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Exploring Screen and Social Media Use Among Young Adults With Persistent Post-Concussion Symptoms

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Abstract

This thesis details how young adults with ongoing post-concussion symptoms deal with the omnipresence of screens and social media in their daily lives. Their injuries often induce heightened sensitivities to stimuli, requiring them to commence "cognitive rest," a treatment contested by experts in the field. While emerging literature endorses such rest during the acute phase of concussion recovery, numerous clinicians still recommend that patients reduce screen exposure (i.e., extend the rest) beyond this period until symptoms resolve. Complex dilemmas arise, however, for young adult screen users whose symptoms persist for weeks, months, and years.

Drawing upon Max van Manen's phenomenology of practice, this thesis delineates these dilemmas. Its central inquiry concerns young adults' post-injury screen and social media use as they (a) attend to their online identities and obligations (e.g., relational upkeep and schoolwork) and (b) obtain information on the Internet about current concussion management strategies to aid their recoveries. Addressing both (a) and (b), five female participants aged 18-25 shared their lived experiences through semi-structured interviews.

These participants experienced screens as simultaneously helpful *and* harmful, alleviating some of their challenges while aggravating others. They appreciated that screens afforded them social connectedness, distraction from difficulties, and accessible concussion information. Conversely, they confronted technology's central role in their everyday routines, struggled to integrate their invisible injuries into their social media presences, and concluded that Internet information could supplement (but not supplant)

traditional clinical encounters. Underlying their interrelated screen-use dilemmas was the

realization that they could use screens as an escape but not fully escape screens.

Summary for Lay Audience

This thesis explores screen and social media use among young adults with persistent post-concussion symptoms. Their injuries often induce heightened sensitivities to light, sound, and motion, requiring them to minimize mental exertion through "cognitive rest," a treatment contested by experts in the field. Anticipating swift recoveries, healthcare practitioners routinely advise these patients to reduce screen use until their symptoms resolve. Complex dilemmas arise, however, for young adult screen users whose symptoms persist for weeks, months, and years.

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These participants experienced screens as simultaneously helpful *and* harmful, alleviating some of their problems while aggravating others. On the one hand, they appreciated that screens brought them social connectedness, welcome distractions, and accessible concussion information. On the other hand, they confronted technology's central role in their everyday routines, struggled to manage their invisible injuries and social media profiles, and sought to balance Internet information with advice from clinicians. Underlying their interrelated screen-use dilemmas was the realization that

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screens could provide them with an escape from their challenges but also be

challengingly inescapable.

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Chapter One: Introduction

Background

Numerous studies suggest that screen use is endemic among adolescents and young adults. Although various contexts influence their screen exposure, large subsets of these populations living in North America spend approximately 6-7 hours per day on screens (Bond, 2022; Chester et al., 2020; Khan et al., 2022; Nagata et al., 2022). Screens they encounter include smartphones, computers, televisions, and tablets (Kuppili et al., 2021). Drawing them to these devices are the Internet, search engines, social platforms, discussion forums, video games, and films/shows, among other media (Chau et al., 2022).

Social media, in particular, pervade these populations' daily lives. As reported by the Office of National Statistics in 2017, 96% of Americans aged 16-24 frequent sites such as Facebook, Instagram, Twitter, YouTube, Snapchat, and TikTok (Bhandari & Bimo, 2022; Chester et al., 2020; Kent, 2020). Propelled by hidden algorithms that entice users, these platforms encourage habitual engagement (Chester et al., 2020; Kent, 2020).

Young adults report outsourcing much of their personal lives to online realms. They engage in "self-representation" (and, relatedly, "self-disclosure"), creating digital selves to which their fellow social media users respond through functions such as "likes" (Bhandari & Bimo, 2022; Sherman et al., 2016; Tamir & Mitchell, 2012; Thumim, 2012). In addition to managing these profiles, they also maintain relationships, seek entertainment, complete academic or job-related work, and retrieve information (Dennen et al., 2020).

Current research overlooks how concussions complicate young adults' everyday screen and social media use. Some scholarly attention is paid to post-injury screen

sensitivities but not yet to the challenges of underdeveloped, ambiguous "cognitive rest" recommendations (i.e., that support reduced screen time) combined with the centrality of technology as experienced by patients (Brown et al., 2014, p. 300). An ironic consequence of the field's incipient screen-use instruction is that patients might turn to the Internet to obtain information on cognitive rest (and other treatments) using the platforms that purportedly prevent it.

The Current Study

This thesis details how young adults with ongoing post-concussion symptoms deal with the omnipresence of screens and social media in their daily lives. Their injuries often induce heightened sensitivities to stimuli, requiring them to commence "cognitive rest," a treatment contested by experts in the field. While emerging literature endorses such rest during the acute phase of concussion recovery, numerous clinicians still recommend that patients reduce screen exposure (i.e., extend the rest) beyond this period until symptoms resolve. Complex dilemmas arise, however, for young adult screen users whose symptoms persist for weeks, months, and years.

Drawing upon Max van Manen's phenomenology of practice, this thesis delineates these dilemmas. Its central inquiry concerns young adults' post-injury screen and social media use as they (a) attend to their online identities and obligations (e.g., relational upkeep and schoolwork) and (b) obtain information on the Internet about current concussion treatments and management to aid their recoveries.

General Thesis Outline

Following this introduction, the second chapter clarifies my research question and reviews relevant scholarly literature on concussions, clinical guidelines, screens, online

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platforms, and information seeking. The third chapter explicates my inquiry paradigm, methodology, and methods. The fourth chapter presents the results of semi-structured interviews with five female participants aged 18-25. The fifth and final chapter revisits my methodological framework and central inquiries before situating the study's findings within current concussion and critical phenomenology research.

Chapter Two: Literature Review

Research Question

Before searching the literature I refined my research focus. Considering my use of van Manen's (2014) phenomenology of practice (which is elaborated upon in the methodology section), I isolated specific and concrete phenomena for investigation: using screens, living with post-concussion syndrome (PCS), and seeking concussion-specific health information. Consolidating these phenomena (using van Manen's [2014] phenomenological sentiment: "What is this [phenomenon] like?" [p. 35]), my central research question asks:

> What is it like for concussed young adults to use screens and social media as they:
> (a) attend to their online identities and obligations (e.g., relational upkeep and schoolwork)?
> (b) obtain information on the Internet about current concussion management strategies to aid their recoveries?

This timely two-part question possesses the potential, as should become more evident throughout my review, to initiate conversations that remain largely unexplored in the fields of concussion, social media, and knowledge mobilization research.

Search Method

To begin exploring relevant literature, initially I accessed three health information science databases: CINAHL, PubMed, and Scopus. Into these databases, I inputted core concepts from my research questions such as "concussion," "post-concussion syndrome," "social media," "screen time," "clinical protocols," "cognitive rest," "compulsive screen time," "Internet addiction," "information seeking," "concussion information," "knowledge mobilization," "health information," "online identity," and "online

community." From these core concepts I employed in my search a combination of free-text terms and controlled vocabulary terms. While accessing CINAHL, for example, I entered controlled vocabulary terms including "brain concussion," "screen time," and "Internet addiction"; also, I used free-text terms like "laptop," "computer," and "Internet identity." On PubMed I experimented with MeSH terms such as "brain concussion" and "screen time," in addition to free-text terms similar to those tried on CINAHL. To cull concise definitions of each concept on PubMed, I referred to its MeSH database. On Scopus I utilized comparable free-text terms to those searched on PubMed and CINAHL. To then retrieve research on self-presentation and online identities, I surveyed Academic Search Ultimate, a multidisciplinary database, using controlled vocabulary terms like "online identity."

Since the aforementioned databases demonstrate an upsurge in concussion research starting in the late 1990s, just before expert stakeholders convened at the first International Conference on Concussion in Sport in 2001, I determined that 2000-2022 would be an appropriate timeframe in which to search for peer-reviewed articles. I observed similar upward trends, particularly within the past decade, when searching for related articles on social media, the Internet, online platforms, online information-seeking, and online identity. In total, 56 articles relevant to these research themes and overarching questions were included in the below literature review.

Results of the Literature Review

Defining Social Media and the Internet

Despite social media's widespread popularity, scholars across disciplines seldom agree upon its universal definition (Nau et al., 2022). Difficulties arise, in part, due to the

diversity of features found on such media, which often incorporate not only peer interaction, content sharing, and identity creation but also video calling and in-app purchases, among other activities (Nau et al., 2022). Also complicating its classification is users' ability to access this media through multiple interfaces, such as the Internet *and* specific device-based "apps" (Nau et al., 2022, p. 42). In other words, social media is no longer simply "web-based," as the literature has historically suggested (Nau et al., 2022, p. 41). Additional typologies account for its marketed capabilities (e.g., "music-sharing sites," "texting apps," and "blogs") and metaphorical purposes (e.g., "play-driven" and "aesthetic-driven"), further changing how we conceptualize social media (Nau et al., 2022, p. 41).

To address these issues, Nau et al. (2022, p. 41) advance a comprehensive re-characterization of social media. Specifically, they state:

> Social media are web-based and mobile services that allow individuals, communities, and organizations to collaborate, connect, interact, and build community by enabling them to create, co-create, modify, share, and engage with content (user- or bot-generated).

Particular characteristics of these services, as they outline, are self-presentation (e.g., managing reputation), participation in activities (e.g., sharing "posts"), gratification (e.g., receiving "likes"), user-activity data (e.g., follower counts), social context (e.g., characteristics of a particular social network's users), a platform's capabilities (e.g., disseminating information), and regulatory structures (Nau et al., 2022, p. 44).

The Internet is another concept worthy of clarification, especially considering the extent to which it parallels social media. Technically, it consists of "local networks

hooked together with the TCP/IP protocol" (Haigh et al., 2015, p. 144). Socioculturally, it "involves applications, content, services and interaction – social media, shopping and games, rather than switches, packets and protocols" (Abbate, 2017, p. 10). Like social media, it can act as a "virtual space for social interaction and individual expression" (Abbate, 2017, p. 10). What becomes clearer when parsing these terms, though, is that the literature (as Nau et al. [2022] point out) tends to classify social media as a *type* of Internet-based platform, implying that the latter is a broader category under which other platforms are also included.

A possible differentiating factor is the Internet's association with search engines, which scholars describe as "gateways to the Web" (Gao & Shaw, 2020, p. 1). As Van Couvering (2008) explains, these engines "mediate between the user and other Websites, sorting, classifying, and constructing a lens through which we view other content on the Web" (p. 179). More recently, researchers have reaffirmed that such engines are practical tools "currently used to access information" (Nassution, 2017, p. 1). Equally, some criticize the convergence of political and economic conditions that create "the presence of bias in search engines" and "digital hegemonies," problematizing the processes that privilege *particular* Webs (Ballatore et al., 2017, p. 1194; Gao & Shaw, 2020, p. 1; Van Couvering, 2008).

Although social media and search engines seem distinct in how they configure content (e.g., encouraging self-presentation through "posts" versus collating websites), they increasingly circulate similar health information. Spotlighting sites in the latter category (e.g., Google), user-activity surveys estimate that American adults initiate eighty percent of their online queries about a medical condition through search engines (Fox &

Duggan, 2013; Mager, 2012). Such searches yield results on "treatment options,"

"diagnosis of a condition," "understanding a health condition or procedure,"

"understanding medications," "lifestyle information for chronic conditions," and "recent

medical research" (Choudhury et al., 2014, p. 1368). At the same time, screen users now

acquire this information on social media such as Facebook, Twitter, Instagram, Youtube,

and TikTok (Choudhury et al., 2014; Lim et al., 2022). These platforms allow them to

"[follow] their contacts' health experiences or updates, [post] their own health-related

comments, [gather] health information, or [join] a health-related group" (Choudhury et

al., 2014, p. 1365). Table 2.1 below acknowledges the above terms' entanglement and

clarifies how they are applied to this thesis's questions and subsequent research.

Table 2.1. Clarifying Use of Major Media Concepts

Subsection of Research Question	Online Identity and Obligations	Information Seeking
Prioritized Concept (i.e., Social Media vs. Internet) in the Thesis	**Identity**: Generally, for online identity, the literature I found favoured its association with social media. For example, Nau et al.'s (2022) comprehensive analysis of social media definitions proposed that "[i]dentity is crafted through the development of a personal profile or virtual self over time on social media" (p. 1). I use the term "online identity" to leave room for other platforms, though it gives priority to social media platforms. **Obligations**: Since "obligations" is conceptualized quite broadly, to encompass tasks on social media, the Internet, and other platforms (e.g., Microsoft Word), I tended to employ a combination of these terms, while prioritizing what feels like the broadest categorizations: screens or screen-based platforms.	**Information Seeking**: Since the literature (e.g., Choudhury et al.'s [2014] study) states that users increasingly seek health information through search engines *and* social media, and both types of platforms (among others) are often arguably subsumed under the Internet, I prioritized the "Internet" as the term for online information seeking. Occasionally, though, I refer specifically to social media's uses in this context.

Defining Concussion

Comparable definitional challenges permeate concussion research. Generating the most widely cited descriptions of the injury is the Concussion in Sport Group (CISG), whose latest iteration came out of the 2016 International Conference on Concussion in Sport. Consistent with their previous consensus statements, they confirm that concussion

is a form of traumatic brain injury (McCrory et al., 2016; McCrory et al., 2012). The injury is caused, they contend, by "a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head" (McCrory et al., 2016, p.1). This blunt force produces a transient upsurge in various symptoms and functional disturbances that often resolve sequentially (McCrory et al., 2012; McCrory et al., 2016).

Types of symptoms and their duration vary. The most common include headache, sleep difficulty, fatigue, dizziness, decreased concentration, irritability, personality changes, depression, anxiety, an inability to handle stress, and delayed recall (Tator et al., 2016; Jotwani & Harmon, 2010). A person may experience one or a combination of these symptoms indefinitely. Generally, though, within the literature most researchers expect individuals' symptoms to dissipate within 7-10 days (McCrory et al., 2012; Tator et al., 2016). When symptoms persist beyond this initial period the condition is re-classified as "post-concussion syndrome (PCS)" (Hiploylee et al., 2017; Tator et al., 2016; Makdissi, Cantu & Johnston, 2013; King & Kirwilliam, 2011). The precise percentage of patients developing PCS is debated, ranging from 5 to 58% (Tator et al., 2016).

Treatment of Concussion

Treatment protocols for concussion and PCS are constantly emerging and evolving, particularly within the realm of "rest." Historically, patients were encouraged to engage in periods of cognitive *and* physical rest for a minimum of 1-2 weeks before beginning "return to learn" and "return to play" programs (Ellis et al., 2015; Master et al., 2012). In recent years, demonstrating an updated stance on the duration of *physical* rest, studies have supported early returns to exercise (Leddy et al., 2019). Facilitating this updated treatment approach are tools such as the Buffalo Concussion Treadmill Test, a

program promoting patients' "subsymptom threshold aerobic exercise" within 48 hours of sustaining their head injuries (Leddy et al., 2019, p. 2). Growing consensus continues to credit this exercise protocol with speeding up concussion recoveries (Leddy et al., 2018).

Cognitive rest remains a notable subset of rest in concussion treatment. First emerging at the Second International Conference on Concussion in Sport in 2004, the notion has since been considered a requisite for recovery (Brown et al., 2014). Its hallmark is the cessation of "[a]ctivities that require concentration and attention [that] may exacerbate the symptoms and as a result delay recovery" (Brown et al., 2014, p. 302). Symptom-inducing activities may include scholastic endeavours (e.g., reading) and screen-related activities (e.g., working online, playing video games, and texting; Brown et al., 2014; McCrory et al., 2008; Meehan, 2011). Despite practitioners' success in implementing daily cardio intervals guided by the Buffalo Concussion Treadmill test, they still search for comparably effective treatments for reintroducing light mental activity.

Studies on cognitive rest consequently relay inconclusive, conflicting recommendations. Suggestions among experts span from a minimum of 24-48 hours of cognitive rest to several days (and now, less commonly, weeks) of "cocoon therapy," since the "optimal period of rest after concussion remains unknown" (Thomas et al., 2015, p. 214). Thus, healthcare providers' views on this intervention understandably differ (McLeod et al., 2017). Some clinicians, for example, have observed no significant decrease in patients' symptoms following periods of cognitive rest, whereas others endorse its effectiveness at the outset of recovery (Gibson et al., 2013; Brown et al.,

2014). Consistent with the latter conclusion, a recent systematic review states that an initial period of cognitive rest benefits patients' concussion recoveries (McLeod et al., 2017).

Other prominent organizations corroborate the perceived value of cognitive rest. In 2010, the American Academy of Pediatrics asserted that athletes with concussive injuries should minimize mental activity until symptoms resolve when both resting and exerting effort (Halstead, 2010). Similarly, in 2013 the American Medical Society for Sports Medicine suggested that students require cognitive rest and subsequent academic accommodations (Harmon et al., 2013). The 2013 International Consensus Conference on Concussion in Sport encouraged patients' gradual return to cognitive activities alongside their awareness of worsened symptoms (McCrory et al., 2012).

Post-Concussion Screen Time

Two noteworthy articles on post-concussion screen time, a topic connected to cognitive rest, have been published in the past year. The first, a randomized trial conducted by Macnow et al. (2021) between 2018 and 2020, followed 125 patients aged 12-25 for ten days after their injuries. Within 48 hours of sustaining concussions, 66 participants received permission to use screens, while the other 59 were asked to abstain. These patients then tracked their symptom trajectories through various surveys. After analyzing the results, researchers concluded that initial screen abstinence (i.e., for the first 48 hours of the injury) accelerated recovery times, though they did not explore the intervention beyond a two-day period.

Adding to Macnow et al.'s (2021) preliminary conclusions, Cairncross et al. (2022) explored the effects of screen use within the first 7-10 days post-injury among

concussed participants. Initially recruiting 967 children aged 8-16, the primary investigators filtered prospective participants using various inclusion and exclusion criteria into two groups: an acute concussion group and an orthopedic injury group. They then compared the impact of screen use on both groups' recoveries using patient and parent questionnaires completed regularly within the first six months following the injuries. Though the authors acknowledged Macnow et al.'s (2021) finding that short-term screen abstinence benefitted patients' recoveries, they discovered that early screen time did not exacerbate symptoms beyond the 30-day mark. They also postulated that children with the lowest and highest reported screen use fared worse than those with moderate reported screen use.

Knowledge Mobilization

Once the scholarly literature starts solidifying trends related to cognitive rest and screen time, contemporary knowledge mobilization (KM) research can improve the integration of this clinical information into concussion treatment. Defined by the Social Sciences and Humanities Research Council (SSHRC), KM comprises "a wide range of activities relating to the production and use of research results, including knowledge synthesis, dissemination, transfer, exchange, and co-creation or co-production by researchers and knowledge users" (SSHRC, 2019, p. 1). The process has gained popularity in healthcare discourses (e.g., in practice and policy) for supposedly redressing the infamous "17-year odyssey" involved in transforming "best available [medical] knowledge" into practice (Graham et al., 2006, p. 13; Morris et al., 2011, p. 510).

This slow uptake of medical knowledge affects concussion care, albeit differently among stakeholders. Prominent global organizations (e.g., the International Olympic

Committee and the International Rugby Board) and national associations (e.g., ThinkFirst Canada and the American National Football League (NFL) employ CISG's consensus guidelines, which are the field's gold standard, yet general healthcare providers and non-expert stakeholders (e.g., coaches, parents, and athletes) struggle to implement the same information (Finch et al., 2013).

A chronological analysis of CISG's changing guidance on KM provides context for the consensus statements' poor uptake among the latter stakeholders. In the 2004 statement, for instance, the language of KM is not explicitly used. Instead, two brief paragraphs entitled "Education" acknowledge that the ability to treat or reduce concussions is minimal, meaning that education is paramount. Without elaborating on concrete KM strategies, this section reaffirms that "education … is the mainstay of progress in this field" (McCrory et al., 2004, p. 202). Methods for advancing education are simply listed: web-based resources, educational videos, and international outreach initiatives. Anticipated beneficiaries of educational efforts are athletes and healthcare providers, who are ultimately expected to understand the injury's "…clinical features, assessment techniques, and principles of safe return to play" (McCrory et al., 2004, p. 202).

The succeeding statement, published in 2008, contains the same brief paragraph at the bottom of the document, only opting to change the title, which now reads: "Knowledge Transfer." In CISG's 2012 consensus statement, the KM-related section, still a brief paragraph, is updated. Titled "From consensus to action—how do we optimise knowledge transfer, education and ability to influence policy?", this section mentions the value of knowledge translation (KT) in concussion education, noting that

the best KT methods require further evaluation but, at minimum, should include a plan identifying knowledge gaps and target audiences. It also briefly references media and social media as emerging KT tools. Next, the most recent statement from 2016 renames this section "Knowledge Translation," reusing the same paragraph from the 2012 statement and then re-adding the brief paragraphs from the earlier statements, only amending the list of stakeholders to include more knowledge users.

Even though the KM sections of the consensus statements represent well-intentioned early efforts, no concrete steps are explicated, which warrants further attention. Prominent scholars echo this sentiment, expressing that "[a]lthough the concussion guidelines have always recommended the development of education and knowledge transfer strategies, there appears to have been no coordinated effort to develop and evaluate such approaches…" (Finch et al., 2013, p. 7). They ultimately call for more concerted measures that go beyond relying on expert groups such as the CISG and that consider appropriate alternatives (Finch et al., 2013).

The most comprehensive educational evaluation comes from Provvidenza and Johnson (2009), whose framework guides stakeholders in tailoring concussion-specific KM to various end users' needs. They first identify end users: physicians, physiotherapists (PTs), nurses, athletic trainers and therapists, coaches, and student-athletes. They then outline the presumed best "optimal learning strategies" for each audience, including printed materials, didactic lectures, audits, patient-mediated interventions, opinion leaders, peer support groups, peer-assisted learning (PAL), evidence-based learning (EBL), and education outreach (Provvidenza & Johnson, 2009, p. 2). Notably, however, they omit online platforms from the framework. Their guide

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then rates the effectiveness of each potential strategy, briefly commenting on its relevance to stakeholder groups and broader concussion education.

