Smartphone Addiction & Attention Deficit Hyperactivity Disorder: Evidence-Based Treatments

By

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Abstract

This research project dives into the indicated relationship between Smartphone Addiction (SPA) and Attention Deficit Hyperactivity Disorder (ADHD) within the context of counselling. This study looks at evidence-based treatments that psychotherapists and counselling clinicians can utilize to successfully address the interconnected difficulties by combining existing literature and empirical studies. The results show the importance of mindfulness-based therapies (MBI), physical activity, social support, and digital health interventions (DHI) in combating and reducing symptoms of ADHD and SPA. The research intends to provide the counselling profession with practical techniques to support individuals dealing with these complex challenges by conducting a thorough analysis of various treatment modalities. Counsellors can have a significant impact on individuals with ADHD and their SPA by prioritizing a comprehensive treatment approach and taking into account the specific requirements of each individualistic client. This approach is crucial in encouraging recovery and enhancing overall well-being.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD), Smartphone, Smartphone Addiction (SPA), counselling, mindfulness-based interventions (MBI), exercise, social support, digital health interventions (DHI)

Dedication

To my clients and future clients. Thank you for your bravery and vulnerability.

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My nuclear family, Joel, Lydia, and Anders, have given up so much so that I can pursue my dream. I am grateful beyond words. The paper that you hold in your hands is a culmination of all of our hard work. Thank you does not begin to cover it. I love you all more than words can express.

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Chapter One: Introduction

In today's fast-paced world, society faces difficulties as more individuals are struggling with Attention-Deficit-Hyperactive-Disorder (ADHD) and Smartphone Addiction (SPA). Many are seeking effective ways to manage these challenges and cope with these issues. This paper examines the use of mindfulness, exercises, and social support interventions as possible techniques to assist persons dealing with both ADHD and SPA. The objective is to offer practical insights to clinicians and individuals seeking holistic approaches to address the interconnected concerns of emotional regulation, behaviour management, and overall well-being by studying the positive effects of various therapies. Through a blend of personal reflection research findings and practical recommendations, this paper aims to shed light on the importance of tailored interventions that consider the unique needs and context of each individual grappling with ADHD and SPA.

When thinking about this capstone, I wanted to gain insight and leave with more tools in my toolbox to aid myself and my current and future clients in an area that would have the most significant impact. Throughout my first year as an intern in private practice, I came across a diverse range of clients, yet each, in some way or another, asked the same question: “Can you give me tools not to use my phone as much.” Having dealt with my struggles with the smartphone and its addictive qualities, I could empathize with my clients, yet was unsure of the most effective way to help them with this plight, as I was barely able to hold the compulsive dependency and need at bay myself. This simple question from my clients sparked the reason for this capstone. This awareness of the cell phone or smartphone conjecture left me with an idea, yet it seemed incomplete. I continued my work with clients, using the techniques I was trying to utilize in my pursuit of phone freedom, such as mindfulness, alarms, well-being apps, and many

more. Even as I write this, I am using an application that keeps me from using my phone by allowing me to plant a tree, and if I go into my phone at all, my beautiful plant begins to die. This is what Martin and Pear (2019), along with D'Zurilla and Goldfried (1971), would call behavioural modification at its finest. I noticed that my neurodivergent clients, more so my ADHD clients, did not respond the same way to the interventions I was using with my neurotypical clients. In hindsight, of course not; their brains are wired differently. It was like a left-hand person using right-handed scissors; it just did not fit. There has got to be a better way. Through that exploration, I came to this: How do we as clinicians best help our clients, no matter how typical, with behavioural addiction such as smartphone use?

What Can be Expected?

You, the reader, can expect a thorough evaluation through the lens of myself as a person-centred counsellor and a student emerging in the world of psychology. From my perspective, I intend to do my due diligence to ensure that the content and research are presented clearly and concisely to the best of my ability. As an objective reader, you can expect some flaws in the process, as they are unavoidable. Although these flaws are present within this capstone, they are not intended. As clinicians, there is a need to utilize our therapeutic judgment to the best of our ability. We must trust our intuition with each of our clients (Itzchakov et al.,2023). The intention of the treatments that come forth in Chapter 2 is not a catchall but more so a springboard to enhance the tools for a base that one can use with their client and can build upon for a holistic overall treatment plan. The aim of this paper is to give a guide to clinicians to work with their clients who are struggling with their ADHD symptoms and with dependency or addiction to their smartphone devices. More on this in the section of personalized treatment.

From the research, it was evident that there needs to be more research on actual treatment for ADHD and SPA. This is a limitation throughout the whole research process. With this understanding, treatments that stood out firmly amongst the two variables were Mindfulness-Based Interventions (MBI), exercise, and social support. Bringing these into focus will enhance the overall treatment for a client who is dealing with the distress of addiction and dependency on their phone. What also emerged from the research was Digital Health Interventions (DHI). All are connected and have the interventions together, and the reader can expect clarity of these processes.

Brief Overview of Research Done

Mindfulness-based treatments (MBI) originating from meditation practices prioritize cultivating present-moment awareness and the distinction between self and others. These strategies aim to reduce impulsive behaviours and addictive tendencies, demonstrating promise in the management of symptoms associated with ADHD and excessive smartphone use (Li et al., 2021). Research conducted by Li et al. (2021) has shown that group mindfulness therapies, which involve practices such as mindfulness breathing and progressive muscular relaxation, can effectively reduce symptoms associated with ADHD.

Strong social support, encompassing familial, friendly, and professional interactions, is crucial in effectively addressing SPA in those diagnosed with ADHD. Group therapy and family counselling are successful treatments that enhance resilience and decrease negative developmental outcomes associated with ADHD (Li et al., 2021). Behavioural treatment and parental training groups are effective therapeutic techniques for alleviating symptoms of ADHD and decreasing excessive smartphone usage (Li et al., 2021).

Exercise regimens possess the capacity to diminish symptoms of ADHD and alleviate

distress resulting from SPA. Engaging in physical activity has been shown to decrease symptoms of ADHD by increasing the expression of dopamine (Azam et al., 2020; Dastamooz et al., 2023). Regular physical exercise acts as a safeguard against substance use disorder. It enhances the general state of well-being in individuals diagnosed ADHD (Azam et al., 2020).

DHI, such as smartphone apps and wearable devices, hold the potential to enhance the accessibility and efficacy of mental health therapy (Sun et al., 2023). Specific applications have effectively mitigated SPA and alleviated symptoms of ADHD (Liu X, 2021; Cárthaigh, 2020). The ability to monitor and track usage habits in real time enables the prediction of inclinations toward addiction (Arora et al., 2023). Telehealth broadens the accessibility of mental health support, which is especially advantageous for those with challenges with executive functioning (Lakes et al., 2022; Phep et al., 2021). Mindfulness-based mobile therapies exhibit potential in managing SPA and ADHD, while additional research is required to establish benchmarks and assure the safety and efficacy criteria for their utilization (Chan et al., 2023; Sun et al., 2023).

Prevalence of Smart Phone Use

In Canada, there has been an increase in smartphone use since the pandemic in 2020. According to Statistics Canada (2023), an overwhelming majority of Canadians, 4-5, own a smartphone. Landlines and cell phones are a way of the past, and this new medium of smartphones has invaded our culture. This stat gets more staggering when you break it down in age: Canadians aged 15 to 45, 96% reported having a smartphone, and Canadians aged 45 to 64 at 87%. This is a growth rate of 4% in 2 years (Statistics Canada, 2023). With a growth rate of 11 percentage points for those over 65 years old (Statistics Canada, 2023). A multitude of questions come to mind when one hears stats like this. If we all have a phone, when are we using them? What are we doing on our phones? Can one be addicted to their smartphone? We can

answer the former two by looking deeper into the statistical data. For the latter question, researchers are perplexed by the answer as well. In the next section and Chapter 2, the literature review, we examine the data gathered by researchers to see what the science says. For now, let us look at the "what" and "when" of the average smartphone owner.

As we all know, there is this distinct need to have our phones. There is denying that smartphones make our lives easier, and after the pandemic the world has become increasingly focused on the need for smartphones, even though we lived without them before. When you leave the house, thoughts like "Do I have my wallet, keys, phone?" dominate. After World War II, which sparked the invention of the mobile phone and it came into being (Farley, 2005). Our phones have become distinctly a part of us. As the above statistics show, most of us in Canada own a mobile device now. Our smartphones are far from those built in the laboratories of D.H. Rings and W.R. Young when they first articulated an actual cellular mobile system in December of 1947 (Farley, 2005). I remember a particular story in which I was at a conference, and the speaker brought a participant up on the stage. She asked one of them what the time was. The participant got flustered and was not sure what to do. The speaker asked what she needed to tell the time; the participant said her phone was in her seat. She ran off stage to her seat to grab her phone and then back on stage to tell the speaker the time. I tell this story to show that we are so reliant on our phones, even to say the time. We have become so reliant on our devices that even when it comes to the simple task of telling the time, we can not do it without our smartphones in our hands. What else do we rely on our phones for? Besides the time? I can hear you roll your eyes and say, "Everything." You would be correct. According to the research of Marketing Charts (Lashbrook, 2021), email, taking photos, surfing the internet, using maps, online

shopping, and using social media are the highest percentages, and there is still much missing on that list. These are the things we spend the most time on.

Purely anecdotally, let us look at a typical night out for my partner and me. 1st, we look up the restaurant and the reviews, order food for our children, contact a babysitter service, turn on music to get ready, and even look up on Pinterest how to do make-up tricks. This is all before we even leave the house. It goes one further: pull up Google Maps on the smartphone to get to the restaurant. The restaurant's menu is online; scan the code, check on the babysitter, look at the bank account, move funds around to pay for dinner, check on the time for when the show is, etc. We rely on our smartphones to enjoy a night of connection between partners. Please do not get me wrong; I believe there is nothing terrible about having our smartphones; on the contrary, it makes nights out easy and accessible for parents and individuals. Smartphones enable us to do things quicker and more efficiently. A smartphone can streamline work, family, contact, finances, etc. The list is truly endless. However, by always having our phones and needing them, or as researchers call it, environmental influence (Morales et al.,2020), behavioural disinhibition becomes a great predictor of forming an addiction (Peris et al., 2020). In other words, the environment that we are in is directly correlated to breed a higher chance of an addiction-forming. The above story illustrates that in our environment, our cell phones are always within our hands' reach, and by being reliant on them, our environment is directly influenced by our behaviour, which increases the likelihood of addiction. This brings up a question: Are different brains more susceptible to that addiction from the environment? For the scope of this paper somebody who has been diagnosed with ADHD are they more likely to have an addiction to their smartphone? For this, we have to dive into what ADHD is.

ADHD

ADHD in a Nutshell

ADHD Is classified as a neurodevelopmental disorder and has research documenting it for more than 200 years (CADDCA, 2023). Freanke et al. (2018) describe ADHD's clinical presentation as heterogeneous, that is, on a broad spectrum of severity and symptoms; they go on to say there is partial overlapping with other conditions. It is a complex clinical picture. This disorder manifests in childhood and can persist into adulthood (Franke et al., 2018; Salvi et al.,2019). 80% of children continue to qualify for that diagnosis in adolescence, and at least 65% have the same impairments in adulthood (CADDCA, 2023). The DSM-5 gives a clinical definition that ADHD is a neurodevelopment disorder that impairs levels of inattention, disorganization, and hyperactivity-impulsivity (American Psychiatric Association, 2013). The inattention and disorganization essentially mean not being able to stay on task, lacking listening skills, and losing materials. An essential factor is that this is inconsistent with age and developmental level. Hyperactivity-impulsivity can mean overactivity, fidgeting, not staying still, intruding on other people's spaces, and an inability to exhibit patience. There are three classifications, and each has its unique ways of displaying the symptomology: hyperactive-impulsivity (H-I) ADHD, inattention (IA) ADHD, and combined (CADDCA, 2023, Romo et al., 2018).

Interestingly, CADDCA (2023) reports that all forms of attention regulation are impaired in ADHD. What this can mean is that those inflicted with this disorder can overfocus and have difficulties breaking away from the task that has their hyperfocus. Something that is stimulating has the same problems with under-focusing. In my work with clients, I affectionately call this the ADHD superpower. The fact that their brains can be so dialled in on hyperfocus is a way to learn at such a high rate. Hupeld et al. (2018) reported that those with higher ADHD symptomology

had higher total hyperfocus and more frequency of those episodes across the three settings of school hobbies in screen time. The trouble is harnessing that superpower of hyperfocus and using it for good and not "evil."

