023). In the first study, addicted users of short-form videos exhibited decreased interest, concentration, and increased distractions compared to non-addicted

users, indicating difficulties in maintaining attention or impaired attentional concentration during media consumption (Chen et al., 2022). Additionally, addicted users showed longer response times and decreased accuracy in the Stroop task, a task used to assess cognitive processing speed and selective attentional focus, further underscoring deficits in attentional control and cognitive processing (Chen et al., 2022). In the second study, Sha and Dong (2021) found that higher screen time using TikTok was associated with memory loss, with males exhibiting more symptoms of depression, anxiety, and stress compared to females (Sha & Dong, 2021). This impairment in attentional control not only leads to academic procrastination but also contributes to experiencing mental health conditions, such as anxiety and depression, which further exacerbates difficulties in task completion and cognitive functioning (Sha & Dong, 2021). Similarly, Xie and colleagues (2023) found that when individuals are exposed to unrelated stimuli such as social media, short-form videos, or message notifications, they are more likely to struggle with regulating impulsive behaviours and prioritizing academic goals (Xie et al., 2023). Furthermore, this difficulty in attentional control could then trigger unpleasant emotions that lead to symptoms of anxiety and depression when individuals struggle to resist distractions and complete tasks (Xie et al., 2023). These negative emotions not only impede mental well-being but also hinder individuals' ability to concentrate on tasks, further exacerbating their tendency to procrastinate and undermining their performance in tasks that demand high cognitive resources and attention (Xie et al., 2023). Overall, these findings suggest that excessive screen time has a adverse impact on attentional control and cognitive function, posing significant challenges for academic performance and mental well-being among adolescents and college students (Chen et al, 2022; Sha & Dong, 2021; Xie et al., 2023).

Impact on Sleep Quality

Emerging research in the effects of problematic social media use also shows an impact on young adult's sleeping quality (Hjetland et al., 2021; Zhu et al., 2023). Hjetland and colleagues (2021) conducted a cross-sectional study surveying all university students (n = 49,051) in Norway. The results showed that overall, there are higher rates of insomnia among those with higher levels of addiction to smartphones (Hjetland et al., 2021). Particularly, those who had a higher screen time in the evening tend to have a higher level of addiction and poorer sleeping quality (Hjetland et al., 2021).

Similarly, a study conducted in China found that higher problematic social media use predicted poorer sleep quality but not sleep duration (Zhu et al., 2023). On the other hand, the byproduct of problematic social media use, social media fatigue (SMF), which is described as a feeling of tiredness and burnout due to prolonged social media use in each session, was found to negatively impact both sleep duration as well as sleep quality (Zhu et al., 2023).

Problematic Social Media Use and Emotional Regulation

Contemporary research over the past two decades has shown several psychopathological factors that are associated with problematic social media use, such as depression, social anxiety, attachment issues, and difficulty in emotion regulation (Gioia et al., 2021). In this capstone, the relationship between problematic social media use and emotion regulation has been chosen to be examined due to its transdiagnostic property across several mental health conditions (Gioia et al., 2021).

Emotion regulation is typically defined as the individual's ability to effectively recognize, monitor, and regulate his or her emotional responses in order to adapt to various situations (Gioia et al., 2021). More specifically, this involves active awareness of one's emotions and selecting the appropriate coping strategies to modulate emotional states (Gioia et al., 2021). The ability to

emotionally regulate helps individuals to navigate around stress, anxiety, and crisis moments (Gioia et al., 2021). The ability to regulate emotions has been shown to be associated with resilience, which is the individual's ability to adapt to life's adversity and stressful events (Chen et al., 2022). Conversely, past studies have found that individuals with high resilience are better at regulating emotions and implementing strategies to deal with painful emotions (Chen et al., 2022).

On the other hand, challenges in regulating emotions are identified to be significant risk factors in both substance use issues, such as alcohol and drug addiction, and behaviour addictions, which include gambling disorder and video game addiction (Liu & Ma, 2019). Based on this, one of the reasons one may resort to using social media could be explained as an attempt to cope with unpleasant feelings by escaping into the alternate reality of the online world (Amendola, 2019; Liu & Ma, 2019). An Italian study on 300 students aged 11 to 18 found a significant positive association between problematic internet use and emotional dysregulation (Amendola, 2019). More specifically, problematic internet use is correlated with specific facets of emotional dysregulation, such as non-acceptance, difficulty engaging in goal-directed behaviours, difficulties with impulse control, and limited emotion regulation strategies (Amendola, 2019). This finding shows the possibility for adolescents to find relief from painful emotional states by engaging with internet use (Amendola, 2019). Furthermore, emotional dysregulation has also been found to be linked with and predict Facebook addiction (Hormes et al., 2014; Liu & Ma, 2019). In a study with a sample of 253 university students in the United States, the researchers found a positive association between disordered online social networking use and poor emotion regulation skills along with problem drinking issues (Hormes et al., 2014).

Emotion Regulation

Emotional regulation is a fundamental aspect of human psychology, encompassing various processes aimed at managing and modulating emotions in response to internal and external stimuli (Kozubal et al., 2023). Research on emotion regulation has shown abilities to effectively regulate emotions can act as a protect factor for multiple mental and physical health issues such as depression, anxiety, substance use disorders, and eating disorders (Kozubal et al., 2023). For instance, effective regulation prevents depression, correlates with work productivity, and interpersonal relationships satisfaction (Kozubal et al., 2023). Furthermore, when emotion dysregulation is posited to be the common underlying risk factor for depression, anxiety, substance use disorder eating disorder, and borderline personality disorder, Sloan and colleagues (2017) found that out of 67 studies examined, 65 studies showed a significant decrease in maladaptive emotion regulation strategy use along with decrease in symptoms of the above-mentioned mental health issues.

One prominent perspective in understanding emotional regulation is through the process model, which posits that emotion regulation process occurs via a four-stage process: identification of emotions requiring regulation, selection of appropriate regulation strategies, implementation of chosen strategies, and ongoing monitoring for potential adjustments (Kozubal et al., 2023). This model not only provides insight into the real-time dynamics of emotion regulation but also offers a framework for investigating its implications in the context of psychological disorders (Kozubal et al., 2023).

Contemporary research shows there are around six styles commonly employed in regulating emotions: acceptance, reappraisal, problem solving, suppression, avoidance, and rumination (Kozubal et al., 2023). Acceptance involves acknowledging one's emotions and circumstances without judgment, while reappraisal entails reframing the meaning of a situation

or adopting an alternate perspective (Kozubal et al., 2023). Problem solving involves active attempts to come up with solutions or planning a course of action to contain the stressful situation (Aldao et al., 2010; Kozubal et al., 2023). Though problem solving is not a direct emotion regulation strategy, it can be beneficial in improving mood by effectively eliminating the stress inducing circumstance (Aldao et al., 2010). The use of acceptance, problem solving, and cognitive reappraisal are shown to be adaptive and promote psychological well-being in the long term (Shum et al., 2024). More specifically, cognitive reappraisal is found to be positively associated with greater psychological well-being and self-concept, which is associated with decreased internalization of problems (Hsieh & Stright, 2012; Shum et al., 2024).

Suppression focuses on inhibiting the expression of emotions once they have arisen, whereas avoidance involves redirecting attention away from emotional triggers (Kozubal et al., 2023). Conversely, rumination is the act of dwelling on the thought, which could exacerbate negative emotions and perpetuate their intensity and duration (Kozubal et al., 2023). These three styles are found to be associated with psychopathology and internalization of emotionally stressful situations (Hsieh & Straight, 2012). Understanding these emotion regulation styles illuminates their respective impacts on emotional well-being and underscores the importance of effective regulation techniques in maintaining mental health (Kozubal et al., 2023).

Neurobiology of Emotion Regulation

Emotion regulation happens through the coordination between the nervous system, hormones, brain structures, cognitive processes, and behavior (Göçen & Özden, 2024). Research that examines the brain activity when one is engaging in an emotion regulation style has frequently been focused on reappraisal (Martin & Ochsner, 2016). Reappraisal has demonstrated efficacy in modulating responses within key brain regions associated with affective processing

(Martin & Ochsner, 2016). Notably, regions like the amygdala, responsible for detecting and modulating the encoding of emotionally significant stimuli, and the ventral striatum, implicated in signaling the reward value of stimuli, are influenced by reappraisal (Martin & Ochsner, 2016). Additionally, the insula, which represents bodily states linked to emotional responses, is impacted by reappraisal as well (Martin & Ochsner, 2016). This modulation of neural activity is believed to occur through the engagement of a network of brain regions, including the dorsolateral prefrontal cortex (dlPFC), posterior parietal cortex (PPC), ventrolateral prefrontal cortex (vlPFC), posterior medial prefrontal cortex (mPFC), and anterior cingulate cortex (ACC) (Martin & Ochsner, 2016). Interestingly, these areas are commonly involved in cognitive control tasks, but they are seen to play a crucial role in emotion regulation as well (Martin & Ochsner, 2016).

The nervous system works with the above brain regions to perceive, interpret, and regulate emotions in response to internal and external stimuli (Göçen & Özden, 2024). The role of the nervous system function in emotion regulation is primarily explained by Porges' polyvagal theory (Göçen & Özden, 2024). More specifically, polyvagal theory focuses on the interaction between the sympathetic and parasympathetic branch within the autonomic nervous system (ANS) in modulating attention span, task management, and emotion regulation (Göçen & Özden, 2024).