The authors deduce from this framework that numerous traditional KM methods fail to resonate with end users. KM methods deemed least effective at reaching their respective audiences include printed materials, didactic lectures, practice audits, and patient-mediated interventions. The CDC's "Heads Up: Concussion in Youth Sports" campaign, for example, which circulated information sheets and posters, did not significantly increase physicians' knowledge of the injury (Chrisman et al., 2012). Similar strategies for disseminating CISG's consensus guidelines demonstrate "a low uptake… in community sport" (Finch et al., 2013, p. 5). Conversely, the traditional KM learning strategies considered most effective comprise education outreach, EBL, PAL, peer support groups, and acknowledging multiple intelligences to individualize education plans. Despite the promise of these latter KM efforts, though, Provvidenza et al. (2013) warn that in-person efforts alone are insufficient and should adapt accordingly alongside the rise of the Internet.

Internet Information and Support

Though there exist many studies on how broader media (e.g., news outlets, etc.) advances concussion awareness, few examine the relationship between the Internet, social media, and concussion recoveries. The handful of scholarly works on these areas address individuals' use of virtual platforms to seek support and information—two activities associated with KM.

Concerned with the former use of the Internet (i.e., to seek support), a recent study conducted by Cassilo and Sanderson (2019) provides examples of online

communities facilitating conversations on injury-related grief. Benefitting from this support, in particular, are athletes, a population at risk for post-injury grief following temporary or permanent removal from sports (Colon et al., 2017). Specific communities serving this group and others are "ConcussionConnect.com," "TheKnockoutProject.org," and "TalkConcussion.com" (Cassilo & Sanderson, 2019). A common sentiment shared on these sites is, "I no longer went out with friends, I could barely attend class, and it hurt to even eat. I rarely left my room" (Cassilo & Sanderson, 2019, p. 686). Such painful consequences of concussions are processed similarly (i.e., communally, among concussed peers) in Ahmed et al. (2010)'s study on Facebook support groups.

Other studies have focused on the latter use of the Internet (i.e., obtaining and disseminating concussion information). Highlighting Twitter, Sullivan et al. (2012, p. 2), state that its users share news reports and anecdotal personal experiences, both of which cover "inferred management" (i.e., treatment protocols). Additionally, the platform allows organizations and participants to reach global audiences and "…to tweet and re-tweet landmark documents such as the consensus statement on concussion in sport to a wider and potentially different audience [compared] to the readers of these [academic] journals" (Sullivan et al., 2012, p. 5).

Along with online support spaces, Facebook groups, and Twitter, image-sharing platforms also successfully disseminate concussion information. On Pinterest, Instagram, and Flickr, 23% of concussion-related content has contained infographics that cover information from CISG's SCAT framework (Ahmed et al., 2016). Overall, 88% of images posted on these sites have "reflected the best practice concussion management guidelines" (Ahmed et al., 2016, p. 85). Ahmed et al.'s (2016) study concludes that

image-sharing sites can resonate particularly well in low-literacy populations and "should be included as part of a comprehensive, holistic approach towards information dissemination strategies for concussion" (p. 85).

A controversial consequence of patients' use of the Internet and social media for post-injury support and information is their decreased reliance on conventional clinical encounters (e.g., appointments with physicians). Ahmed et al. (2013) analyze this issue, noting a "traditional doctor-patient relationship" affected "by patients retrieving information online" (p. 37). When asked about these trends, general practitioners participating in the study shared concerns about Facebook's privacy and its group-related facilitation but ultimately supported patients' use of social media to supplement "…traditional face-to-face concussion management consultations" (Ahmed et al., 2013, p. 331). Another study conducted by the same authors on a similar topic emphasized the importance of trust within Facebook groups between (and among) patients and clinicians (Ahmed et al., 2013).

Upholding the credibility of concussion education on the Internet and social media is imperative, as Kollia et al. (2018) warn that misinformation abounds online. Further, they urge patients to exercise caution when accessing platforms such as YouTube, which publishes videos that garner millions of views but do not necessarily share credible, evidence-based information (Kollia et al., 2018). Other scholars reveal that numerous other websites poorly reflect the field's consensus guidelines (Ahmed et al., 2012).

Online Identity and Habitual Screen Use

In addition to seeking support and information, screen users create online identities that are tied to large interpersonal networks and represent significant personal investments. How individuals produce online selves as technological platforms proliferate has piqued the interest of scholars who have long studied self-presentation (Baumeister, 1982; Jawed et al., 2019). They define these digital identities as being "dynamic just like the identity itself, strongly influenced by how we see ourselves and the way others and the society perceives us, based on our online interactions" (Jawed et al., 2019, p. 34). Reinforcing this complicated interplay between social media identities and relational dynamics, a study conducted by Yang et al. (2017) states that users carefully curate their "online image in a way that allows them to both stay connected with family and friends from home and also make new connections" (p. 213). Also contributing to individuals' maintenance of these selves is the validation they receive through metrics such as "likes" that activate the brain's reward circuitry (Sherman et al., 2016).

A recent study led by Kent (2020) illustrates the steps involved in maintaining a specific type of online identity. They present in this article examples of "optimal health identities" constructed by participants who foregrounded health promotion in their self-presentation on social media (Kent, 2020, p. 1). This group prioritized post-worthy moments (e.g., finishing a marathon) and embellished them with catchy captions like "All the leaves are brown/And the sky is grey/I've been for a run/#10K" (Kent, 2020, p. 5). Their peers responded positively to these posts, reinforcing a habit-forming cycle:

> Once fitness and training [were] documented in a lifestylized way, and
> positively received by the community in the form of likes and written
> affirmations, this open[ed] the representational door for other more

creative ways to portray personal progress and achievements (Kent, 2020, p. 6).

This cycle, for most participants, represented what the author called a "compulsive 'hold' these practices had over their lives" (Kent, 2020, p. 10).

The same study described the complications of disrupting these cycles tied to social media use, identity formation, gratification, and peer interaction. The participants ultimately concluded that the only way they could "reject the compulsive 'hold' […] was to 'detox,' which referred to deleting the platform for a period of time or quitting altogether" (Kent, 2020, p. 10). Upon attempting a digital detox, however, many felt guilty for not participating on social media, despite its frequent use being linked to worsened mental health (Kent, 2020). In other words, they could not just *step away* from their online identities and social realms for extended periods without experiencing complex feelings about their inactivity.

This study's revelations about habitual screen use serve as a microcosm of young adults' broader entrenchment in digital realms due to various internal and external factors. Recognizing widespread patterns of excessive screen time, a 2018 press release (on a comprehensive survey) claimed that the average American spends approximately 42% of their waking hours looking at a screen (CooperVision, 2018). In response, many studies, using phrases such as "smartphone dependence," frame this frequent screen use as an *individual* problem (Park, 2019, p. 123). Other scholars reject the notion that excessive screen use is the fault of individuals, instead identifying a more sinister source. McKee and Stuckler (2018), for example, introduce corporate and commercial determinants of health that encompass the methods by which powerful entities exploit users by concocting addictive platforms.

Literature Gaps

Often articles discuss the scarcity of standard concussion treatment protocols but not how patients respond. Confirming the former, researchers and practitioners have long called for comprehensive recommendations:

> Although concussion is a common sports injury, there are few published data on effective treatments. Many current recommendations are based on anecdotal evidence and consensus. Even when the search is expanded beyond the realm of sports, to include all forms of concussive brain injury, data remain scarce (Meehan, 2011, p. 1).

In the decade following Meehan's (2011) study, data have evolved significantly (e.g., supporting treatments such as the Buffalo Treadmill Test), yet clinical guidelines remain changeable and challenging to implement. What my study would contribute is an analysis of how concussed individuals respond to unclear guidance. I surmise that this population feels compelled to (a) seek their own information and (b) seek their own information *online*.

An unexplored consequence of online information seeking is its contradictions with patients' periods of cognitive rest. Since studies on cognitive rest are largely inconclusive, and professionals' recommendations consequently vary (e.g., 48 hours versus outdated cocoon therapy), patients might, ironically, access screens for information on effectively *reducing* screen use. My study would offer first-person accounts of navigating this unexpected dilemma.

The few studies on cognitive rest that converge toward screen abstinence at the outset of recovery negate the various implications experienced by patients. Some acknowledge these individuals' removal from their social milieus, but none consider online identities. A recent study in the broader field of health and social media research

that could provide a useful springboard for my investigation uncovered how users curated specific identities on social media that showcase their health habits (Kent, 2020). It concluded that the participants were attached to their online identities and invested significant effort into maintaining them. Offering novel insights into these issues, the current study would probe how participants' injuries affect their posting habits and larger identities online.

The same Kent (2020) study explored how online platforms' addictive qualities can create symptoms of withdrawal, a complex response that rarely receives attention in concussion research. If the participants in Kent's (2020) study struggled to enforce voluntary digital detox and subsequently navigate urges to use social media, concussed individuals might feel especially disoriented trying to reduce their screen use throughout their recoveries. This thesis research would address how young adult social media users respond to their concussion symptoms and potential screen withdrawal.

Chapter Three: Paradigm, Methodology, and Methods

Paradigmatic Preface

In the spirit of integrity and trustworthiness, two pillars of quality qualitative research, I will elucidate the emerging layers of my inquiry paradigm and their influence on my research (Finlay, 2002; Guba & Lincoln, 1994). Guided by Guba and Lincoln's (1994) seminal work on qualitative research paradigms, I acknowledge where I lean ontologically, epistemologically, and methodologically. I recognize that doing so will necessarily result in oversimplification. Each respective area is ineffably vast, and my understanding of it is cursory (especially given the challenges of conducting such interdisciplinary research). I am, therefore, not attempting to be comprehensive or definitive and choose to disclose my current inclinations as a starting point. Ultimately, uncovering my budding beliefs in these areas and consistently interspersing first-person disclosures throughout my writing are important acts of "reflexivity" (Finlay, 2002, p. 532). This principle actively builds upon my above-mentioned aim to be transparent, representing a commitment to continuous "explicit, self-aware analysis" of my role in knowledge development (Finlay, 2002, p. 531).

To loosely locate my "metaphysical assumptions," I begin with Guba and Lincoln's (1994) ontological question about the nature of reality and what can be known about it (p. 105). Relatedly, I rely on the four overarching options the authors provide as answers to this prompt: positivism, post-positivism, critical theory, and constructivism (Guba & Lincoln, 1994). Given my previous degree in Media, Information, and Technoculture—a program that spotlights theorists including Michel Foucault, Stuart

Hall, and Judith Butler—I gravitate to critical theory's ontological standpoint. Core to its

position is a belief that:

> A reality is assumed to be apprehendable that was once plastic, but that
> was, over time, shaped by a congeries of social, political, cultural,
> economic, ethnic, and gender factors, and then crystallized (reified) into a
> series of structures that are now (inappropriately) taken as 'real,' that is,
> natural and immutable (Guba and Lincoln, 1994, p. 110).

Although I am most familiar with this view, I also appreciate constructivism's more

general relativist ontological position that advocates the existence of multiple valid

subjective realities shaped by the interplay of individuals and their contexts.

Of the same four response options the authors provide for the epistemological

question concerning the relationship between the knower and what can be known, I, once

again, in the broadest sense, favour critical theory and constructivism. Both approaches

view "the investigator and the object of investigation… [as] interactively linked" (Guba

& Lincoln, 1994, p. 111). This interactive link "effectively challenges the traditional

distinction between ontology and epistemology; what can be known is inextricably

intertwined with the interaction between a *particular* investigator and a particular object

or group" (Guba & Lincoln, 1994, p. 110). In other words, this subjectivist and

transactional epistemological stance accounts for how a researcher's positionality

inevitably influences how they select and design projects, interact with participants, and

co-create findings (Guba & Lincoln, 1994).

My tentative alignment with these ontological and epistemological principles is

complicated by the fact that my project's methodology, phenomenology, is seldom

employed along the critical-constructivist continuum in health research. A few of its most

notable pioneers, Edmund Husserl, Maurice Merleau-Ponty, and Martin Heidegger,

exhibit positivist, post-positivist, and interpretivist paradigms, respectively (Dowling, 2005). More contemporary scholars, like Sara Ahmed, have reinvented phenomenology, situating it within the critical canon[1]. Such literature, on the whole, though, is nearly non-existent in concussion scholarship. For my own project, then, I avoid scrambling to present any precise synthesis of my critical-constructivist assumptions with phenomenology. Instead, I settle on, and yield to, van Manen's phenomenology of practice, a specific contemporary theory of phenomenology that best serves my objectives for this particular project. My use of his concepts becomes clearer below. The justification and limitations of my use of his suggestions are also included below, interjected throughout each section.

Phenomenology of Practice

Phenomenology is quite enigmatic. It functions both as a long-standing philosophy and an evolving research methodology. The boundaries between these functions are complex, blurred, and changeable (Dowling, 2007). Although the health-oriented literature documents phenomenology's methodological applications, some scholars reject reducing it to a systematic approach to research pursuits, maintaining that it should instead take the form of a fundamental attitude towards being, thinking, questioning, and writing (Wright St. Clair, 2015; van Manen, 2014). Conversely, its philosophical offshoots face criticism for being inaccessible to "researchers who are not themselves professional philosophers" (van Manen, 2014, p. 18). When confronting this inaccessibility issue in *Phenomenology of Practice*, van Manen (2014) concedes that

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[1] Other contributors to this collection of phenomenological works spanning inquiry paradigms include, among others, Linda Finlay and Barbara Payman (2013) who introduce "reflexive-relational phenomenology" and Astrida Neimanis (2013) who proposes a "posthumanist feminist phenomenology."

there is no one true way of approaching phenomenology. Naturally, then, it felt

unrealistic for me, a novice researcher, to endeavour to sift through its various esoteric

tenets or settle any lingering quandaries. Instead, I prioritized including, in broad strokes,

some of its central concepts to justify my methods, relying primarily on van Manen's

methodological recommendations geared for professional audiences.

What makes van Manen's (2014) phenomenology of practice especially

appropriate for my research is his goal of making phenomenology "do-able" for the non-

philosopher (p. 30). Though he certainly respects the core philosophical pillars from

which newer strands of phenomenology have evolved—including intentionality, the

epoché, reduction, bracketing, and the natural attitude—he prioritizes introducing more

practical alternatives for research. Simultaneously, he advises against simplifying

phenomenology into a series of repeatable steps. A phenomenological method, in contrast

to many other qualitative methods, rejects "technicization" and "cannot be fitted to a rule

book, an interpretive schema […] or a systematic set of procedures" (van Manen, 2014,

p. 29). To carefully navigate this tension between preserving a phenomenological

undertone and dodging prescriptive frameworks, van Manen suggests some key meaning-

making options for phenomenological inquiry. Of the options he presents, I incorporate

into my research the phenomenological question, the phenomenological interview, lived

experience descriptions (LEDs), reflective analytical methods, and phenomenological

writing to augment my analysis, all of which I expand upon below in the data collection

and analysis sections.

The underlying aim of these various methods is to derive meaning from an

ongoing flow of moments that one might not ordinarily pay much attention to or even

fully grasp. These moments are often micro in nature, galvanized by the bodily senses, accumulated beyond a cognitive recognition. They can entail any "ordinary experience that we live in and through for most, if not all, of our day-to-day existence. Whether we are eating a meal, going for walk, driving a car, gardening, daydreaming, texting a message…" (van Manen, 2014, p. 28). The undercurrent of these experiences comprises what van Manen (2014), in the company of numerous phenomenological predecessors, calls pre-reflective meaning. In phenomenological contexts the task is to encounter this elusive undercurrent and gently interrupt its reflexive nature to begin revealing it.

For many phenomenologists, this process of revealing involves a distillation. This distillation of a particular lived experience's core and (seemingly) universally experienced components is, in some phenomenological circles, considered its "essence" (Dowling, 2007, p. 132). In my research, however, I veer away from this term. I certainly try to keep the focus of knowledge generation on the participants' lived experiences rather than pre-existing scholarly literature or clinical guidelines, but I do not aim for claims of full-blown universality (e.g., of their experiences' structures), nor do I attempt to bracket out the intersectional factors constituting individuals' "social location in a specific historical lifeworld" that shape how they live through phenomena differently (Guenther, 2019, p. 14). I acknowledge instead elements of basic commonality in the LEDs, with the intention to evoke an "empathic understanding" of participants' lived experiences (Holloway & Todres, 2003, p. 349).

Methods of Data Collection

Phenomenological Questions

In theory. A phenomenological question tries to restore the pre-reflective elements of a lived experience that might otherwise be taken for granted. Eminent phenomenologists posit, after all, that "in everyday life we rarely focus on our common experiences. We live through them and we may never even think of them again" (van Manen, 2014, p. 34). Even when we recount experiences, we often unwittingly leave out many of the details present when we *lived through* them in the moment. For example, when remembering a meet-up with a friend for coffee, we might grasp the gist of the experience but struggle to recreate its smaller moments: sipping the coffee, observing the waiter, fleeting feelings about the conversation topics, the temperature of the room, and so on (van Manen, 2014). A phenomenological approach calls upon the researcher to "single out" these potentially overlooked micro- and macro-moments to ask: "What is this like?" (van Manen, 2014, p. 35).

In practice. I anchored my research using phenomenological questions because I have gathered—from preliminary research, informal interactions with my peers, and my own lived experience—that screen and social media use can, for many, fade into the pre-reflective realm. This status as a taken-for-granted aspect of daily life speaks to the significance of virtual practices. I wondered, then, if concussions could rupture young adults' habitual online tendencies, swinging the pendulum and subsequently jolting them into a newfound hyper-awareness of their screen and social media use. In other words, I surmised that the injury could, in phenomenological terms, make young adults more aware of their pre-reflective screen experiences. Relatedly, I wanted to explore whether

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living with the injury affected their efforts to seek health information, on- and offline.

When considering how to explore these inquiries, I gravitated to phenomenology's

questioning style that probes specific moments (e.g., sensations, feelings, memories, etc.).

Illuminating the bodily and psychological symptoms associated with screen use, by way

of vivid LEDs, is imperative in concussion research since PCS is still largely

misunderstood, especially in the context of technological habits.

My phenomenological questions were formed in two ways. First, I created an

overarching research question to clarify (for my reference) the phenomena under study.

Then, I atomized this question into smaller parts to form the interview guide (Appendix

F). The main research question, as was stated in Chapter Two, proposed:

> What is it like for concussed young adults to use screens and social media
> as they:
> (a) attend to their online identities and obligations (e.g., relational upkeep
> and schoolwork)?
> (b) obtain information about current concussion management strategies to
> aid their recoveries?

Although this two-part question focused on the meaning that participants gave to their

lived experiences and consolidated numerous working themes to form an identifiable

nucleus of the project, it needed to be broken down in an interview setting. The interview

questions, consequently, were much more manageable and concrete. Essentially, I tried to

keep van Manen's (2014) phenomenological sentiment—"What is this like?"—at the fore

of these prompts (p. 35). I applied this sentiment, in modified language, to each group of

questions corresponding to a subcomponent of the fundamental question. In my interview

guide I started with questions asking participants to describe what their injury and

symptoms were like for them, then I invited them to express their experiences using

screens and social media, pre- and post-injury, before ending with a discussion about how

they sought concussion information on- and offline.

Recruitment Process

In theory. Phenomenological literature varies in its recommendations on study

sizes. Since such studies do not strive for "empirical generalizations," van Manen (2014)

advises against applying the term "sampling" in the traditional sense (p. 352). Instead, he

suggests seeking "examples" of a phenomenon and centring a study's size around the

question: "How many examples of concrete experiential descriptions would be

appropriate for this study in order to explore the phenomenological meanings of this or

that phenomenon?" (van Manen, 2014, p. 353).

In practice. Considering that this phenomenological study is part of a master's

degree, I aimed for a smaller-sized study that could nonetheless inspire rich experiential

information on the identified phenomena. Keeping in mind that some notable research

scholars suggest a recruiting a range of 5-25 participants in a phenomenological study, I

initially sought to recruit 5-10 participants (Cresswell et al., 2007).

To solicit participant involvement in this study, we (my supervisor and I)

partnered with Accessible Education who contacted students registered with concussions

in their database by email to inform them of the opportunity to share their lived

experiences for research. This email included a screening questionnaire (via Qualtrics)

that confirmed whether the recipients met the eligibility criteria. These criteria required

that prospective participants had at least one social media account that they accessed

within the last year; had a concussion diagnosis (from a physician, psychologist, or nurse

practitioner); had experienced screen sensitivity (at some point) as a symptom of their

injury; were between the ages of 18 and 25; and were fluent in English. Respondents were excluded if they experienced any comorbidities (outside concussion) affecting their screen sensitivity. If these criteria were met, they were asked to provide explicit consent to be contacted for an interview and to provide contact information to facilitate recruitment. Initially, nine participants expressed consent and a desire to be contacted for an interview. Their contact information was stored securely, separately from the eligibility information. Once contacted, five female participants ultimately followed through to schedule an interview.

Phenomenological Interviews

In theory. Following the formation of phenomenological questions and recruitment is the phenomenological interview. Contrasting with other qualitative interview methods that prompt participants to share their perceptions, interpretations, and personal views, a phenomenological interview prioritizes detailed "experiential narratives," otherwise known as "Lived Experience Descriptions (LEDs)" (van Manen, 2014, p. 314). Eliciting LEDs during interviews is far from simple. Researchers must be mindful of when a participant is *telling about* an experience rather than as it was *lived through*. To encourage the latter, researchers are to be alert to participants' mentions of particular moments, events, and stories. Then, they can pose follow-up questions to gain richer descriptions of these incidents: "When exactly did this happen? What were you doing? Who said what? And then what did you say? What happened next? How did it feel? What else do you remember about this event?" (van Manen, 2014, p. 316).

In practice. Given the need for both the interviewee and interviewer to continuously adapt to new content that arises in the interview, while keeping the

phenomena in the foreground, researchers are encouraged to embrace semi-structured phenomenological interviews (Holloway & Todres, 2003). I enacted this semi-structure, coming into the interview with an overarching guide but also the intention to let it evolve naturally. If participants alluded to a story or a theme that could contribute relevant experiential material, I probed further, asking what it was like, or for a particular recent moment or a notable memory.