Silverstein and their team (2018) claim that a person who has symptoms of ADHD can have effect's executive function deficits, which is a deficiency in higher-order cognitive processing, self-control, self-regulation, and the ability to plan out and prioritize tasks. Silverstein et al. (2018) findings conclude that executive function deficits are correlated with ADHD symptoms of IA and H-I, and Adler et al. (2017) would agree with the researchers that even though executive dysfunction is not part of the The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.) (DSM-5) criteria, it belongs with ADHD symptomology. The symptoms of executive function are highly dominant in adults who are seeing symptoms of ADHD.

Prevalence of ADHD

With the effects of 4-6% of adults and 5-7% of children, the CADDRA, and The Canadian ADHD Resource Alliance, ADHD has become the most common neuro developmental disorder in Canada. That is approximately 1.8 million Canadians (Vear, 2023). As per Manulife's *Special Report on Employee Health Insights* (Employee Health Treads, n.d., as cited in Vear, 2023), the unique claims of ADHD medications from adults 18 and over grew by 24.5%. This is a monumental spike from the previous years.

Women and ADHD

Throughout history, ADHD has been underdiagnosed in women (Da Silva et al., 2020; Hinshaw et al., 2022; Attoe & Climie, 2023; and Morgan, 2023). Now, however, the diagnosis

ratio for ADHD has climbed to 60% male and 40% female in Canada (Vear, 2023), which differs from the previous years, when women were demonstrably underdiagnosed compared to men. Morgan (2023) found that women are more likely than men to be diagnosed with late ADHD, which is supported by Da Silva et al. (2020) and Hinshaw et al. (2022). Therefore, this means women are living their childhood and adolescence with undiagnosed disorders. How does this affect women, and why does this happen? There is still little available research on this matter. According to available research, this impacts women's self-esteem and mental health identity and has a substantial detrimental effect on all of them, including increases in psychosocial burdens (Morgan, 2023; Attoe & Climie, 2023; Stenner et al., 2019).

Women come from a unique place with this diagnosis, says Morgan (2023) in their research, as there is perceived stigma, minimal health and psychological support, inadequate follow-up, and internalized ableism. Morgan's research (2023) highlights why young girls are not being diagnosed with ADHD, and it comes from a social standpoint where girls are brought up in an environment to be the "good girl," which HID the behaviours associated with ADHD. This is also exacerbated by professional knowledge of how ADHD is present in women and girls. It is not a "typical" presentation compared to the male counterpart. Morgans (2023) continues by talking about how there are gender stereotypes within the diagnostic presentation for ADHD. It is important to understand that, throughout the research, there has been a growing amount of representation of women; however, it is lower than that of male representation. Keeping this fact in the back of our minds as we do good, comprehensive research will aid in understanding how to treat SPA with both genders.

Addiction

Addiction Defined by the Research

The term addiction itself is loaded and has quite stigmatizing connotations when used (Petry et al., 2018). Back in 1990, Goodman stated that the mental health disciplines have criticized the concept of addictions, and it is often used without defining it, which leaves the term devoid of a pragmatic value. Goodman (1990) defines addiction as problematic behaviour as it is marked by a repeated inability to control behaviour and persistence of the behaviour despite adverse outcomes. Griffiths identified several widely acknowledged signs of addiction, including relapse, conflict, mood modulation, tolerance, and salience (Griffiths 1989, 2005). Nevertheless, the explanations of these criteria might encompass a wide range of severity, varying in importance. In a recent publication by Saunders et al. (2017), it was pointed out that the ICD-11 draft defines the main characteristics of substance dependence as follows: (a) a powerful internal urge to use the substance, accompanied by a diminished ability to regulate that usage; (b) a growing inclination to prioritize substance use over other activities; and (c) continued substance use despite experiencing harm and adverse outcomes.

Addiction has been around for millennia, which is up against desire, self-control, and willpower. Self-control is an important part of the treatment model, which we will examine in more detail in Chapter 2. Brewer (2019) from Berkeley University talks about how addiction can be modern-day substances such as food or experiences such as social media and the internet. He continues his research to say that each of these is being increasingly engineered for us as individuals to be hooked on the substance as an experience. Alter (2017) supports Brewer's (2019) claims that companies are planning their product for human behaviour to be addicted or using a reward-based learning paradigm such as operant conditioning that perpetuates addictive behaviours. Every addiction has a learning system; there is a trigger (something else) and then a

reward. Brewer's (2019) continuous research of the orbital frontal cortex in the reward value comparison might be the key to unlearning our addictions.

Behavioural Addiction

According to Alter's (2017) book, behavioural addiction has six components; "compelling goals that are just beyond reach; irresistible and unpredictable positive feedback; a sense of surge in mental progress and improvement; tasks that become slowly more difficult or time; unresolved tensions that demand resolution; and strong social connections." (p.9). Though behavioural addition can be diverse in its presentation, the modern behavioural addition will have one of the above components. The DSM-5 considers behavioural addition as an addictive disorder within substance-related and addictive disorders; they categorize it by the experience of cravings, intense urges, and disruptions of one functioning related to that behaviour (American Psychiatric Association, 2013). In regard to behavioural addiction, Kardefelt-Winther et al. (2017) put out a description consisting of two key elements: (a) notable functional impairment or distress resulting directly from the behaviour and (b) the behaviour's endurance over an extended period. In summary, the theoretical definition of addiction can be distilled from its multiple sources into two main aspects: the significant harm, impairment, or adverse outcomes caused by the behaviour and the psychological factors such as craving, salience, and loss of control, as well as the physical dependence characterized by tolerance and withdrawal, which drive the continuation of the behaviour (Panova & Carbonell, 2018).

The rise of behavioural addictions is quite severe in that state of an epidemic, although purely anecdotal. In Alter's (2017) research and conversations, he came to the understating that the majority of people have some resemblance of a behavioural addiction. Behavioural addictions have compartmentalization to them, which makes them easy to hide; this fact makes

them dangerous as they can go unnoticed for years. The person with the behaviour can be in distress for a long time before they enter therapy. However, the researcher is describing what can be seen in the therapy room with SPA; it can go unnoticed, yet for the client, it raises increasing distress.

In Brown's book “The Gifts of Imperfection,” she describes what addiction can be and how most of us engage in behaviours that help us numb or take the edge off of uncomfortable feelings, such as vulnerability, pain, discomfort, and discomfort (2022). Addiction can be chronically and compulsively numbing; according to Brown (2022), everyone numbs to take that edge off, in some form or another, and the addiction is engaging in those behaviours repeatedly. This is why my clients are coming to me. There is a sense of “stuckness” with the compulsive need to numb. Moreover, what better opportunity to numb than the device in our hand, the smartphone?

Addiction and ADHD

As we defined addiction at the beginning of this section, we know that it is a disruptive behaviour or behaviour pattern that is characterized by a persistent failure to control it despite its harmful effects. Mathew, Morrell, and Molle (2018) found that individuals who report ADHD symptom severity were positively associated with increased addiction likelihood. Romo and their team of researchers (2018) investigate the potential connections between ADHD and the occurrence of concurrent addictions with or without substance abuse. ADHD students scored higher on alcohol, cannabis, tobacco, and behavioural addictions (gambling, compulsive shopping, eating disorders, and internet addiction). These results do not seem surprising as the symptoms of ADHD are impulsivity and risky behaviour. This supports the claims in Dekkers et al. (2016) study, whose findings suggest a correlation between ADHD and a heightened

propensity for making dangerous decisions in a controlled experimental environment, mainly when ADHD co-occurs with disruptive behaviour disorders. These traits, such as reward-seeking (Shoham et al., 2021) and impulsivity (Silverstian et al., 2020; Adler et al.,2016; Kim et al., 2018;), may increase the likelihood of taking risks as a strong desire to avoid delay might cause individuals to ignore options that may be more profitable in the long run, and a lack of behavioural inhibition can lead to overlooking potential favourable choices. Therefore, we can assume that from the research, individuals with this disorder are more likely to have an addiction than their narrow typical counterparts.

Smartphone Addiction (SPA)

This relatively new phenomenon is seen to have many names in the literature. A quick summary of them is as follows. SPA is called by the more contemporary scientific term “nomophobia,” which researchers have come to term as “no-mobile-phobia,” the fear of not having one’s phone (Alter, 2017; Arora et al., 2023). Nomophobia can refer to the discomfort or anxiety about not having a mobile phone present or being without that communication device; this anxiety can change behaviour in daily habits and is in the presence of comorbid mental disorders, e.g., depression and sleep disorders (King et al., 2012; Arora et al., 2023). These are novel, and for this paper's purposes, we will focus predominantly on smartphones as these devices are connected to an abundance of behavioural addictions. For instance, one can shop online, gamble in different forms, play games, interact socially, engage in social media, and watch content (Nawaz, 2023). Problematic Smartphone Use and Dependence (PSUD) found in Nawaz’s (2023) research can refer to the different factors available within the smartphone, such as numerous apps and their impact on behaviour. The researcher extensively explains this term and how it is evaluated. With both the positive and negative effects of the alliance on a

smartphone, it is increasingly vital that we understand what we are investigating. With the negative impacts of cell phone use, we must look at motivational engagement, the purposeful and the goal-oriented, and the impulses. Problematic Media Use (PMU) (a derivative of PSUD*)* is a psychopathology that characterizes a person who is in the trulls of and is in distress from their dysfunctional smartphone use (Sihoe et al., 2023). Sihoe and colleagues (2023) characterize SPA as excessive use, cravings, psychological withdrawal, and dependency on the device as a form of coping.

With the prevalence of SPA rising, researchers are trying to coin what to call this new ailment, hence the multitude of names. For the ease of the following paper, we will use the simplified SPA, which encompasses all the terms. Throughout the paper, I may use them interchangeably, with a heavy lean towards Sihoe and colleagues' (2023) characterization, which distinguishes SPA by excessive use, cravings, psychological withdrawal, and dependency on the device as a form of coping.

Can we be diagnostically addicted to our smartphones? Kim and colleagues (2016) stated that as of right now, there are no accepted diagnostic standards for a disorder typified by compulsive smartphone use, and there is an ongoing debate about whether to label such use as "addiction." To shed some light on this question, a researcher at the University of Victoria (Sihoe et al., 2023) conducted a study looking at the link between SPA and ADHD symptomatology. In their literature review, there was an apparent disconnect between SPA and whether it is the "primary" cause or if it is a "secondary" dysfunction of something else (Billieux et al., 2014). This differentiation is imperative to this research paper, as the primary disorder that Sihoe and colleagues (2023) were discussing was ADHD. Are people who exhibit the symptoms of SPA, is that the cause, or is it the primary? Moreover, does having a diagnosis of ADHD make you more

susceptible to the addictive nature of the smartphone? Additional research is needed to answer these questions thoroughly as the construct validity of SPA as a purposed disorder is constantly questioned by critics (Sihoe et al., 2023). In a recent longitudinal study by Lee et al. (2020), they found evidence that SPA is a primary disorder and presents as an addiction. Billieux et al. (2014) cautions still needs to ring throughout. Should we conceptualize SPA as a distinct pathology? As we advance, we need to tread lightly and do further research in this area.

Justification and Rationale

As I have pointed out, smartphone use is highly prevalent in Canada 4-5 own a smartphone (Statistics Canada, 2023), ADHD is high, with almost 1.8 million Canadians inflected with the diagnosis (Vear, 2023). It is safe to say that those with the disorder are most likely to have a smartphone. Especially if we look at the population of adolescents and adults. The addictive personality comorbidity within ADHD increases the likelihood of an SPA (Kim et al., 2019). With this prevalence, how do we as clinicians treat this growing concern among our neurodivergent clients? This is what my research aims to figure out. What interventions can we use in the session room? What works best for an ADHD brain? With the instrumental statistics of smartphone use in Canada, we as a psychological community need to understand how to best help our clients and ourselves. This is the primary goal of this paper.

Positionality Statement & Theoretical Framework

As a white, cisgender, middle-aged, university-educated, English-speaking, Canadian-born mom of two, and married female, it is important to realize my position and the privilege that comes from that space and how that can contribute to my unawareness and lack of understanding of minorities and experience of marginalization. As a neurodivergent myself, I can

understand how there is a need to adapt specific interventions to help the best individuals achieve the same outcome as neurotypical.

Growing up with a disability that affected my reading and writing abilities has had a profound impact on my worldview. I am constantly looking for discrete adaptations of how to be expected while finding shortcuts to help myself do what my neurotypical cohort can do.