The sympathetic nervous system (SNS) is responsible for the "fight, flight, freeze" response, by preparing the body to face perceived threats (Göçen & Özden, 2024). Physiologically, the SNS increases heart rate, dilates airways, and redirects blood flow to muscles to facilitate rapid responses to danger (Göçen & Özden, 2024). The parasympathetic nervous system (PNS) facilitates relaxation and rest, which counteracts the stress response

initiated by the SNS (Göçen & Özden, 2024). Therefore, it slows heart rate, stimulates digestion, and promotes recovery from activities (Göçen & Özden, 2024). The “freezing” response can be manifested in an individual as immobilization, dissociation, or a total emotional shutdown, which would be the complete detachment of the individual’s sense of self from their bodily state (Haeyen, 2024). A central component within the PNS is the vagus nerve, which is the longest cranial nerve in the body that extends from the brainstem to various organs throughout the chest and abdomen (Göçen & Özden, 2024). The vagal nerve influences social engagement behaviors and mood regulation. Therefore, autonomic nervous system or vagus nerve dysfunction has implications for emotional dysregulation (Göçen & Özden, 2024).

While there is a lack of research on whether a connection can be established between using social media as a coping strategy and nervous system functioning, social media use is currently hypothesized as a coping strategy through the avoidance emotion regulation style (Gioia et al., 2021). This means when adolescents encounter a stressful situation, their phones become an accessible source of distraction in order to avoid experiencing unpleasant feelings (Gioia et al., 2021). Accessing social media short form content or by connecting with others on social media could help to alter emotional states and thus help with emotion regulation (Gioia et al., 2021). While the avoidance strategy could be adaptive for emotion regulation in the short term, it is correlated with decreased psychological well-being in the long term (Gioia et al., 2021). In addition, the use of social media as a coping strategy could also fuel the development of problematic social media use (Gioia et al., 2021).

Developmental Research on Emotion Regulation

While most research on emotion regulation primarily focuses on adults as the sample population, recent developmental research sheds light on the process of brain formation on

emotion regulation strategy deployment (Martin & Ochsner, 2016). Martin and Ochsner (2016) suggest that the prefrontal control regions, like the dlPFC and vlPFC, mature at a slower pace compared to affective response regions, such as the amygdala and ventral striatum. This difference in development, characterized by stronger subcortical activation relative to cortical regions during adolescence, may contribute to mood instability and heightened emotional reactivity among adolescents (Martin & Ochsner, 2016). However, this theory oversimplifies the intricate interplay between cognition and emotion during development, necessitating further investigation into the maturation of cortical-subcortical circuitry to better understand age-related changes in mood regulation (Martin & Ochsner, 2016).

Risk Factors in Developing Emotion Dysregulation

Several studies have found the impact of childhood maltreatment on the development of emotional regulation and social adjustment in children (Dvir et al., 2014, Maughan & Cicchetti, 2022). Maughan and Cicchetti (2022) found that maltreated children exhibited difficulties in emotional regulation when exposed to simulated angry adult interactions, with 80% of maltreated children demonstrating these challenges compared to 37% of non-maltreated controls. These difficulties were also associated with reports from mothers regarding child behavior problems, as well as symptoms of anxiety and depression (Maugh & Cicchetti, 2022). Similarly, Kim and Cicchetti (2010) discovered a bidirectional relationship between emotional dysregulation and social dysfunction in maltreated youth. Emotional dysregulation was found to be correlated with a history of neglect and physical and sexual abuse, both individually and in combination (Kim & Cicchetti, 2010). Furthermore, deficits in emotional regulation were linked to externalizing behaviours, which, in turn, contributed to peer rejection (Kim & Cicchetti, 2010).

Research on trauma history and emotional dysregulation consistently reveals a correlation between exposure to trauma, PTSD symptoms, and emotional dysregulation. (Burns et al., 2010; Tull et al., 2007). Tull and colleagues (2007) identified various aspects of emotional dysregulation associated with PTSD, specifically challenges in recognizing and accepting emotions, difficulties in employing effective strategies to regulate negative emotions, and impulsivity. Furthermore, the level of emotional dysregulation was linked to the severity of interpersonal trauma history, especially involving past abuse or multiple interpersonal traumas (Tull et al., 2007). It is important to note that non-interpersonal trauma was associated with the risk of PTSD and dissociative symptoms but not with emotional dysregulation (Dvir et al., 2014). These findings underscore the importance of interventions aimed at enhancing emotional regulation strategies as a crucial component of treatment and prevention for adolescents who have faced potentially traumatic experiences during childhood (Dvir et al., 2014; Tull et al., 2007).

Emotion Dysregulation as a Risk Factor

When examining developmental trajectories, a critical inquiry arises regarding whether the inability to regulate emotions, or emotional dysregulation, could act as a precursor to developing psychopathology (Dvir et al., 2014). In a longitudinal study by McLaughlin and colleagues (2011), the researchers evaluated depression, anxiety, aggressive behavior, disordered eating, and emotional regulation in a cohort of 1065 adolescents. Their findings revealed that emotional dysregulation contributed significantly to various psychiatric and psychosocial problems during adolescence, including anxiety, aggression, and disordered eating (McLaughlin et al., 2011). It is also important to note the unidirectionality; emotional dysregulation did not emerge because of psychopathology (McLaughlin et al., 2011). In addition, existing

psychosocial problems did not predict changes in emotion regulation over time either (McLaughlin et al., 2011).

Furthermore, bipolar disorder serves as a particularly illustrative example of a condition deeply intertwined with emotional dysregulation (Dvir et al., 2014). Despite the historical debate surrounding the diagnosis of childhood bipolar disorder, a consensus has emerged, acknowledging the existence of a subgroup of youth who meet full DSM criteria for the disorder (Dvir et al., 2014). Notably, childhood exposure to interpersonal trauma is prevalent among adults with bipolar disorder, with approximately half of patients reporting such experiences across multiple studies (Dvir et al., 2014). Moreover, individuals with bipolar disorder and a history of childhood trauma tend to exhibit earlier onset of affective symptoms, with more severe manifestations (Dvir et al., 2014). Recent research also highlights elevated rates of comorbid post-traumatic stress disorder (PTSD) in youth with bipolar disorder, particularly those with a history of trauma exposure (Dvir et al., 2014). Evidence suggests that both polyvictimization, which is the experience of multiple types of victimization such as sexual assault, physical abuse, and neglect, and comorbid bipolar disorder in adolescents contribute symptoms that are less responsive to treatment (Dvir et al., 2014).

Emotional dysregulation also presents in personality disorders, particularly those linked with exposure to interpersonal trauma (Dvir et al., 2014). Extensive research has found the association between severe personality disorders, such as borderline, schizotypal, and paranoid personality disorders, with histories of interpersonal trauma and childhood physical abuse (Dvir et al., 2014). Individuals with borderline and paranoid personality disorders report the highest rates of trauma exposure, especially childhood sexual trauma (Dvir et al., 2014). Furthermore, there exists a significant correlation between childhood trauma inflicted by primary caregivers

and emotional dysregulation in adults with borderline personality disorder, further emphasizing the enduring impact of early traumatic experiences on emotional functioning.

In addition, a strong correlation was found between substance use issues and emotion dysregulation, particularly the difficulty in controlling impulsive behaviors (Dvir et al., 2014). It is worth noting that psychiatric symptoms did not appear to mediate this connection between substance use and emotion dysregulation (Dvir et al., 2014). These findings highlight the link between emotion dysregulation and substance use, emphasizing the potential importance to target difficulties in impulse control as a crucial part of the intervention for individuals with substance use problems (Dvir et al., 2014).

Goldilocks Effect

Social media has revolutionized how people interact by providing them with an accessible platform to easily satisfy their need for social engagement. Based on the current growth rate, the global population that uses social media is projected to grow to over 6 billion by 2027 (Dixon, 2023). In light of this trajectory, it becomes imperative to consider the nature of our relationship with social media.

A large-scale study sheds light on the relationship of digital screen time on people's wellbeing (Przybylski & Weinstein, 2017). With a sample of 120,115 adolescents, the study result showed a non-linear relationship between digital screen time and mental well-being that is best characterized by a concave-down curve (Przybylski & Weinstein, 2017). This signifies that both excess and little screen time are associated with declined mental well-being, and that there is an optimum amount of screen time that is associated with increased mental well-being (Przybylski & Weinstein, 2017). This result affirms the digital Goldilocks hypothesis, which posits that technology use at moderate levels is not intrinsically harmful and may provide

advantages for individuals to be more socially connected (Przybylski & Weinstein, 2017). Too much technology use may interfere with school or extracurricular activities, whereas too little screen time could deprive young people of social updates and peer connection (Przybylski & Weinstein, 2017).

After integrating the Goldilocks hypothesis with the connection between problematic social media use and emotional regulation, the next section will focus on discussing strategies not only aimed at defining a healthy relationship with technology, but also with regulating emotions.

Intervention for Problematic Social Media Use

ACT and Emotion Regulation

Maladaptive emotion regulation strategies are associated with elevated depressive and anxiety symptoms in adolescents, which highlights the importance of learning adaptive emotion regulation techniques in mitigating psychopathological symptoms (Menefee, Ledoux, & Johnston, 2022). Acceptance and Commitment Therapy (ACT) offers a promising approach to address these challenges by fostering psychological flexibility and encouraging individuals to accept internal experiences while aligning actions with personally held values (Menefee, Ledoux, & Johnston, 2022).

ACT emphasizes the importance of non-judgmentally examining "unworkable actions" and discrepancies between values and actions, facilitating motivation for change (Menefee, Ledoux, & Johnston, 2022). Furthermore, ACT targets the emotion regulation style, avoidance, through techniques such as acceptance and cognitive defusion, encouraging individuals to perceive thoughts as thoughts and feelings as feelings without becoming entangled in them (Menefee, Ledoux, & Johnston, 2022). By promoting psychological flexibility and acceptance,

ACT holds promise in ameliorating emotional dysregulation and associated psychopathological symptoms (Menefee, Ledoux, & Johnston, 2022).