In addition to being semi-structured, these interviews were in-depth. They were projected to take no longer than 90 minutes, but none of them went under this estimate. The participants had much to share and were eager to contribute their lived experiences to a greater knowledge base. Five interviews, one for each participant, took place over Zoom. At the outset of each interview, the participant reviewed the Letter of Information and Consent (via Qualtrics) before providing consent virtually on the platform and verbally in the recorded conversation. I then paused the process to ensure that the virtual consent had been captured in the Qualtrics system, which I confirmed using the participant ID numbers assigned as part of the initial screening questionnaires. Before commencing the interview portion, I reminded participants of the option to turn off their screens or to take breaks as needed. These interviews were recorded and transcribed (via nVivo) for further data analysis. Once transcribed, they were de-identified before data analysis.

Methods of Data Analysis

Phenomenological Analysis

Van Manen (2014) asserts that for phenomenological analysis to be possible, two bare-minimum conditions must be met: the research should be guided by proper

phenomenological questions, and these questions should generate detailed experiential material (i.e., LEDs). Upon completion of both tasks, I turned to van Manen's reflective methods to analyze the LEDs. Of the reflective analytical options he offers, I borrow from the philosophical, philological, existential, thematic, and written methods. I felt comfortable selectively choosing which methodical elements were best suited for my research because I kept in mind van Manen's initial admissions—that there is no one true way to conduct phenomenological research and that its methodological applications are meant to be adaptable rather than systematized.

Philosophical Methods

In theory. Central to phenomenology's original philosophical methods are the "epoché" and "reduction" (van Manen, 2014, p. 216). Both concepts are incredibly complex, hard to define, and understood contradictorily. Nevertheless, van Manen attempts a basic overview. According to him, the epoché requires one to suspend or remove "what obstructs access to the phenomenon" (van Manen, 2014, p. 215). This tricky process implies that "bracketing out" one's preconceived notions, knowledge, and contexts will reveal an untainted phenomenon, free to exist independently in the form of "meaning structures" (van Manen, 2014, p. 215). Conversely, the reduction "leads back to the mode of appearing the phenomenon" (van Manen, 2014, p. 215). It is what remains—or rather *appears*—after the epoché has been applied. Van Manen also refers to the reduction as a catchall term, encompassing *both* the epoché and the reduction. Employing the latter usage, he concludes his overview with a cautionary message:

> To reiterate, the reduction is not a technical procedure, rule, tactic, strategy, or a determinate set of steps that we should apply to the phenomenon that is being researched. Rather the reduction is an attentive turning to the world when in an open state of mind, effectuated by the

epoché. It is because of this openness that the insight may occur… (van Manen, 2014, p. 218).

Elaborating on the epoché and the reduction, in a comprehensive manner, is well beyond the scope of my project and field of study. I would be remiss, however, not to acknowledge their deep tie to the phenomenological tradition or reference their general relation to my research and inquiry paradigm.

In practice. My research, to a limited and very general extent, integrates van Manen's formulations of the epoché and reduction. Given my focus on lived experiences, I appreciate that these philosophical tenets keep in the foreground "experience-as-lived" (van Manen, 2014, p. 221). Applying this approach in my own context, I intended for the participants to avoid relying on pre-existing explanations or theories (e.g., clinical guidelines) about their concussion symptoms in relation to screen use and information seeking. Alternatively, I wanted their in-the-moment experiences to be the source of knowledge.

Although I, too, with a sense of wonder and openness, tried to keep the focus on their lived experiences, I take cues from contemporary phenomenology researchers who recognize the inexorable impact of socio-political, economic, and cultural factors on such experiences. Proceeding with a critical phenomenological lens, Astrida Neimanis (2013) proffers an account of multi-faceted phenomena that might, generally, be compatible with critical-constructivist paradigms:

> Like some other phenomenologists, I am committed to the idea that close, careful attunement to sometimes seemingly banal aspects of embodiment can yield rich and powerful insights into the structures of things, but also into the ethics and politics of being in the world. […] While my writing (of, on) the body is inspired in particular by the feminist continental tradition, my understanding of what it means to be a body also owes a great debt to Merleau-Ponty's phenomenology of embodiment—that is, as

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an open-ended, chiasmically entwined-with-the-world phenomenon
through which we come to know that same world (p. 18).

The consequences of being entwined with the world emerge, explicitly and implicitly, in relational situations, including the interviewer-interviewee dynamic[2]. Annemie Halsema and Jenny Slatman (2017), for example, embrace these conditions, challenging the idea that phenomenological interviews only involve the investigation of first-person perspectives. The authors propose instead that the interviewer's second-person perspective inevitably enters the conversation: through the questions they pose, their spontaneous responses, and their body language. The interviewer is not simply a "neutral researcher" but someone who actively shapes the process of "sense-making" and who participates in a "joint narrative work" (Halsema & Slatman, 2017, p. 243).

Philological Methods: The Vocative and Anecdotal Examples

In theory. Philological methods entail the expressive presentation of participants' experiential material. The "vocative," according to van Manen, is key to the particular expression engendered by phenomenology-inspired analyses. Its original meaning translates to "bring to speech," which phenomenological research extends to the ways in which "a text can 'speak' to us" (van Manen, 2014, p. 240). Getting a phenomenological text to speak to its audience, then, often requires an appeal to "the noncognitive,

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[2] Finlay and Payman (2013) address the epoche and reduction, offering a more relational phenomenological attitude: "Our reflexive (i.e. self-aware) focus forms part of the phenomenological attitude adopted where researchers aim to engage a paradoxical dance between the reduction and reflexivity (Finlay, 2008). Our use of reflexivity also highlights our understanding that researcher and/or supervisor (inter)subjectivity is inextricably intertwined with any interpretations made (Churchill, 2007). Relational dynamics between participant and researcher (and researcher and supervisor) are taken seriously and are used as a way of deepening understandings (Finlay and Gough, 2003)" (p. 148).

ineffable, and pathic" (van Manen, 2014, p. 240). To produce such resonant responses, van Manen suggests transforming the LEDs into vivid anecdotes.

Anecdotes prove practical and powerful in phenomenological research because their short, punchy descriptions acquaint wider audiences with lived experiences they might otherwise overlook. For example, Hanneke van der Meide et al. (2019) used anecdotes to convey the challenges confronted by individuals living with chronic obstructive pulmonary disease (COPD). Their anecdotes addressed key components of participants' lived experiences, including feelings of hope, hopelessness, vigilance, and isolation from others. An excerpt from one of their anecdotes entitled "Fighting a losing battle" reads:

> But I just go on, I have no choice. If I do nothing, my body will deteriorate even faster. This motivates me to keep on fighting, even though I realize I will never win. No matter how hard I try, my lungs will never get better (van der Meide et al., 2019, p. 123).

What made their anecdotes particularly poignant was their use of the first-person voice, their vivid descriptions of feelings and bodily sensations, and their concise style. In just a few sentences, the authors created a narrative about a specific moment or theme representing the lived experiences, meant to capture the reader's attention and evoke feelings of empathy.

In practice. In my research analysis, I followed suit, finding meaningful moments and themes from participants' experiential descriptions that I transposed into affecting anecdotal examples. To create these "narrative devices," I referred to van Manen's (2014) suggestions for structuring such texts (p. 250). First, I spent time immersed in the interview transcripts. I reread participants' descriptions of their lived experiences and paid attention to any themes that emerged or pointed to a "promising narrative" (van

Manen, 2014, p. 254). Then, to turn these instances into anecdotes, I focused on single

incidents or themes, edited the LEDs so as to omit extraneous or irrelevant material,

prioritized participants' quotes, framed them from a first-person perspective, kept the

story short, and used evocative language. An example demonstrating the transformation

of transcript excerpts into anecdotes is provided below (Table 3.1). Additionally, to

ensure the fidelity of the anecdotes, a table of the original quotes alongside the edited

anecdotes is also included (Appendix A).

Table 3.1: Transforming Transcript Excerpts into Anecdotes

Transcript Excerpt   "Yeah, so when I first was concussed, and you can't really do anything, it's so easy— since you're not able to walk, you're not able to read—to just look at your screen…Yeah, and then, after that, when you get so bored, it kind of seems like it's the only option, which—it's really not the only option, but your brain doesn't [n/a—not captured] too well in that state."   **Anecdote**   When I was first concussed and could not really do anything, I found it so easy—since I was not able to walk, I was not able to read—to just look at my screens. After that, I would get so bored that turning to a screen seemed like the only option. It was really not the only option, but my brain did not do well at recognizing this in its concussed state.

Thematic Methods: The Parts and the Whole

In theory. To extract the LEDs that were analyzed and featured in the anecdotes, I

heeded van Manen's instructions on phenomenological thematic analysis. This method

differs significantly from the theme finding popularized by other qualitative

methodologies, including grounded theory, ethnography, and content analysis. Notably, it

disavows "codifications, conceptual abstraction, or empirical generalizations" (van

Manen, 2014, p. 319). Instead of being a clear-cut mechanical application of procedures,

phenomenological theme analysis is "a free act of 'seeing' meaning driven by the epoché

and reduction" (van Manen, 2014, p. 320). While I did not aim for an "epoché-reduction

proper," which warrants a level of "bracketing" that is beyond my scope and contradicts

layers of my inquiry paradigm, I respected the fundamental attitude of wonder and

openness so core to this part of phenomenology (van Manen, 2014, p. 228). Specifically,

I focused on the lived experiences themselves as the knowledge base for themes, rather

than pre-existing literature.

In practice. For the anecdotes and the transcript LEDs, I conducted a reading that

accounted for their parts, their whole, and the interconnection between the two. To

preserve this delicate balance, I deployed van Manen's three-step reading approach. This

process involves wholistic reading, selective reading, and detailed reading. Wholistic

reading holds the text in its entirety to arrive at an overarching meaning. Selective

reading requires multiple interactions with the text. An increasing familiarity, it is hoped,

will reveal significant statements or sections. These passages are then highlighted and

prepared to inform longer analysis sections. Finally, a detailed reading necessitates line-

by-line reading, also enriching the analysis. To carefully read each sentence, van Manen

(2014) offers a guiding question: "What may this sentence or sentence cluster be seen to

reveal about the phenomenon or experience being described?" (p. 320). Taken together,

these various lenses informed my reflective phenomenological writing.

As part of my application of van Manen's three-step reading approach, and in

congruence, more broadly, with his vision for practical phenomenological research, I

analyzed the transcript texts with varying levels of generality (van Manen, 2014; Coffey

and Atkinson, 1996; Slaughter et al., 2007). Commencing at the most general level, I

acquainted myself with the transcripts, first by verifying them against the audio

recordings and then by conducting a second read-through. I tentatively marked off

sections that included particularly vivid LEDs while maintaining openness to text, as I was not yet looking for specific disparate themes. Any initial overarching observations were noted in an informal reflexivity journal (Appendix B). I next proceeded to the selective reading, going through the texts several times, using a colour-coded scheme, to signal segments that had anecdote potential or were relevant to remaining sections subsumed under my research questions (e.g., information seeking). In my final, most-detailed reading I went through the texts line-by-line and took cues from the participants' language for any remaining themes and to nuance my previously identified themes.

Phenomenological Writing

In theory. Phenomenological writing, as van Manen devised it, differs from the writing done in other qualitative contexts. Foremost, it is a method, not just a means of *summing up* methods. This form of expression goes beyond a routine mechanical act and instead helps produce phenomenological information, acting as a vehicle for the researcher to arrive at meanings they might not have otherwise. Part of this *meaning-making* is the style of phenomenological prose itself. Van Manen illustrates this particular style in his own writing, giving researchers a glimpse at the benchmark for which they should aim. In the language of this exemplary phenomenological prose, he encourages researchers to straddle between "the pathic phenomenality of phenomena and the evocative expressivity of writing [that involves] not only our head and hand, but our whole sensual and sentient embodied being" (p. 20). The core message here is that leaning into the feeling nature of writing brings one closer to the feeling nature of the phenomena under study and vice versa.

Although van Manen (2014) emphasizes the potential (and necessity) of reflective

writing in the phenomenological process, he also points to its limitations. Some of the difficulty arises in the separation between language and the intangible undercurrent of experiences. His specific friend or loved one, for example, will conjure in him particular memories and meanings which help form both his internal and relational realities, whereas reducing these relationships to standard categories by writing the words "friend" or "loved one" suddenly neutralizes his intricate constructions of them. Naming them, in a sense, robs them of their "existential richness" (van Manen, 2014, p. 21).

In practice. To employ his phenomenology of practice in research to portray lived experiences, then, is to acknowledge that a researcher's written representation of phenomena is just that: a representation. It will never truly approximate the hidden depths of an experience. I take this word of caution as a reminder to approach lived experiences with a reverence for the unknown and be mindful that I am, in attempting to put my interpretations into language, affecting phenomena. Finlay and Payman (2013), critical phenomenology scholars, aptly capture the challenges of dwelling with the participants' experiences through a "relational-centred approach[…] where meanings are seen to emerge in a co-created, dynamic context" (p.147). Rather than attempt to extricate meanings seemingly inhering in the data, they maintain that their "understandings are seen to be born within the intersubjective between of the embodied dialogical encounter" (Finlay & Payman, 2013, p. 147).

In my writing, I do not try to construct or establish claims of universality. It is not uncommon in phenomenological research to move toward an "exemplary singular" of a phenomenon, but striving for such a result would contradict my partiality toward Guba and Lincoln's (1994) explanation of critical and constructivist assumptions. Thus, I

appreciate van Manen's counsel on dealing with lived experiences, keeping in mind the importance of "a sense of modesty and caution in ... writing insightful lifeworld studies" (p. 24).

Ethical Considerations

This study received approval from Western University's Non-Medical Research Ethics Board (NMREB) before any data collection involving human participants commenced. Once approval was confirmed, prospective participants were contacted through Western University's Department of Accessible Education. The students contacted received a link to a Qualtrics survey containing the Letter of Information and Consent and a screening questionnaire to ensure they met the eligibility criteria. If interested in participating in the study, the students were able to provide explicit consent at the end of the survey to further contact for arranging interviews. Interested students then received emails to schedule an interview. At the interview, they had the opportunity to review once more the Letter of Information and Consent. Then they provided consent virtually using Qualtrics and verbally which was captured using Zoom's recording function. I verified that Qualtrics captured the virtual consent before officially beginning the interviews.

Chapter Four: Results

Introduction

This three-part chapter presents a series of central and secondary themes. Each central theme showcases an anecdote taken from the transcript texts. These anecdotes are based on specific participant quotes that were particularly vivid in their descriptions and that paralleled the other participants' LEDs. Minor edits were made to account for grammar, punctuation, and evocativeness. The polished anecdotes are presented below as plausible representations of lived experiences and are followed by reflective writing that weaves the participants' exact quotes into a larger experiential narrative. Some secondary themes, tabbed with italicized titles, are expanded upon to extend the reflection.

Part One: Online Identity and Obligations

Tethered to Technology

Since school was online last year, I found that even more difficult, just because I was doing lectures online, I was doing my notes online, like I could not really escape it. I could not avoid using a laptop. On social media, like everyone I know is kind on there. It is not a way of life, but it is so ingrained in a lot of our lives that it is almost hard to step away now.

As part of their concussion recoveries, the participants required respite from symptom-inducing stimuli. Reducing exposure to light, sound, and movement by closing their eyes, plugging their ears, and staying still seemed manageable initially. Beyond a few days, though, as weeks to months dragged on, they started feeling stalled. By this point they grappled not only with incessant symptoms but also with internal and external pressures to resume their pre-injury routines. Awaiting them were obligations to work,

school, and relationships that increasingly involved screens, the significant contributor to their symptoms.

Despite their difficulty using digital devices to fulfill their various commitments, the participants still deemed screen use compulsory. Most of them experienced either an injury or irksome symptoms at the height of the pandemic, when everyone was essentially confined to their living quarters and encouraged to embrace remote (i.e., technology-oriented) activities. P1, for example, who sustained an injury in February of 2020, said that her screen use stayed the same throughout her recovery: "Not a lot of technology has changed in regards to the things that I have to use, and the things that I can't use. Like, I can't avoid using a laptop." Then, she elaborated, touching on pandemic-related constraints: "Until April, there was nothing I could do because it was, like, online studies, and I had to study on [the] computer."

The other participants shared P1's sentiments, corroborating the centrality of screens to their daily lives. P2, in particular, echoed P1, almost verbatim: "Since school was online last year, I found that even more difficult, just because I'm doing lectures online, I'm doing my notes online, like you can't really escape it." P3 similarly recounted the difficulty of attempting to avoid screens: "Yeah, it was definitely more difficult because I like… I—that was my main form of communication and, obviously, like that last [injury] especially, like it happened during the pandemic."

P4 quantified her screen time, further illustrating the link between screens and obligations: "Well, I would say right now, especially being in school, [my screen time amounts to] eight to ten hours a day." When asked if her concussion symptoms forced her to decrease this daily quota, she expressed that her schedule did not allow it: "Again, no,

solely based on my need to continue and succeed. If I could, I would make it lesser, for sure." P5, in contrast, was able to reduce her screen time significantly following her injury but still used all of the same devices: "I still use all the same screens, but I just use them a lot less often."

Taken together, these excerpts reveal connections between the participants' injuries, commitments, and screen use: screens were experienced as being integral to the participants' obligations; therefore, reducing screen time to recover, in many cases, reduced their perceived opportunities to meet said obligations.

Multiplicity of Screens. Day to day, the participants confronted *multiple* screens, sometimes all at once. Laptops and phones made up most of their device usage, followed in many cases by television, tablets, and miscellaneous school- and work-related screens (e.g., projector screens, point-of-sale systems, etc.). All accepted the recurring presence of these devices but revealed the added burden of navigating multi-screen situations. They recalled moments when they were required to repeatedly switch their gaze between digital displays. P1 conveyed this circumstance quite vividly:

> Yeah, but one more thing was like when there's like a change of scenario, like change of screens, you know? Sometimes you're looking at something, and then sometimes another screen comes up. Like, we have to multi-screen ourselves, right. Sometimes on the phone, on the laptop, and then sometimes, like, when you're watching a movie, there's a dark, dark—and then all of a sudden there's, like, bright light with all the lighting. It's a little bit hard to adapt [to] these changes [on] the screen.

P2, too, spoke to this dilemma, including a description of flipping between *windows* on a screen: "But I think flipping between screens really bother me. So for exams, if it's a linear exam, like you have to go from one question to the next, [which] completely changes the screen, that really bothers me."

In both of these examples, the participants struggled with the omnipresence of screens and online applications in their daily lives. The confluence of lights, sounds, and motions, from multiple directions, left them feeling stunned in situations others might overlook.

Withholding Struggle in On- and Offline Identity

I have never posted anything about my concussion. I really try to make it seem as if my injury has not affected me, and that's the presence I put out on Instagram.
I remember I once posted a picture of me cross-country skiing. Then somebody I know commented on my picture, saying something like, "Oh yeah? How is your concussion doing?" in a condescending way, meaning, "Oh, you have a concussion, but you're still able to go cross-country skiing?"
And that made me super upset because cross-country skiing is basically just me walking. It did not require any heavy exercise, and it was one of the few things I was able to do after my injury amidst so many things I could not do.
Them mentioning my concussion on Instagram also bothered me because in real life, if you know me really well, you know how much I think about my head and things affecting my head.
In one sense, I do not want to be known as the person who has a concussion. I just want to be alleviated from the negative sides, like I don't want to be known as somebody who always has to give up something because of my head.

In their online identities (i.e., their 'presence' portrayed through "posts" on social media platforms), the participants often withheld that they wrestled with complex and persistent post-concussion symptoms. Instead, they preferred posting about other parts of their lives or not at all. This reticence to reveal their struggle stemmed partly from internalized pressure to project a strong or separate exterior that embodied their non-

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injury experiences but that also protected them from peers' potential misunderstanding or invalidation.

Some participants equated hiding their post-concussion symptoms from their peers with increased (mental, emotional, and physical) strength. On- and offline, P1, for example, aimed to appear "strong," not divulging her symptoms. She proceeded by pretending to be a different person—an unaffected person: "I was, the other day, like talking to my… another friend and, like, then I have to pretend that I am someone else than what I'm going through." P2 shared this stance: "I try to stay strong through it and not let people… not let it show that it affects me." P5 elaborated on this tendency to minimize her symptoms, especially on social media:

> Yeah, I feel like in my online identity, I'm very—I seem to be just so put together. I mean, I'm not like a mess, but I seem to be so put together and doing well. And, for the most part, I think I am. But nowhere, I think, on my social media, can you see how hard it was to get to that [more functional and recovered] point, and I'm not even always at that point. Because, obviously, I'm not going to post about my bad days and… but I think it especially discounts it, because my bad days are really bad concussion days, not just someone, you know, feeling upset.

She continued, detailing the concrete bodily experiences that remained unseen by her online friends and followers:

> Or, like, I know people have real bad days, but my… I don't ever talk about the headaches and make… that literally make me not able to stand up because I'm so dizzy. And it's… and… I also, like, I don't really tell people… talk to people about that because I kind of want to preserve that [put-together] online identity when I see them in person, especially if I don't see them that often.
> And it almost feels fake sometimes. But, at the same time, I'm not going to have people seeing when I'm struggling, so I'm OK with them seeing that, I mean, I guess that's why I post [about other things].

Other participants placed a less explicit emphasis on exemplifying 'strength' but were similarly hesitant to divulge details of their discomfort and distress. They either

(ostensibly) separated these experiences from their identities and interactions or were selective about what or to whom they shared. Speaking to both approaches, P4 let her close circles in on her concussion but classified the injury as separate from her personal online identity: "It remains separate. I would say, like, most of my friends and family know I've had concussions, but I don't really talk about it now." She developed this separation, in part, to define herself beyond her battles with PCS:

> I think I just don't think about it. I think I just kind of separate the two. So unless I'm specifically posting something about concussions, like research, I don't necessarily tie the two together, especially in my personal realm of social media and my social media presence. I generally don't think about my concussion, even though… or concussions—even though I do consistently have migraines and stuff like that, I try not to let it necessarily define me in my social media presence.