I grew up in a staunch religious household; this left me with the need for people-pleasing, a lack of self-esteem, and a feeling of never being enough. As the belief system laid the foundation, people are nothing without their deity. This can pave the way for addictions, as one can seek anything to fill that empty part of the feeling that is never enough. It is because of my upbringing that I strongly resonate with Brown's (2022) definition of addiction: compulsively and chronically numbing and taking the edge off feeling those feelings. It is a terrible place never to feel you are enough just by being you. Searching for aid to make that feeling less sharp is precisely where my addiction to smartphones started - the compulsive need to be anywhere but where my feet are. This, of course, was exacerbated by the 2020 COVID-19 pandemic. Coming out on the other side is why I am writing this paper today. Where else can we turn to besides our smartphones? Do we get the proverbial monkey, the phone, off our backs? How do we help our clients, neurotypical or otherwise?

The theoretical framework for this paper is highly humanistic and person-centred. Unconditional positive regard and genuineness are great attributes I strive to hold in the therapeutic setting. At the heart of this capstone is ensuring the person behind the issue is respected and honoured throughout the process. As a student clinician, understanding cultural diversity, ethical implications, the person of the therapist, and the person of the client all

contribute to the therapeutic outcomes within any interaction. In a modality sense, I lean toward narrative therapy, acceptance commitment therapy (ACT), internal family systems (IFS), and mindfulness.

While we may be dealing with a specific behavioural addiction in this paper, such as smartphone use, many intersections cross in this understanding that we each have our strengths and belief systems, which contribute to what intervention we use and the results that are seen. Intersectionality, according to Gzanka et al. (2017), is multi-social systems intersecting to produce complex inequalities and unique challenges to every clinician and practice. Every person comes from a different viewpoint that differs from mine. We as clinical counsellors must understand that the person is the expert of themselves (Patallo, 2019). With these definitions in mind, as I write about interventions, I do so with the utmost clarity in cultural competencies and intersectionality to the best of my ability.

Summary

This capstone project seeks to equip clinicians with evidence-based tools for treating clients who struggle with the dual challenges of SPA and ADHD symptoms. As a person-centred counsellor with firsthand experience in managing phone dependency, I have observed that clients, especially those with ADHD, rarely react diversely to different interventions, highlighting the necessity for tailored research in this area. The study identifies three promising treatment areas: MBI, exercise, social support, and DHI, playing a supporting role of the three.

The aim of this capstone is to offer a personalized treatment framework that revolves around these four themes and adapting specific interventions to the varied presentations of ADHD. The paper discussed the post-pandemic surge in smartphone use and its potential impact on clients

with ADHD. By understanding the unique ways in which individuals with ADHD interact with smartphones, this capstone underscored the urgent need for comprehensive and culturally diverse practices. Ultimately, this project is designed to empower clinicians to help their clients overcome SPA in conjunction with managing ADHD, paving the way for sustainable and positive change in the therapeutic context.

Definitions of Key Terms

Smartphone - a manufactured device that combines the functionalities of a traditional cell phone with a handheld computer, offering a wide range of features beyond making phone calls. They provide access to the internet, e-mail, and an unconventional amount of software applications referred to as apps. (Kirvan & Provazza, 2023).

Smartphone Addiction (SPA) - the excessive and uncontrollable use of mobile devices, where individuals experience a persistent urge to interact with their phones. There is a withdrawal experience and anxiety symptoms when the smartphone is not within reach or has access (Sihoe et al., 2023). SPA can be described as the excessive utilization of a device, solid desires or cravings to use it, experiencing psychological withdrawal symptoms when not using it and developing a dependency on the device's means of coping (Sihoe et al., 2023).

Treatment - treatment in therapy encompasses a variety of psychological interventions to assess individuals in modifying behaviours, thoughts, and emotions that contribute to mental health disorders (NIMH, 2024).

Mindfulness-based Interventions (MBI) are therapeutic approaches that incorporate mindfulness practices to address various psychological and physical conditions (Lan et al.,

2018). These interventions are designed to focus an individual's attention on the present moment in a nonjudgmental manner.

Digital Health Intervention (DHI) - our health services that are delivered or enhanced through digital and mobile technologies. DHI are designed to support health systems by improving service delivery and facilitating better health outcomes. Along with the development of elements and use of digital technologies to improve health (WHO,2021).

Psychological Interventions- refer to treatments that aim to identify automatic thinking patterns and false beliefs, decrease participation in dysfunctional behaviours, establish accurate, rational beliefs, enhance supportive adaptive functioning, and ultimately reduce negative thoughts and addictive behaviours (Liu, X. 2021).

Chapter Two: Literature Review

When starting this journey of exploring the literature, the aim was to help clinicians have tools in their toolbox to make a personalized treatment plan for their clients who have troubles with smartphones and whose diagnosis of ADHD prohibits neurotypical tools from working as effectively. Upon reading the conducted research, it became apparent that experts disagree on whether SPA is a primary (Olson et al., 2022; Panova & Carbonell, 2018) or a secondary (Billieux et al., 2015; Alhassan et al., 2018; Aydin & Kus, 2023) addiction. Primary addiction is the initial behaviour that the individual becomes dependent on and is often the most challenging to overcome due to its deep-rooted nature in the individual's life. In contrast, a secondary addiction is when the individual replaces one addiction with another. This secondary form can happen when someone overcomes their primary addiction but then develops a dependency on a different substance or behaviour; for example, if you give up smoking but take up chewing gum, chewing gum would be the secondary addiction. Whether or not SPA is a primary or secondary addiction can impact the tools that therapists use with their clients to treat the addiction, so finding common ground in the future may be imperative to finding solutions. What most articles agreed upon, however, was the fact that smartphones play a dominant role in our society, and there is a level of distress associated with a dependency or an addiction to these multifaceted devices that we carry around in our pockets.

The purpose and scope of this paper are to focus on the interventions that therapists can use within a session with a client who is in distress from their cell phone use and has a narrow divergent pathology with ADHD. The research found interventions that will benefit both the clinician and the client. The following paragraphs will help clarify the research process and define dependency versus addiction.

Search Methodology

Connecting ADHD to SPA is a relatively new topic, and it excites me to dive deeper into this topic and pull different interventions and treatments to use in clinical practice with clients. The literature review focuses on SPA among those who have ADHD, aiming at finding treatment to alleviate the distress caused by mobile phone dependency or problematic use. Primarily, my research entailed going on to research databases and research libraries. The online search databases I used included the City University of Seattle's library and Google Scholar. I also talked to the the librarians who aided me in affectively using each database to the best of my ability. The key search terms used, SPA, treatment, ADHD, and behavioural addiction, were used in different respects depending on the section. Once it was clear that the themes that connected ADHD and smartphone use were mindfulness, social support, exercise, and digital health interventions, I added those words to the key search terms.

I was careful to use only articles from the past five years Unless the info could not be found elsewhere and was an invaluable source of information needed to gain full understanding of the topic. The articles generated look at ADHD and smartphone use and how they are connected. There was a great abundance of articles that tied my two variables together, but research could have done better in terms of putting a focus on treatment and interventions. To find overlap, I focused my research on treatment for ADHD and behavioural addictions. I found articles that research the amalgamation of different types of treatment, from therapy to lifestyle training to executive functioning and more. I then focused my research on treatment for SPA or problematic smartphone use. Once again, I found an abundance of different types of treatment. The overlapping themes of treatment that stood out were mindfulness, social support, exercise, and DHI. Once I found this theme, I dug deeper into the research. I found articles taking my two

variables of ADHD and SPA and found specific treatment interventions. When I came across articles that went with my initial search, I knew I had found the most concise themes to base my research.

As my research was relatively limited, I did not discriminate my articles based on the age of participants or location. Though I initially was looking for research-based primarily in Canada and the United States, only a small amount of research is available in those regions. For this reason, culture could play a role in the treatments and their effectiveness, as we will examine them more thoroughly in the Culture and Environment section below. Where I discriminated was the year each paper was written, as this is a new topic and technologies are changing so quickly, so I wanted to ensure the research was relevant. I focused predominantly on articles published in the last five years and limited my articles outside of that. I also focused on peer-reviewed articles to ensure quality assurance, credibility, and trustworthiness. Each article cited in this paper is from a credible journal or an online platform that indicates all works were peer-reviewed.

Culture and Environment

When starting this literature review, I wanted to focus on Canadian and US research to culturally understand those I would be helping the most. However, most of the research was done in Asian countries. The research far surpassed anything done in Canada or the States. When reading the research, we have to take into consideration the culture in which the research was taking place (Wu & Chou et al., 2023). I would be curious to dive in further to why there is such a staggering difference between them. In my opinion the culture differences are massively different, they're seeing an increase of smartphone use and therefore SPA, and the distress that that brings upon their people. I would also consider the possibility of the political landscape to

have a bearing on why more research is done in Asian countries. More research needs to be done in order to fully understand this concept.

Culture and the environment of our clients are vast components of therapeutic practice. Understanding the environment in which our clients are is imperative for personalized treatment to reach our clients where they are. In a paper done at the University of Arizona, the researcher (Moon, 2012) pointed out that in the United States, for instance, emphasis on individualism and self-reliance can lead to the myth and myth conception about ADHD, such as the belief that success comes from solely personal determination which may discourage individuals from seeking help. Conversely, in countries like Korea, there is a tendency for adults to take personal responsibility for a child's ADHD symptoms, which may be influenced by cultural values that differ from Western norms. Culture can affect how we view what our therapists are saying and how we interpret the interventions and treatments they are implementing (Chentosova-Dutton & Ryder, 2019).

The environment is crucial for understanding how SPA plays a role in our client's everyday life. There is a story about a gardener who sees a plant that is wilting and dying, but the gardener does not think there is something wrong with the plant. The gardener does not think that the plant is not inherently a wrong plant or that genetically, there is something at its core that's wrong. No, the gardener looks at the environment of the plant. Is it getting enough water and sunlight, and is it in the right environment for the condition that particular plant needs? This is what we need to do individually for each of our clients. Understanding the environment that they are in enables us to give them the proper treatment, sunlight, and water that they need for their particular situation.

Note about Age

The research was reasonably limited in the age range that was presented in the articles. Four age ranges were present within the research: child, adolescent, university student, and adult. What I observed through the research process was the amount of child and adolescent research there was compared to adult ADHD research. The more experimental research was predominantly done amongst university students (Pheh et al., 2021; Li et al., 2021; Arora et al., 2023; and Chen et al.,2023). This makes sense as that population is one that is easily researched and more readily available. When researching addiction, there was a high component of substance use research compared to behavioural addictions for all four age ranges. However, adolescents and university students dominated this part of the research. This makes sense as children are not being exposed to substance disorders as early within their environment; therefore, we will not expect to see this often in the research. Substance use articles were used sparingly throughout the capstone to ensure behavioural addictions were the clear focus. The research, however, was quite limited in the behavioural addictions to screen time and children with ADHD. Child research is heavily focused on parent attitudes as well as school environments (Grassmann et al., 2017; Sihoe et al., 2023; and Lee et al., 2020). Because of this, those articles were included if they reached both variables of SPA and ADHD. However, they were not used if those two variables were not included.

When looking at the treatments and interventions, it is important to remember that all age ranges were taken into consideration due to the lack of research articles applicable to this topic. With this limitation of age group categories being from childhood to adulthood, the interventions of exercise, social support, and mindfulness must be able to transcend the age. This means that each intervention, when personalized within a treatment, must be age-appropriate for each age

range. The benefits of mindfulness, social support and exercise for neurotypical clients can result in therapeutic change; for the neurodivergent ADHD client, there is also the propensity for change from incorporating these three treatment models into the therapeutic process.

Treatment

Mindfulness-Based Intervention (MBI)

Mindfulness originated from Buddhist meditation, which centres on actively and fully being aware of one's experience and maintaining this consciousness from one moment to the next (Lan et al., 2018). By practicing mindfulness techniques, individuals acquire the ability to enhance their perceptual detachment from mental impulses. This approach has been considered to be effective in treating behavioural addictions due to the following reasons: (a) meditation can decrease the occurrence of relapse and withdrawal symptoms, (b) mindfulness can regulate an emotional state characterized by distress related to addiction, (c) the technique can assist in reorganizing that inherent worth of life rather than superficial gratification of addictive behaviours, (d) the dominant nature of addictive activities can be diminished, and (e) the ability to wait calmly can be enhanced (Van Gordon et al.,2017).