A study has shown the effectiveness of ACT in a group-based setting (Salimi et al., 2019). Salimi and colleagues (2019) conducted a quasi-experimental study among mothers of children with ASD. Thirty mothers were randomly assigned to either an experimental group receiving ACT or a control group with no intervention (Salimi et al., 2019). Pre- and post-intervention assessments were conducted using the cognitive emotion regulation questionnaire (Salimi et al., 2019). Results indicated that group-based ACT significantly enhanced various cognitive emotion regulation strategies including positive refocusing, positive reappraisal, and acceptance; and alleviated self-blaming, blaming others, catastrophizing (Salimi et al., 2019).

In the developing body of research on the efficacy of ACT, ACT has not been shown to reduce rumination (Salimi et al., 2019). Similarly, Sheibani and colleagues (2019) conducted a study investigating the effects of ACT groups in emotion regulation and self-control in patients with coronary heart disease. The researchers found that the patients randomly assigned to the experimental group were better able to regulate emotions through cognitive strategies only (Sheibani et al., 2019). Additionally, patients who went through ACT group counselling showed an increased use of acceptance strategies, increased positive refocus, as well as reduced termination time and other blaming strategies (Sheibani et al., 2019). These findings underscore the potential of ACT-based interventions to enhance cognitive emotion regulation strategies among mothers of children with ASD as well as patients with coronary disease, recommending the integration of such approaches into welfare institutions and centers to address the needs of this population (Salimi et al., 2019; Sheibani et al., 2019). In addition, the above research also shows the efficacy of ACT in improving emotion regulation through enhancing the individual's

ability to practice cognitive reappraisal, which is the ability to adopt a different perspective of an unchangeable situation (Salimi et al., 2019; Sheibani et al., 2019).

Somatic Reappraisal and Emotion Regulation

Another foundational framework to strengthen adaptive emotion regulation skills is by engaging in sustained interoceptive awareness (Price & Weng, 2021). This process involves intentionally directing attention inward to perceive bodily sensations, accurately identifying these sensations, maintaining a continuous awareness of them, and reflecting on their significance to interpret and integrate the information (Price & Weng, 2021). Sustained interoceptive awareness improves emotion regulation by facilitating cognitive reappraisal as well (Price & Weng, 2021). Additionally, this practice can lead to "somatic reappraisal," where shifts in emotional perspectives arise from focused attention on internal bodily experiences (Price & Weng, 2021). These shifts, often accompanied by enhanced self-understanding, enable individuals to apply cognitive frameworks to derive healthier intra- and interpersonal responses (Price & Weng, 2021). This approach underscores the palpable impact of sustained interoceptive attention on emotional and psychological well-being (Price & Weng, 2021).

Intervention for Problematic Social Media Use

Public Resources for Problematic Social Media Use

While there has been considerable research on the impact of social media on mental health, the development and public accessibility of intervention methods specifically targeting emotion regulation are still limited (Ji et al., 2023). Currently, there are a few noteworthy approaches and resources that have been explored or are in development (Ji et al., 2023). Digital mental health apps like Calm and Headspace offer mindfulness and meditation exercises, while Woebot provides cognitive-behavioural therapy techniques and mood tracking (Ji et al., 2023).

Social media-based support groups on platforms like Facebook and Reddit offer peer support and shared strategies for managing emotions (Ji et al., 2023). Educational content is also available through YouTube channels and Instagram influencers who share tips and personal experiences about managing emotions (Ji et al., 2023).

Emerging research and potential interventions include AI and machine learning-based tools that analyze user behaviour to provide real-time support, content moderation efforts to promote positive interactions, gamification to teach emotion regulation skills, and wearable technology that offers real-time interventions based on physiological stress indicators (Ji et al., 2023). However, challenges remain in ensuring privacy and data security, making resources accessible to diverse populations, and grounding interventions in robust scientific research (Ji et al., 2023).

Evidence-Based Resource for Problematic Social Media Use

The advent of the Internet and technological devices has significantly transformed interpersonal communication, often leading to problematic use, particularly among adolescents (Cañas & Estévez, 2021). A meta-analysis by Cañas and Estévez (2021) categorizes four researched approaches addressing problematic social media use: cognitive behavioural therapy, educational programs, positive psychology interventions, and multi-family group therapy. Cognitive behavioural therapy (CBT) is widely regarded as the primary treatment for Internet addiction, effectively adjusting maladaptive thoughts and reducing psychosocial symptoms, with long-term benefits observed (Cañas & Estévez, 2021). Combining CBT with music therapy has been shown to further alleviate anxiety and impulsivity (Cañas & Estévez, 2021). Educational programs focusing on self-regulation, self-efficacy, and academic motivation have also proven

effective by promoting awareness of the negative consequences of Internet addiction and fostering healthier behaviours (Cañas & Estévez, 2021).

Positive psychology interventions aim to enhance social harmony and interpersonal relationships, which helps mitigate addiction symptoms (Cañas & Estévez, 2021). Additionally, multifamily group therapy has demonstrated long-term efficacy by improving parent-adolescent communication and creating supportive environments that encourage sustainable behaviour changes (Cañas & Estévez, 2021). These diverse approaches underscore the importance of a multidisciplinary strategy in treating problematic social media use and Internet addiction (Cañas & Estévez, 2021).

The analyzed studies affirm the necessity of adolescent intervention programs to prevent and address issues arising from excessive internet and technology use (Cañas & Estévez, 2021). These programs successfully raise awareness about the associated risks, leading to a general reduction in maladaptive behaviours among participants (Cañas & Estévez, 2021). By involving not just individuals but also their peer groups, teachers, and families, these interventions have shown increased effectiveness and sustained impact over time (Cañas & Estévez, 2021).

Additionally, the COVID-19 pandemic has altered Internet usage dynamics, necessitating a reassessment of Internet addiction criteria and treatment development (Cañas & Estévez, 2021). Consequently, this review serves as a foundation for future research that includes broader academic levels and validated programs (Cañas & Estévez, 2021). In addition, while there have been eclectic approaches amongst intervention programs, a systematic intervention program is yet to be designed with a focus on the relationship between problematic social media use and emotion regulation.

Another review by Zhu and colleagues (2023) supports the efficacy of CBT in improving problematic social media use. The researchers stated that when compared to other interventions such as psychoeducation, exercise therapy, and group therapy, the combination of repetitive transcranial magnetic stimulation (rTMS) with cognitive-behavioural therapy (CBT) was the most effective in treating internet addiction (IA) (Zhu et al., 2023). rTMS involves delivering repetitive electromagnetic pulses via an electromagnetic coil to regulate cortical excitability in specific brain regions (Zhu et al., 2023). Numerous studies have demonstrated the potential of rTMS in treating substance dependence, particularly when targeting the dorsolateral prefrontal cortex (DLPFC) to enhance cognitive regulatory capacity, modulate cortical excitability, and maintain neurotransmitter levels in reward circuit structures, thereby reducing cravings and addictive behaviours (Zhu et al., 2023). Additionally, rTMS applied to the DLPFC has been found to inhibit brain cortices associated with addiction, enhance cognitive and emotional regulation, and diminish craving and addictive behaviours in internet addiction (IA) (Zhu et al., 2023).

CBT helps to correct cognitive dysfunction in IA patients, with improvements in cognitive control ability being crucial for addressing IA (Zhu et al., 2023). Network meta-analysis results suggest the combination of rTMS and CBT was more effective than either intervention alone (Zhu et al., 2023). This is potentially due to its capacity to ameliorate physiological, psychological, and behavioural aspects of IA concurrently, thus yielding more favourable outcomes (Zhu et al., 2023).

Given the variety of current intervention approaches on problematic social media use, this capstone will specifically focus on CBT intervention programs as it is the approach that’s the

most measurable and contains the most evidence-based research compared to other approaches (Cañas & Estévez, 2021; Hou et al., 2019).

Hou and colleagues (2019) developed and tested a self-help intervention program for problematic social media use with 232 college students. The experimental group underwent a one-week intervention program, whereas the control group received no intervention during this period (Hou et al., 2019). The intervention comprised two stages. Initially, participants engaged in cognitive reconstruction, a process lasting approximately 30 minutes (Hou et al., 2019).

Participants visited the lab and were prompted to contemplate their social media usage from various perspectives: daily and weekly time spent on social media, alternative meaningful activities, the benefits of abstaining from social media, reasons for using social media and potential alternatives, and the adverse effects of social media use (Hou et al., 2019). After reflection, participants listed five advantages of reducing social media use and five disadvantages of excessive usage on a card, which they photographed to use as a lock screen reminder on their phones and placed on their desks for the following week (Hou et al., 2019).

In the second stage, occurring in the subsequent week, participants recorded daily thoughts, emotions, and behaviours related to social media use, adhering to cognitive-behavioural techniques (Hou et al., 2019). Before bed, participants reflected on their social media activities, including platforms used, duration and manner of usage, associated thoughts and emotions, and strategies for reducing usage (Hou et al., 2019). Additionally, they rated their emotional state, engagement in learning, and anticipated social media usage for the following day (Hou et al., 2019). To ensure compliance, participants received daily reminders to complete the recording and were required to photograph their completed reflections and send them to a designated lab contact for confirmation, with the responses constituting part of the intervention

and not used in the analysis (Hou et al., 2019). Finally, participant's learning engagement was measured and they self-reported their emotional state during the week of intervention (Hou et al., 2019).