In other words, she imposed a boundary between her injury and identity differently depending on whether she used social media for personal or academic purposes. On Instagram and Facebook, for example, she connected with her family and friends, prioritizing relational upkeep that did not involve referencing her concussions; on TikTok, she sought out entertainment and parasocial interactions; on Twitter, she engaged Academics who had conducted concussion and nutrition research. Interestingly, the latter context, in contrast to her social realms, seemingly provided a more justifiable outlet for entering conversations and raising awareness about the injury.

When crafting an online identity, P3, too, considered her varying audiences. To navigate the range of people tied to her social media, she created two accounts: a main one where she garnered followers from different facets of her life, and a peripheral one she reserved for a select group of friends, the people who knew her very well and who

could reliably contextualize her harder moments. She described the advantages and disadvantages of this duality:

> I think I post like my better moments on [the main account]. And then, like, like my captions, like I'd put more thought into those because it can't just be like: "hey, guys, I'm depressed, lol"—which I can do on my more private one. But, like on one where it's me and I have a lot of like university and like my high school friends following it, I feel like I have to put up like a persona almost of someone, like the better parts of myself, if that makes sense.

On one hand, she carved out a small group online to whom she could be candid about her concussions. On the other hand, she still felt compelled, like the other participants, to conceal her challenges in most relational contexts.

Social Media as a Highlight Reel. Part of the reason participants personified a strong or separate online identity pertained to pressure to conform to social media's highlight reel. The participants allude to these pressures in the aforementioned LEDs—particularly when P3 put up a persona based on her "better moments," when P5's online identity made her seem "put together," and when P1 and P2 emphasized appearing strong. Extending the discussion of these pressures further, P4 explicitly mentioned the highlight reel:

> But if we're talking about my personal private accounts, that don't necessarily share… like that I have privacy settings on, I only post when something eventful is happening. It is… it is truly a highlight reel. So I just decided to let my online presence kind of go the wayside [during recovery].

She then restated what this highlight reel meant to her: "Just again, if there was no memorable… memorable events occurring, then I wasn't posting. And because of the concussions, I wasn't really doing anything memorable." P1 acknowledged social media's highlight reel, too, and similarly stopped sharing due to her injuries: "On my

Facebook, I used to post a lot of stuff about myself, about things that I'm going—like if I would go to like a special event, I would post a picture and everything. Now I don't." P5 did not necessarily stop posting during her injury but, like P1 and P4, she showcased her highlights online: "Just like if there's something exciting happening, and I have a picture of it, then I'll post it, and if not, then it doesn't really matter."

Internalizing the perceived norms of social media, these participants prioritized their most eventful pictured moments. Though accepted by their online social milieu, this approach only deepened the chasm between their cultivated (untroubled) appearances and already-overlooked adversity.

Longing for a "Lost" Self. In some cases, the influx of highlights shared on social media reminded the participants of lost potential, of "what could have been" had they not sustained their concussions. P2, for example, offered her experience of being on the other side of the highlight reel, comparing her peers' posted progress against her own:

> I think that's also difficult, kind of looping back to what I said about where
> I wish I [were] if I hadn't had concussions. So seeing other people—kind
> of cheesy—but like living my dream, like things that I wish that I was
> doing. Like one of my friends just won a soccer championship for their
> university [and] I was so beyond happy for them, but I'd be lying to myself
> if I didn't say: wow, I wish that was me. Or just seeing other people
> getting into medical school, already, makes me, like: wow, I wish that was
> me.

More generally, the other participants grappled with grief, like P2, over lost opportunities and parts of themselves. P3 captured this loss, citing unfulfilled potential:

> I think the main thing that kind of stuck around was like frustration and
> just kind of feeling, like, I left a better version of myself, like, in the past,
> almost. Because I feel like I can't get to my full potential anymore.

P4, too, felt frustrated that a recovered and more "normal" version of her self remained out of reach:

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So it's hard because you want to be normal, but then you have all of these things, from events that you didn't cause or plan or anything of that nature, right? So it is, I would say, quite emotionally [taxing].

Returning to the present, P5 noted a new and unrecognizable self, riddled with reminders that she was still recovering:

It feels like I'm not myself, like I have a different personality and it's not a personality I particularly like. I feel like I'm not like physically… like sometimes I feel like I can be normal, and I'm not physically limited, but then my brain will tell me otherwise, and I actually can't handle things most people can.
I have to take a lot of breaks. Or something that seemed to be so easy before is so difficult, and I feel slowed down. And all of it together is very frustrating, so then there's some emotions involved.

Others in her life noticed her newfound limitations, which pained her:

But, as I am getting better, it's, like, people just make comments like: yeah, when you like—when you were freshly concussed, you were just mean, like you were a different person, the light was gone in your eyes. And I'm like: well, I'm still not fully recovered, and I can—I can feel like I can get that way sometimes, so that's rude—triggering—telling me that.

Like P5, P1 navigated personality changes that permeated her relationships: "I was known to be like a non-irritable person, but that month [after the injury] was like terrible. I was like fighting with everyone." She often felt confined by these changes: "It feels like I'm in like my own world now, in my severe restrictions, and there's not a lot… many things I can do." As if watching her injury's aftermath unfold in slow motion, she felt her own sense of alarm grow as she realized those around her could not connect her uncharacteristic reactions back to her concussion.

Invisibility of the Injury. Although the participants certainly *felt* the physical, mental, and emotional impacts of their injuries, which reverberated into their relationships, they often "looked fine" from the outside looking in. This "invisibility" was challenging to endure, both on- and offline. The participants hinted at having no choice

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but to keep their concussions at the forefront of their minds, often attributing any changed physical abilities, emotional habits, and personality traits to their injuries. Other people in their lives, though, were less able to comprehend the participants' moments of strain, especially as time passed. Instead of connecting out-of-character interactions and complaints of elusive bodily symptoms to the participants' concussions, these other people were often understandably confused, not realizing that the participants were still recovering, even after months and years. Or, if they were aware of the participants' unremitting symptoms, some were skeptical. Many were supportive and attuned to what lay beneath the surface, of course, but, still, it was the participants who ultimately carried the complex weight of the invisible injury.

A few participants discussed their experiences navigating the invisible component of their concussions. P5, in particular, stressed that even she was deceived by her outer appearance despite dealing with ongoing post-injury difficulties. On a moment-to-moment basis, she had to remind herself that she was still recovering:

> I'd say, for a while, it's pretty disabling, but almost to the point where you don't even know it, in the moment. Because you still look like you can do everything you could before, and sometimes you think you can, until afterwards. You really realize you can't, and nobody can see it.

She felt that those around her also failed to fully appreciate the chronic nature of her concussion symptoms and instead misjudged her:

> Because I was recently discharged from treatment, people just assume that means I'm one hundred percent, and that, like, I can control everything that's going on. And I can't, and then they just think like… you're, oh…you're being irrational, you're being crazy, and just kind of forgetting that… or just not knowing that I'm really trying, but it's not always under my control.

P4 similarly struggled with the hidden depths of her post-concussion symptoms that

others in her life overlooked:

> So it's not like I broke my arm, and I got a cast. It's almost like an invisible
> injury. If I looked in my brain, it wouldn't be invisible, but no one can see
> my brain through my head, right?

She found the invisibility, which disconnected her internal struggle from her outward

appearance, challenging to communicate:

> But even, still, when I get a migraine, I try to explain to school or work or
> friends, and I'm like, I'm sorry, I cannot leave my house today because I
> can't function. It is emotionally [taxing] in the sense that it's embarrassing
> to have to not participate in things because of something people can't see.

Her response, then, was to commission various practitioners to treat her symptoms and to

bring credence to her concussions:

> So I would say working with the physiotherapy team, and then them
> connecting with like my school, my family, things like that, just kind of
> brought more legitimacy to the situation, I think. Because I often think,
> too, that a lot of people can think you're faking it, when it comes to
> concussions and things like brain injuries because, again, you can't see it,
> right?

In trying to bring legitimacy to the otherwise invisible parts of her injury, this participant,

along with the others, underscored feeling unseen, partly because the damage done was

not easily seeable or locatable in any practical and concrete way. Judging by the

participants' exteriors, outsiders tended to either overlook their limitations or

overestimate their abilities. Both miscalculations left the participants feeling invalidated

and misunderstood.

    Feeling Misunderstood. In masking their struggles online (e.g., on social media),

the participants leaned into their injuries' invisibility, which simultaneously protected

them from, and contributed to, misunderstandings. Prioritizing the former (i.e.,

protection), they could temporarily inhabit other facets of their identity and avoid

conveying their concussions' complexities that left even them confounded. The

consequence, though, was that masking the seriousness of their symptoms exacerbated

their isolation. P2, whose LED inspired the anecdote for this section, spoke to posting

about the non-concussion parts of her life on Instagram and feeling misunderstood when

a peer commented on her post:

> Yeah, it was really annoying. I called my sister right after and ranted about
> it. Yeah, like I kind of had mentioned, one of the first things that… when
> you first get a concussion, people are like sympathetic about it, or
> empathetic about it… no, definitely sympathetic; unless you've had a
> concussion, or you really get it, you don't really know what it feels like, to
> an extent.
> But like yeah, yeah. It really bothered me, because I thought that it was
> one thing that I was finally able to, that made me happy, that I finally
> *could* do… like I think that was the very first form of physical activity, in
> any sense, that I had done in a year.
> So, for somebody to kind of throw it back in my face, in like a: oh, you
> can do this sort of thing? Like why? Why are you taking a reduced course
> load?
> It's kind of like… like [what] do you want me to post? What did you want
> me to say? Do you want me to be in a dark room all day? Like would that
> show you the actual side of… like the reality of what it really is? Or…
> yeah, it still bothers me.

P2's peer's unsolicited comment forced her to confront her offline injury in her online

identity, for all of her followers to see. It also, in her opinion, mistook her ability to

engage in mild exercise as an opportunity to question the validity of her concussion (e.g.,

her symptoms, academic accommodations, etc.). Her takeaway from this vivid memory

was that lived experience with concussion begets an appreciation for its hidden aftermath,

which is otherwise too difficult for outsiders to decipher, such that they subsequently

struggle to sustain sympathy and empathy after the acute phase of recovery passes. She

expanded on her experience of others' provisional openness to the injury:

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> At the beginning, everyone was really supportive, and they always asked if I needed a hand, because I had to take time off school for all these concussions, so they were very supportive at the beginning. However, I think just generally with injuries, the more that you have them, the more people think that it's easier to deal with. And I really don't think that's the case. So even though I'm still suffering in the same way that I was before, as it prolongs people just think you get used to it.
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> I've tried to make it easier, but it still doesn't get any easier.

Anticipating a similar subtle invalidation that P2 described, P5 rarely posted pictures of herself being active:

> Yeah, I think I like to post things more discreetly.
> Like, I used to post, like, well, party photos in first year, just all these like crazy things. And now it's just… it's more classy, and, I mean, I know that like I have people that know about my injuries, or like people I work with on Instagram, so I also don't want to appear like I'm being reckless when I have this head injury, so there's kind of nothing that makes me look bad or makes me look irresponsible.

When selecting which moments to share online, she sought to portray herself as someone whose life was filled with the expected amount of caution but also without complication.

Offline, she tried to maintain a similarly "put-together" image in the company of her peers:

> Like my online identity [of being functional and recovered], I can maintain it out in public, but if I'm like having a bad head day or something like that, then I just… I would not… people would not see me as the same person, all put together and succeeding at life to the fullest or whatever.

Like P2, she entertained the possibility of exposing people to the challenges she faced but feared the consequences of doing so. Her response to this fear was to avoid acknowledging her concussions altogether in her online identity:

> If I'm like having a bad head day or something like that, then I just… I would not… people would not see me as the same person, all put together and succeeding at life to the fullest or whatever. I think my online identity really discounts how much I struggle with my head injuries. I think I've successfully covered it up.

Beyond avoidance, though, she actively attempted to "cover-up" any traces of her troubles. This tendency, shared among the participants, revealed the importance placed on feeling accepted rather than risking feeling rejected and misunderstood.

Part Two (A): Screens and Symptoms (Turning towards Screens)

Altering Screens

> Post-injury, I have not stopped using particular screens, but I have changed how they look. For example, I have "night-mode" on both my laptop and phone to reduce the screens' blue light and brightness to their lowest points.

Given that the participants could not just eschew the surplus of screens surrounding them at school, work, and in their social lives, they felt compelled to find ways to cope with their heightened post-injury sensitivities to virtual stimuli. Of particular concern to them was the bright blue lights emitted from their screens that stung their eyes and subsequently spurred headaches, dizziness, and other symptoms. Their strategies to combat these complications involved altering their screens and using non-virtual aids.

Focusing on the first strategy, many participants discussed changing their screens' brightness and colour. For example, P1, whose LED inspired the anecdote for this section, dimmed her brightness and blue light to extend the amount of time she could turn her gaze toward screens. P2 adjusted her digital displays almost identically:

> And on my phone, I have my phone permanently on like an ambient light. So it's not a bright light. It's kind of orange-y. And then my brightness is down for most things, like I don't have the auto light-correcting thing or whatever because that bothers my eyes.

Generally, P4 tried to decrease her time spent on screens but more often changed her settings to omit the blue light in favour of a yellow one:

> No, I definitely tried to reduce my screen time and change settings on my screens so that it's more of the yellow light, rather than the blue light, because I find the blue light is more impactful to my migraines. But I would—in order to succeed in school and life, I have continued to use all of the same screens as previous to my concussions.

Like the previous participants, P5 preferred an altered screen. Rather than apply software-related adjustments, though, she superimposed a physical cover over her screen at work:

> We even have this screen protector over the monitor at work, and it like dims everything, and even that is a lot, and that's like the most-chill screen I've looked at.

> As part of the second strategy, some participants deemed it necessary to go beyond dimming their screens' brightness and colour by introducing various external aids. Seeking to soothe her eyestrain and minimize the stimuli competing for her visual focus, P1 obtained special glasses with tape occluding the outer fringe of her lenses: "My physical therapist, she gave me some vision restriction. So if you can check my [glasses], I have like the taping on my specs." She then detailed the benefits of using these glasses:

> So it's just like a blind spot in there, in which this tape goes on, and this was a miracle. It like reduces the stress on my eyes to a lot more extent. And—and I've been like used of this thing, so when I'm in my specs, I feel relaxed. But if I take this off and use the screen time, it's like [within] a minute, a minute or two, I'm like: my head is not on the right place, like it needs something to cover itself up.

P5 also aimed to operate in a calmed state. Specifically, she substituted meditation sessions for screen use:

> And I'll do mindfulness things, so when I could be using my phone like, say, on my lunch break, I'll just do like a meditation instead. And that makes my lunch actually restful, versus if I were just to scroll through Instagram; it wouldn't have actually been restful, and just kind of, like being incredibly organized, and try to keep that going as long as possible.

Upon centering herself, she was better able to organize her activities, including her screen time.

Nothing Else to Do

> When I was first concussed and could not really do anything, I found it so easy—since I was not able to walk, I was not able to read—to just look at my screens. After that, I would get super bored, so turning to a screen seemed like the only option. It was really not the only option, but my brain did not do well at recognizing this in its concussed state.

Although the participants credited various software applications and strategies with allowing them to extend their screen time, some felt that the very restrictions requiring them to alter their devices rendered them vulnerable to increased screen use. Consequently, instead of finding ways to cope with screens, they often used screens to cope. Contributing to this bidirectional cycle, in addition to the participants' (physical, mental, and emotional) limitations, was the accessibility and pervasiveness of screens in their environments. P2, whose LED underpins the above anecdote, described this predicament. Being unable to move or think in the first few days and weeks following her injury left her feeling deeply uncomfortable. Within her reach to decrease this discomfort were screens. Finding herself in a comparable circumstance, P3 said: "I was already kind of more isolated and it was really difficult to be able to just not do anything." She often turned to her peripheral social media account, the one where she shared less-inhibited posts with her inner circle:

> I guess, for like my spam account or like my meme account, as I mentioned, I use that a lot more, because I had—because I like complaining, and I feel like when I was in bed all day, there wasn't anything else to do.

To offset using screens to fill time, she concluded that her other obvious options were to

take naps or to try to find extremely mild activities:

> I feel like I slept a lot. Like, I just took a lot of naps because I didn't know
> what else to do. And it was just it, like even back then, it was a lot of
> frustration because like I, I would try—I… I still tried to keep myself off
> of screens, but it was still kind of difficult. So, navigating was just kind of
> like trying to avoid it and maybe doing things that didn't include screen
> time or loud noises or whatever.

Lying in bed all day, looking to quell boredom with screens and low-key tasks, became a

daily staple for P5, too:

> So I guess with my headaches and neck pain, before, like near the
> beginning, I wouldn't really know what to do. I would just lie in bed all
> day or do exercises and go to physio.

Realizing that screens were convenient yet symptom-inducing motivated P5 to implement

a screen-restriction software application, which, she admitted, was unsuccessful:

> Right after my injury, I didn't really do anything. It was more so spending
> a bit of time on [screens], and then napping because I just got tired. And
> then I did try like the screen time [restriction app]. After a certain amount
> of time, it would cut you off, but that doesn't work on me because I could
> just go turn off the screen time [restriction app] if I, if I'm not done my
> post or whatever. So that's my main attempt. It's never worked on me.

Though she felt drawn to screens, her symptoms' severity still forced her to take breaks.

Once she had stepped away, though, the cycle continued: her boredom would return,

invoking in her an urge to do something. She detailed the trial-and-error process of

striking a balance between screen time, taking breaks, and trying other activities:

> So when I would need those breaks [from screens], for like several hours,
> I would start off being really successful for maybe like half hour, an hour,
> or sometimes I'd fall asleep, and that would be good. But then as soon as I
> get up, I'd be like oh, what if I missed something, and I'd check my phone,
> or I'd get up, I'd try to do something, because I felt like maybe that was
> long enough. And it would always result in me feeling worse. And then I
> would go back to trying to do nothing, and then I get bored, and then I'd
> try to do something and feel worse.

Ultimately, P5 felt confined to this painful push-pull, as did the other participants. All of them wanted to assuage their various symptoms and, at any moment, had to weigh which ones were more manageable. Often, they settled on provoking screen-related symptoms if that meant that they had an activity to help them pass the time.

Mindless Distraction

Since sustaining a concussion, my social media activities have stayed relatively the same. But I find on social media now I look more for mindless entertainment versus things that I have to actively think about, because of the fact that I don't want to be focused on what I'm looking at–I just kind of want the content to be mind numbing.
With my concussion symptomatology, I have become more of an anxious sleeper. I know the best thing for sleep is to put the devices away, but I find if I just have to lie there, then I get too lost in thoughts, I start to become anxious, my heart rate accelerates, and then I give myself a migraine. So sometimes it is more practical to scroll mindlessly through social media to distract myself, and then I can fall asleep more easily: everything is fine, and I do not have to think about the 400 tasks I have to do tomorrow or anything other than this little girl trying a fun hair-do on TikTok.

The participants used screens not only during bouts of boredom but also to bring down heightened anxiety. They turned toward screens, in other words, to alleviate under-stimulation *and* over-stimulation. Describing the latter, P1 narrated a memory in which she and her roommate had an argument that was worsened, in part, by her post-injury irritability. Disturbed by the conflict that unfolded along with her overblown reaction, a subtle reminder of her injury's impacts, she retreated and recalibrated. In the aftermath of this distressing instance, which was one of many, she used social media as an escape:

It's a lot—stressful, like because dealing with that is scary, because I know how hard it is, because a number of times I have been through it. I know eventually it goes, so all I need to do is just give myself some time. Physically, I would say that my heart beats like a lot faster. My body starts to weaken itself. Sometimes I feel like there's like a big hole in my chest, which is not like filling up. And, I, because it's like a lot harder to not think about it, but I still do like some days. Like that is the time, like one more interesting fact, like dealing with that, escaping from that is one solution [of] social media.

Then, more generally, she reaffirmed her use of social media to calm herself down: "Sometime—most of the times, when I feel that way, I use social media [more] than any other thing, because social media is the biggest distractor." She continued: "Yeah, I just watched some like, like Instagram Reels or anything for like half an hour, maybe, and then [feel] more normal because that feeling is gone." When asked about the consequences of this screen use on her symptoms, she first stated that the temporary distraction provided by social media actually improved her bodily experience: "I think, I would say, the distraction to social media outweighs everything—like my body's the normal, I feel lighter, for some reason." Next, she nuanced this experience, returning the importance of balance: "So it is an escape from those feelings, but at the same moment, I have to balance it out on how much I use it, because of the screen time."

Other participants similarly used social media to distract and to sooth. P3, for example, enjoyed the "mindless" quality of scrolling through her various platforms: "I would say, before bed, I use [them] a lot. I feel like it's like that passive scrolling before bed, and it kind of… like my brain slowly shuts off because I'm doing like for some… sometimes it's like mindless, almost."

Like P3, P4 scrolled through social media to interrupt her incessant thoughts:

So it's not like it's something strenuous for me versus a lot of the other activities in my life [that] take a lot out of me to do versus just scrolling

through TikTok or watching Instagram videos or something [that] takes away from my life into other people's lives that I just, I don't know, and I don't have to think about.

In the interview she also recounted her moment-to-moment inner dialogue of using distraction to help her sleep: "And then it calms my body into feeling like, OK, you're OK, you can go to sleep. Everything's fine." Ultimately, she felt that social media provided a welcomed escape: "Because, as I said before, it's just kind of a mental escape. So I would continue to [scroll] without posting myself." This way, she could avoid exerting significant cognitive energy but still feel somewhat calmed by seemingly mundane online content.

Complicating their previous comments about screens inducing intolerable physical sensations, the participants concluded here that, in certain circumstances, online stimuli improved their emotional state.

Fear of Missing Out (FOMO)

> Sometimes, when I take a break from screens, I worry that I am missing out on something: What if people are trying to contact me? Or I get some important news? Or I come across something that I really want to hear right now?
> If I know I am waiting on something specific, I will feel the urge just to check, like I need to know. Sometimes I have checked my phone and, as usual, there's nothing there.

Also catalyzing the participants' screen use was a need to feel connected, to feel *in the know*. Each day, at any moment, they could pick up a digital device that afforded them access to vast virtual realms in which their peers, colleagues, and strangers shared content funnelled through an undetectable algorithm that keeps online audiences enticed. This deluge of data weighed on many participants. It lingered in the back of their minds.