Recent research that shows the impact of mindfulness interventions on managing symptoms of ADHD, specifically impulsivity and attention for SPA, has shown that individuals with ADHD are more prone to impulsivity and inattention. Mindfulness interventions have been studied to manage addiction and have been shown, especially in the context of ADHD, to aid in both impulsivity and inattention. The research points to mindfulness helping in self-control in smartphone use (Liu F. et al.,2022; Choi et al., 2020), decreasing smartphone overuse and harmful use (Chen et al., 2022; Liu H. et al.,2022), and reducing behavioural problems and

improving attention functioning (Li et al., 2021). Online mindfulness-based interventions have been developed to address the accessibility of therapy for ADHD, aiming to improve core symptoms and executive functioning (Pheh et al., 2021). The research suggests that mindfulness interventions, particularly those delivered online, have shown promising management of ADHD symptoms by producing smartphone use and enhancing behavioural and executive functioning.

Mindfulness and ADHD

MBI typically involves practices that encourage individuals to focus on the present moment and observe their thoughts, emotions, and physical sensations without judgment (Lan et al., 2018). For example, a group mindfulness intervention consisting of eight weekly sessions lasting about two to five hours leads to a notable reduction in ADHD symptoms (Mitchell et al., 2019), and even shorter interventions, such as four weekly hour-and-a-half sessions, have been effective (Mitchell et al., 2019). Xue and his colleagues (2019) did an investigation of a meta-analysis looking at MBI on ADHD symptoms, and they found that specific techniques that have been found helpful include mindfulness breathing, which aids in focusing and calming the mind, progressive muscle relaxation, which involves tensing and relaxing different muscle groups, and guided imagery, where individuals practice peaceful scenes in their mind. These practices help individuals concentrate on their breath, observe the rise and fall of their belly and chest with each breath, and remain present in the moment without wandering thoughts or daydreaming.

Researchers did a meta-analysis and looked at ADHD and mindfulness (Kretschmer et al., 2022). The results indicated that mindfulness may reduce ADHD symptoms, improve executive functioning, decrease problematic behaviours, and decrease emotional dysregulation. However, the outcomes differed depending on the patient's age and what the study looked at. We

will discuss this more in the section on social support and ADHD. The data from the meta-analysis indicates that mindfulness may have positive effects, although more research is needed. The findings of this systematic review showed that mindfulness has the potential to decrease symptoms of ADHD, emotional challenges, and problematic behaviours. Additionally, there is evidence suggesting that mindfulness can enhance executive functioning, quality of life, wellness, and self-compassion. Nevertheless, it is worth noting that the impact was consistently more pronounced in adults compared to children; however, the generalizability of these findings is constrained by the variability in methodology and controls of each study. In other words, the meta-analysis shows that there is a great impact on ADHD symptoms; however, more proficient research needs to be done to see conclusive proof.

ADHD directly affects impulsivity and hyperactivity, which decreases executive functioning skills. Alizadehgoradel and their team of researchers (2021) examined youth between the ages of 18 and 21 who were struggling with cravings and overuse of methamphetamine addiction. They saw that by implementing MBI, there was an increase in executive functioning skills and a decrease in cravings compared to the control group, which did not implement MBI. This study, though it looks at substance use, shows that mindfulness lowers the cravings of addiction while also increasing executive functioning skills. The mindfulness training for the mindfulness group included 12 sessions that looked at different parts of psychoeducation and walked the participants through various strategies and themes. Participants saw an increased awareness of their behaviours after the in-depth work of psychoeducation and mindfulness-based training, which ultimately led to increased executive functioning skills and decreased cravings. By implementing mindfulness-based psychoeducation with someone who

struggles with executive functioning, which the ADHD brain struggles with, counsellors can give their clients tools to deal with addiction.

Mindfulness and Smartphones

Lan et al. (2018) examined the effectiveness of group mindfulness-based cognitive behavioural interventions (GMCI) on SPA in a sample of Chinese university students. The researchers found that the key treatment mechanism of mindfulness in GCMI includes two parts. One part is a change in how individuals perceive their response to sensory and cognitive-affective stimuli, which then allows the individual to view the thinking process objectively and recognize thoughts and responses as a temporary occurrence, the second part. The benefit of this recognition is a decrease in relapse and withdrawal symptoms through the abstraction of maladaptive addictive behaviours with mindfulness. The advantage they found with GMCI is the structuralized program itself. This program can be easily conducted by an instructor or therapist and also has follow-up sessions, which aided in the chance of relapse occurring with SPA. What we as clinicians can take from this research is that having a group dynamic can relieve SPA by building up mindfulness education within the group. Each participant will learn there are differences between why each individual will grab their smartphone; however, the attraction to the phone is the same. Working in a group can solidify the self-awareness each individual acquires.

Researchers in Beijing, China (Lin et al.,2022) wanted to see the effects of brief mindfulness on problematic smartphone use among college students. Each research participant was given a 30-minute, brief, single session on mindfulness intervention. The researchers' aim was to increase self-control through mindfulness interventions for each participant. As defined

by other research, self-control is the capacity to override or modify one's internal responses, such as intentionally interrupting the stream of thoughts, altering emotions, and restraining unwanted impulsive ideas and behaviours. For our clients with ADHD, this seems to be their greatest hurdle. When the researchers implemented their mindfulness interventions, the participants were required to maintain their focus on being aware of the current events and managing distractions generated by irrelevant thoughts. Increasing participants' awareness of their thoughts and teaching them to label the thoughts as irrelevant in managing those thoughts is considered to be a form of self-control training, where the ability to manage oneself is regularly and continuously practiced, leading to great improvement. After this training was implemented, the researchers revealed that self-control fully medicated the impact of have brief mindfulness intervention on reducing problematic smartphone use in their sample. In other words, brief mindfulness interventions not only directly alleviate problematic smartphone use amongst college students but also indirectly alleviate it by enhancing self-control. The comprehensive examination of the direct and indirect impacts reveals that the indirect impact of mindfulness interventions on problematic smartphone use was predominant, constituting 50.3% of the overall impact.

Mind subtraction meditation (MSM) is a comprehensive approach that centres on understanding the essence of human existence and embracing the universal mind (Choi et al.,2020). This approach offers a systematic and scientific method that aims to eliminate negative thoughts in order to allow the universal mind to manifest. The study conducted by Choi et al. (2020) aimed to examine the impact of MSM on adolescents who were suffering from SPA. The researchers observed that the combination of academic demands and social pressures in a high school setting led to an increase in psychological disturbances among adolescents. Adolescents were resorting to their phones as a means of self-soothing due to these environmental factors.

The MSM program was implemented as an innovative strategy to cater to students with a wide range of demands on their time. Researchers implemented the MSM program to be an innovative strategy for students with all of those demands. MSM is founded on the premise that individuals can confront their authentic selves and enhance their comprehension of others by recalling and then eradicating any negative thoughts from their experiences. They can “subtract” the thoughts by ultimately being aware of them. What this means is that researchers helped train the experimental group of adolescents how to reinforce their self-awareness and motivations around their cell phone use and increase their self-esteem by realizing who they are as individuals. Students using the MSM program also found a component of self-control, and when self-control was high, the addictive cell phone use was decreased. Choi and team (2020) classified self-control into instant satisfaction and long-term satisfaction, thinking before acting and controlling desires. What the researchers are saying is that when self-control is low in the individual, they are more likely to give in instant graduation, whereas with mindfulness, self-control goes up where the person's thinking is more future-forward and delays grafting which therefore leads to control desires and not giving in to urges. By implementing the program, adolescents received instant and long-term satisfaction, reflecting on their own behaviour and changing their coping mechanisms. Ultimately, researchers found that using MSM decreased smartphone use because it increased self-control and self-esteem through awareness and self-understanding that changed the addiction behaviour.

Mindfulness with Smartphone Use and ADHD

A higher level of mindfulness correlates with lower levels of mobile phone addiction and reduces time spent on the phone daily (Chen et al., 2021). The client can be aware of what they are doing in the present moment, which helps mitigate the likelihood of reaching for the

smartphone. Chen et al. (2021) looked at mindfulness and mobile phone addiction and how that intervention decreases psychological stress. Researchers found that mindfulness may help individuals manage their cravings, impulsiveness, and psychological responses to stress, which often triggers smartphone overuse. The effectiveness of mindfulness in reducing SPA is linked to its ability to increase emotional regulation. By practicing mindfulness, individuals can become more aware of their habits and impulses related to smartphone use, which can lead to more controlled and intentional use of technology (Chen et al., 2023).

Li et al. (2021) wanted to examine athletes and smartphone overuse with mindfulness and ADHD. The researchers used the lens of basic psychological need theory (BPNT) to explore the variables together. BPNT, which is a subset of self-determination theory, proposes that there are three essential psychological needs that are universal and that every individual comes into contact with. The three primary psychological needs are autonomy (the need for control and independence), competence (the need for the capability to successfully accomplish challenging tasks), and relatedness (the need for warmth and establishing connections with significant individuals) (Li et al., 2021; Vansteenkiste et al., 2020; Putchavala et al., 2023). Every human being has to satisfy these basic psychological needs for their growth and well-being (Putchavala et al., 2023). According to the research, there can be satisfaction of these three needs as well as frustration, and the frustration can be a stronger and more threatening experience than just lacking the need overall.

With this basic lens in place, Li and colleagues (2021) found that mindfulness appears to increase the fulfillment of these three basic psychological needs. The researchers defined mindfulness as a state of ability to be aware of the present moment and experience without being judgmental. Training athletes to perceive the present moment through their own interests and

values while accepting what's happening at that moment decreases self-centred behaviours and promotes healthy relationships. The awareness of the present moment can help individuals function in a way that is congruent with who they are and how they want to be, which satisfies the need for autonomy, as well as competence in achieving. . Another way to say this is the researchers found that mindfulness led to higher psychological needs being met in athletes who have been diagnosed with ADHD. Mindfulness from the study showed need satisfaction and lowered need frustration. This supports Choi and Teams (2020) findings that by bringing awareness to our thoughts and changing or subtracting them, we can increase self-control and decrease smartphone overuse and impulsivity.

The researchers (Li et al., 2021) conducted a closer examination of the mechanisms underlying the relationship between the variables: ADHD, mindfulness and smartphone overuse. What they found was quite interesting. They discovered that need frustration mediated the relationship between ADHD symptoms and smartphone overuse, as well as the relationship between mindfulness and smartphone overuse. By using BPNT, researchers were able to identify the direct path between ADHD symptoms and SPA. Their interpretation of these findings is that when those basic psychological needs of autonomy, competence, and relatedness are not met, there becomes a need frustration. This frustration comes from trying to fill that need by using the smartphone. By increasing mindfulness in the present moment need frustration lessens significantly, so the person can fulfill the need in a more satisfactory way.

Summary

Integrating MBI into the treatment of ADHD and SPA shows potential as an effective method for managing symptoms and behavioural patterns. Mindfulness techniques are

derived from meditation practices that focus on awareness of the present moment and differentiation between self and others. This practice seeks to improve the ability to detach from mental impulses, making them helpful in addressing addictive behaviours. Recent research emphasizes the effectiveness of mindfulness interventions in decreasing symptoms of ADHD impulsivity and excessive smartphone use, especially when delivered through online platforms. This suggests that these interventions have the potential to enhance executive functioning and self-control. Group mindfulness interventions have demonstrated significant decreases in symptoms associated with ADHD, utilizing techniques such as mindfulness breathing, progressive muscle relaxation, and guided imagery. Although additional research is required to establish definitive proof, initial findings indicate that mindfulness interventions show the potential to reduce symptoms of ADHD, such as emotional difficulties and problematic behaviours. Furthermore, research suggests that practicing mindfulness improves one's ability to regulate emotions and behaviours, reduces strong desires, and supports cognitive processes that are responsible for decision-making in planning, thus reducing the severity of addiction to smartphones. BPNT suggests that mindfulness can satisfy the needs for autonomy, confidence, and relatedness, leading to a decrease in the need for frustration caused by ADHD symptoms and excessive smartphone use. The researchers (Li et al., 2021) propose that the development of the present moment consciousness and the fulfilment of psychological needs through mindfulness interventions provide a comprehensive method for managing ADHD and SPA.