As a result, participants in the experimental group showed a significant decrease in symptoms of problematic social media use, whereas no changes were observed among the participants in the control group (Hou et al., 2019). Additional factors such as sleep quality, self-esteem, learning efficiency, and general mental health well-being all improved for the experimental group, but not for the control group (Hou et al., 2019). Additionally, participants from the experimental group self-reported the intervention to be effective, which aligns with the outcomes of their level of problematic social media use post-intervention (Hou et al., 2019).

In addition, another study found CBT based short-term abstinence intervention also reduces problematic social media use (Zhou et al., 2020). In this study, the experimental group of 33 participants took eight 2.5-hour breaks from using social media over two weeks (Zhou et al., 2020). The participants also kept daily dairies to record difficulties, feelings and thoughts before or after the abstinence (Zhou et al., 2020). The control group, on the other hand, were instructed to write diaries without abstaining from social media (Zhou et al., 2020).

After two weeks, the experimental group reported a significant increase in life satisfaction than the control group (Zhou et al., 2020). The researchers also found that the effects of the intervention varied between participants with different levels of problematic social media use (Zhou et al., 2020). Participants with higher levels of problematic social media use found more difficulty in abstaining and relied on more external forces, such as turning off the phone or putting the phone away, to meet the abstinence requirement (Zhou et al., 2020). At the same time, participants with higher levels of problematic social media use reported higher life

satisfaction earlier than participants with low levels of problematic social media use (Zhou et al., 2020). This suggests the abstinence intervention coupled with CBT journaling techniques may have a longer lasting and compelling effect on people with more severe problematic social media use (Zhou et al., 2020).

This review suggests that interventions with therapeutic rationale, rather than mere restriction or total abstinence from social media, may yield greater benefits for mental well-being (Zhu et al., 2023). Such interventions employ established methods like counselling and CBT-based techniques to promote mindfulness and reflection on the impact of social media usage on thoughts, emotions, and behaviours (Zhu et al., 2023). Therapy-based approaches facilitate behaviour change by enabling individuals to replace negative actions with structured goals and positive thinking, thereby enhancing motivation and reducing the fear of missing out (FOMO) (Zhu et al., 2023). Sustained abstinence from social media use alone appeared to be the least effective method, this is shown through subsequent intensified usage in response to perceived time restrictions (Zhu et al., 2023). Additionally, participants' compliance with usage restrictions or abstinence was difficult to track accurately across various devices used to access social media platforms, thereby decreasing the validity of the results measured (Zhu et al., 2023). Connecting to the Goldilocks hypothesis, the intervention of temporary abstinence supports this hypothesis that a relationship with social media consisting of moderate use is shown as the most beneficial for the individual (Przybylski & Weinstein, 2017).

Chapter Three: Discussion, Application, and Conclusion

This capstone explored the current research on problematic social media use and the association between problematic social media use and emotion regulation. Overall, three research questions were asked: What is social media's appeal among adolescents? What is the relationship between problematic social media use and emotion regulation skills? What are interventions for adolescents targeting both emotion regulation and problematic social media use?

Discussion

The appeal of social media among adolescents can be attributed to a combination of psychological, social, and technological factors that align with their developmental and social needs. Platforms like TikTok, Instagram, and Snapchat offer immediate gratification through instant feedback mechanisms such as likes and comments, which fulfill adolescents' desire for social validation and peer connection (Van Der Wal et al., 2024). This feedback loop not only enhances their sense of belonging but also stimulates the brain's reward system, contributing to the addictive nature of social media platforms. Personalized content algorithms further amplify this effect by continuously engaging adolescents with material that resonates with their interests and preferences, tailoring their experience to be more enjoyable (Van Der Wal et al., 2024). Moreover, social media provides a vital space for self-expression and identity exploration, allowing adolescents to experiment with different personas and connect with like-minded peers (Van Der Wal et al., 2024). This aligns with the Uses and Gratifications (U&G) theory, which posits that individuals will actively seek media content that satisfies their needs (Qiu, 2022).

The ease of communication and constant connectivity offered by these platforms also play a significant role in their appeal, as they facilitate real-time interaction and a sense of community, especially during the adolescent years when peer relationships are paramount (Van Der Wal et al., 2024). The ubiquitous presence of smartphones and the culture of digital connectivity further embed social media into the fabric of adolescent life, making it an integral part of their daily routines. Collectively, these factors illustrate how social media's design and functionality cater to the intrinsic needs of adolescents, reinforcing their engagement and dependence on these platforms.

Along with the constant companionship of social media, research shows that long-term social media use negatively impacts adolescents by contributing to a range of adverse physical, cognitive, and psychological outcomes. One significant physical consequence is the deterioration of eyesight due to excessive screen time, leading to conditions such as computer vision syndrome (CVS). Symptoms of CVS, including redness, blurred vision, and eye strain, are prevalent among adolescents who spend prolonged periods on digital devices (Skoblina et al., 2020). This indicates a strong correlation between extended screen exposure and the onset of ocular symptoms, emphasizing the need for strategies to mitigate these effects (Skoblina et al., 2020). Cognitively, problematic social media use impairs attentional control and cognitive function, as evidenced by decreased concentration, increased distractions, and longer response times on tasks requiring sustained attention (Chen et al., 2022). This impairment not only leads to academic procrastination but also exacerbates mental health issues such as anxiety and depression, which further hinder cognitive performance and task completion (Sha & Dong, 2021; Xie et al., 2023). Psychologically, the constant connectivity and instant feedback mechanisms of social media contribute to sleep disturbances. High levels of problematic social media use are

associated with poorer sleep quality and higher rates of insomnia, particularly when screen time occurs in the evening (Hjetland et al., 2021). Additionally, the phenomenon of social media fatigue, characterized by burnout from prolonged use, negatively affects both sleep duration and quality, compounding the overall negative impact on adolescents' health and well-being (Zhu et al., 2023). These findings underscore the multifaceted detrimental effects of long-term social media use on adolescents, highlighting the urgent need for interventions to promote healthier digital habits and mitigate the risks associated with excessive use.

The connection between problematic social media use and emotion regulation is multifaceted, encompassing psychological, developmental, and neurobiological dimensions. problematic social media use is associated with significant challenges in emotion regulation, which is defined as the ability to effectively recognize, monitor, and manage emotional responses to adapt to various situations (Gioia et al., 2021). Individuals with poor emotion regulation skills often resort to social media as a coping mechanism to escape from unpleasant feelings, leading to problematic use. This behaviour is analogous to other behavioural and substance use disorders where emotion dysregulation is a significant risk factor (Liu & Ma, 2019). Within the scope of this capstone, the focus is on the development of problematic social media use through the excessive use of maladaptive coping strategies to regulate unpleasant emotions.

Emotion regulation difficulties are prevalent among adolescents, partly due to the developmental trajectory of their brain regions involved in emotional and cognitive processing. The prefrontal cortex, responsible for high-order functions like decision-making and impulse control, matures more slowly than the amygdala and ventral striatum, which are involved in emotional responses and reward processing (Martin & Ochsner, 2016). This developmental

mismatch can result in heightened emotional reactivity and mood instability, making adolescents particularly vulnerable to emotion regulation issues and subsequent problematic social media use (Martin & Ochsner, 2016).

Research also indicates that individuals with problematic social media use demonstrate significant deficits in emotional regulation strategies such as reappraisal and problem-solving, often relying on maladaptive strategies like suppression, avoidance, and rumination (Kozubal et al., 2023). These maladaptive strategies exacerbate negative emotions and perpetuate a cycle of poor psychological well-being and increased social media use (Hsieh & Stright, 2012; Shum et al., 2024). For instance, avoidance, a common response to stress, leads adolescents to use social media as a distraction from negative emotions, which may offer short-term relief but contribute to long-term psychological distress and addiction (Gioia et al., 2021).

Neurobiologically, social media use may influence emotion regulation by impacting the nervous system and brain structures involved in emotional processing. The sympathetic and parasympathetic branches of the autonomic nervous system play crucial roles in emotion regulation, with dysfunctions potentially leading to emotional dysregulation (Göçen & Özden, 2024). The process model of emotion regulation posits that effective regulation involves identifying emotions, selecting appropriate strategies, implementing these strategies, and ongoing monitoring for adjustments (Kozubal et al., 2023). problematic social media use disrupts this process, particularly by impairing the selection and implementation of adaptive strategies, thereby exacerbating emotional dysregulation (Hormes et al., 2014; Liu & Ma, 2019).

In summary, problematic social media use is intricately linked to challenges in emotion regulation, influenced by developmental, psychological, and neurobiological factors. Understanding this connection is crucial for developing interventions targeting emotion

regulation skills to mitigate the risks of problematic social media use risks and promote healthier coping mechanisms among adolescents.

Limitations

This capstone has several limitations that should be acknowledged. First, because the scope of this study focuses on adolescents, the level of generalizability is low for other populations, such as adults and older adults. This means that the findings regarding the relationship between problematic social media use and emotion regulation may not apply to these other age groups. Additionally, this thesis does not discuss gender differences, which could be a significant factor in understanding how problematic social media use develops and manifests differently across genders. Furthermore, while this capstone concentrates on using social media to cope with unpleasant emotions as a pathway to problematic use, it recognizes that there are multiple other reasons for the development of problematic social media use that are not covered in this paper. These factors, such as social influence, boredom, and seeking validation, also play crucial roles and warrant further investigation.