They became almost hyperaware of accumulating unchecked updates (e.g., posts, emails, etc.) or unseen content on a given platform. Continuously checking to see how their online lives evolve in real time was experienced as an urge, a reinforced habit. Submitting to any FOMO by checking social media was common for P2, as she felt she had already missed out on so much due to her concussions:

> However, maybe the reasoning behind me not wanting to miss out on something is because I've already missed out on so many things because of my concussion. So I feel like if I don't know something, like, that somebody asks me like, oh, did you know blah, blah, blah went to blah, blah, blah? And I'd say, no. Like, it makes me feel I'm even more out of the loop, but maybe that's just me thinking too far into it because the concussion mindset is one that I'm in right now.

P3 also described feeling pulled to glance at social media, not wanting to miss interesting content:

> Like a pull is—yeah, that's a good word. Because it's like, it is addicting, because it's like, it's almost like: what if I miss—what if I miss a good post?
> So that's why I tend to stop scrolling after. There always comes a point where, like, your feed gets a little bit, like, there's less interesting stuff at the bottom. That's when I can kind of pull myself away easily.
> But when it's a lot of interesting stories or like photos or whatever, it's really hard to tear myself away then.

P5 pinpointed an anxiety to stay connected online:

> Yeah, it was guided by that, and kind of my just anxiety of feeling like I need to be social, or on social media, and be connecting [with] people, or doing something all the time, because that's what I was so used to, for like ever.

She elaborated on how she experienced her habit of checking social media:

> Yeah, I guess I'm so accustomed to going out, doing things with people, or if I'm not, then being on my phone, like all the time. And just even when I was not social, it technically was still kind of being social, online. Like sending memes or just texting or being on the phone or FaceTiming. And then not being able to do that, at first, it was like: OK, I'll just stop for

a little bit, and I'll be good, and then I can go back to it. Then I realized I
can't go back to it.

Emphasized in her passage is the realization that the injury disrupted her established way of socializing on- and offline. Her concussion symptoms forced her to confront her continuous screen checking; at the same time, though, she could not just abruptly abandon the habits she associated with social connectedness.

Most participants mentioned instances when they overrode their PCS symptoms to sift through online stimuli and to ensure they were up to speed with their peers and colleagues. Solidifying this decision to turn toward screens was grief about accumulating missed opportunities.

Part Two (B): Screens and Symptoms (Turning away from Screens)

Screens causing Symptoms

When I started to get a headache every single day, I realized screen time is a significant trigger of the headache.
Physically, it feels like the light is so bright, even when turned to the dimmest setting. It hurts and somewhat burns, but it is also really sharp, right behind my eyes, and it makes the rest of my head hurt, and it just feels like a lot of pressure.
If I use screens continuously, then my whole day is gone.

Struggling with residual hypersensitivities to light, sound, and motion, the participants considered screens a significant symptom trigger that should be less central to their daily lives. Though many of them found adaptive mechanisms by which they could extend their time spent on screens, they remained cautious, having learned the painful consequences of overdoing it. In the interviews, they all vividly recalled the physical, mental, and emotional aftermath of spending too long scrolling, staring, and

concentrating. When using digital devices, P1, for example, often felt her head tense up and her eyes strain:

> But then physically, it just… my head just tenses up. It's not like paining, it's like heavy, like my nerves are being stretched. My eyes are like: don't; you cannot see this screen anymore. And then, yeah… and then that is like a certain tension point.

P2, especially in the acute phase of her injury, could barely look at screens:

> So I think it was the first—the first weeks, [about] at least a month that I tried to not go on my phone at all. But it wasn't because I only knew that it was bad for me, it was just that like going on it made me really dizzy. So it was a bit of me knowing that it's not good for me, and it causing me more—like cognitively symptomatic.

She now stays off screens when possible to minimize symptom spikes:

> I have been trying to decrease the amount of time spent on my phone because of concussion, and I tried to… I'm pretty bad at it—but sometimes I try and decrease it in the morning, just because if I go on my phone right away, I think sometimes it can be a trigger for some of my symptoms, so I try and also—like I'm very bad at this—but, ideally, I would wait like half an hour before I'd be able to go on anything.

P3 was comparably leery of long periods of time spent on screens: "I guess, like long periods of screen time can aggravate a lot of symptoms." Screens also aggravated P4's symptoms. At the beginning of her recovery, she experienced a full-blown intolerance:

> Especially, like I said, the first concussion that I ever had: even if I looked at a screen for more than a minute, I was extremely sick with migraine, nausea, vomiting, blurry vision, and it was quite instant.

Enduring similar symptoms, P5 significantly reduced her time browsing social media: "Yes, I no longer like browse on social media. I think I've become a lot less active on it because it's not… well, because it hurts my eyes too much." She still cannot handle much leisurely scrolling and instead allocates specific blocks of daily screen time to her most pressing tasks:

I've got my screen time down to about an hour a day, just like to check emails, or texts, things on social media, briefly. Now, I do a little morelike at work, just doing charting and looking at the schedule, but I mostly am not looking at a screen at work because I'm working with patients. So it's like maybe a couple of minutes in the morning and then not—like maybe like half an hour at night. Like, I really cut it back just because I can't handle it.

Creating a concrete schedule allowed P5 to engage in some online activity (e.g., which reduces FOMO) while intentionally structuring her day around non-screen activities. Importantly, once she emerged from the acute phases of her injury, she held a healthcare-related job compatible with her lived concussion experiences that did involve much screen use and that gave her a greater sense of purpose.

Most participants struck a balance between satisfying their urges to use digital platforms and listening to their persistent symptoms. When possible, they adapted each day to suit their priorities (e.g., offline resting vs. online socializing or studying) and made intentional efforts to conserve their energy by staying off screens.

"My whole day is gone." Minimizing symptoms to make the most of each day was imperative for the participants, as their concussions curtailed their daily allowances of time to (even remotely) *enjoy*. It was disappointing, then, when an activity sent them into symptom overload such that they had to completely retreat and rest, losing the rest of their day. Since screens threatened to push the participants to this point, as had happened before, they were vigilant. P1, for example, recalled knowing she had reached her capacity: "And at that moment, I know that my whole day is gone, because I got a very small limit to do things now." She reiterated that symptoms stayed for the duration of the day: "From the headaches, it was like migraines, and those are like the worst one. They can take up to one whole daylong." P2 used similar phrases when speaking about the

presentation of her symptoms following too much stimulation, stating, "the next day is completely wasted." P3 mentioned the unpredictability of her symptoms day by day:

> After that, it was very dependent on the day. I never really figured out what would trigger—what would trigger like a bad day or what caused a good day. But the short-term and the long-term symptoms, like I found that, if I had—it would either be a good day or a bad day. Like there wasn't ever like a day where the first half was bad, the second half was good, or vice versa. It would always, for me, like I would notice like change—it wouldn't change during the day, it would change day by day, if that makes sense.

P5 focused specifically on her emotional symptoms and, like the previous participants, gauged her threshold within the confines of a day:

> I usually… I'm very level headed, but the tiniest thing can make me so upset or… and I'll start crying over like losing a lip balm, for example, and then it just kind of… it can affect the rest of my day.

When the participants, like P5, referenced struggling through the rest of their day, they implied, in part, that their symptoms (e.g., dizziness, eye strain, headache, fatigue, etc.) overwhelmed them so much that they could focus on anything else. Resembling the beginning of their recoveries, a time that they dreaded reliving, they began feeling confined and restricted, anxious and bored.

Guilt about Screen Time: "I use it too much"

> When using my phone, I feel on an emotional level like I should keep going on it because it is addictive. Then I realize I am wasting my time. I realize that it is not good for me, but I still keep doing it, and then I realize it again, but I still keep doing it.

Underneath what the participants considered habitual screen use was a steady and compelling self-awareness that nudged them to step back, to break the cycle. The mere presence of this cautionary conscience did not guarantee concrete action, though. If

anything, the participants found their awareness challenging to actualize. As a result, most avoided aiming for total abstinence from technology. They instead made the modest-yet-intentional effort to decrease their screen use when possible.

P1, whose LED inspired the included anecdote, spoke to the suspicion that she spent too much time on her digital devices. What she found especially disappointing about the state of her frequent screen use was the feeling that she was wasting her own time and feeding a habit. Also alarming to P1 was the fact that the negative consequences of continued use did not deter her. She resigned herself to wishing her screen use was less. P2 also aspired to reduce her screen use, calling it a waste of time: "I just wanted to reduce my screen time because it's a pretty big waste of time." Echoing these feelings, P3 spoke with regret about squandering time on screens while, at the same time, situating her use within broader social contexts, where her experience was the norm:

> I wish it [were] less. Like ideally, I wouldn't spend as much time on it. That's why right now, I'm like: aw, I have to actually admit how much I use it. But yeah, like I guess I wish I spent less time on it because I know there's like better things to spend my time on. But I also, like, accept that: OK, like everyone I know is kind of on there, like it's not of a way of life, but it's so ingrained into a lot of our lives that it's kind of—it's almost hard to step away now.

Like P1, she often knew she was descending into digital quicksand, especially at the outset of her recovery, a time when she felt most obliged to minimize stimuli. Already accustomed to habitual contact with her devices, she understandably used them anyway:

> And [my phone is] just something that I've always had—it feels like I've always like had with me. So it's always, so—I remember like going on and being like: I shouldn't be doing this, but I was doing it anyway, just because it's hard to just, like, cut everything off.

P4, too, described growing up with digital devices and social media that consumed her time:

I use it too much. Definitely. I am like, I would say, especially because what—I'm 24. So, basically, grade nine/grade ten was the age of everybody getting Instagram, Twitter… I think I had a Tumblr in high school. Like all of those social media things were the be-all-end-all of your existence.

Upon reflecting on her social media experiences, she resented ever joining the platforms at all:

If I could go back in time and never have any, I probably would because I think it does take up a lot of my time and I do care too much, like I kind of said, about the gratification of likes and posting, and it's just—I also I feel that I get too involved in other people's lives, like I go down a rabbit hole of following, like looking at this person and this person and this person, when I'm like, why do I care? Like I don't care, but why do I care? You know?

Ultimately, she summarized the sentiment shared by the other participants: "If I could, I would make [screen and social media use] lesser, for sure."

Although these participants ascribed their perpetual screen use to a lack of self-control, they also acknowledged, rather astutely, the social contexts surrounding them that normalized and reinforced their habits. Most, after all, grew up with phones, laptops, and tablets at their fingertips. They came of age as their favourite digital devices did. The options offered on these devices only became more advanced and alluring. Among other sites, Facebook, Instagram, and Twitter increasingly shaped and structured the participants' social relations, entertainment, and employment. Inevitably, these seasoned screen users struggled to step away, especially under limiting concussion-related conditions. Nevertheless, they tried to turn away from screens, when possible.

Out of Sight, Out of Mind. Strategies that succeeded in precluding some participants' screen use included placing their digital devices out of sight and removing specific applications from them altogether. A participant who emphasized these

approaches was P1. Despite deriving helpful distractions from social media in certain

situations, she often lost track of time when scrolling. She felt easily ensnared by the

endless flow of stimulating content. In an attempt to create some separation, she resolved

to put her phone, in particular, out of reach:

> What I do is, at nighttime, it's like more—most addictive, because I just
> lay on my bed, and I want to see my phone, and then once I picked that up,
> it is never going back down, like it will be 2am, 3am: I can never put it
> back down. That [has] happened to me once before where I had [to] like
> forcefully like… you need to sleep, put it back and then go to sleep. But
> now what I do is like… the… one of the major attempts I did was to keep
> my phone far   away from me.

She further justified her approach:

> That's because I am lazy enough to go there and actually pick it up and
> then use it and, at night, I just take a shower. And then I literally go to bed.
> I keep my phone out of my sight, like under my pillow, so that I cannot
> even see it. And, in this way, I have to forcefully close my eyes. But then
> once they're closed, and that's it.

Additionally, she uninstalled her most "addictive" applications:

> And these social media, these days, they're really, really addictive. So
> these kind of reels, TikTok's videos […] they're like never-ending, so the
> time flies by like this. So because of the screen time, I usually like
> uninstall these apps, because that's the only solution I think… is not
> [being] towards them, not to have them in your phone.

Returning to the first screen-reduction tactic, P2 also hid her phone:

> So, I tried to lock my phone away for as long as possible, just because I…
> [inaudible]… putting it away is really hard; you get so bored that it's hard
> to control yourself sometimes.

Interestingly, like P1, she expressly identified her phone as being "addictive":

> So, if I can see it, I'm more inclined to grab it; you kind of get addicted to
> it. So if I put it in a place that I can't see it, like even behind my laptop,
> then I'm less likely to reach it.

Leaning into the second strategy, P4 relied upon notification-blocking software, especially when studying:

> So I would say, like the most prolonged periods are school and actively studying. I put my phone on Do Not Disturb, so I just don't see the notifications. It's usually from like 10am till 6pm every day; I try at least.

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Moving their devices behind objects or to different rooms, along with removing access to certain online applications, is what ultimately helped most participants combat continued screen use. This success of this strategy revealed that the participants often used screens as knee-jerk reaction to having them within reach or sight. Though they might not have consciously wished to use them, they were so accustomed to the physical act of grabbing their devices.

Acceptance. According to the participants, another approach to thwarting screen overuse and subsequent guilt was acceptance. Instead of resisting screen-related urges, many participants expected them. With time, some even detached from them. Adjusting to frequent sensory breaks, often with alternative activities, these participants, P2 and P5, felt a newfound sense of freedom. P2 traced the trajectory of her changed relationship to screens:

> Initially, yeah [it was hard not going on screens]. But, after a while, it doesn't really matter to you, or it didn't really matter to me—it was a lot easier. But when like going on your phone and social media is an addiction, when you stop right away, you're going to crave it, in a sense. The longer you have without it, it gets easier and easier.

The outcome of her intermittent breaks from screens was, she said, feeling overcome with indifference, represented by her readiness to abandon social media:

> I don't think, physiologically, that bothers or upsets me. Like, I don't really care about social media. Like, if you told me to delete all of it right now, I'd be like, okay, who cares?

P5's journey with screens and social media paralleled P2's: she struggled initially to

separate herself from them but, in time, adapted:

> And so it just took me a while to be able to successfully take myself off of
> screens for a long… long periods of time—just kind of, I guess, over time
> being able to go longer and longer without it, and noticing that that felt
> better. So that was feedback that, you know, this is—I was doing
> something right.

Like P2, P5 increasingly accepted her reduced screen time:

> I feel content with it. I feel like I'm not very active on it, and it kind of
> bugged me for a while. I was like—I feel like I should post more, but I
> don't really care anymore. I mean—there shouldn't be like an amount that
> you need to post.

As she grew accustomed to breaks from screens, she no longer felt the same need to keep

up with internalized conditions or quotas for posting online.

The participants' repeated bouts of post-screen-use symptoms accelerated their

acceptance of reduced screen time. Reflecting on this acceptance, they reiterated the

tangible bodily benefits they noticed from taking screen breaks. Some eventually felt

relieved to have significant space away from the constant bustle of stimuli.

Part 3: Information Seeking on the Internet and Beyond

Navigating Nebulous Guidelines and General Unawareness

> There wasn't a clear guideline for almost anything, which I found extremely frustrating. And practitioners would say, "When your symptoms get to an eight, then don't do any more."
> And I was like, how do you categorize an eight? An eight on what? An eight on dizziness? An eight on headache?
> And, then, they were like, "Do activities until you won't be symptomatic tomorrow."
> …How am I supposed to know if I'm going to be symptomatic tomorrow? That's really hard to gauge. So there is definitely a significant time period when you have to discover things that provoke your symptoms more than others. When you go "overboard," for instance, I believe that's the word they used, then you are expected to just rein it back in and not do that the next day but still try to push yourself.

The participants often encountered clinical guidelines that were imprecise or only temporarily useful. The few that received practical and appropriate advice still mentioned consulting multiple practitioners before finding one who was knowledgeable about concussions. Compounding their challenging search for concussion information were the instances when they felt misunderstood or invalidated in other contexts (e.g., at school).

The participants recalled these alienating moments in which they felt their injuries were not understood. P1, who was unfamiliar with concussions before her actual injury, felt unsatisfied with her physician's response: "But that [interaction] was not very helpful because, I don't know, maybe she didn't have enough knowledge on this part or something, but I did not receive any information from her on that part." Despite having had a specific incident in which a metal beam fell on her head at work, requiring her to be transported to the emergency room and then take a medical leave, many practitioners

failed to connect P1's newfound constellation of symptoms (e.g., ringing ears, confusion, neck stiffness, and panic attacks) to the event. It took months for clinicians to confirm that she was experiencing post-concussion symptoms: "I could feel some of the other symptoms, which I mentioned to my doctors, but they did not give me like any kind of exact response [about] why they could be happening to me." P2 confronted similar circumstances and developed enough of an understanding of concussions that she could evaluate the clinical information shared with her:

> I remember […] a few doctors appointments that I had that I had to teach the doctor instead of the doctor teaching me, which really shouldn't be that way but it is. Their information was outdated, and there is a significant amount of evidence showing that the way that they were teaching people to go about things was wrong. Yeah, so very frustrating, in that sense, and then piled on top of physicians saying that there's nothing that they can do to help me, that it's just time that will… that it will heal.

As P2 indicated, the mismatched knowledge between her and her doctor was only worsened by the doctor's conclusion that she could not be helped any further:

> Yeah, they just said that there's nothing that they can do to help, that I'm just going to be in this post-concussive state for many more months to follow. And that there's nothing that they can do to help cure the dizziness. They didn't have any more advice. They didn't mention… or I don't think they even mentioned phones, when I went to go talk to them.

Conversely, P3 had more positive clinical encounters. She certainly noticed gaps in the guidance she got but at least appreciated that her doctors framed her recovery as something she could spearhead, as she knew her body best. P4, too, remembered some helpful medical appointments. For her, though, the unhelpful ones were still significant enough to mention:

> And I would fault a lot of my high school teachers and even some doctors that I experienced, because I don't think they stressed [resting] enough to

me—the importance of it—because I'm now, since my first concussion, [it's] over 10 years later, and I'm still experiencing symptoms.

Unfortunately, P5's information-seeking experiences largely resembled P1 and P2's, in that she received almost no recourse following her concussion:

I can't remember which concussion it was, but like I was never given proper guidance on how to do things. Like I think after my car accident, […] I went to the ER, like three times, apparently. My memory was resetting constantly, like I have no recollection, and I wasn't given any kind of guidelines on what to do next, [or] next steps, and I had to continuously advocate for myself because I didn't know what was going on, and I was very confused and foggy. All I knew is it wasn't right.

Unable to count on consistent clinical guidelines, P5, like the other participants, felt disappointed and unsure how to proceed.

Screen Use Cessation amidst Unclear Information. The dearth of substantive screen-reduction guidelines made the participants' recoveries more difficult. A priority for this group was mitigating their symptoms while retaining access to the devices that facilitated much of their day-to-day lives. Within the first few days following their injuries, at the height of their symptoms, all were told, to some extent, to eliminate screens. After this initial period, they received minimal advice on how long to maintain screen abstinence. The instruction they *were* given varied by practitioner and year of injury (of which the participants had multiple). Consequently, the participants commenced a process of carefully attuning to their bodies and surroundings, discerning on their own how to balance daily screen use with unpredictable symptom spikes.

The incomplete screen-specific guidance shared with participants at the outset of their recoveries included vague restriction estimates. Most were told some variation of "Stay off screens if any symptoms arise" or "You may still use screens, provided you do not push yourself." P1 relayed this experience: "That **[**the former**]** was actually

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recommended to me by my physicians and my physiotherapist: that if I tend to see any

heightened symptoms, then I should cut off my screen." She could appreciate the

sentiment but considered it unhelpful, as her symptoms were, in her words, "quite

variable." Before obtaining any specific recommendation for staying off screens, she

waited many months and consulted a myriad of professionals:

> I was not told in my March and April months about how much… how
> much… how many breaks… up to how long I have to take. It was just
> that: you need to use the screen the lowest. Like, yeah, like not to use like
> much of the screen, but they told me to have some breaks, but not a
> specified time.

It was a physiotherapist who finally recommended that she structure her screen use

around specifically-timed breaks:

> When I started [physio] in November, she gave like a full-fledged period.
> Like I have to take like 15-minute—like 10-minute breaks per hour use of
> screen, and even in the exams. And like ten minutes extra and then 10-
> minute breaks, so 20 minutes more per hour thing.

P2 never received clear screen-related instructions: "For the first one, it was until your

symptoms subside enough." She therefore concluded from her lived experience that a

deeper problem exists in concussion care: "…not a lot of physicians have too much

information regarding screen time in regards to it, and they just let patients figure it out

themselves with very little guidance." P3, on the other hand, received different screen-

specific advice for each injury:

> The first, like in 2017, after my first injury, because they're kind of
> different… so that first one, I was advised to stay off of [screens] as much
> as I could and to rest, stay away from like bright lights, and things like
> that.
> For, I think, that first [injury], like in 2017, I was told, like almost a
> month, or three…two, three weeks, like it was a long time. But like more
> recently, it's: OK, take a few days to like rest, and like don't look at the
> screens and put off like any school work you have to do that will involve

> [screens], or even just like in general, for a couple of days, and then start
> slowly reintroducing.

Though P3 was initially told, like P1 and P2, to avoid screens as much as possible, she

was then given a four-step sheet that provided some structure. It served as a basic starting

point, but she still felt it was limited:

> Like I remember, I was given a sheet, and that's usually what I would refer
> to.
> And the sheet just had like four steps. One would be like step one: don't go
> on your screens for this many weeks. Step two: start reintroducing screens
> this many hours a day or whatever, but I don't—I was never like, I was
> never told, or even given options as to what to do with [when] I was
> going to go on [screens] anyways or like any… yeah. There were no
> alternatives, I guess. I don't know. And it was never addressed as to, like,
> yeah, them being so ingrained and so part of our day-to-day lives. Like
> that was never addressed. It was…it was… it almost was like an
> assumption that I was going to sit around and do nothing for two weeks, or
> one week, or whatever they recommended.