Social Support

This section delves into the role of social support in the context of therapy as a treatment for SPA in those with ADHD. As the research for this paper was conducted, there was a common theme that social support for SPA with ADHD seemed to have a significant effect on lowering

the usage of the device. As a clinician, utilizing the idea of social support through family counselling (Lui et al.,2023; Wu et al., 2023), group counselling, peer and personal interactions (Herrero et al., 2019)., along with support and training of parents attitudes and family climate (Smit et al ., 2022)., can play a vital role in treating SPA in individuals with ADHD. This addresses the underlying issues of impulse control problems associated with both variables. Encouraging lifestyle adjustments and seeking professional help are also crucial to comprehensive treatment plans.

Social Support and ADHD

Youth with ADHD who receive social support in their social lives, social integration, and validation of their value are proven to have positive mental health outcomes (Harris-Lane et al., 2021). Harris-Lane and colleagues (2023) identify social support as a key factor in the development of resilience within those who exhibit ADHD symptoms. Christoffersen (2023) integrated and paraphrased Cobb's (1976) and Porritt's (1979) definitions of social support as a social relationship that makes a person feel loved, respected, cared for and appreciated. This relationship is described as constructively sincere, considerate, understanding, and empathetic. An evolution of a person's social support system may encompass elements such as supportive individuals (family and friends), teachers, counsellors, compassionate listening, assistance with problem-solving, reassurance of worth, validation and safety. While this is a hefty, loaded definition, not all aspects of the definition need to be present in order to be socially supported; however, some aspects do need to be present.

Christoffersen (2023) found that adolescents and children with ADHD are at risk of negative development cognitively, socially, and, even later in life, in the occupational sphere if their symptoms are left untreated. Their research looked at if social support could make a

difference. A study using computational modelling and a survey based on the national sampling of 4718 young people from Denmark confirms the detrimental developmental effects in adolescents exhibiting symptoms of ADHD, which is in line with earlier investigations. Their research also showed social development issues are one of the many functional deficiencies that children and people with ADHD face. Pojanapotha et al. (2021) support this finding as their study screen inclusion showed that, when combined with symptoms of ADHD, the risk factors of depression development are high. Researchers found that supportive behaviours from caregivers, such as responding to a child and offering coping mechanisms, raise the child's emotional intelligence and self-control versus non-supportive behaviours, such as dismissing the child's emotions (Smit et al., 2022). What these research studies indicate is that lack of social support increases the struggles of ADHD symptoms, while positive support raises the resilience of children who exhibit the symptoms.

Christoffersen (2023) also found that social support could reduce the secondary developmental problems often seen together in children with ADHD symptoms. The secondary symptoms include, but are not exclusive to, antisocial depressive disorders, school failure, occupational problems, and emotional problems. The results indicated that social support could be a potential intervention for children and adolescents with ADHD symptoms. Breaux et al. (2018) support this finding and take it one step forward; the results of their longitudinal study indicated that parents reported that when using supportive reactions to their children's emotional behaviours, their children responded with higher emotional regulation, even those with high ADHD symptoms. A year later, the non-supportive parent reactions reported an emotional liability for the same child. With proper social support, a child with ADHD symptoms can learn to regulate their emotions effectively and decrease the distress that comes from their diagnosis.

A parental figure's attitude and perceptions are huge components of social support when dealing with children and adolescents. Smit et al. (2022) looked at a parenting program that helped parents with positive parenting and gave them tools to increase their awareness of their children. Clinicians should take comfort in the fact that promoting positive parenting may increase parents' usage of these techniques and decrease depressive and withdrawn behaviours in their children or adolescents. Treating parenting and child behaviours together may prove to be the most thorough and beneficial therapeutic method when working with families who have a child or adolescent who has ADHD. Parents are advised to adopt two general strategies to assist in the development of their children's emotional functioning: utilizing emotionally focused practices and creating a positive emotional environment for the family. Having a strong positive emotional climate in the family proves to decrease distress from ADHD symptoms, confirming that social support is a huge component of ADHD support.

Social Support and Smartphones

Social support has been recognized for decades as a crucial factor in promoting health and well-being for not only our neurodivergent ADHD brains but also for neurotypicals (Herrero et al., 2019). Herrero and their team (2019) investigated SPA and social support in a three-year-long attitudinal study. According to the researchers, social interactions and relationships can provide individuals with assistance, comfort, and a sense of belonging. In this time of the mobile era, smartphones have become a central tool for social interaction, offering various means of communication such as text, voice, and video. However, there is a paradox where lower levels of real-life social support are associated with higher levels of SPA. The researchers are saying that smartphones are taking the place of real-life, in-person social support. The paper continued by claiming that the reduction in addiction would be proportional to the rise in support.

Researchers found that the reverse of the wrong type of support could also increase problematic smartphone use or even SPA (Lui et al., 2023). After the pandemic in 2020, researchers in China found that college students' problematic smartphone use and SPA rose quite significantly (Lui et al., 2023). They investigated parental psychological control over college students and how that may have led to high social anxiety, which pushed more smartphone use that led to SPA. Parental psychological control looks like invasive parenting methods, intrusive strategies such as belittling and causing guilt, as well as refraining from expressing love to their children to manage their children's behaviour. Lui and colleagues used the social phobia inventory, the mobile phone addiction tendency scale, and the parental psychological control questionnaire to assess social anxiety, problematic smartphone use, and parental psychological control. The results of the research showed that social anxiety was positively correlated with higher problematic smartphone use, parental psychological control had a significant correlation with their children's social anxiety, and social anxiety was positively related to higher problematic smartphone use. The results also indicated that social anxiety played a mediation role in parental psychological control and problematic smartphone use. This indicates that high psychological controls from the parents positively correlate with children of college age having more addiction issues with their smartphones.

The researchers continued by explaining that social interaction on mobile networks helps individuals feel more secure and natural during virtual conversations, whereas social settings in real life tend to make people with social anxiety feel uncomfortable and less safe (Ren et al.,2017). As a result, individuals might use their phones more frequently, which could lead to problematic smartphone use. Another critical reason why socially anxious people are more likely to have problematic smartphone use is that they also use their phones as a means of coping with

unpleasant emotions (Zhitomirsky-Geffet & Blau, 2017). Based on the study's findings by Lui et al. (2023), college students who experience strong parental control from their parents may not demonstrate their full potential in social situations. They might be frightened to speak to others, which could lead to social anxiety in fear and internal uneasiness, which would hinder regular communication with the outside world. These unfavourable emotions encourage people to use their phones, which increases the risk of phone addiction. College students' social anxiety and propensity for problematic smartphone use may be lessened if clinical workers concentrate their intervention efforts on the psychological controls that parents have over their children. They should also provide guidance to the parents on how to lessen this control. Family therapy is an intervention technique that can be used therapeutically to more effectively and interfere with parental psychological control by addressing patterns of parent-child interaction, modifying family rules, and reconstructing boundaries (Lui et al.,2023; Wu et al., 2023).

Social Support with Smartphone Use and ADHD

Social support plays a pivotal role in mitigating the risk of SPA However, it is crucial to understand its specific manifestation. A study by Kocyigit and colleagues (2021) explores the connections between parental attitudes, social support, and problematic smartphone use among children and adolescents diagnosed with ADHD. The researchers found that these individuals exhibited an increased tendency for novel seeking, which in turn amplifies their susceptibility to SPA. This propensity is further heightened by the parent's reduced protective attitudes toward smartphone use, paving the way for a potential addiction. For individuals without ADHD, smartphone use is typically associated with novel seeking and low persistence, but no significant correlation was found between parental attitudes and SPA. However, for those with ADHD, an

increase in novel seeking coupled with less parental protectiveness was linked to increased problematic smartphone use.

As clinicians, understanding these temperament features and parental attitudes toward adolescents is essential when dealing with this population (Lui et al.,2023; Wu et al., 2023). The studies above emphasize the importance of adequate social support from parents in curbing the rise of SPA. Thus, for working with a broad age range, it is crucial to comprehend how family context influences addictive tendencies toward smartphone use. As we only get our clients for 50 minutes a week and the families are with them most of the time, it is important that we look at the family as a subset of treatment. Practically speaking, in order to stop smartphone overuse, it is necessary to lessen ADHD symptoms and need frustration. Psychological therapies, including behaviour therapy and mental skill training, can be used to control symptoms of ADHD. ADHD medication management is another option, if needed, for those who have extreme or severe symptoms of the disorder (Putchavayala et al., 2023). Manipulating social circumstances can help prevent that need frustration; for instance, parents, coaches, or teachers can receive education on how to avoid employing authoritarian parenting or parental psychological control parenting methods and walk away from forcing individuals to think and behave in a certain way (Lui et al.,2023; Li et al., 2021; Putchavayala et al., 2023).

Group therapy has been identified as a potentially effective intervention for SPA offering a nurturing setting that promotes effective communication, establishment of boundaries and cultivation, and a sense of community. A research investigation conducted on a cohort of Korean adolescents revealed that 7.5% of participants were classified as exhibiting symptoms of SPA (Kim et al., 2019). The findings of the studied indicated a subsequent association between symptoms of ADHD and the likelihood of developing SPA, even after accounting for other

characteristics. This implies that ADHD could potentially serve as a subsequent moderator for SPA, underscoring the need for focused therapies. The efficacy of group therapy as a treatment strategy for individuals with ADHD experiencing SPA has been established, as group therapy offers several advantages. In a nurturing atmosphere, group therapy offers a platform for folks to exchange their experience and monitor their progress alongside others who encounter comparable difficulties. The collaborative encounter has the potential to move and mitigate sentiments of loneliness and serve as a catalyst for behavioural change (Kim et al., 2019;). This can be essential for individuals with ADHD, as it provides social support that fosters a sense of belonging in the real world, away from digital sources. A collective environment facilitates interpersonal connections among individuals, cultivating a sense of community that could provide support and empathy. Participating in direct interpersonal interactions during group therapy sessions can induce a soothing impact and foster a feeling of safety. This phenomenon shows those diagnosed with ADHD as they may excessively depend on digital content as a means of social support.

Summary

In the context of ADHD, this section highlights the critical role that social support plays in overcoming SPA. It emphasizes how important it is to have relationships with family, friends, and support workers, such as teachers, coaches, and therapists, in order to minimize smartphone use and manage impulse control problems linked to ADHD (Lui et al.,2023; Wu & Chou, 2023; Herrero et al., 2019). Group therapy and family counselling are two successful interventions in this regard. Several studies revealed that social support has a very probable effect on the mental health of young people with ADHD by promoting resilience and reducing adverse developmental consequences of the diagnosis (Kim et al., 2019). Additionally, although smartphones provide

opportunities for social engagement, use of them frequently takes the role of in-person social support, which increases the risk of addiction, especially when combined with psychological control from parents (Kocyigit et al., 2021). In order to mitigate the symptoms of ADHD and lessen the need for excessive smartphone use, effective therapeutic strategies such as behavioural therapy and parental training groups can be utilized. Group therapy has the potential to encourage real-world connections and behavioural change. Utilizing group therapy can provide a holistic approach to addressing the issue of SPA in individuals diagnosed with ADHD. This method not only helps in mitigating the risk factors associated with marked SPA, but also fosters a supportive environment that enhances communication skills and nurtures a sense of community. The strong correlation between ADHD symptoms and SPA underscores the need for targeted treatment methods like group therapy. This approach could serve as a potent weapon in our arsenal to combat this growing concern effectively. In summary, this section emphasizes the value of social support in reducing SPA in individuals with ADHD and stresses the necessity of all-encompassing therapeutic interventions that deal with behavioural patterns, emotional control, and family dynamics.

Exercise

After the 2020 COVID-19 pandemic, the use of smartphones has increased dramatically, and it has become a concern to find a treatment for researchers; physical exercise has been a dominant research trend (Zaeng et al., 2022; Liu, H., et al., 2022; Guo et al., 2022). According to the research, physical exercise appears to be a protective factor for SPA (Zaeng et al., 2022). ADHD is a significant risk factor for SPA, with individuals with ADHD having higher odds of developing SPA compared to those without ADHD, states researchers (Kim et al.,2019). As stated before, due to their impulsive behaviour and sensitivity to the instant gratification that the

smartphone offers, people with ADHD symptoms have a higher likelihood of developing SPA (Kim et al.,2019). Given the strong association between ADHD and SPA, incorporating exercise into therapy can be a beneficial strategy. Exercise can serve as a healthy alternative to smartphone use, providing a different form of reward and engagement that can help manage ADHD symptoms and potentially reduce the risk of SPA.