Additionally, this capstone did not distinguish between active and passive social media use. Active use involves engaging in activities such as posting, commenting, and messaging, which foster interaction and content creation (Valkenburg et al., 2021). Passive use, on the other hand, includes behaviors like scrolling through feeds and viewing content without direct engagement (Valkenburg et al., 2021). The lack of distinction is a significant limitation of this paper, as the differential effects of active versus passive use on user outcomes might not be adequately captured. Lastly, due to the scope of this capstone, the positives of using social media, such as enhanced communication and community building, are less discussed. This

limited focus might result in an incomplete understanding of the overall impact of social media use.

Gaps in Current Research

Despite the insights existing studies provide, several research gaps remain. One significant gap is the need for more research into the impact of short-form content on the brain. Conducting longitudinal studies could provide valuable information about how repeated exposure to this type of content affects brain development and function over time. Additionally, there is a lack of research examining the mechanisms of the nervous system when individuals use social media for emotional regulation. Understanding these mechanisms could help develop more effective interventions for problematic social media use. Moreover, more research is needed to explore brain functionality changes associated with consistent social media and internet use. Investigating these changes could shed light on the long-term cognitive, neurobiological, and emotional effects of problematic social media use, providing a more comprehensive understanding of its impact. Finally, as the research on problematic social media use continues to develop, there is yet an evidence-based set of interventions targeting both problematic social media use and emotion regulation.

Application

This capstone contributes to the counselling field by developing a workshop for adolescents and young adults, focusing on the intersection of social media use and emotion regulation through the support of current research. The workshop aims to present current research on social media, emphasizing the improvement of emotion regulation skills through theoretical foundations from somatic therapy and acceptance and commitment therapy (ACT).

The primary goal of this workshop is to educate participants about the pervasive nature of social media, and its common effects and initiate discussion on developing a healthy relationship with social media.

The curriculum of the workshop is tailored for adolescents and begins with an overview of social media usage statistics, highlighting the prevalence and potential for addiction. It then delves into the negative impacts of social media use, specifically connecting these effects with poor emotion dysregulation. A significant focus is placed on how social media is often used as a coping mechanism for stress and how this can exacerbate emotional issues in the long term.

Participants will learn about effective emotion regulation strategies, including somatic reappraisal and cognitive defusion, which provide practical steps for managing emotional responses. Additionally, the workshop offers evidence-based methods that aim to alleviate dependence on social media, such as taking scheduled breaks from social media, answering reflective questions, and using cognitive-behavioural therapy (CBT) journaling techniques. Through this structured approach, the workshop aims to empower adolescents with the knowledge and skills to manage their social media use and enhance their emotional well-being (Appendix A).

Conclusion

In conclusion, the pervasiveness of social media has firmly established its presence in the daily lives of adolescents and young adults. Its high accessibility, the appeal of short-form content, and personalized algorithms contribute significantly to its popularity, with research indicating that a primary reason for social media use among adolescents is to fill up spare time. However, there is a troubling association between problematic social media use and emotional dysregulation, suggesting that such usage may serve as a coping mechanism for stress and

unpleasant emotions. Research identifies six general emotion regulation styles following stressful events. Acceptance, problem-solving, and cognitive reappraisal are linked to increased long-term psychological well-being, whereas rumination, suppression, and avoidance—such as using social media to cope with stress—are associated with decreased well-being. Therefore, this capstone emphasizes the importance of fostering adaptive emotion regulation skills in adolescents and young adults. To this end, the application section utilizes two theoretical frameworks—acceptance and commitment therapy (ACT) and somatic therapy—to develop interventions. The goal is to educate on the ubiquity of social media and its psychophysiological and behavioral impacts, aiming to increase readers' awareness of their own social media use and its link to emotion regulation. Ultimately, this capstone aspires to offer actionable strategies to reduce problematic social media use and enhance emotion regulation skills.

References

Aksoy, M. E. (2018). A qualitative study on the reasons for social media addiction. *European Journal of Educational Research*, *7*(4), 861–865. https://doi.org/10.12973/eu-jer.7.4.861

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Specificity of cognitive Emotion Regulation strategies: a transdiagnostic examination. *Clinical Psychology Review*, *30*(2), 217–237. https://doi.org/10.1016/j.brat.2010.06.002

Amendola, S., Spensieri, V., Guidetti, V., & Cerutti, R. (2019). The relationship between difficulties in emotion regulation and dysfunctional technology use among adolescents. *Journal of Psychopathology*, *25*, 10–17. https://www.jpsychopathol.it/wp-content/uploads/2019/02/03_Cerutti-1.pdf

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, *64*, 287–293. https://doi.org/10.1016/j.addbeh.2016.03.006

Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook Addiction Scale. *Psychological Reports*, *110*(2), 501–517. https://doi.org/10.2466/02.09.18.pr0.110.2.501-517

Beck, A. (1976). Cognitive therapy and the emotional disorders. In *Google Books*. International Universities Press.

Bhandari, A., & Bimo, S. (2022). Why's Everyone on TikTok Now? The Algorithmized Self and the Future of Self-Making on Social Media. *Social Media + Society*, *8*(1), 205630512210862. https://doi.org/10.1177/20563051221086241

Burns, E. E., Jackson, J. L., & Harding, H. G. (2010). Child Maltreatment, emotion Regulation, and Posttraumatic stress: The Impact of Emotional abuse. *Journal of Aggression, Maltreatment & Trauma*, *19*(8), 801–819. https://doi.org/10.1080/10926771.2010.522947

Cañas, E., & Estévez, E. (2021). Intervention Programs for the Problematic Use of the internet and Technological Devices: A Systematic review. *Electronics*, *10*(23), 2923. https://doi.org/10.3390/electronics10232923

Chen, B., Chen, M., Wu, Y., & Wu, Y. (2022). The relationship of social media addiction with internet use and perceived health: The moderating effects of regular exercise intervention. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.854532

Chen, X., Huang, Z., & Lin, W. (2022). The effect of emotion regulation on happiness and resilience of university students: The chain mediating role of learning motivation and target positioning. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1029655

Chen, Y., Li, M., Guo, F., & Wang, X. (2022). The effect of short-form video addiction on users' attention. *Behaviour & Information Technology*, *42*(16), 2893–2910. https://doi.org/10.1080/0144929x.2022.2151512

Darnai, G., Perlaki, G., Zsidó, A. N., Inhóf, O., Orsi, G., Horváth, R., Nagy, S. A., Lábadi, B., Tényi, D., Kovács, N., Dóczi, T., Demetrovics, Z., & Janszky, J. (2019). Internet addiction and functional brain networks: task-related fMRI study. *Scientific Reports*, *9*(1). https://doi.org/10.1038/s41598-019-52296-1

Dixon, S. (2023, August 29). *Number of social media users worldwide from 2017 to 2027*. Statista. Retrieved April 5, 2024, from https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/

Dvir, Y., Ford, J. D., Hill, M. A., & Frazier, J. A. (2014). Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harvard Review of Psychiatry*, *22*(3), 149–161. https://doi.org/10.1097/hrp.0000000000000014

Gioia, F., Rega, V., & Boursier, V. (2021). Problematic Internet Use and Emotional Dysregulation Among Young People: A Literature Review. *PubMed*, *18*(1), 41–54. https://doi.org/10.36131/cnfioritieditore20210104

Göçen, H. B., & Özden, A. V. (2024). Psikiyatrik bozukluklarda otonom disfonksiyon. *Psikiyatride GüNcel YaklaşImlar/Psikiyatride Güncel Yaklaşımlar*, *16*(3), 401–409. https://doi.org/10.18863/pgy.1329118

Gross, J. J., & Jazaieri, H. (2014). Emotion, Emotion Regulation, and Psychopathology. *Clinical Psychological Science*, *2*(4), 387–401. https://doi.org/10.1177/2167702614536164

Haeyen, S. (2024). A theoretical exploration of polyvagal theory in creative arts and psychomotor therapies for emotion regulation in stress and trauma. *Frontiers in Psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1382007

Hall, J. E. (2010). *Guyton and Hall Textbook of Medical Physiology*. Saunders. http://www.doody.com/rev400images/pdf/2010/9781416045748.pdf

Hayes, S., & Strosahl, K. (2004). *What is acceptance and commitment therapy?* A Practical Guide to Acceptance and Commitment Therapy. Retrieved May 12, 2024, from https://books.google.ca/books?hl=en&lr=&id=uFrYJq8tPOIC&oi=fnd&pg=PA3&dq=define+acceptance+and+commitment+therapy&ots=HpJusWbUZq&sig=CFgc2owgLL-u750SsP2KqYyHhrE#v=onepage&q&f=false

Hjetland, G. J., Skogen, J. C., Hysing, M., & Sivertsen, B. (2021). The association between Self-Reported Screen Time, Social media addiction, and sleep among Norwegian University students. *Frontiers in Public Health*, *9*. https://doi.org/10.3389/fpubh.2021.794307

Hormes, J. M., Kearns, B., & Timko, C. A. (2014). Craving Facebook? Behavioral addiction to online social networking and its association with emotion regulation deficits. *Addiction (Abingdon. Print)*, *109*(12), 2079–2088. https://doi.org/10.1111/add.12713

Hou, Y., Xiong, D., Jiang, T., Song, L., & Wang, Q. (2019). Social media addiction: Its impact, mediation, and intervention. *Cyberpsychology*, *13*(1). https://doi.org/10.5817/cp2019-1-4

Hsieh, M., & Stright, A. D. (2012). Adolescents' emotion regulation Strategies, Self-Concept, and Internalizing problems. *Journal of Early Adolescence*, *32*(6), 876–901. https://doi.org/10.1177/0272431611433848

Hu, B., Cui, Y.-L., Yu, Y., Li, Y.-T., Yan, L.-F., Sun, J.-T., Sun, Q., Zhang, J., Wang, W., & Cui, G. (2022). Combining dynamic network analysis and cerebral carryover effect to evaluate the impacts of reading social media posts and science fiction in the natural state on the human brain. *Frontiers in Neuroscience*, *16*, 827396. https://doi.org/10.3389/fnins.2022.827396