As with P3, P4 mentioned an instructional document. She acquired it from a well-known,

specialized rehabilitation program for brain injuries in London, Ontario. Since then, she

has not encountered a similar sheet and has found subsequent clinical advice to be

impractical:

> I've never had any documents similar to that as such. I've been told like,
> oh, you should only use screens for max two hours a day, but that also
> lends to being unrealistic when everyone else in my life is not
> accommodating to that. So although the recommendations and guidelines
> are there, they're not helpful if everyone else around you isn't willing to
> accommodate you in that sense.

Adjusting to reduced screen time seemed unrealistic to P5, too. She was recommended a

very general range of time to stay off of screens, leaving her without concrete next steps.

What made this suggestion more challenging to implement was its failure to define what

counted as screen use:

I just thought, maybe I should just not watch TV anymore. And I guess I didn't really make that connection that staying off screens included not texting people or calling people, or FaceTiming, until I realized that that was also making things worse. Then I'm like: OK, now that is screen time. So, yeah, I think I've figured that out on my own.

Importantly, P5 underscored a process of *figuring out on her own* how to reduce her screen use. The implication of was that she, and the other participants, devoted their limited available energy to monitoring their symptomatic responses to attempted screen use.

Developing an Internal Compass. Most participants noted the need to retrieve their own information, rely upon past personal experiences with the injury, and advocate for proper treatment. P1, for example, deemed it best to do her own research:

So with like that kind of thing, and when I knew that I would not be getting an answer from [the doctors], so I was like, I think it's probably good if I do research on my own.

P2 also anticipated and accepted (from past experiences) that she would receive inadequate advice. Before arriving at a recent appointment, for example, she rehearsed the steps she knew that she would ultimately take to recover but still attended, hoping for a different outcome:

Like, when I went in for the third concussion, like I knew that I was concussed, like I knew what I was going to do, I knew that I had to get off my phone, I knew my course of action for recovery. And sitting in a brightly lit hospital room, waiting six hours for someone to tell me exactly that [inaudible]; but I did it regardless. They didn't tell me… like, yeah, they said that my concussion was going to last a few weeks; it didn't. They said try to avoid going on your phone; okay. And after that, they didn't give me a concrete plan. Like once again, they didn't know any more about concussions than I did.

In contrast, P5 was able to find further assistance, which she attributed to her advocacy:

And I finally, like, advocated enough to get treatment. And then all of a sudden, things started falling into place, and I started consistently getting

better. And I could have bits of memory of that time and I could actually
go back to school after a few months, or after, I guess, a semester [or] two.

Like P1, P2, and P5, the other participants developed an internal compass to navigate

their symptoms and treatment, often using the Internet as a guide—ironically, a screen-

based avenue.

Seeking Information Online

> I definitely followed a lot of online advice, mostly
> because I was not given much direction from my
> doctor past however long I was told to do nothing.
> So, I used a lot of the information online to
> reintroduce things back to my life, to make sure I
> was extra healthy.
> After a week is when I relied more on the online
> stuff versus what the doctor did not really tell me.

To progress in their concussion recoveries, the participants accessed the Internet

in search of answers. What they found online was information shared by professionals

and peers on symptoms, prescribed medications, alternative treatments, and concussion

communities in which users offered one another support. Though careful not to accept

these findings at face value, the participants ultimately felt they filled gaps missed in

traditional clinical settings. Epitomizing this experience was P1, who relied upon virtual

platforms for suggestions she did not get elsewhere: "I would rather trust that thing from

the Internet. But when I'm not getting the answers that I want, I would go to the Google

and Internet it because I have no other person to ask." She described the specific steps

she followed to obtain answers online:

> But in March, when my symptoms like got increased, then I was like… I
> started to search my symptoms. If it is a symptom of a concussion, what is
> a concussion? How can it… how can it impact you? And the medications?
> Yes.

P2, too, resorted to the Internet, using "just plain Google searches." When her post-injury

screen intolerance improved, she felt immense relief that she could dedicate increased

time and effort to searching for concussion information. She admitted, however, to

feeling resentful about having to initiate her own research in the first place:

> So, in that sense, it feels like I have some control over it. That makes me
> very happy. But, on the converse side of things, that makes me really
> frustrated that, like—when I needed the information the most, it wasn't
> given to me. And when I… like I have the ability to navigate a computer,
> but with my sister's friend who just got a concussion, she has no way of
> knowing whether to look for information. But it's just with time, I knew
> where to look.

Also embedded in P2's LED was the revelation that she felt her concussed friend was at a

disadvantage due to an inability to use screens to find further concussion information.

Reflecting this attitude, P3 owed much of her knowledge on the injury to the Internet. In

addition to her LED that produced this section's anecdote, she said, "And then online—

online, I mostly consulted, for longer-term effects, so how to deal with those versus the

shorter-term ones." She, too, felt somewhat burdened by having to seek out this

information. Other participants, such as P4, described different responses:

> I would say it's emotionally refreshing because, as I said, it is way more in
> the spotlight now than ever before. So having greater access to
> information with the age of social media and just the heightened spotlight
> has allowed me to feel happy, in a sense, that I am able to find more
> information about things online.

She felt liberated by the variety of online options rather than confined by a lack of

concussion information shared in clinical environments. P5's experiences, in contrast,

were marked by frustration, mirroring the previous participants'. She commented that

Internet information was absolutely crucial to her recovery:

And if I didn't have access to the Internet to help me find resources on
getting treatment, then I don't know what would have happened or how
long it would have taken me to get better.

All of the participants concluded that the Internet helped their recoveries. The

abundance of medical databases, interactive online forums, and supportive social

communities allowed them to choose the most relevant and practical advice.

Information at their Fingertips. The participants appreciated the accessibility of

online information during their recoveries. All they had to do was pick up a device and,

within seconds, they could access to an unlimited stream of sources. P1 elaborated on this

instant relief:

Rather than like we have to set up an appointment with the doctor and then
go to them and then discuss things, it just like gives you like an instant
relief in the arsenal, about something to just reassure yourself.

P2 similarly valued the range of information available to her at any moment on the

Internet:

It's usually accessible, to an extent. You have basically all information at
your fingertips. And then you know that if you want to [find a] research
paper, you go to PubMed; if you want to [find] something a little bit more
naturopathic, you can go to a different sort of website. It really depends
what you want.

P4 added to the "availability" aspect of accessibility the user-friendly component of

sources:

And I think, like I said, it just makes information way more accessible and
digestible, at times, because a journal—a 30-page journal article is not a
digestible read versus a one-page infographic that you find on Instagram
that talks about, oh, maybe this would help, and this would help, and this
would help is something that I find to be way more user-friendly.

She felt grateful for the users who distilled prominent jargon-filled academic articles into

brief and engaging posts on social media. For the other participants, too, accessibility

encompassed the speed with which participants could access information, the diversity of readily-available sources, and readability of content on a complex topic.

    Feeling Validated. Accompanying the accessibility of information on the Internet was the accessibility of community. On various online platforms, the participants were able to connect with individuals and groups who shared similar struggles with concussions and subsequently offered social support. Interacting with others—asking them questions, reading about their recoveries, etc.—left the participants feeling seen and deeply validated. P1 put it simply: "And if you could find your symptom in that, that just gives you a reassurance that, yes, that is because of concussion." Sharing this sentiment, P3 reminisced about the groups of people she found on social media:

> I used Reddit during my last one. It was… because there's like that
> community [that is] public, [where] there's a subreddit [section] for
> concussion specifics. So I did look at that to see like what other people
> like did that helped them that might necessarily be like not what the doctor
> ordered.

Despite still struggling with screen-induced symptoms, she reaffirmed the importance of online communities:

> It kind of felt ironic because my doctor told me to stay away from screens,
> but I don't know—it's kind of like it was almost comforting, especially like
> in the [online] communities, like knowing that I wasn't the only one
> experiencing these things. And how did it feel accessing them? I guess,
> like that's the main one, is just like kind of knowing that I now… or like
> having almost more support. It felt like even though it was complete
> strangers, I kind of knew more about what was going on in my brain,
> which I think was helpful for me, too.

P4 also found a virtual community that validated her complicated post-concussion experiences: "it's real, and it's not something that's just in their head, even though it's in their head. It's it has more of a legitimacy to it all." She recalled a specific memory in

which she came across a girl on TikTok who shared content on the migraine-injection treatment that P4 was also trying:

> So it allows me to feel that, I don't know, I have a sense of community with those people. And kind of what I was saying before, it makes me feel seen, it makes me feel that like I'm like not crazy for having these symptoms. And when I have these migraines, right—to lay in the dark all day long or I will throw up, like having other people, although that's horrible that they experience that, it just allows me to feel that what I'm experiencing is real.

P5 echoed the previous participants' experiences of feeling supported by fellow social media users recovering from concussions:

> So it kind of helps [people] navigate through what their next steps are, or maybe things they could do at home right now to make them feel better, or just kind of giving a bit more of an understanding on what's going on because it's so confusing, like feeling these things but not knowing what's going on. So kind of, if you can understand what's going on, maybe it will relieve some stress or make you feel validated like you're not going crazy.

Like P4, P5 interestingly used the exact same language to reiterate the importance of being exposed to others' experiences to confirm hers was not an anomaly.

Finding online communities was of the utmost importance to participants, who frequently felt the impacts of fledgling formal concussion guidance. Many questioned their condition until stumbling upon support groups that validated their symptoms and struggles.

Effects on the Traditional Doctor-Patient Relationship. Some participants brought the concussion information they gleaned from online sources to their respective practitioners, who received it open-mindedly. At first, though, P3 hesitated to introduce Internet advice into her appointments:

> I do feel weird about it because I don't… because… they know what they're talking about; I'm just going online. But I feel like… I do try to

look for, like, what's the word—not real resources, not honest—reputable ones.

So, like, if I have a concern, I will bring it up with my doctor, and I feel a lot more safe doing that now because I know that, like I, I know that I'm kind of like mostly looking at reputable sources, and a lot of the time my doctor's like: oh yeah, that's true. So, like, you like that's definitely like a symptom that can happen. So I feel like it kind of opens up conversations to things that sometimes aren't brought up.

P4 echoed P3's experiences. She believed that acknowledging her attempts to research the condition ultimately benefitted her clinical encounters: "I wouldn't say [talking about online information has] hindered it in any way. I would say I bring up more information to clinicians that, like, oh, I found this like, what do you think?" In fact, on social media she discovered promising monthly injections that she suggested to her physician, who approved the treatment:

So I've gone to different medication now, but [the injection] was something that I actually brought forth to my general practitioner. And she did more research into it and then found me a doctor here in London who would do it.

Ultimately, she felt fortunate to have a receptive practitioner. P5 described a comparable dynamic with her doctor:

And just like kind of getting—advocating for myself to my doc, my family doctor: like I need treatment, and this is what I've found, but I don't know how to work this because I'm not a doctor.

Though P5 was unfamiliar the intricacies of clinical conclusions, she still trusted that her research accelerated her treatment.

The takeaway communicated by these participants was that integrating their personal research into clinical encounters improved their relationship with their practitioners and advanced their recoveries. They were aware of the potential for their Internet-based suggestions to be repudiated, and they recognized that their smooth

experiences were not universal. Still, they were relieved to have had their propositions considered. Their investigative efforts opened up opportunities to collaborate on, rather than be dispensed, treatment interventions.

Skepticism. The participants were not naïve about the risks of relying on concussion-related Internet advice. Even though they retrieved information that was overlooked by some clinicians, they often opposed using online platforms to supplant traditional medical guidance. P1, for instance, revealed that she felt an increased sense of security speaking directly with her doctor:

> So it's kind of more reassuring to hear from a doctor than from the
> Internet, because even though it's like a quick and reliable check, like a
> quick… nothing, it's not like completely [to] be trusted, sometimes.

P2, coincidentally, reached the same conclusion about filtering through untrustworthy sources: "Not everything you read is completely right." Reflecting on this potential issue, P4 deduced that a dependence on Internet information could actively do people harm:

> Obviously, some of the cons, or bad aspects of social media information,
> is it may not be backed in any sort of scientific knowledge or research.
> It could be harmful to people and not—it's not a one size fits all; so maybe
> something that works for someone, and is great, may not work for another
> person and could actually be detrimental. So I think that's something that
> really needs to be monitored and considered.

P5 shared similar concerns about people sharing and absorbing information in an uninhibited, unchecked manner, rather than consulting a professional:

> They might think that they're good with just using the Internet, [that] they
> don't need [traditional] treatment, but there could be a lot of other things
> that aren't being addressed because they're not being seen by a
> professional.

Importantly, she identified that issues could be missed if not examined properly by a clinician.

Overall, the participants seemed to strike a balance between diverse sources of information. They compared online sources against each other to form their own conclusions, incorporating any promising suggestions into their regimens. And, at regular intervals, they also conferred with clinicians.

Chapter Five: Discussion

Introduction

This study explores screen and social media use among young adults with persistent post-concussion symptoms. Inspired by van Manen's phenomenology of practice, it foregrounds participants' everyday lived experiences. Central to these experiences are complex (and often invisible) bodily sensations, thoughts, and emotions; screen use for socializing and working that both aggravates and alleviates various symptoms; and a desire to have up-to-date clinical information that promotes recovery.

Given the study's (contemporary) phenomenological undertones, it does not settle whether the participants' frequent screen use hinders or aids their concussion recoveries. It instead underscores the tensions present in their day-to-day lives. The following theme synthesis, in particular, relies exclusively on the participants' experiential material rather than cited content to capture these tensions that might otherwise circumvent "more conceptual and rational discourses" (van Manen, 2014, p. 377). Then, to demonstrate the study's relevance to the field, the findings are compared to the current scholarly literature on concussion care, critical phenomenology, and media studies. Limitations are also discussed.

Reflective Theme Synthesis

Each participant's concussion began with some sort of blunt force: a bundle of metal beams falling from a shelf at work, a car crash, a failed gymnastic stunt, or a high-speed collision of heads in a soccer game, among other accidents. These impacts were blatant. Yet some were subtler, like one participant's misstep on the tines of a rake, causing its pole-like handle to jolt her body.

Next, newfound bodily sensations set in. All of a sudden the participants struggled with head pain, dizziness, fatigue, heightened sensitivity to light and noise, eyestrain, and neck tension. Even walking and talking became a challenge in some cases. Uncharacteristic mental and emotional responses accompanied these experiences of physical discomfort. Some of the participants found themselves crying more easily and snapping at peers. Others could no longer concentrate on seemingly simple tasks.

Settling into this strange new state, the participants realized that they looked the same as before their injuries. Many people around them, too, did not note anything obviously new or different about their appearances. To the participants, this disconnect between their inner and outer worlds proved challenging to endure and communicate. To outsiders, this disjuncture was often hard to detect. They could not easily connect the participants' moments of strain back to their concussions. What the participants grew to realize was that their injuries were *invisible.*

In numerous clinical environments, the participants received sparse information. Some sat in crowded, brightly lit emergency rooms, waiting hours for a consultation, only to hear mentions of a concussion but no comprehensive description or treatment plan. Others received helpful advice, though often after consultations with multiple practitioners over the course of many months. Overall, the participants sensed a lack of general knowledge about their injuries. Most were told some variation of, "Reduce activities until symptoms start to dissipate," signalling a need for rest but not how to concretely implement it.

In the wake of these clinical encounters, the participants felt particularly confused about their screen use. They knew to stay off devices as much as possible until their

symptoms improved, but what happened when their symptoms did not improve? What happened beyond a few days or weeks? One participant mentioned that it was almost an assumption that she could just drop all screens for an indefinite period. In time, she, and other participants, found some structure. Two were given handouts with weekly steps, and another was recommended on/off ratio times per hour (e.g., 50 minutes on, 10 minutes off). These suggestions provided a useful starting point but sometimes felt impractical.

Staying off screens seemed most difficult when the participants could not really do anything else. Especially in the acute phase of the injury, when stimuli felt altogether too overwhelming, most participants just laid in bed all day. Isolated from their usual activities, they became increasingly bored. For many, using a screen was the only thing to *do,* aside from taking naps.

At the same time, screens provoked painful sensations. A mere glance at the bright lights, fast motions, and influx of information brought on instant nausea, eyestrain, migraine pain, and other symptoms among the participants. If they were too overstimulated, they would lose the rest of their day. As they emerged from the immediate aftermath of their injuries, the participants' digital tolerances improved, yet they remained wary, still considering screens a significant symptom trigger.

Balancing bouts of seclusion, boredom, screen use, and symptoms became more complex as the participants resumed their pre-injury routines. During the COVID-19 pandemic, when many participants sustained concussions, their social lives, school, and work occurred almost exclusively online. Even before the pandemic, though, they used screens frequently in these contexts. For most of the participants' lives, screens acted as a

vehicle for identity, connection, and communication. They concluded that they could not really escape or avoid technology.

As the participants' external worlds reinforced frequent screen use, their internal worlds (i.e., their habitual responses) followed suit. Recurring in their minds were thoughts like "What if I miss something?" or "What if I am out of the loop?" Interesting content and social updates inundated them. At regular intervals, they battled overwhelming urges to check their devices. Yet they also remained skeptical of social media, in particular, for its "addictive" qualities.

Weeks and months began to pass, and the participants—still symptomatic and without practical and concrete clinical instructions, especially regarding screen use—relied on trial and error. They endeavoured to participate in screen-centred activities (socially, in school, and at work) but stepped back when necessary. They also experimented with strategies such as dimming their screens, using physical screen protectors, scheduling breaks in their days, and implementing screen-time restriction software. Though they found some success on their own, the participants yearned for more clarity about their recoveries.

All participants, at some point, turned to the Internet for concussion information. Many did not feel they were getting adequate guidance elsewhere. They were beyond the 7-10 day recovery benchmark, now dealing with longer-term effects. One participant could appreciate that online information gave her a sense of control over her recovery, but she resented having to spearhead a search in the first place. The others similarly attributed their progress to the Internet.

What the participants found online was information about various concussion symptoms, treatments, and social support. Some inputted basic questions into search engines, like "What is a concussion?" "How can it impact you?" and "What is this medication?" Many also accessed academic journals, including PubMed, for the latest research. All appreciated reading about others' experiences with the injury shared in support groups and forums on platforms such as Reddit and Facebook. Leery of misinformation, they compared sources against one another and consulted practitioners to help form conclusions. In most cases, turning to the Internet for information and support validated the participants' experiences. They reaped reassurance that their injuries were real and that numerous other people could relate.

Relevance to Research Questions

The above synthesis provides concrete experiential material relating back to my primary research question, which asks what it is like for concussed young adults to use screens and social media as they (a) attend to their online identities and obligations (e.g., relational upkeep and school) and (b) obtain information on the Internet about current concussion management strategies to aid their recoveries.

Beginning analysis with the preface portion of the question (i.e., on screen use among young adults, before it branches off into two specific directions), I establish a fundamental pattern found in the data. Throughout the participants' prolonged recoveries, they confronted a series of screen-specific dilemmas. These dilemmas did not necessarily concern whether screens hindered or helped the participants—screens often did both. It was often a matter of *what* screens hindered or helped, at any given time. In certain moments, the participants accessed screens for distraction and connection, subsequently

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lessening their symptoms (e.g., emotional distress). In other moments, they avoided

screens to reduce stimuli, also lessening their symptoms (e.g., eyestrain). Underlying the

concussed participants' screen use, then, was the process of constantly weighing the

consequences of this use on both their inner and outer worlds (e.g., thoughts, emotions,

and bodily symptoms versus external environments).

Speaking to the next subsection of the question, the participants considered

technology a central component of these inner and outer worlds. When crafting their

online identities, for example, they shared aspects of their (inner) selves on (outer) public

platforms. Their screen-use dilemma, in this case, involved deciding *which* aspects of

their selves to divulge. Since their injuries now pervaded their everyday lives, they

struggled to reconcile complicated (inner) symptoms with internalized pressures to

perform a strong, unbothered, interesting (outer) persona that fit social media's highlight

reel. Many abandoned their online identities altogether at the height of their symptoms,

feeling that they lacked appropriate content to share. When they did post on social media,

most omitted any mentions of their injuries, further "invisibilizing"[3] their already-

invisible injury.

Along with navigating these online identities, the participants used screens to

meet various social, academic, and work obligations. At any moment, they could pick up

a device affording them access to constant updates on friends, colleagues, and strangers

and to activities such as virtual lectures. Even while significantly symptomatic, the

participants deemed their devices important for their perceived success. They often

therefore associated stepping back from screens with falling behind, creating another

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[3] This term is taken from Alcoff's (2019) article in *50 Concepts for a Critical Phenomenology.*

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difficult screen-use dilemma. The participants concluded that they could not fully avoid or escape screens.

The participants addressed the final subsection of the question by providing thorough descriptions of their screen use to seek concussion information. Solidifying their urge to turn to the Internet were their struggles to find sound formal guidance on their complicated symptoms. In many traditional clinical settings, they received unclear or impractical information. What they did glean from their practitioners was that they should reduce their screen time indefinitely. Yet using screens was, ironically, one of the only things they could do in the acute phases of their injuries, *and* screens provided them access to up-to-date concussion information and social support that they did not receive elsewhere. Though they valued traditional clinical encounters, many participants felt compelled to introduce Internet information into their recoveries and medical appointments, thus attempting to use screens as an escape from their injuries and gaps in concussion guidelines.

Addressing Literature Gaps

Patient Information Seeking (On and Offline). Minimal literature explores patients' use of online platforms as a *direct response* to outdated or inconclusive clinical guidance given in traditional settings. In responding to this gap, this study revealed what it was like for participants to access the Internet for further concussion information. These participants felt surprised and disappointed by the lack of general awareness around their injuries but ultimately relieved to learn about others' journeys and the plethora of treatments available through online platforms: among other insights, participants one and three discovered other users' anecdotal accounts of using the

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medications they were prescribed; participant two confirmed that her social activities, including gentle-but-high-altitude climbs, worsened concussion symptoms; patient four viewed TikTok videos of someone describing the painful migraine injection she was trying; and participant five searched for concussion recovery programs in her area. They displayed varying levels of distrust toward Internet information but still reaped some sort of benefit from it.