Exercise and ADHD

Exercise has proven to be a highly effective strategy for controlling symptoms of ADHD (Mehren et al., 2020; Neudecker et al., 2019; Vysniauske et al., 2020; Den Heijer et al., 2017). It not only enhances executive functioning but also encourages dopamine release and aids in behaviour regulation. While adults with ADHD can choose from a variety of exercises to help manage their symptoms, children with ADHD must maintain an active lifestyle throughout the day (Den Heijer et al., 2017). Both cardiovascular and non-cardiovascular exercises show promise in alleviating the symptoms of ADHD (Kim et al.,2019). Regular exercise can improve mood, physical health, and cognitive performance (Yuan & Raz, 2014), all of which can significantly benefit individuals with ADHD. However, it's important to note that exercise should not be the sole treatment but part of a holistic, personalized treatment routine.

According to Neudecker and associates' (2019) systematic review, there is currently no evidence-based recommendation for the frequency, intensity, or duration of exercise that should be used with the ADHD population to achieve the desired effects. However, some initial trends regarding the impact and specific exercise regimes can be identified. In terms of long-term health benefits for children and adolescents diagnosed with ADHD, qualitative aspects of exercise may be significant. Exercise therapies can be provided in a highly systematic manner, with virtually

no side effects, and are far more cost-effective than behavioural or medication-based interventions. The former is also relatively easy to administer and follow (Vysniauske et al., 2020). This underscores the significant role of exercise in personalized treatment for individuals struggling with ADHD symptoms. Although research on the type of exercise is limited, it has been suggested that exercise programs involving complex and regulated movements and cognition have a strong influence on functional outcomes compared to repetitive aerobic or treadmill exercises (Vysniauske et al., 2020). Vysniauske and their colleagues (2020) conducted a meta-analysis to determine the impact of physical exercise on executive functioning and motor skills in children with ADHD. They found that exercise has a moderate and significant dose-response effect.

An important finding in the research was the willingness to exercise or attitude surrounding exercise. This is an essential note because people with ADHD frequently struggle with time management and organization (Aadil et al. 2008); therefore, the willingness or drive to exercise is crucial in order to engage in that activity. Cochrane et al. (2022) surveyed their sample on their preferences and attitudes to exercise in medicated and unmedicated adults with ADHD. This survey found that if exercise served as a standalone or complementary treatment, participants were prepared to invest a significant amount of time in that activity. The most common way to support an exercise intervention was through a personalized app or in-person sessions with a personal trainer or health expert. The social support of a coach or a personal trainer was a main selling point for those who have ADHD. The researchers found that there was a willingness to participate in exercise among their participants; however, they were more likely to have a better attitude about exercise if there was a social component included.

The umbrella review from Dastamooz et al. (2023) can confirm what the other research is showing. The researchers looked at the studies conducted on the effects of exercise on mental health, cognitive function, and ADHD symptoms in children and adolescents with ADHD from 2015 to 2022. They found substantial evidence to support the idea that exercise can help with inattention, inhibitory control, and cognitive flexibility. On the other hand, there was little indication that exercise improves working memory, emotional regulation, or social skills. Moreover, the effects on hyperactivity and behavioural functioning did not significantly differ from one another. This finding shows the fundamental need for a personalized treatment model for each individual, as exercise alone cannot be a stand-alone treatment. It needs to be one part of an all-encompassing treatment (Den Heijer et al.,2017).

Exercise and Smartphones

Physical activity has been shown to be a critical preventive factor against SPA (Liu, H., et al., 2019). In addition to exercise being central to maintaining good health, physical activity has a significant role in managing and preventing the chain of behavioural addictions and mental disease (Marconcin et al., 2022). Making improvements to one's quality of life through physical exercise can assist in satisfying fundamental psychological demands, reducing the desire to use smartphones excessively (Li et al., 2021). Each of the two groups of researchers, Mehren et al. (2020) and Li et al. (2021), discovered that when a participant engaged in physical activity, it resulted in a reduced stress response, an increase in quality-of-life satisfaction, and a reduction in the participant's usage of their smartphones. After engaging in physical activity, these behavioural improvements resulted in a decrease in impulsivity and hyperactivity and an improvement in attention and executive functioning (Mehren et al., 2020), which led to a

decrease in the craving or urge to reach for the mobile device and less and the use of smartphones (Li et al., 2021).

A systematic review done by Liu, H. and their team in 2022 explored various interventions that other regions have done to mitigate the issue of SPA, the role of physical exercise, and psychological strategies. They found that exercise reduces SPA in the population that they studied consisting of college students. Exercise interventions, particularly those lasting for more than eight weeks with sessions lasting about 30 to 60 minutes, have been shown to be effective at lowering problematic smartphone use. The researchers also discovered an intriguing fact: since psychological and social adaptation can improve well-being and lessen reliance on smartphones for emotional support, they may act as mediators in the relationship between physical exercise and reducing SPA. The researchers are saying that engaging in exercise at least three times a week creates enhanced well-being within the participant that carries over into social interactions instead of going to the device for those social interactions and connections.

Recent research by Zang et al. (2022) shed light on the relationship between physical exercise and SPA, revealing how self-control, rumination, and psychological distress, with loneliness, play a moderating role in the mediating effects. Self-control, rumination, and psychological distress acted as mediators between physical exercise and SPA. This means that when rumination in psychological distress is present, and there is a lack of self-control, the person is more apt to reach for their device to deal with those negative emotions or hostile states. This is confirmed with the research of Guo and their team (2022). With high levels of self-control and physical exercise, SPA is decreased. Loneliness has a moderating effect on these interactions as well. Particularly, the impact was more significant among college students who experienced greater levels of isolation. This research study from Zeng et al. (2022) shows a

correlation between college students' physical exercise and SPA. It demonstrates the necessity for clinicians, educators, and parents to prioritize the physical exercise of these students. Ultimately this research highlights the urgent need to promote physical exercise as it provides a visible approach to mitigating the increasing prevalence of SPA and its associated psychological distress.

Exercise with Smartphone Use and ADHD

It has been discovered that physical activity has a negative correlation with SPA (Guo et al., 2022), and it may have an indirect impact on SPA by promoting self-control, lowering psychological discomfort, and ruminating. Exercise effects on SPA can be mitigated by loneliness, indicating that social factors may potentially influence addictive behaviours, as we have seen in the social support section of this paper. Grassmann et al. (2017) observed that a routine of regular physical activity can lead to neurobehavioral changes such as reduced impulsivity and hyperactivity. These characteristics are typically found in individuals with ADHD and may contribute to SPA. In addition, physical activity is advantageous for overall health and well-being, and it demonstrates the capability to enhance mood, quality of life, and lower stress responses, all of which are especially pertinent for those who have ADHD (Mehren et al., 2020).

An increasing body of research suggests that physical exercise may play a role in the treatment of symptoms associated with ADHD, including impulsivity and hyperactivity, which can lead to an increased usage of smartphones (Mehren et al., 2020; Neudecker et al., 2019; Vysniauske et al., 2020; Den Heijer et al., 2017).. Along with this, there is a significant amount of research done to prove that exercise is a substantial treatment for SPA (Marconcin et al., 2022;

Guo et al., 2022; Zang et al., 2022; Liu, H., et al., 2019). Mehren and colleagues' (2020) research has demonstrated that engaging in physical activity can lead to improvements in executive functioning as well as reductions in fundamental symptoms of ADHD. Aydin et al. (2023) support this claim that physical activity can improve executive functioning and attention, providing a potential solution to the inattention associated with problematic internet use from a smartphone. The above research would be in agreement with both of the researcher's claims. After an in-depth search, there is a lack of evidence connecting the two variables together. More research is needed in this area to connect SPA in those who have ADHD with exercise as a treatment intervention. From the overview, we can see the connection between the two; however, there needs to be a deeper investigation into whether exercise helps individuals with ADHD treat their SPA or not.

Summary

In essence, these studies found that physical exercise can serve as a protective factor against SPA. For individuals with ADHD who are grappling with SPA, incorporating routine physical exercise is a great strategy to improve their overall well-being and manage symptoms effectively. Moreover, exercise emerges as a promising intervention for individuals with ADHD to manage symptoms and potentially reduce SPA. The benefits of exercise extend beyond immediate physical health to increasing executive functioning levels and mental health. It could be a key component to a holistic treatment of SPA and ADHD

As clinicians, we glean that encouraging an exercise regime in our clients' daily lives has the potential benefit of decreasing their ADHD symptoms and also decreasing the stress caused by SPA. A study of the literature on the link between physical exercise in student groups and

SPA found that SPA can be lowered by getting more students to play sports and do physical activity (Azam et al., 2020). An interesting finding was that swimming reduced ADHD symptoms by enhancing the expression of dopamine, making it a potentially beneficial exercise for children and adolescents (Dastamooz et al., 2023). By engaging our clients in sports, they get the social component and the physical activity benefits of the exercise. Liu X.'s (2021) systematic review indicated that exercise therapy is a good choice because it is low-cost, easy to run, easy to promote, and allows for independent training. Schools and classes can utilize online remote physical education teaching activities to facilitate teacher-student interactions and instill sports and exercise habits and attitudes in students. This can be achieved through the use of online applications where students and adults alike can engage in exercise, like yoga, aerobics, Tai chi, and more. Ultimately, as clinicians, our duty is to harness the power of physical exercise as a therapeutic tool by integrating it into our clients' daily routines to combat ADHD symptoms and lessen the stress caused by SPA. By doing so, we not only promote physical health but also help to build a robust defence against psychological stress, paving the way for a healthier, more vibrant future for our clients.

Digital Health Interventions (DHI)

DHI, such as computer-assisted therapy, smartphone apps, and wearable technologies, are widely recognized for their significant potential to enhance the uptake and accessibility, efficiency, clinical effectiveness, and personalization of mental health treatments (Holli et al 2016). It was found that management of both SPA and ADHD symptoms were supported through the DHI. Liu X. (2021) showed in their systematic reveal that application restrictions such as *Familync* and *Lock n' LoL*, to name a few, showed using phone apps can decrease usage or the attractive ability that phones have the propensity for can decrease the use. Furthermore,

implementing limitations on the use of applications could be a financially effective method to decrease SPA (Cárthaogh, 2020). Therefore, by utilizing the phone itself, the behaviour can change. According to Lakes et al.(2022), a systematic review of the research provides evidence for the effectiveness of various DHIs; their analysis offers an overview of the current state of the field, they urge for further investigation and emphasize the importance of increasing the development of evidence-based products from initial concepts. In other words, they stress the need to speed up the process of looking for evidence-based products to enhance the digital health sector.

Emerging smartphone applications that monitor phone usage attributes are proving to be a promising and accurate technique for researchers to anticipate SPA. The use of the smartphone itself can aid researchers in more accurately and quickly predicting SPA. Arora et al. (2023) discovered that specialized smartphone applications designed specifically for tracking phone usage attributes could provide precise measurements of real-time usage trends, serving as an investigation for SPA. These applications can replace questionnaire-based subjective data with objective indicators of smartphone usage features. In other words, the applications within the cell phone itself were able to predict smartphone usage behaviour more quickly than questionnaires, revolutionizing the way we investigate SPA. This shift in research methodologies could potentially replace conventional questionnaire-based approaches with real-time, unbiased assessment of smartphone use, thereby improving the precision and efficiency of predicting SPA, as well as helping clients monitor their own usage throughout their day.

Through DHI, such as Telehealth, there is an ability to increase our reach as therapists to people who need more cognitive and psychological aid that are struggling with SPA and have ADHD symptoms (Lakes et al., 2022; Pheh et al., 2021). By meeting our clients who struggle

with executive functioning skills, such as getting somewhere on time, or being uncomfortable in certain situations, telehealth can transcend those barriers and allow us to connect with our clients on the level they are comfortable with. While scientific interest has increased in utilizing DHI, commercial interest has developed far more rapidly (Lakes et al., 2022). This means that the market is demanding that digital applications be there, but the scientific world has not caught up to the efficacy of these applications. Currently, there is a diverse selection of items accessible on the Internet and in app stores, promoting the possible therapeutic advantages for individuals with ADHD in their families. The effectiveness of most, however, is mainly unknown.

From the above, we know that mindfulness can increase self-control for SPA for those who have ADHD. Chen et al. (2023) investigated mobile mindfulness meditation (MMM), which refers to the practice of mindfulness meditation that is conducted using mobile devices, such as smartphone apps, rather than in-person interaction. MMM has been found to exhibit comparable or superior outcomes to traditional face-to-face interventions (Kerst et al., 2020), due to its advantages of accessibility, lack of time and space limitations, minimal or no cost, and privacy (Bruhns et al., 2021). Therefore, MMM has garnered significant interest in enhancing the psychological well-being of students who struggle with SPA and ADHD.