Ji, Y., Liu, S., Xu, H., & Zhang, B. (2023). The Causes, Effects, and Interventions of Social Media Addiction. *Journal of Education, Humanities and Social Sciences*, *8*, 897–903. https://doi.org/10.54097/ehss.v8i.4378

Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *51*(6), 706–716. https://doi.org/10.1111/j.1469-7610.2009.02202.x

Kozubal, M., Szuster, A., & Wielgopolan, A. (2023). Emotional regulation strategies in daily life: the intensity of emotions and regulation choice. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1218694

Liu, C., & Ma, J. (2019). Adult attachment style, emotion regulation, and social networking sites addiction. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.02352

Mak, L., Minuzzi, L., MacQueen, G., Hall, G. B., Kennedy, S. H., & Milev, R. (2017). The Default Mode Network in Healthy Individuals: A Systematic Review and Meta-Analysis. *Brain Connectivity*, *7*(1), 25–33. https://doi.org/10.1089/brain.2016.0438

Martin, R., & Ochsner, K. N. (2016). The neuroscience of emotion regulation development: implications for education. *Current Opinion in Behavioral Sciences*, *10*, 142–148. https://doi.org/10.1016/j.cobeha.2016.06.006

Maughan, A., & Cicchetti, D. (2002). Impact of child maltreatment and interadult violence on children's emotion regulation abilities and socioemotional adjustment. *Child Development*, *73*(5), 1525–1542. https://doi.org/10.1111/1467-8624.00488

Mazzoni, G., Venneri, A., McGeown, W. J., & Kirsch, I. (2013). Neuroimaging resolution of the altered state hypothesis. *Cortex*, *49*(2), 400–410. https://doi.org/10.1016/j.cortex.2012.08.005

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen–Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy*, *49*(9), 544–554. https://doi.org/10.1016/j.brat.2011.06.003

Menefee, D. S., Ledoux, T., & Johnston, C. A. (2022). The importance of emotional regulation in mental health. *American Journal of Lifestyle Medicine*, *16*(1), 28–31. https://doi.org/10.1177/15598276211049771

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology*, *74*(2), 116–143. https://doi.org/10.1016/j.biopsycho.2006.06.009

Porges, S. W. (2009). The polyvagal theory: New insights into adaptive reactions of the autonomic nervous system. *Cleveland Clinic Journal of Medicine*, *76*(4 suppl 2), S86–S90. https://doi.org/10.3949/ccjm.76.s2.17

Price, C. J., & Weng, H. Y. (2021). Facilitating Adaptive Emotion Processing and Somatic Reappraisal via Sustained Mindful Interoceptive Attention. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.578827

Przybylski, A. K., & Weinstein, N. (2017). A Large-Scale test of the Goldilocks hypothesis. *Psychological Science*, *28*(2), 204–215. https://doi.org/10.1177/0956797616678438

Qiu, J. (2022). How TikTok Satisfies the Public's Psychological Needs—A perspective from the Uses and Gratifications Theory. *Advances in Social Science, Education and Humanities Research*. https://doi.org/10.2991/assehr.k.220105.199

Radesky, J., Weeks, H., Schaller, A., Robb, M., Mann, S., & Lenhart, A. (2023). *Constant Companion: a week in the life of a young person's smartphone use*. Common Sense.

Raichle, M. E. (2015). The brain's default mode network. *Annual Review of Neuroscience*, *38*(1), 433–447. https://doi.org/10.1146/annurev-neuro-071013-014030

Rieck, J., Wrobel, J., Porras, A. R., McRae, K., & Gowin, J. L. (2024). Neural signatures of emotion regulation. *Scientific Reports*, *14*(1). https://doi.org/10.1038/s41598-024-52203-3

Sacks, D. (2003). Age limits and adolescents. *Paediatrics & Child Health*, *8*(9), 577. https://doi.org/10.1093/pch/8.9.577

Salimi, M., Mahdavi, A., Yeghaneh, S. S., Abedin, M., & Hajhosseini, M. (2019). The Effectiveness of Group Based Acceptance and Commitment Therapy (ACT) on Emotion Cognitive Regulation Strategies in Mothers of Children with Autism Spectrum. *PubMed*, *14*(3), 240–246. https://doi.org/10.26574/maedica.2019.14.3.240

Shaffer, F., McCraty, R., & Zerr, C. L. (2014). A healthy heart is not a metronome: an integrative review of the heart's anatomy and heart rate variability. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01040

Shum, C., Dockray, S., & McMahon, J. (2024). The Relationship between Cognitive Reappraisal and Psychological Well-Being During Early Adolescence: A scoping review. *Journal of Early Adolescence*. https://doi.org/10.1177/02724316241231918

Skoblina, N., Shpakou, A., Milushkina, O., Markelova, S., Kuzniatsou, A., & Tatarinchik, A. (2020). Eye health risks associated with the use of electronic devices and awareness of youth. *Klinika Oczna*, *2020*(2), 60–65. https://doi.org/10.5114/ko.2020.96492

Sloan, E., Hall, K., Moulding, R., Bryce, S., Mildred, H., & Staiger, P. K. (2017). Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: A systematic review. *Clinical Psychology Review*, *57*, 141–163. https://doi.org/10.1016/j.cpr.2017.09.002

Su, C., Zhou, H., Gong, L., Teng, B., Geng, F., & Hu, Y. (2021). Viewing personalized video clips recommended by TikTok activates default mode network and ventral tegmental area. *NeuroImage*, *237*, 118136. https://doi.org/10.1016/j.neuroimage.2021.118136

Tull, M. T., Barrett, H. M., McMillan, E. S., & Roemer, L. (2007). A preliminary investigation of the relationship between emotion regulation difficulties and posttraumatic stress symptoms. *Behavior Therapy*, *38*(3), 303–313. https://doi.org/10.1016/j.beth.2006.10.001

Valkenburg, P. M., Van Driel, I. I., & Beyens, I. (2021). The associations of active and passive social media use with well-being: A critical scoping review. *New Media & Society*, *24*(2), 530–549. https://doi.org/10.1177/14614448211065425

Van Der Wal, A., Valkenburg, P. M., & Van Driel, I. I. (2024). In Their Own Words: How Adolescents Use Social Media and How It Affects Them. *Social Media + Society*, *10*(2). https://doi.org/10.1177/20563051241248591

Wang, Y., Qin, Y., Li, H., Yao, D., Sun, B., Li, Z., Li, X., Dai, Y., Wen, C., Zhang, L., Zhang, C., Zhu, T., & Luo, C. (2019). Abnormal Functional Connectivity in Cognitive Control Network, Default Mode Network, and Visual Attention Network in Internet Addiction: A Resting-State fMRI Study. *Frontiers in Neurology*, *10*. https://doi.org/10.3389/fneur.2019.01006

We Are Social, & Meltwater. (2023). Digital 2023: Global Overview Report. In *Data Reportal*. Retrieved May 3, 2024, from https://datareportal.com/reports/digital-2023-global-overview-report

Xie, J., Xu, X., Zhang, Y., Tan, Y., Wu, D., Min, S., & Huang, H. (2023). The effect of short-form video addiction on undergraduates' academic procrastination: a moderated mediation model. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1298361

Zhang, R., & Volkow, N. D. (2019). Brain default-mode network dysfunction in addiction. *NeuroImage*, *200*, 313–331. https://doi.org/10.1016/j.neuroimage.2019.06.036

Zhou, X., Rau, P. P., Yang, C., & Zhou, X. (2020). Cognitive Behavioral Therapy-Based Short-Term Abstinence Intervention for Problematic Social Media Use: Improved Well-Being

and Underlying Mechanisms. *Psychiatric Quarterly*, *92*(2), 761–779. https://doi.org/10.1007/s11126-020-09852-0

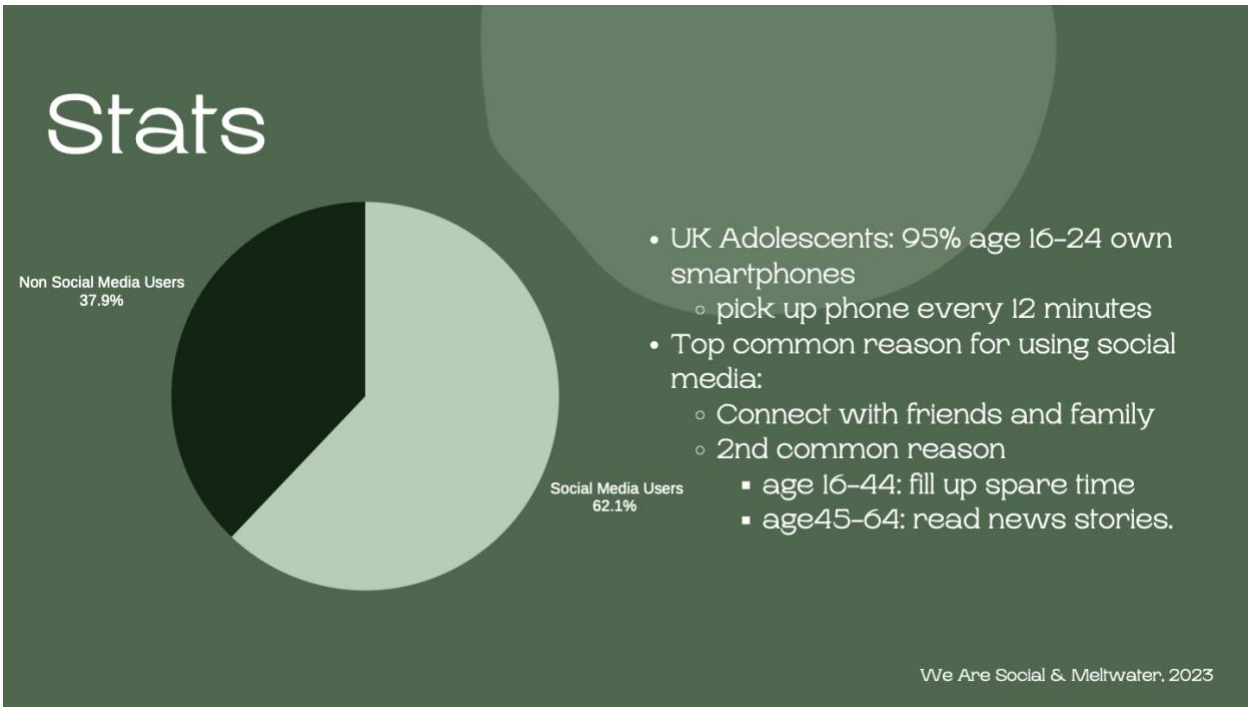
Zhu, X., Zheng, T., Ding, L., Zhang, X., Li, Z., & Jiang, H. (2023). Exploring associations between social media addiction, social media fatigue, fear of missing out and sleep quality among university students: A cross-section study. *PLOS ONE*, *18*(10), e0292429. https://doi.org/10.1371/journal.pone.0292429