   Complicating Cognitive Rest. The participants' experiences with unclear cognitive rest guidelines paralleled a larger uncertainty found in the literature. Most studies included in Chapter Two supported an initial period of cognitive rest but called for more conclusive recommendations regarding its specific length (Brown et al., 2014; Halstead, 2010; Harmon et al., 2013; McLeod et al., 2017). Reflecting on their lived experiences, the participants noted confusion about implementing cognitive rest beyond the first few days of their injuries. The guidance they received omitted mentions of a 48-hour break from screens in the acute phase of recovery or distinctions between strict and moderate rest—two topical concerns in concussion research (Thomas et al., 2015).

   Some participants, after months of searching, obtained documents to help structure their screen use but, overall, felt dissatisfied with the vague directions relayed to them on reintegrating screens while dealing with prolonged symptoms. As a consequence of being told to reduce screen use until their symptoms subsided (i.e., without concrete steps on how to do so), they often resorted to the Internet for advice. Their experiences demonstrate a need for further research on cognitive rest guidelines that account for patients whose injuries evolve into PCS. Also implicated in their descriptions is an

opportunity for stakeholders to consider the impact of screen breaks on young adults'
online identities and obligations.

Implications for Screen-Use Recommendations

As growing consensus converges toward an initial period of cognitive rest,
screen-related guidelines should better address technology's centrality in numerous
patients' lives and provide a long-term plan for those who develop PCS. A controversial
component of cognitive rest is screen abstinence, which experts have historically
supported but to varying degrees (Cairncross et al., 2022; Macnow et al., 2021). In
alignment with my study's results, two recent articles advise against strict screen
restriction, noting detrimental consequences for patients' wellbeing. Macnow et al.
(2022), in a commentary response to Cairncross et al. (2022), confirm a "need to strike a
balance between avoiding boredom, deconditioning, isolation, and the nocebo effect
without overexerting themselves physically or cognitively" (p. 1). An acknowledgement
in future recommendations of the benefits of screen use for keeping patients connected
and occupied will be equally important as the current caution about its symptom-inducing
consequences.

Implications for Online Knowledge Mobilization

Since many young adult patients, like those in this study, consult the Internet for
concussion information, various organizations and stakeholders should consider adopting
online platforms to advance knowledge about the injury. Already, users informally spread
information on head injuries on websites such as Facebook, Twitter, Instagram, Pinterest,
and Youtube, among others. In response, scholars have supported these trends:

> The use of support groups and utilisation of online technologies have been
> cited as positive methods of specifically tailoring knowledge transfer

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relating to concussion to young athletes, and the use of Facebook in this manner ('iSupport') would seem to be an appropriate medium to facilitate this knowledge (Ahmed et al., 2010, p. 1880).

At the same time, online misinformation abounds. A notable study on concussion websites uncovered that most of them scored poorly on the "CONcheck" list, which evaluates how well sites integrate "gold standard" information from the CISG (Ahmed et al., 2012). Sites published under well-known sporting federations were among these low scorers, which is slightly troubling, as these same federations contribute to CISG consensus conferences and would therefore be expected to be consistent and informed. To assuage these concerns, healthcare practitioners can consider emerging KM research to learn, for example, how to establish concussion-focused virtual communities of practice using social media accounts (Elliot et al., 2020). Such unique online spaces can create opportunities for moderated information sharing, among other benefits.

Future Directions

Critical Phenomenology

Released in 2020, *50 Concepts for a Critical Phenomenology* collates scholarly works on critical theory and phenomenology. This comprehensive book-length project begins by situating core phenomenological concepts within a critical perspective, confirming that the two can, indeed, be reconcilable. Following this practical preface are various specific theories that the reader can apply to research.

Public Self/Lived Subjectivity. Of particular relevance to my study is Linda Martin Alcoff's (2020) article on "Public Self/Lived Subjectivity" (p. 269). At the outset of her work, she asks, "Is our public self connected in any way to our 'real' or lived self, our own sense of ourselves, or, perhaps, who we *really* are?" She then takes an interest in

instances of "disjuncture between one's interior sense of self and the way one is viewed in public by others" (Alcoff, 2020, p. 269). Attributing this disjuncture to relational factors rather than solely the individual, she then says, "one's public self (or how one is recognized by others) and one's lived subjectivity are co-constitutive elements of one's self-in-the-world" (Alcoff, 2020, p. 269).

The progression of these ideas—our relation to our public self, feeling disconnected from it, and acknowledging the role others play in shaping it—conveniently parallels themes presented in my results section. Core to the participants' concerns was the discordance between their public selves and their lived experiences. The invisibility of their injuries in their public selves produced both relief and resentment. On the one hand, they could temporarily disavow the painful parts of their lived experiences and participate in the illusion that they did not struggle with an injury. On the other hand, they sometimes felt claustrophobic (i.e., isolated in their experiences), as if their peers could not *see* them or contextualize their newfound challenges.

Making the participants' public selves more complicated was their participation in social media. Unlike their offline public selves, their online identities were much more curated: they had more space to (a) choose which moments to share with others, (b) control the narrative using captions, and (c) process others' responses. Most participants, in these latter identities, omitted any details about their concussions, further separating their public selves from their lived experiences. Contributing to this decision was an acute awareness of their audience, from whom they did not want to garner criticism.

Compulsory Able-Bodiedness. Another article supplementing my research is Robert McCruer's (2020) "Compulsory Able-Bodiedness" (p. 61). Tracing his ideas back

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to industrial capitalism, McCruer contends that certain bodies are deemed "normal" for their ability, in part, to be conventionally productive (e.g., in a work-related setting). To extend his argument, he borrows from other scholars' work on compulsive able-mindedness, a related notion that critiques the ways in which certain mental abilities are valued and devalued. Recruiting the combination of these concepts to study concussion, an injury that affects one's body and mind, could produce interesting insights.

Applied to my own research, McCruer's theory might relate to the participants' reticence to reveal their concussion-related struggles on social media, an environment in which they internalized pressures to appear unbothered, able, and interesting. It could also help explain the complex feelings the participants had about resuming their obligations to school and work while recovering.

Phenomenology of Screens

To speak about what it means to inhabit an increasingly "screened world," some authors have applied phenomenological ideas (Introna & Ilharco, 2006, p. 58). Expanding on screens' ubiquity, they echo the above thesis study:

> Whether at work, at home, traveling, or immersed in some form of entertainment, most of us find ourselves increasingly in front of screens–television screens, cinema screens, personal computer screens, mobile phone screens, palmtop computer screens, and so forth (Introna & Ilharco, 2006, p. 57).

In response, they have sought to isolate the "screenness of screens" (Introna & Ilharco, 2006, p. 58). Such an endeavour, they argue, does not simply involve reducing a screen to its displays of digital content or how we superficially view it. Rather, they entertain the

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elusive forces that condition us to turn toward a screen *as a screen* (Introna & Ilharco, 2006).

A notable condition they identify is that a screen acts as such a compelling portal to our wider worlds that we forget about the screen itself (Introna & Ilharco, 2000). More specifically, they propose:

> Although I might fix my focus on the text or images on the screen, what I actually see is not the screen itself but rather immediately and simultaneously the world it already refers to, the activities, people, or things already implied in the text and images on the screen (Introna & Ilharco, 2006, p. 72).

Their point is especially interesting in relation to my thesis, since the participants, due to their heightened post-injury sensitivities to stimuli, arguably *do* see the screen itself; many of them cannot focus on anything (i.e., their online entertainment, social interactions, and academic tasks) *but* the screen itself—its bright lights, fast motions, and influxes of information. Their symptoms impede their ability to seamlessly "draw upon screens as [they] act and relate [them]selves to and in the world, mainly within familiar organizational or institutional contexts or situations" (Introna & Ilharco, 2006, p. 62). In other words, the participants' lived experiences seemingly contradict Introna and Ilharco's (2006) claims and provide opportunities to contemplate how post-concussion screen intolerances could ironically bring some individuals closer to screens' supposed "screenness" (Introna & Ilharco, 2006, p. 58).

Critical Media Studies

"Media Prophylaxis." Published in 2018, Dylan Mulvin's "Media Prophylaxis: Night Modes and the Politics of Preventing Harm" offers critical media perspectives that complement my study. According to Mulvin (2018, p. 176), large-scale corporations (e.g., Apple) and popular scientific discourses conveniently construct the ability or

inability to adapt to screens' stimuli through "media prophylactics" (e.g., light-dimming software) as an individual problem to shroud capitalistic machinations to maximize worker productivity (e.g., via nighttime screen use). Consequently, he insists, screen users internalize a responsibility to respond to the harms (e.g., sleep loss, worsened mental health) that ever-evolving technologies perpetuate. In the context of the above thesis, his points might help explain *why* the participants felt compelled to find "media prophylactics" to extend their post-injury screen time for school, work, and relationships (Mulvin, 2018, p. 176).

Importantly, Mulvin (2018) uncovers the moralistic undertones of these discourses that determine how judicious screen users are in mitigating their exposure to digital stimuli. Specifically, he states, "contemporary screen technologies are figured as engineered in ways that enervate humans in particularly malignant ways; and humans are figured as especially susceptible to the attraction of these harmful actors" (Mulvin, 2018, p. 194). Reflecting the latter, the participants often labelled their screens and social media platforms as being "addictive" and internalized a sense of guilt for "wasting" so much time on them. Future research could challenge this perceived duty to manage screen use among concussed individuals and redirect the attention to "intrusive […] infrastructure" (Mulvin, 2018, p. 194).

Throughout his enlightening article, Mulvin (2018) also expands upon the concept of rest. Considering that "gains in worktime flexibility have disproportionately benefitted racially classed 'white' workers and managers […] [r]est, sleep, and darkness are scarce resources to which the already-privileged can gain easier access" (Mulvin, 2018, p. 183, 184). Related to concussion care, virtually no research (at the time of this thesis's

publication) has acknowledged the marginalizing structural factors that control whether various populations can, for example, leave work or avoid screens as part of physical and cognitive rest. It is imperative, then, that future studies on concussion-related rest continue these conversations concerning systemic oppression and race, gender, and socioeconomic status.

In attempting to redress these issues, Mulvin (2018) exposes the alarming histories that have shaped modern media prophylaxis. Regarding disability and technological development, he reminds us:

> The history of technology is characterized by a well-established irony: while new communication technologies and infrastructures are often created and honed through tests using users living with disabilities, impairments, or unexpected bodily functions, those very same users must regularly demand basic accommodations to actually use these pieces of technology (Mulvin, 2018, p. 192).

Put differently, Mulvin (2018) establishes that entities testing technologies have seemingly reaped benefits from non-reciprocal relationships with participants living with disabilities. Though he is referring primarily to circadian rhythm research, his conclusions can call upon concussion scholars to study the ways in which post-injury disabilities, technology, accessibility, and dominant discourses intersect and to what end.

Quality Criteria Considerations

Two sets of criteria guide my reflections on the quality of the above thesis study. Van Manen's (2014) "Validation Criteria" evaluate its phenomenological components (p. 350). Complementing his framework, Sarah Tracy's (2010) "Eight 'Big Tent' Criteria" situate my study more generally within the core values of qualitative research (p. 838).

Van Manen's Validation Criteria. Van Manen (2014) first warns against applying "validity" and "reliability" to studies inspired by his phenomenology of practice

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(p. 347, 351). Referencing the former concept, he expressly states that "measures such as content validity, criterion-related validity, and construct validity" are incompatible with his theory of phenomenology (van Manen, 2014, p. 347). Relatedly, he directs his discussion to reliability—the ability of a given study to be repeated—dissuading researchers from recruiting "different judges [to] rate, measure, and evaluate a certain outcome" (van Manen, 2014, p. 351). He reiterates instead that research on similar phenomena can produce vastly different results.

As an alternative to conventional evaluative measures, he offers four questions that validate a study in a methodologically appropriate manner. The first concerns the nature of the research question and its relevance to his phenomenological sentiment. The second ensures that the question generates descriptive experiential material. The third confirms whether the study roots itself in credible phenomenological literature. The fourth then verifies that the researcher avoided criteria better suited for other methodologies. Below these criteria are compared with the current study (Table 5.1).

Table 5.1: Application of Van Manen's Validation Criteria

Van Manen's Validation Criteria	The Current Study's Use of Criteria
1. "Is the study based on a valid phenomenological question? In other words, does the study ask, 'What is this human experience like?'" (van Manen, 2014, p. 350)	Yes, the core component of my research question asks what it is like for concussed young adults to use screens. Then it considers two aspects of this screen use as they: (1) attend to their online identities and obligations (e.g., relational upkeep and schoolwork)? (2) obtain information on the Internet about current concussion management strategies to aid their recoveries?
2. " Is analysis performed on experientially descriptive accounts, transcripts?" (van Manen, 2014, p. 350)	Yes, the bulk of analysis focuses on the transcripts produced from the in-depth interviews. Found in these transcripts are detailed descriptive accounts of young adults' post-concussion screen use.
3. "Is the study properly rooted in primary and scholarly literature—rather than mostly relying on questionable secondary and tertiary sources?" (van Manen, 2014, p. 350)	Yes, the study relies exclusively on scholarly phenomenological literature such as van Manen's (2014) *Phenomenology of Practice* and credible work emerging in the field of critical phenomenology.
4. "Does the study avoid trying to legitimate itself with validation criteria derived from sources that are concerned with other (non-phenomenological) methodologies?" (van Manen, 2014, p. 351)	Yes, the study avoids conventional evaluative measures and prioritizes van Manen's own criteria and Tracy's flexible criteria for qualitative research more generally.

Tracy's Eight Big Tent Criteria. Like van Manen (2014), Tracy (2010) proposes

alternatives to "traditional empiricist criteria" that remain relevant to my study (p. 838).

Rather than list strict standards that can be applied universally to qualitative studies, she

embraces the diversity of paradigms and methodologies inherent to such approaches and

offers fundamental values that can be adopted flexibly. Eight components comprise her

criteria: "(a) worthy topic, (b) rich rigour, (c) sincerity, (d) credibility, (e) resonance, (f)

significant contribution, (g) ethics, and (h) meaningful coherence" (Tracy, 2010, p. 839).

Of particular importance to the study were rich rigour, resonance, credibility, sincerity, and meaningful coherence (Table 5.2).

Extending my reflection on Tracy's (2010) criteria, I will briefly review the aforementioned five and their application to the study, beginning with rich rigour. This principle refers to a researcher's "evidence [of] their due diligence, exercising appropriate time, effort, care, and thoroughness" (Tracy, 2010, p. 841). Also required of the researcher is the ability to sift through theories and practices and to generate rich, abundant, and relevant data. To meet this criterion, I borrowed Wright St. Clair's (2015) concept of "dwelling with the interview data" (p. 60). I first conducted thorough interviews and then spent numerous hours immersed in the transcripts, allowing meanings to incubate. I documented my process of dwelling with the interview data, relating it back to rich rigour and the other criteria.

Resonance relates to the research's "evocative representation" (Tracy, 2010, p. 840). This criterion is especially relevant to phenomenological studies seeking to spur empathy and reverberation among wider audiences. A guiding question to which to return when considering the study is "Did this affect me?" (Tracy, 2010, p. 845). Using van Manen's reflective phenomenological writing style, I attempted to capture the painful parts of the participants' experiences, presenting them as anecdotes and within a broader experiential narrative. I regard this criterion as a natural extension of rich rigour: once I spent time dwelling with the interview data, I strove to present it in a detailed and evocative manner.

Also building upon these two criteria is credibility, the research's rich data that reveals taken-for-granted assumptions (Tracy, 2010). I did not borrow from each subset

of this criterion (i.e., triangulation and crystallization) but, honouring elements of my paradigm, heeded the hidden meanings that reflect cultural values. In the results section, I tried to uncover how the participants' injuries disrupted technology's taken-for-granted status in their daily lives. In the discussion following the results, I alluded to critical phenomenological and media theories that might help expose the systemic factors shaping the participants' difficulties.

While incorporating these criteria, I consistently aimed for sincerity and meaningful coherence. The former criterion requires ongoing self-reflexivity and transparency (Tracy, 2010). Throughout the body of my thesis, I disclosed my paradigmatic influences and their impact on the study. I also maintained a reflexivity journal where I was candid about my thoughts on the research process. Maintaining this reflexivity helped me better meet the latter criterion, which calls upon the researcher to tactfully interconnect paradigm, methodology, and methods (Tracy, 2020). I first conducted a deep analysis of van Manen's (2014) *Phenomenology of Practice* to clarify the phenomenological elements of the study, and then I explored budding literature on critical phenomenology. Both scholarly realms are inordinately complex, so I aimed to capture the basics of a phenomenology of practice and interpose critical concepts where possible.

Table 5.2: Application of Tracy's Eight Big Tent Criteria

Data Collection/Analysis Activity	Contributions Per: 1. Tracy's Big Tent Criteria 2. Van Manen's Recursive Three-step Reading Approach and Thematic Analysis
Thorough phenomenological interviews, ~90 minutes	1. "Dwelling with the interview data" = "Rich rigour"
Transcription: verifying and polishing the transcripts, ~4-7 hours per transcript	1. "Dwelling with the interview data" = "Rich rigour" 2. Line-by-line reading
Reflection one: on the interviews	1. Reflexivity journal = "Sincerity," "Credibility"
Reflection two: on the use of "themes" in lieu of "codes" and revisiting paradigmatic considerations	1. Reflexivity journal = "Sincerity," "Meaningful coherence," "Credibility"
Preliminary thematic chart that centralizes theme definitions	
Loose readings of hard-copy transcripts: overarching manual theme identification using colour-coded scheme that corresponds to the thematic chart, ~3-5 hours per transcript	1. "Dwelling with the interview data" = "Rich rigour" 2. Wholistic reading
Digitizing initial theme identification, ~3-5 hours per transcript	1. "Dwelling with the interview data" = "Rich rigour" 2. Selective and Line-by-line readings
Refine the transcript sections with 'anecdote potential' and related quotes and tentatively mark off remaining 'lived dimensions' sections	1. "Dwelling with the interview data" = "Rich rigour" 2. Selective and Line-by-line readings
Reflection three: on the emerging themes and beginning to create the anecdotes	1. Informal reflexivity journal = "Sincerity," "Meaningful coherence," "Credibility"
Edit the transcript excerpts with anecdotal potential so as to remove grammatical errors and, if necessary, adjust language to make it more evocative	1. "Dwelling with the interview data" = "Rich Rigour," "Resonance" 2. Anecdote/Plausible representation
Commence reflective writing under each anecdote while integrating the "related quotes" identified above	1. "Dwelling with the interview data" = "Rich Rigour," "Resonance" 2. Anecdote/Plausible representation, Phenomenological writing
Revisit the identified sections for lived dimensions and organize any remaining themes that have not been addressed in the anecdote sections	1. "Dwelling with the interview data" = "Rich Rigour" 2. Selective and Line-by-line reading, Lived dimensions
Write-up of the sections lived dimensions	1. "Dwelling with the interview data" = "Rich Rigour," "Resonance" 2. Lived dimensions, Phenomenological Writing

Limitations and Further Considerations

A potential limitation of this study is its small, limited sample. Though appropriate for my methodology, the study size will not likely result in generalizations that might be needed in the field of concussion research. Nevertheless, it presents a useful starting point from which additional investigations can begin. Interestingly, and in parallel with notable literature trends, the study garnered interest and eventual participation exclusively from female-identifying individuals, potentially reinforcing (a) that this population is at higher risk for protracted recoveries and (b) this population's increased likelihood to give charitably and volunteer in healthcare, social service, and education contexts (Brosheck et al., 2005; Einolf, 2006; Marx, 2000; McGroarty et al., 2020; Mesch et al., 2011; Preiss-Farzanegan et al., 2009).

Final Conclusions

In summation, this thesis study investigated topics including persistent concussion symptoms, unclear clinical recommendations, cognitive rest, information seeking, and online identity. Grappling with the complexity of these interrelated experiences, the study participants confronted numerous daily dilemmas related to their post-injury screen and social media use. Given the interdisciplinary nature of this research, the participants' dilemmas can be considered through various lenses, such as those mentioned above: phenomenology of practice, critical phenomenology, and critical media studies. The implications of this thesis study seem particularly relevant for future screen-specific cognitive rest guidelines and online knowledge mobilization efforts.

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Appendices

Appendix A: Anecdotes alongside Original Quotes

Online Identity and Obligations

Tethered to Technology

Anecdote	Original Participant Quotes
Since school was online last year, I found that even more difficult, just because I was doing lectures online, I was doing my notes online, like I could not really escape it. I could not avoid using a laptop. On social media, like everyone I know is kind on there. It is not a way of life, but it is so ingrained in a lot of our lives that it is almost hard to step away now.	"Since school was online last year, I found that even more difficult, just because I'm doing lectures online, I'm doing my notes online, like you can't really escape it." "Like, I can't avoid using a laptop." "OK, like everyone I know is kind of on there [on social media], like it's not of a way of life, but it's so ingrained into a lot of our lives, that it's kind of—it's almost hard to step away now."

Withholding Struggle: in Relational Contexts, including Online Identity

Anecdote	Original Participant Quote
I have never posted anything about my concussion. I really try to make it seem as if my injury has not affected me, and that's the presence I put out on Instagram. I remember I once posted a picture of me cross-country skiing. Then somebody I know commented on my picture, saying something like, "Oh yeah? How is your concussion doing?" in a condescending way, meaning, "Oh, you have a concussion, but you're still able to go cross-country skiing?" And that made me super upset because cross-country skiing is basically me just walking. It did not require any heavy exercise, and it was one of the few things I was able to do after my injury amidst so many things I could not do. Them mentioning my concussion on Instagram also bothered me because in real life, if you know me really well, you know how much I think about my head and things affecting my head. In one sense, I do not want to be known as	"I have never posted anything like about my concussion. And I really try to make it seem as if my concussion has not affected me, and that's the presence that I put out on Instagram. I remember I posted a picture of me cross-country skiing, because it snowed once in Vancouver, and that was a monumental moment, so we were cross-country skiing in the middle of the city, which I don't know—is the funniest thing ever. But somebody that I know posted on my— commented on my picture, saying something along the lines of like: oh yeah? How is your concussion doing? Like, kind of saying it in a condescending way— meaning, in that instance: oh, you have a concussion, but you're still able to go cross-country skiing? And that made me super upset, because cross-country skiing—you're like basically just walking, like it wasn't any heavy exercise, and it was one thing that I was able to do, but there were so many things I

the person who has a concussion. I just want to be alleviated from the negative sides, like I don't want to be known as somebody who always has to give up something because of my head.	couldn't do, so that really bothered me. Yeah, and just like them mentioning my concussion on Instagram bothered me as well, because in real life, if you know me really well, you know how much I think about my head, and things affecting my head, that—in one sense—I don't want to be known as the person who has a concussion. So I just want to be alleviated from the negative sides, like I don't want to be known as somebody who always has to give up something because of my head."