Schoenfelder et al. (2017) investigated mobile health technology and social media and offered interesting ways to connect with adolescents who are most likely to stop ADHD treatment in order to encourage them to do more physical activity. The pilot study looked at whether an interactive intervention like using a Facebook group or a mobile health-connected wearable activity tracker could get adolescents with ADHD to do more physical exercise. What the researchers found was there was more interaction and less dropout rate, the teens were

engaged and focused well-being part of the physical exercise as well as the social aspect. With the researchers found however was a decline once the program was done.

After reading the research, a curiosity about utilizing DHI within the smartphone with ADHD clients who are struggling with their addiction was whether the reliance on a smartphone for treatment would cause clients to relapse Knouse et al. (2022) examine the utilization of DHI in individuals with ADHD who also possessed a SPA, which raises a multilayered difficulty. The researchers found that through the use of cognitive behavioural therapy (CBT), there was a successful treatment for adult ADHD, and mobile applications are becoming a popular method of providing CBT on a large scale. The application they investigated was the inflow application. This application is grounded in CBT principles and has received positive ratings in terms of its usability. Additionally, users reported a reduction in their symptoms and impairment related to their ADHD after using the app for a period of seven weeks. The researchers urged the need for more data and random controlled trials to give definitive cause and effect.

Although DHIs have been acknowledged for their potential in addressing ADHD symptoms and SPA, there are concerns over their potential tribulation to the development of a greater SPA or relapse. The research indicates that prolonged smartphone usage hinders cognitive functioning and attention control, which are already difficulties faced by clients who have ADHD (De-Sola Gutiérrez et al., 2016). Consequently, the utilization of smartphone-based DHI has the potential to strengthen addictive tendencies and impair focus, thereby impeding the process of recovery instead of facilitating it. It is worth mentioning that digital treatments specifically developed for mental health disorders, such as ADHD, have been scientifically shown to be successful when used correctly (Sun et al., 2023). The critical factor may reside in the thorough choice and administration of these interventions to oversee their controlled

utilization to avoid excess screen time or reliance on smartphones. Additional research is required to create specific criteria for the usage of these DHIs in this population. Although the effectiveness of DHI is significant, it is crucial to conduct additional research to set precise criteria for safe usage. This will ensure that the advantages of digital treatments outweigh any potential harm or relapse related to SPA.

DHI, including but not limited to smartphone apps and wearable devices, shows potential for improving mental health treatment by enhancing accessibility and effectiveness (Holli et al., 2016). Research indicates that particular applications are successful in reducing SPA along with alleviating symptoms of ADHD (Lui, 2021; Cárthaogh, 2020). However, while commercial interest is high, scientific validation lags behind the current market pace (Lakes et al., 2022). Recent advancements in smartphone applications allow for real-time monitoring and tracking of usage habits, which can assist in predicting addiction tendencies (Arora et al., 2023). Telehealth has expanded the mental health assistance reach, giving more access to support for those who are overcoming barriers such as executive functioning difficulties (Lakes et al., 2022; Phep et al., 2021). Mindfulness interventions, particularly MMM, show promise in addressing SPA and ADHD (Chan et al., 2023). Additional investigation is required to define standards and provide safe and effective criteria for using DHI for this population (Sun et al., 2023) with the aim of ensuring that the benefits outweigh the potential risks.

Personalization of Treatment

The research can provide the tools and give evidence-based information based on interventions and treatment for SPA. Nonetheless, the onus falls on the individual therapist and client to cultivate a treatment plan that works for both parties. That is, what can be expected is

information at the fingertips of the clinician to be utilized through communication and the therapeutic lens to create a holistic treatment plan for the client suffering in these areas to develop a therapeutic outcome that increases autonomy, agency, and, ultimately, therapeutic change. Ko et al. (2023) looked at the behavioural addiction of online gaming and found there is a need to develop a treatment model to satisfy the needs of the individual. Personalized treatment should be determined by individual factors, clinical characteristics, and biological markers (Ko et al.,2023). Ko et al.(2023) continue saying that implementing personalized treatment for each individual becomes challenging because evidence-based information is not yet available. The authors urge that this is a limitation in setting individualized treatments, and more studies need to come out to ensure strong cases for each component of an individualized treatment. The researchers suggest that training communication and collaborative work for professionals should be developed.

ADHD can vary among patients and how it appears in their symptomology. Each client can present differently and has unique environments, cultures, and stressors. Due to the varying etiology of ADHD among patients, the specific physiological changes that cause the clinical symptoms of ADHD may differ slightly in each case. This can impact the effectiveness of the chosen treatment and potentially account for the variation of treatment outcomes among different patients (Núñez-Jaramillo et al., 2021). To paraphrase the researchers, developing customized therapies that take into account the individual characteristics of each client has the potential to yield superior therapeutic outcomes. Therapeutic techniques have been modified based on patients' characteristics for both pharmacological and nonpharmacological therapies (Núñez-Jaramillo et al., 2021). With such stark individuality of each presentation of ADHD along with

each client, it is imperative that we as clinicians take this into consideration when developing a treatment plan.

The therapeutic alliance has a profound impact on therapy. The therapeutic relationship is a crucial factor in the effectiveness of treatment. Research has shown that the connection strongly predicts successful therapeutic outcomes (Flűckiger et al., 2018). It is considered one of the most important aspects of psychotherapy, leading to improved treatment outcomes, more vital communication, increased trust and safety, and shared decision-making between therapist and client. The responsibility of creating a therapeutic alliance mainly falls on the therapist; however, it is also a working relationship that requires both parties to be honest, contribute to the decision-making, and be actively engaged in therapy to work (Itzchakov et al.,2023). A strong alliance like this makes the communication more self-aware, and the client starts to understand their problems more deeply. It is a collaborative process associated with better outcomes across various clients and what they bring into the treatment room. This collaborative process will be highly subjective for each therapist-client relationship, so it is essential that this is understood before we implement any intervention.

The client is the expert of themselves. I strongly believe that the treatment interventions need to be tailored personally to the person the clinician is working with. When implementing any intervention or treatment, it is imperative that we as clinicians take the time to instill this common factor and make each client their own individualized treatment plan, one in which the person that we are working with has the best chance of a strong therapeutic outcome from the work we do together.

Summary

We have examined four different treatment models that are apparent in the existing research for ADHD and SPA and discussed strategies and treatments for personalized treatments. The treatment models that were suggested were mindfulness, social support, exercise, and DHI. MBI derived from meditation practices aims to enhance present-moment awareness and mitigate impulse behaviours linked to ADHD and excessive smartphone usage (Li et al., 2021). Group mindfulness therapies have been found to result in substantial reduction in symptoms of ADHD as demonstrated by Li et al. (2021). Family and group therapy provide social support and can help clients with ADHD overcome SPA (Kim et al., 2019). Engaging in physical activity such as swimming or yoga can decrease the stress of ADHD and function as a safeguard against developing SPA (Azam et al., 2020; Dastamooz et al., 2023). DHI, like smartphone applications and wearable gear, enhances the accessibility of mental health therapy. For all four treatments, additional study is required to fully understand the effectiveness. Combining these methods may effectively address symptoms of ADHD and SPA; however, further research is needed to provide standardized interventions (Liu, X., 2021; Cárthaigh, 2020; Arora et al., 2023; Lakes et al., 2022; Phep et al., 2021; Chan et al., 2023; Sun et al., 2023) These treatment models are a great stepping point for clinicians to engage with their clients about their SPA and their ADHD. As smartphones have become irreplaceable in our world it's important that us as a therapeutic community understand how to treat them effectively with our neurodivergent clients. This capstone helps start a look into that treatment.

Chapter Three: Discussion, Limitations, and Reflection

Discussion

At the beginning of this capstone, the question I started with was: How do we as clinicians best help our clients with behavioural addictions such as smartphone use? This question drove the initial research overview; however, as the data became apparent, a new research question came forward: What is the most effective treatment for those who have ADHD and are suffering from SPA? This became the main objective when starting out the process of research and data collection. As the research process continued, no clear research pointed to any treatments to be used as a moderator for both of those variables. As the process of the question changed, the underlying curiosity was still evident: How do we, as clinicians, treat SPA in those who have ADHD? As the process of collecting data continued, themes began to emerge. It became apparent that the most effective treatments in the research right now are MBI, physical exercise, social support, and DHI in mitigating symptoms of ADHD in SPA. This paper's main objective, to find effective treatments for those with ADHD and SPA, was achieved from the answers; however, due to the limitations of the present research landscape, this answer is not all-encompassing.

Integrating MBI into the treatment of ADHD and SPA holds the potential for effectively managing symptoms and behaviours, as indicated by Li et al. (2021). Mindfulness aids in disengaging from cognitive urges and diminishing addictive behaviours. Similar results can be seen when MBIs are given through online platforms (Xue et al., 2019). Receiving social support from family, friends, and professionals can help individuals overcome SPA and effectively manage impulsivity associated with ADHD (Lui et al., 2023; Wu & Chou, 2023; Herrero et al., 2019). Behavioural treatment and group therapy help alleviate symptoms of ADHD and reduce

excessive smartphone use (Kocyigit et al., 2021). Another treatment is engaging in physical activity. Engaging in exercise acts as a safeguard against SPA, promoting general well-being and effectively controlling symptoms. Physical activity is a potentially effective method for controlling symptoms of ADHD and memorizing addiction to smartphones. It improves physical health and enhances executive performance and mental well-being.

Therapy, ADHD, and SPA

Throughout the literature, it was found that therapy can address both SPA and ADHD together (Chou et al., 2022; Kim et al., 2019; Alageel et al., 2021). This treatment approach is significant because it acknowledges the interconnected nature of these conditions and provides holistic strategies for clinicians to support their clients. Having a therapist in a person's corner who is dealing with both ADHD and SPA has a solid potential for a positive therapeutic outcome, lowering distress of SPA in ADHD clients. The support given to a client who is in distress and exhibits both ADHD and SPA can benefit significantly from having somebody in their court to whom they can divulge the information that they are going through. Kim et al. (2019) and Alaeel and colleagues (2021) show through their research that therapy emerges as a critical component in the treatment of ADHD and addiction. This consensus in the literature underscores the therapeutic relationship as a cornerstone for effective intervention. Personal support provided by a therapist is a fundamental aspect of the therapeutic process for clients with ADHD and SPA (Li et al., 2021; Toma et al.,2022; Pera, 2020). The support goes beyond traditional treatment methods, offering clients a trusted individual with whom they can share their experiences and challenges. The therapeutic relationship is a safe space for clients to express themselves and work through their struggles with guidance and understanding. This safe space, along with the benefits of social support, exercise mindfulness, and even digital health

intervention therapy, boosts the chances of success for a client. The research consistently indicates that therapists play a crucial role in the treatment of individuals with ADHD and SPA. Their ability to understand and manage the complexities of these conditions, combined with the personal support they offer, is instrumental in leading clients toward successful outcomes. The therapeutic relationship is not just about applying therapeutic techniques. It also builds trust and provides a supportive environment that fosters healing and growth.

Limitations

This is a relatively new area of research, and each article I came across was adamant that there needs to be more development and research in this area for more concrete proof that digital interventions can help ADHD (Barracca et al., 2023, Lakes et al., 2022, Vajawat, Varshney & Banerjee, 2021, Hollis et al., 2017) A shortcoming that the literature is saying, and one I have experienced myself is that when using an application on your phone or the digital programming there is the possibility that you can delete the application, or forget to use the app, making any treatment inapplicable. The ADHD brain struggles with executive functioning, so there may be a strong pull towards implementing these applications on the phone. This is a considerable detriment to DHI and why there needs to be more research into implementing them.

There have been some shortcomings that identified some limitations to the effectiveness of mindfulness interventions with cell phone addiction, particularly those with ADHD. Li and their team (2021) indicated that ADHD symptoms have a significantly direct effect on cell phone use, and while mindfulness can help reduce smartphone usage to some extent, it may not be significant to fully counteract the influence of ADHD symptoms on the tendency toward SPA The complex relationship between ADHD symptoms, mindfulness, and smartphone overuse requires a more comprehensive approach than mindfulness alone. In other words, mindfulness is

an excellent component of an overarching therapeutic treatment plan, but it needs to be combined with others and should not be used alone. The researchers (Li et al., 2021) also found basic psychological needs play a role in the indirect effects of ADHD symptoms and mindfulness on smartphone use. This finding implies that mindfulness interventions might not fully address the underlying psychological needs that contribute to SPA, such as the need for autonomy, competence, and relatedness.