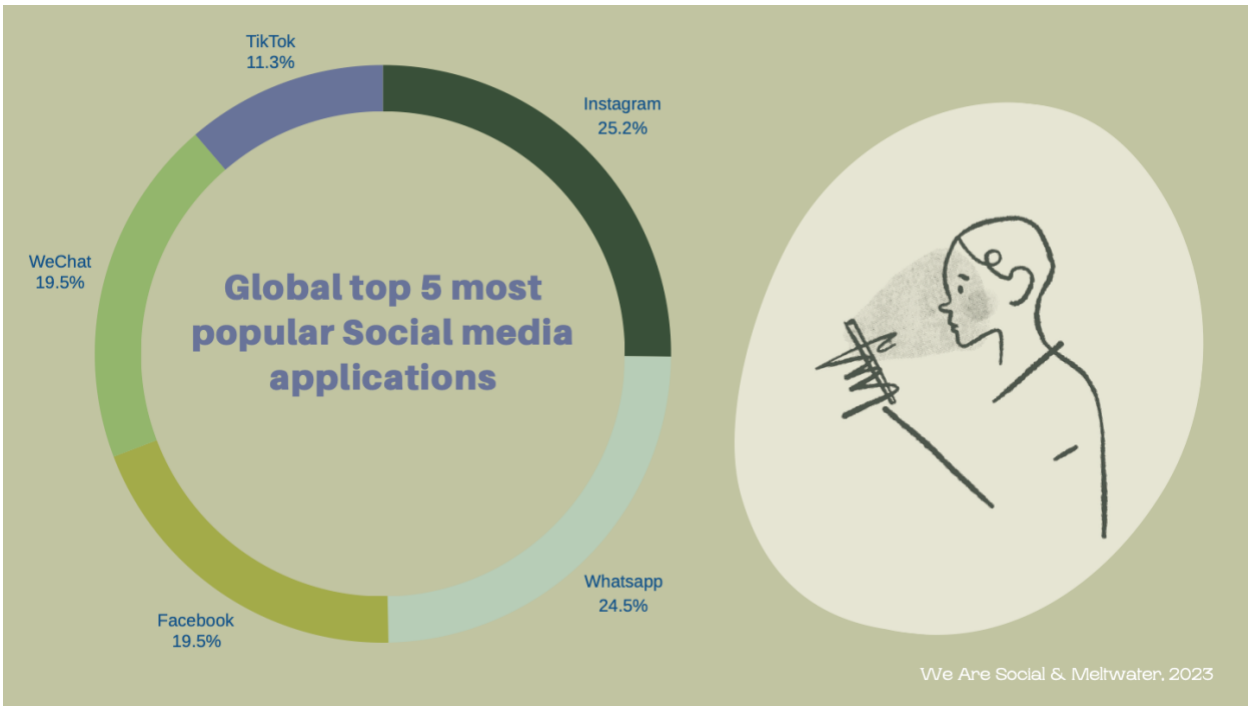
Zhu, Y., Chen, H., Li, J., Xian, M., & Wang, W. (2023). Effects of different interventions on internet addiction: a systematic review and network meta-analysis. *BMC Psychiatry*, *23*(1). https://doi.org/10.1186/s12888-023-05400-9

Appendix A


Workshop: Scroll to Cope
Developing a healthy relationship with social media
Tina Li


Agenda
1. Learning about the connection between problematic social media use and emotion regulation
2. Learning about the six emotion regulation styles
3. What can we do?


Stats
Non Social Media Users
37.9%
Social Media Users
62.1%
• UK Adolescents: 95% age 16-24 own smartphones
◦ pick up phone every 12 minutes
• Top common reason for using social media:
◦ Connect with friends and family
◦ 2nd common reason
▪ age 16-44: fill up spare time
▪ age45-64: read news stories.
We Are Social & Meltwater, 2023


TikTok
11.3%
Instagram
25.2%
WeChat
19.5%
Global top 5 most popular Social media applications
Whatsapp
24.5%
Facebook
19.5%
We Are Social & Meltwater, 2023

Group Discussion: Negative Impacts of Social Media Use

Group Discussion: Negative Impacts of Social Media Use

Eyesight

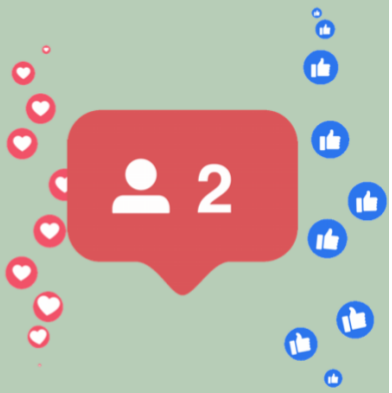
- excessive screen exposure associated with computer vision syndrome (CVS)
- redness, blurred vision, double vision, eye strain