Other shortcomings that came out in the literature were the fear of missing out and negative effectivity in association with SPA. These two factors limit the effectiveness of the MBI in addressing problematic smartphone use (Jin et al., 2023). The researchers found that these emotional and social factors can create barriers to success from the mindfulness practice as they perpetuate the cycle of cell phone addiction despite mindfulness training because of the propensity to grab your phone for that fear of missing out or that emotional draw. The study continued by pointing out individual differences and emotional factors that may get in the way of implementing MBI for SPA. These factors can influence the degree to which individuals with ADHD benefit from mindfulness practices, highlighting the need for personalized treatment strategies that take into account the unique emotional landscape of each individual. This point is also seen in other literature, ensuring that we have a holistic approach for the individual (Pera, 2020; Li et al., 2021).

Exercise is a promising approach to ADHD treatment and SPA as it can boost brain functioning and help manage symptoms; further research should focus on longitudinal studies to explore psychosocial factors as well as genetic and psycho-physical elements that influence SPA (Kim et al., 2019). By understanding and utilizing the benefits of exercise, therapists can offer a more holistic treatment plan for individuals with ADHD that may also mitigate the risks

associated with SPA. However, in enlarged randomized controlled trials, physical exercise showed positive effects on only a few measures compared to neurofeedback and pharmacological treatments, indicating that more research is needed to understand its efficacy fully.

Overall, we can see that further research into all of these treatment modalities for clients with ADHD and SPA is needed in order for the treatments to be utilized effectively. Research in the realm of digital interventions for ADHD and SPA is still in its early stages, as highlighted by several studies (Barracca et al., 2023; Lakes et al., 2022; Vajawat, Varshney & Banerjee, 2021; Hollis et al., 2017). Although there is increasing interest, the literature highlights the need for additional development and investigation to generate definitive evidence of their efficacy. An important obstacle that has been highlighted is the inherent issue in digital interventions, whereby users have the ability to simply delete applications or forget to engage with them. This is particularly troublesome for those with ADHD who experience difficulties with executive functioning. While mindfulness interventions have potential, the research advises against simply depending on mindfulness to tackle SPA (Li et al., 2021). This is because mindfulness may not address all the psychological needs around the addiction to a smartphone. It needs to be part of a holistic treatment plan. In addition, psychological and interpersonal issues, such as the fear of being without and the tendency to experience unpleasant emotions, can hinder the effectiveness of MBI (Lin et al., 2023). This underlies the significance of tailoring treatment approaches that take into account unique Variations and emotional contexts. Furthermore, exercise has shown potential as a viable approach for treating ADHD and controlling SPA. However, further longitudinal research is required to comprehend its complete effects (ARTICLES) fully. Although exercise has demonstrated beneficial effects, it may not be as all-encompassing as

other interventions, such as narrow feedback in pharmaceutical treatments. This suggests that additional research is necessary to understand its effectiveness fully. In summary, the literature emphasizes the necessity for a comprehensive strategy to tackle ADHD and SPA. This involves integrating digital therapies, mindfulness practices, and physical exercise into a personalized treatment regime that is specifically designed to meet the needs of each individual.

Future Research Directions for SPA and ADHD

Mindfulness

Further exploration of the long-term impacts of mindfulness therapies on individuals with ADHD and SPA can provide insight into the profound capacity of mindfulness practices to improve attention regulation (Li et al., 2021). impulse control (Liu F. et al.,2022; Choi et al., 2020), and decreasing smartphone overuse and harmful use (Chen et al., 2022; Liu H. et al.,2022). Studying the many uses of mindfulness techniques and how they might be used to in various populations will help enhance the personalization and efficiency of MBI for this specific population. Furthermore, a deeper exploration into how different cultures view mindfulness and how each culture may have its own way of introducing the mindfulness intervention may prove to be an interesting avenue (Williams et al., 2022). As most of the peer-reviewed articles came out of Asian-based cultures, it would be interesting to base them on Western society and see if the results of MBI can yield the same results (Li J. et al., 2023). This research may show that MBI can help aid in decreasing the distress that comes from ADHA and SPA, or even gain further insight into what other interventions can be used for this population.

Social Support

Future research could explore the indirect dynamics of social support from many sources in promoting behaviour change and coping techniques for those with ADHD and SPA. Gaining a comprehensive understanding of how a social network and treatment results are connected can offer useful insights into the critical role that social connections play in the process of recovery (Harris-Lane et al., 2021). Furthermore, investigating the combined impacts of blending social support interventions with other therapy modalities might provide a thorough comprehension of a holistic approach to treatment (Kocyigit et al., 2021). Along with this fact, looking at age ranges such as children, adolescents, and adults and how this support from their immediate family may play a role. Further research and further clarification is needed the relationship between media use SPA and attention problems how can social support aid in the mediation of these areas (Toma et al, 2022). Continuing with this thought research on social support from friends in one's circle compared to one's nuclear family, how would that affect ADHD and SPA? This finding may be useful for clinicians as they can then use evidence-based interventions with social support effectively with their clients when they no which circle to effectively utilize with their clients.

Exercise

Continued investigation on the long-term effects of exercise therapies on managing symptoms of ADHD and SPA can provide insight into the lasting influence of physical exercise on cognitive performance, emotional stability, and addictive behaviours. Studying the effective ways to exercise, including the types, duration, and intensities that result in the greatest gains in symptom management and general well-being, can help create personalized exercise programs for those within this population (Zaeng et al., 2022; Liu, H., et al., 2022; Guo et al., 2022). It may also be important to look at motivation around exercise and dopamine release and how that

affects the ADHD brain who is in distress over their smartphone use. This research could shed light on how to help individuals decrease that distress while also increasing the long-term effects of physical exercise.

DHI

Subsequent research could focus on evaluating the effectiveness of novel DHI in addressing ADHD symptoms and SPA. As there are new digital applications hitting the market quicker than the research can keep up with, there is a lack of evidence-based research on which application is actually effective. It is imperative that we, as the psychological community, do our due diligence for our clients to ensure that DHI has gone through the testing process to ensure that change can happen from using these applications (Hollis et al., 2017). I would argue that this is a massive limitation within the space right now. We do not know if these DHI are contributing to effective change or creating more harm. As clinicians, it is our job to do our due diligence when suggesting digital help to ensure we are suggesting research-based applications (Canadian Psychological Association, 2017). Researchers can pave the way for technology-enhanced treatment choices suited to the specific needs of individuals by evaluating the usability, acceptability, and impact of DHI with conventional interventions can provide all-encompassing and inflexible treatment methods that capitalize on the advantages of digital technologies in an ethical way (Liu X., 2021; Weizenbaum et al., 2020).

In conclusion, the exploration of mindfulness, social support, exercise, and DHI offers a hopeful route for dealing with the intricate relationship between ADHD symptoms and smartphone distress from addiction. It is imperative that we seek to stimulate further research and creativity in generating custom solutions that address the specific requirements of

individuals facing these issues. By exploring these areas of intervention and recommending future research directions, we can stimulate new understandings in this area and aid our clients who are dealing with ADHD and SPA. Through collaborative efforts and interdisciplinary approaches, the field can advocate for more effective and personalized strategies so for supporting individuals in managing ADHD and SPA.

Personal Reflection on Research Findings

Upon reflection of the research, I found that there were significant challenges in accessing the relevant literature. The research was primarily sourced from search engines such as the City University library, Google Scholar, and other search engines that were recommended. Throughout the research process, I made a concerted effort to vary my keywords. However, I often encountered the same articles, indicating a dearth of research that encompassed both variables of SPA and ADHD. This challenge underscored the need for more comprehensive research in this area.

Unsure of where else to turn, I decided to look up SPA treatments and then ADHD addiction treatments and see where the overlaps were. Once I found those overlaps, I compared them to the articles I found with both variables included, and there was once again an overlap of the four treatments that I found. On reflection, I was in conflict if this was the most efficient way to find the correct literature. When I first started looking at ADHD addiction, there was an overabundance of literature out there, predominantly around substance use. So once again, I had to narrow my field and look at ADHD addiction treatments for behavioural patterns and that narrowed in my results once again. This process made me realize that there are different ways to

find literature. Sometimes, thinking outside the box can create a new way to accumulate information.

As I reflect upon the beginnings of my research, where there was a massive connection between ADHD and SPA but very little was done on the actual treatment, I questioned why. As I reflect on it now, I see that there may be a financial restriction in the treatment, but there appears to be economic abundance in that connection. This thought brought up social justice and how money and funding are genuinely at the core of what is done in the research field. I became keenly aware of the landscape in which research is done.

Ethics Considerations

As this literature review was conducted, I did my absolute diligence to follow the ethical guidelines set forth in the 4th edition of the Canadian Code of Ethics (2017). Underpinning this literature review was a commitment to respect for the dignity of persons, responsible caring, integrity in relationships, and a responsibility to society. Though literature reviews do not involve direct interaction with the general population, they nonetheless have a profound impact on the knowledge base of our field and, by extension, the well-being of individuals and communities. Therefore, the ethical code was a guide throughout the process of this capstone. As clinicians, principle two states responsible caring, which is maximizing the benefit and minimizing the harm to the client (Canadian Psychological Association, 2017) and all of the above interventions I am suggesting are low in their invasiveness. The likelihood of harm coming from implementing mindfulness, social support, DHI, and exercise is minimal. Ethically, there is a component that the greater good can come out of implementing these interventions. Yet, it is always our due diligence as clinicians to do a risk-benefit analysis to ensure that we are

following our values and ethical standards to the best of our abilities when we implement any intervention.

Furthermore, there was a commitment to a thorough, unbiased review of the existing literature and research, seeking out all relevant sources regardless of their alignment with any of my own thoughts. Doing this ensured that there was no selective or biased reporting, which can lead to harm by skewing the understanding of this topic. In this capstone, full and proper citations to all sources viewed, respecting the intellectual property rights of others and acknowledging their contributions to the field were given the utmost respect. as plagiarism in any form is a violation of the trust placed on us as scholars and students. In line with the responsibility to society, this capstone is committed to ensuring that the contributions lead to the betterment of individuals, communities, and the wider society, acknowledging that this work must be relevant, acceptable, and understandable to those who might benefit from it.

Finally, recognizing that undertaking this capstone and the topic of SPA with those who had ADHD was a significant responsibility. The reader can be sure that there was a commitment to the ongoing development of skills and understanding in order to conduct the reviews that are rigorous insightful and truly beneficial to the field.

Conclusion

This capstone discusses the complicated connection between SPA and ADHD and is intended to offer valuable insights into evidence-based treatments that clinicians can use to assist their counselling clients grappling with these difficulties. After reviewing the available evidence, four main treatments were identified as effective interventions for addressing ADHD and SPA: MBI, physical exercise, DHI, and social support.

Mindfulness therapies have shown the potential to help individuals with ADHD manage their symptoms and become more self-aware. By including mindfulness activities in treatment plans, clients can improve how they regulate emotions and focus and increase their self-control, which can reduce their need to rely on phones for comfort. Exercise is also seen as a beneficial therapy for those with ADHD and SPA. Being active not only boosts overall health but also enhances thinking and focus, as well as increasing physical well-being and cognitive function. Encouraging regular exercise can lead to a healthier lifestyle and lessen the urge to use smartphones in excess. Moreover, social support plays a crucial role in addressing ADHD and SPA. Building strong social connections and meaningful relationships can provide individuals with the necessary support system to navigate challenging and overcome addictive behaviours. Clinicians can assist and support their clients by establishing supporting networks and aiding them in fostering a sense of belonging, emotional stability, and well-being. The use of DHIs can also be helpful in the treatment of clients with ADHD and SPA, as it makes treatment more accessible and often counteracts the executive functioning difficulties found in people with ADHD.

By utilizing these empirically supported therapies in counselling practice, clinicians can provide thorough and tailored assistance to their patients struggling with ADHD and smartphone dependency. Adopting a holistic approach to treatment is crucial since it considers the distinct requirements and situations of each client. Ongoing research and exploration in this field are imperative to improve treatment options and optimize outcomes for persons seeking care for these concurrent afflictions. In simple terms, tackling SPA and ADHD is a complex journey that requires teamwork from clinicians' researchers and individuals themselves. By using

mindfulness, exercise, social support, and DHI, clinicians can help their clients deal with these issues and move towards comprehensive well-being and recovery.

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