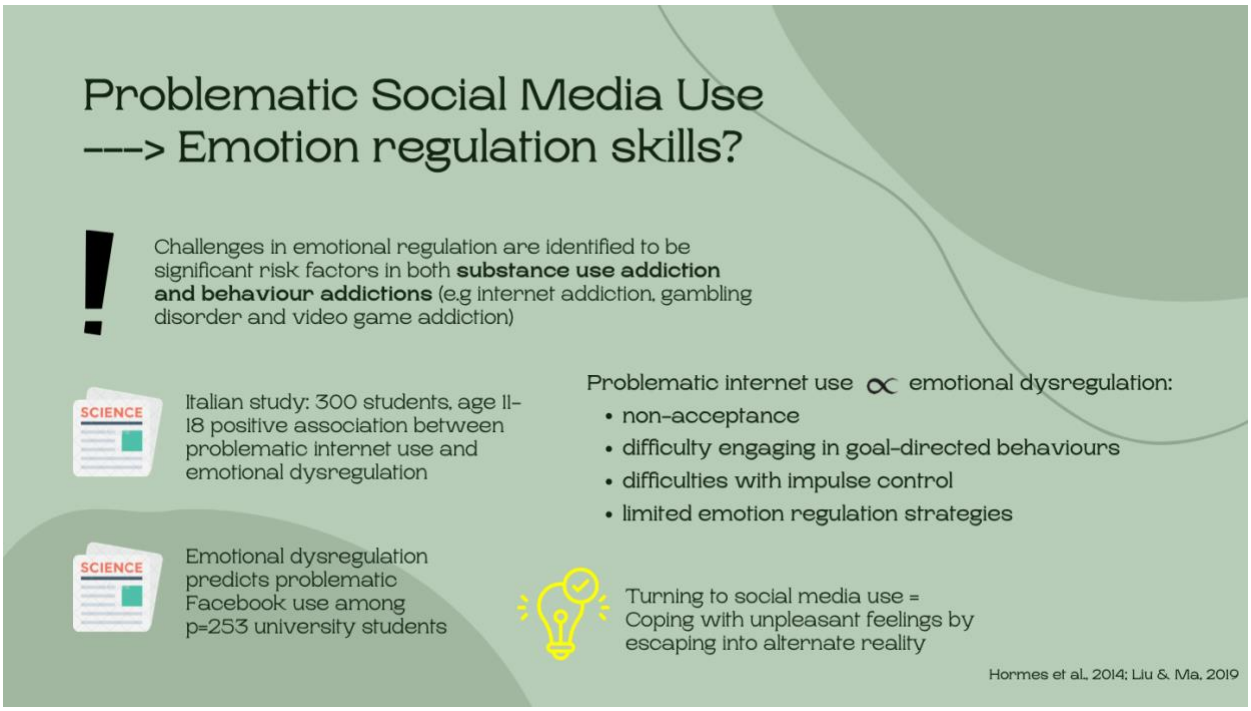
Attention Span

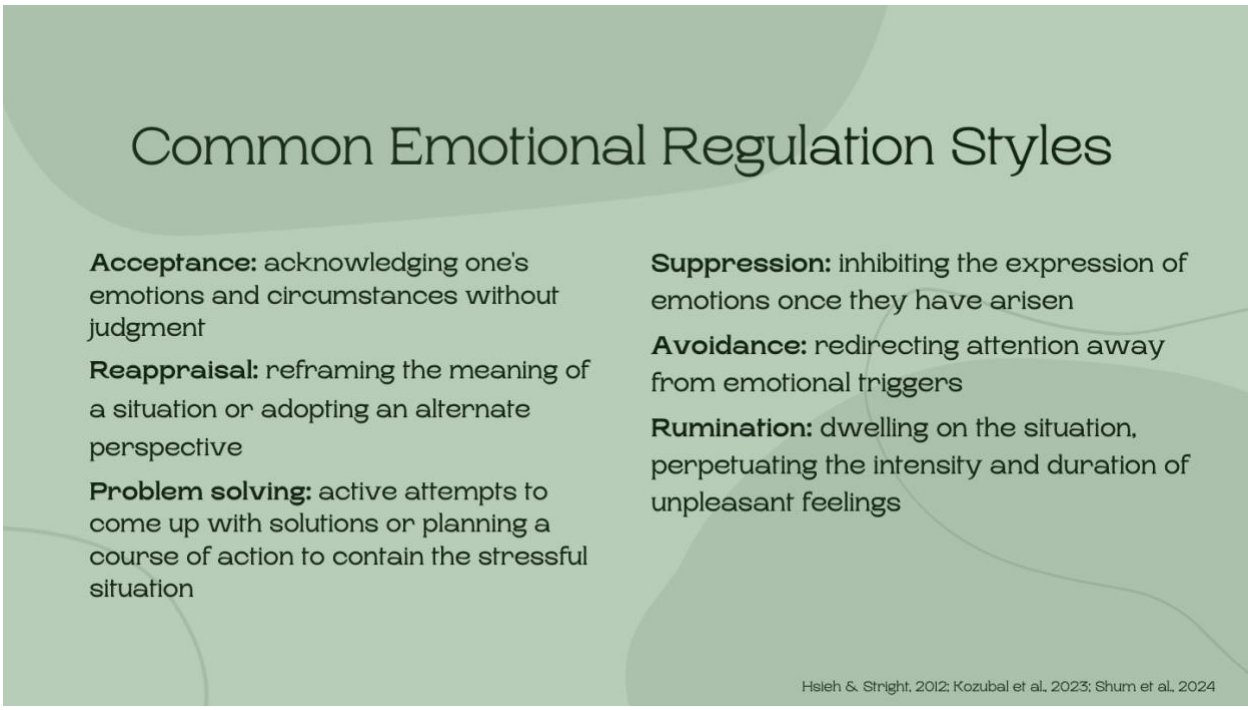
- decreased interest, concentration, increased distractions
- overall longer response time
- memory loss

Sleep Quality

- higher rates of insomnia with higher levels of smartphone use




Problematic Social Media Use
---> Emotion regulation skills?
Challenges in emotional regulation are identified to be significant risk factors in both substance use addiction and behaviour addictions (e.g internet addiction, gambling disorder and video game addiction)
SCIENCE
Italian study: 300 students, age 11-18 positive association between problematic internet use and emotional dysregulation
Problematic internet use ∝ emotional dysregulation:
• non-acceptance
• difficulty engaging in goal-directed behaviours
• difficulties with impulse control
• limited emotion regulation strategies
SCIENCE
Emotional dysregulation predicts problematic Facebook use among p=253 university students
Turning to social media use = Coping with unpleasant feelings by escaping into alternate reality
Hormes et al., 2014; Liu & Ma, 2019


Common Emotional Regulation Styles
Acceptance: acknowledging one's emotions and circumstances without judgment
Reappraisal: reframing the meaning of a situation or adopting an alternate perspective
Problem solving: active attempts to come up with solutions or planning a course of action to contain the stressful situation
Suppression: inhibiting the expression of emotions once they have arisen
Avoidance: redirecting attention away from emotional triggers
Rumination: dwelling on the situation, perpetuating the intensity and duration of unpleasant feelings
Hsieh & Stright, 2012; Kozubal et al., 2023; Shum et al., 2024

Common Emotional Regulation Styles

Acceptance: acknowledging one's emotions and circumstances without judgment

Reappraisal: reframing the meaning of a situation or adopting an alternate perspective

Problem solving: active attempts to come up with solutions or planning a course of action to contain the stressful situation

- Long term psychological well being
- Positive self-image
- Decreased internalization of problems

Hsieh & Stright, 2012; Kozubal et al., 2023; Shum et al., 2024

Acceptance and Commitment Therapy

Cognitive defusion

- importance of non-judgmentally examining "unworkable actions" and discrepancies between values and actions, facilitating motivation for change
- through this technique, ACT targets experiential avoidance and promotes psychological flexibility and acceptance in the process

Effectiveness of ACT in a group-based setting

- Mothers of children with ASD.
- P=30
- Random assignment
- experimental group receiving ACT vs. control group with no intervention

Group-based ACT impacted:

- positive refocusing
- positive reappraisal
- reduced blame of self and others
- reduced catastrophizing situations
- increased acceptance

Menefee, Ledoux, & Johnston, 2022; Salimi et al., 2019

Somatic Reappraisal

- Sustained interoceptive awareness facilitates cognitive reappraisal
- Intentionally directing attention inward
- This practice can also lead to "somatic reappraisal," where shifts in emotional perspective arise from focused attention on internal bodily experiences
- These shifts can lead to enhanced self-understanding, enable individuals to apply cognitive frameworks to connect with their internal experiences with non-judgement and compassion

Price & Weng, 2021

Somatic Reappraisal Exercise Script

Let us prepare our minds and bodies for this mindfulness exercise. Sit in a comfortable but alert posture. Gently close your eyes. Take a few deep breaths, allowing yourself to let go of any tensions and thoughts you may have with each breath out. You may relax your face and any other part of your body that feels tense. Set the intention that this time will be dedicated to re-connect with your own internal experiences. Try to bring kindness and acceptance to your awareness in each moment.

Our emotions manifest in our system as sensations in the body. For example, when we are afraid, our heart may begin to race, our breath may start to quicken, we may begin to sweat, our chests may constrict, and we may have a scared look on our face. So let us tune into the sensations of our body more closely tied to emotions. Let us start with the areas around our face, neck, and shoulders.

Bring your attention to your face... Our faces signal to ourselves and others how we may be feeling...Notice sensations around your forehead...any tension, tingling, pressure, warmth or coolness...Now notice sensations in your cheeks and jaw...Notice the sensations around your lips and chin.... Now bring your kind attention lower to the throat area... and to the shoulders and back...

You may notice that your thoughts distract you from your internal emotional experience. When this happens, just gently bring your attention back to the sensations of your emotions with an breath of kindness
(pause)
You may notice that your emotions may feel unpleasant or pleasant. No matter how it feels, just notice how they change, moment by moment. If a feeling ever becomes too overwhelming, you may always turn your attention back to your breath. But if it is not, see if you can approach it with a breath of curiosity and openness.

As you are present with the sensations and feelings in your body, see if there are any messages your body is trying to tell you...Emotions tell us about our needs in our life...

See if any wishes, needs, or boundaries may be coming up...No need to rush...just ask this of your body, and answers may emerge now or at a later time...See if you can listen in this different way, and notice what may come up... (long pause)

And as we bring this exercise to a close, take a few moments to appreciate the sensations and feelings in your body and how they help to guide you...When you are ready, you may open your eyes and attend to your surroundings

Price & Weng, 2021

References

Amendola, S., Spensieri, V., Guidetti, V., & Cerutti, R. (2019). The relationship between difficulties in emotion regulation and dysfunctional technology use among adolescents. Journal of Psychopathology, 25, 10–17. https://www.jpsychopathol.it/wp-content/uploads/2019/02/03_Cerutti-1.pdf

Hormes, J. M., Kearns, B., & Timko, C. A. (2014). Craving Facebook? Behavioral addiction to online social networking and its association with emotion regulation deficits. Addiction (Abingdon, Print), 109(12), 2079–2088. https://doi.org/10.1111/add.12713

Hsieh, M., & Stright, A. D. (2012). Adolescents' emotion regulation Strategies, Self-Concept, and Internalizing problems. Journal of Early Adolescence, 32(6), 876–901. https://doi.org/10.1177/0272431611433848

Kozubal, M., Szuster, A., & Wielgopolan, A. (2023). Emotional regulation strategies in daily life: the intensity of emotions and regulation choice. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1218694

Liu, C., & Ma, J. (2019). Adult attachment style, emotion regulation, and social networking sites addiction. Frontiers in Psychology, 10. https://doi.org/10.3389/fpsyg.2019.02352

Menefee, D. S., Ledoux, T., & Johnston, C. A. (2022). The importance of emotional regulation in mental health. American Journal of Lifestyle Medicine, 16(1), 28–31. https://doi.org/10.1177/15598276211049771

Price, C. J., & Weng, H. Y. (2021). Facilitating Adaptive Emotion Processing and Somatic Reappraisal via Sustained Mindful Interoceptive Attention. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.578827

Salimi, M., Mahdavi, A., Yeghaneh, S. S., Abedin, M., & Hajhosseini, M. (2019). The Effectiveness of Group Based Acceptance and Commitment Therapy (ACT) on Emotion Cognitive Regulation Strategies in Mothers of Children with Autism Spectrum. PubMed, 14(3), 240–246. https://doi.org/10.26574/maedica.2019.14.3.240

Shum, C., Dockray, S., & McMahon, J. (2024). The Relationship between Cognitive Reappraisal and Psychological Well-Being During Early Adolescence: A scoping review. Journal of Early Adolescence. https://doi.org/10.1177/02724316241231918

We Are Social, & Meltwater. (2023). Digital 2023: Global Overview Report. In Data Reportal. Retrieved May 3, 2024, from https://datareportal.com/reports/digital-2023-global-overview-report