Turning to Screens

Altering Screens

Anecdote	Original Participant Quote
Post-injury, I have not stopped using particular screens, but I have changed how they look. For example, I have "night mode" on both my laptop and phone to reduce the screens' blue light and brightness to their lowest points.	"No [the type of screens I use hasn't changed], but I have changed how those screens look, so I have night- mode on, on both my laptops and my phone. I've got one apps, which is like no blue light from your laptop or your phone, and brightness is to the lowest point"

Nothing else to do

Anecdote	Original Participant Quote
When I was first concussed and could not really do anything, I found it so easy— since I was not able to walk, I was not able to read—to just look at my screens. After that, I would get so bored that turning to a screen seemed like the only option. It was really not the only option, but my brain did not do well at recognizing this in its concussed state.	"Yeah, so when I first was concussed, and you can't really do anything, it's so easy— since you're not able to walk, you're not able to read—to just look at your screen…Yeah, and then, after that, when you get so bored, it kind of seems like it's the only option, which—it's really not the only option, but your brain doesn't [n/a— not captured] too well in that state."

Fear of missing out

Anecdote	Original Participant Quote
Sometimes, when I take a break from screens, I often worry that I am missing out on something: What if people are trying to contact me? Or I get some important news? Or I come across something that I really	"And I guess for—sometimes there are points where, throughout my break, where I feel a little worried that—what if people are trying to contact me? Or I get some important news? Or something that I really

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want to hear right now? If I know I am waiting on something specific, I will feel the urge just to check, like I need to know. Sometimes I have checked my phone and, as usual, there's nothing there.	want to hear right now? Or, if I'm waiting on something, I feel like—oh, I should just check it, like I need to know. And then sometimes I have checked my phone for anything, and as usual, there's nothing there…"

Mindless Distraction

Anecdote	Original Participant Quotes
Since sustaining a concussion, my social media activities have stayed relatively the same. But I find on social media now I look more for mindless entertainment versus things that I have to actively think about, because of the fact that I don't want to be focused on what I'm looking at–I just kind of want the content to be mind numbing. With my concussion symptomatology, I have become more of an anxious sleeper. I know the best thing for sleep is to put the devices away, but I find if I just have to lie there, then I get too lost in thoughts, I start to become anxious, my heart rate accelerates, and then I give myself a migraine. So sometimes it is more practical to scroll mindlessly through social media to distract myself, and then I can fall asleep more easily: everything is fine, and I do not have to think about the 400 tasks I have to do tomorrow or anything other than this little girl trying a fun hair-do on Tiktok.	"And I would say that since, like getting a concussion, my social media activities have stayed relatively the same. But I find on social media now I look more for mindless entertainment vs. things that I have to actively think about, because of the fact that I don't want to be focused on what I'm looking at. I just kind of want it to be mind numbing." "I am definitely—the height of my social media use is before bed, because another thing I have found with my concussions, I didn't actually say this earlier with my symptomatology, but I am a very anxious sleeper." "So, I know the best things for sleep are to put the devices away and things like that, but I find if I just have to lie there, I get too lost in thoughts, and I start to become anxious and then start to accelerate my heart rate, and then I give myself a migraine. So it's more [n/a—not captured] for me just to scroll mindlessly through social media, and then I just kind of fall asleep a lot easier." "Yeah, especially TikTok, with just like, mindless kind of funny videos, it takes my mind off the anxiety. "Everything's fine. And because then I just don't have to think about the 400 tasks that I have to do tomorrow or anything really, other than laughing at this little girl who needs to do piggies or bunnies in her hair."

Turning away from screens

Screens causing symptoms

Anecdote	Original Participant Quotes
When I started to get a headache every single day, I realized screen time is a significant trigger of the headache. Physically, it feels like the light is so bright, even when turned to the dimmest setting. It hurts and somewhat burns, but it is also really sharp, right behind my eyes, and it makes the rest of my head hurt, and it just feels like a lot of pressure. If I use screens continuously, then my whole day is gone.	"So in late February and March, when I start to get headache on every single day, every day, daily basis, then I was like: Oh, the screen time is actually the trigger to the headache." "It feels like, the light is so bright, even if it's on the most dim setting. And it just hurts, like kind of it's—somewhat burns, but like it's really sharp, and it's right behind my eyes, and it makes the rest of my head hurt, and it just feels like a lot of pressure." "But, if I use them continuously for like one hour, my whole day is gone."

Guilt about screen-time: "I use it too much"

Anecdote	Original Participant Quotes
When using my phone, I feel on an emotional level like I should keep going on it because it is addictive. Then I realize I am wasting my time. I realize that it is not good for me, but I still keep doing it, and then I realize it again, but I still keep doing it.	"Emotionally, it still feels like I should keep going on my phone, because it's addictive. And then, it's just like, I don't know, there was like a specific word for it. It was like—you realize that you're wasting your time. You realize that this is not good for you, but you still keep doing it, and then you realize it again, but you still keep doing it."

Online Information Seeking

Unclear Screen-use Guidelines

Anecdote	Original Participant Quote
Initially, I was told to go "cold turkey" off phones, so that's what I did. But because they didn't have any more information about screen time guidelines for concussion symptoms, at least none that was available to me, I kind of had to take it into my own hands after the month mark.	"Initially, yes, because I was told to go cold turkey off phones, so that's what I did. But because they didn't have any more information about screen time guidelines for concussion symptoms, at least none that were available to me, I kind of had to take it into my own hands after the month mark."

Navigating Nebulous Guidelines and General Unawareness

Anecdote	Original Participant Quote
There wasn't a clear guideline for almost anything, which I found extremely frustrating. And practitioners would say, "When your symptoms get to an eight, then don't do any more." And I was like, how do you categorize an eight? An eight on what? An eight on dizziness? An eight on headache? And, then, they were like, "Do activities until you won't be symptomatic tomorrow." …How am I supposed to know if I'm going to be symptomatic tomorrow? That's really hard to gauge. So, there is definitely a significant time period when you have to discover things that provoke your symptoms more than others. When you go "overboard," for instance, I believe that's the word they used, then you are expected to just rein it back in and not do that the next day but still try to push yourself.	"But there wasn't a clear guideline for almost anything, which I found extremely frustrating. And they were like: when your symptoms get to an eight, then don't do it anymore. And it's like, how do you categorize an eight? An eight on what? An eight on dizziness? An eight on headache? And then, they're like, do it until you— until you won't be symptomatic tomorrow; how am I supposed to know if I'm going to be symptomatic tomorrow? That's really hard to gauge… So, yeah, there's definitely a big time period where you have to discover things that provoke your symptoms more than others, and when you go overboard, for instance, I believe that's the word they used, then to just rein it back in and don't do that the next day, but still try and push yourself."

Online Information Seeking

Anecdote	Original Participant Quote
I definitely followed a lot of online advice, mostly because I was not given much direction from my doctor past however long I was told to do nothing. So, I used a lot of the information online to reintroduce things back to my life, to make sure I was extra healthy. After a week is when I relied more on the online stuff versus what the doctor did not really tell me.	"I definitely followed a lot of like—a lot of like the online advice, mostly because I wasn't given that much advice from my doctor past however long they told me to do nothing. So just like, I used a lot of the things online to reintroduce things back to my life, and like I said, all that diet stuff like, I kept that because, like at the time, I'm sure my immune system was a bit weakened. So I would use that to like keep—make sure I was extra healthy. And, yeah, I guess that's kind of it. Like I'd say, I used the online stuff to past a week; after a week, that's when I kind of relied more on the online stuff versus what the doctor did not really tell me."

__Note__: These anecdotes closely resembled the participants' exact original quotes in that I mainly adjusted punctuation and the order of a few words, while omitting any identifying information or extraneous details. To give an idea of how other researchers approach this task differently, I have included a table here from another study in qualitative health research that applied concepts related to the phenomenology of practice. In this example, the researchers combined disparate sentences from their transcript texts and rewrote them as part of a passage to form short narratives and portrayals of lived experiences:

Part of the transcript
Interviewer: And how does your body inform you on how you're doing?
Participant: Um ... yes, I feel that, eh. And my saturation level indicates it, eh, because I measure quite uh ... a lot. Every day, and uh ... in some circumstances too. But I also feel it myself.
Interviewer: But that is...
Participant: Yes, actually ... I don't really need to look at the saturation meter.
Interviewer: I just wanted to ask, if it ever diverges, that you might think ...
Participant: Yes...
Interviewer... that you sometimes feel better than the pulse oximetry indicates or not ... um
Participant: No, not at all, no, no, no.
Interviewer: No. OK.
(Spouse of the participant): Yes
Participant: No.
Interviewer: Yet you use it often, you say, just because it ... uh ...
Participant: Yes
Hum ...
Participant: Yes. I've discussed this with the pulmonologists who discouraged me doing it but those people in Breda ... those physiotherapists and those doctors there, they recommended it because it would give me more insight into how I was doing during the exercises.
Hum ...
But I actually know those values without measuring, because that's what I bodily experience.
Yes.
In the case of a staircase of twenty steps, like there is one in the gym, then I know exactly what my oxygen level will be once I've arrived upstairs. I don't really have to look.
Interviewer: Because uh, you feel that in your body, you say; how does your body feel? Could you describe that?
Participant: Well, I'm gasping for air...
Interviewer: Yes Yes.
Twenty steps it is.
Hum ...
Yes.
Yes.
Participant: Normally, I stop for that staircase and take a rest for a minute, then I go upstairs to the gym, where all those fitness machines are, and if I wait for another minute ... in the changing room, then uh ... then it will be 95, 96...
Hum ...
Participant: When I am at the top of the stairs, then it is 85. But yes, I know that and I feel that. I can do it as long as I take enough rest.

Textual portrayal
I know and feel that after climbing the twenty-steps staircase in the gym, my level will be 85 once I'm arrived upstairs. I know that if I then rest for a minute and wait for another minute in the changing room, it will be 95, 96.

Figure 2 Example of the process of converting a transcript into a textual portrayal.

(van der Meide et al., 2019, p. 122)

Appendix B: Reflexivity Journal

Reflection One: After the Interviews

In my initial reflection on the interviews, before immersing myself in the transcripts or beginning any analyses, I identified some of the overarching issues that stood out to me.

Many participants allude to this newfound sense of "vigilance" post-injury. Its aftermath appears to pervade their lives; thus, they are constantly on guard, assessing whether their daily actions will worsen their symptoms or cause another concussive impact. I vividly remember asking one participant about the impact of the injury on her life, to which she responded, "my ability to do things." Other participants, using different words, echoed this sentiment.

In response to the injury's far-reaching reverberations, they now pay attention to their every physical move, calibrating where their body is in space to dodge any potential threats. "Threat" is a strong word and likely conjures images, in concussion contexts, of car accidents or sport-related collisions and repeated thumps. For the participants, though, even the most seemingly mundane objects and activities can become threatening. A misstep on the tines of a rake causing its pole-like handle to jolt the body, a bump into a cupboard door, rolling too far over one's bed while asleep—these are the types of situations invoking concussive symptoms for one participant. Screen use, which can strain even healthy non-concussed populations, seems particularly tricky for the participants.

Yet even as the participants describe this vigilance, which spreads to their screen use, they simultaneously describe their coping, which surprised me, as I did not necessarily prompt specific discussions on this topic. Many of them express a sense of acceptance regarding their complicated relationship with screens and social media. They draw upon memories in which they dealt with the painful consequences of "overdoing it," now opting to respect their internal thresholds when necessary. On the contrary, they also lean into the "distraction" provided by social media to cope with emotional and physical symptoms. They appreciate that sometimes the immediate gratification of online content ironically is what takes them out of their bodies (i.e., temporarily increases their emotional mood, which lessens their physical symptoms, such as headaches). To carefully navigate these considerations, some even set schedules allocating a few hours daily to their screen time for academic obligations, social media scrolling, and miscellaneous activities.

I will keep these emerging pre-understandings in mind before fully immersing myself in the transcripts via re-listens, re-reads, and iterative theme identification. At this point, these understandings feel commensurate with van Manen's "wholistic reading" of a text, rather than corresponding with themes related to a "selective reading," which I have tentatively reserved for identifying LEDs, or "detailed reading," which I will likely use to refine the aforementioned themes (van Manen, 2014, p. 320).

Prior to perusing the transcript texts, I will reflect on my use of the word "themes" rather than "codes" when organizing data segments for analysis.

Reflection Two: Creating Themes (in lieu of Codes)

It is customary for qualitative (and quantitative) researchers to create coding systems that categorize common concepts and patterns in the data. After all, they "need to be able to organize, manage, and retrieve the most meaningful bits of [their] data" (Coffey and Atkinson, 1996, p. 26). "Coding," then, is the concrete method by which researchers often complete this task (Coffey and Atkinson, 1996, p. 26). More specifically, they use: "tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes usually are attached to 'chunks' of varying size—words, phrases, sentences, or whole paragraphs…" (Coffey and Atkinson, 1996, p. 28).

In principle, this process of coding, as described by these authors, makes intuitive sense to me, yet I am still hesitant to uncritically apply the language of coding and codes to my study. What makes me pause here is van Manen's warnings against "abstracting, coding, and procedural approaches; developing taxonomies; looking for recurring concepts and themes; and on" (van Manen, 2014, p. 319). Instead of applying the systematic coding procedures sometimes used in grounded theory, ethnography, and content analyses, he suggests a "thematic analysis," which involves the three-step reading approach mentioned in my methodology section (van Manen, 2014, 319). Given that his interpretation of phenomenology prioritizes LEDs, which are spacious categories that often align with larger blocks of text (e.g., a paragraph), I can appreciate why he might favour the word "theme" over "code." The former seemingly feels less micro and procedural than the latter.

Admittedly, I see some superficial similarities between van Manen's three-step reading approach categorized as thematic analysis and, for example, Coffey and Atkinson's (1996) steps for coding. Like van Manen, these authors offer researchers three sweeping steps for reading interview texts:
    • First, scan for relevant phenomena.
    • Then, extract examples of the phenomena.
    • Finally, analyze the phenomena by synthesizing recurrent, disparate, and/or interesting concepts.
Though quite broad and introductory, these steps align with van Manen's guidance on reading the texts with varying levels of generality, finding relevant excerpts, and reflecting on extracted insights. In parallel, again, to van Manen's take on thematic analysis, Coffey and Atkinson (1996) reject misconceptions that coding is "a simple and unproblematic procedure" that merely assigns "categories to data" (p. 31). They instead support coding's multifaceted, generative potential. Still, to avoid getting swept into a struggle of semantics, I honour van Manen's language for a phenomenology of practice and opt to classify my analytical approach as a thematic analysis rather than a coding venture.

In striving to revisit my inquiry paradigm at various research stages, I situate my use of the word *themes* in lieu of *codes* within my chosen methodology, as noted above, and beyond, to include my ontological and epistemological assumptions. Tactfully incorporating one's ontological, epistemological and methodological assumptions with the appropriate methods, language, and literature—so as to create a "meaningfully coherent" study design—is no small feat (Tracy, 2010, p. 848). Such a task warrants careful attention and ongoing effort. Where data analysis is concerned, methods abound, and their suitability for a specific study should be carefully examined. The application of thematic analysis, then, is no exception.

Although research buzzwords such as *codes* and *themes* might, on the surface, seem straightforward and unambiguous, they contain critical nuances that crop up in varying paradigmatic contexts. Researchers proceeding along the posivitist continuum could, for example, hold a realist ontological view of interview transcripts, seeing participants' responses as access to true and accurate accounts of their external realities from which analytical methods can harvest insights. For them, codes and themes index tidbits of the participant's reality. Their epistemological stance will often reflect this systematic approach to transcript texts, positioning them as distanced and detached from the data, bringing them closer to objective results.

I can certainly appreciate the merit of such assumptions and aims underpinning positivist-leaning analysis methods, yet I still feel pulled to (my familiarity with) critical-constructivist views of the codes and themes. Bringing such lenses to phenomenological data analysis creates a fascinating dilemma that challenges me to double-down on my reflexivity. At any rate, I believe this challenge will ultimately benefit my research. What I have to keep in mind is that researchers leaning into critical-constructivist assumptions likely fall closer to the relativist end of the spectrum. They might view interview transcripts as a particular depiction of reality, co-created and shaped by multiple contextual factors, including the interviewer-interviewee dynamic. Their subsequent use of codes or themes is sometimes informed by theories of a particular *approach* to reality (e.g., using a critical discourse analysis lens to uncover the ablest assumptions in texts). Alternatively, they might recruit multiple researchers to codify the same text to demonstrate varying-but-valid interpretations. In either case, their goal is to present a plausible representation of reality rather than extricate the "true meanings" inhering in the texts.

It is at this particular juncture—the point at which the researcher (according to van Manen) thematically analyzes the transcript texts in the attitude of the epoche and reduction, an activity that arguably resembles the ontological and epistemological stances tied to positivism and post-positivism—that I diverge slightly. Aside from avoiding the complexity (and risking misuse) of such concepts, I make an effort to clarify my critical-constructivist use of themes. In commencing thematic analyses, I aim not to completely rid myself of preconceptions when analyzing the transcript texts. Such an aspiration, in phenomenological contexts, has been challenged and nuanced, anyway. I instead try to sensibly channel my subjectivity by acknowledging that I am presenting one possible interpretation of the data. To transparently document my evolving interpretations, I

maintain this thorough reflexive journal, leaning into a sense of wonder and openness to data.

Appendix C: Ethics Approval Confirmation

Western Research

Date: 19 December 2021

To: Dr. Andrew Johnson

Project ID: 119618

Study Title: Exploring the relationship between screen sensitivity and social media usage among young adults who have sustained a concussion.

Short Title: Screen Sensitivity and Social Media Usage

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: January 14 2022

Date Approval Issued: 19/Dec/2021 22:15

REB Approval Expiry Date: 19/Dec/2022

Dear Dr. Andrew Johnson

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. **All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.**

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Interview Guide (20211001)	Interview Guide	01/Oct/2021	1
Contact Info, Qualtrics (20211208)	Online Survey	08/Dec/2021	1
Recruitment Email, (20211208)	Recruitment Materials	08/Dec/2021	1
LOI Interview (20211208)	Verbal Consent/Assent	08/Dec/2021	1
Interview LOI, Qualtrics (20211208)	Verbal Consent/Assent	08/Dec/2021	1
LOI Screening (20211208)	Implied Consent/Assent	08/Dec/2021	1
Screening, Qualtrics (20211208)	Implied Consent/Assent	08/Dec/2021	1

No deviations from, or changes to the protocol should be initiated without prior written approval from the NMREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson , Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix D: Recruitment Email

Subject Line: Post-Concussion Syndrome and Social Media Usage

Dear Students,

You are invited to participate in a thesis-based research study investigating the relationship between post-concussion syndrome (PCS) and young adults' social media use. Specifically, this study explores how PCS impacts this populations' use of online platforms (1) to manage their online identity and obligations and (2) to access online social support and current research on concussion treatments.

To participate you are required to meet the following criteria:
• Be diagnosed with a concussion
• Be between the ages of 18-25
• Possess at least one social media account that has been accessed within the past year
• Have current or previous experience with screen sensitivity as a symptom of your injury
• Be fluent in English

If you choose to participate in this study, you will first be asked to complete a brief screening questionnaire in the link below to determine your eligibility and to consent to further contact from researchers. Then, you will receive an email to set up an interview that is expected to take no longer than 90 minutes. Your participation is voluntary and all identifying information will be kept confidential.

As compensation for your participation, you will receive an electronic $20 gift card.

If you are interested in participating, please access the letter of information and consent followed by a brief screening questionnaire here:

[Link omitted]

For more information on this study, please contact [Contact Information Redacted].

Kind Regards,

[Contact Information Redacted]

Appendix E: Letter of Information and Consent

Exploring the relationship between screen sensitivity and social media usage among young adults who have sustained a concussion

[Contact Information Redacted]

LETTER OF INFORMATION

Introduction
You are invited to participate in a research study investigating the experiences of young adults with concussion symptoms who use social media. The following letter contains information to assist in your decision as to whether or not you wish to participate in the study. Some of the information presented here speaks to why the study is being conducted, and what it entails. Please take time to carefully review all of the contents of this letter. It is important that you fully understand what the study entails before you proceed. Your participation is not mandatory and you may withdraw your participation up until the point that data analysis has begun.

What is this study about, and why is it being done?
This study will explore how young adults experience the impact of concussion symptoms on their social media use. We are interested in answering two research questions:

    (1) How do individuals with concussion symptoms manage and maintain their online identity and obligations?

    (2) How do individuals with concussion symptoms access online social support and current research on concussion treatments?

It is conceivable that concussion symptoms may complicate the web-based identity and obligations of young adults. Research has suggested that young adults represent the largest subpopulation (worldwide) accessing the Internet, with many indicating that it is part of their daily routine (Alimoradi et al., 2019). Despite the centrality of online platforms in young adults' lives, very few scholarly articles have addressed how members of this population reconcile regular screen use with ongoing symptoms of a brain injury. Specifically, symptoms of concussion may be worsened by the combination of screen glare and the cognitive load required by some computer-intensive tasks (e.g., completing computer-based assignments, drafting emails, and interacting with social media posts). However, even though symptoms may be present, the extent to which screen-based platforms encourage (and reinforce) daily use (Kent, 2020) may make it difficult for individuals with concussion symptoms to remove themselves, even temporarily, from screens. This tension may have implications for young adults' recoveries *and* for their online identities and obligations.

On the other hand, despite potentially worsening symptoms, social media platforms may provide young adults with greater access to up-to-date concussion information than clinical settings. Because research on concussion is still evolving at a rapid pace, it is difficult for stakeholders to access consistent guidelines on how to treat it (McLeod et al., 2017). Patients may subsequently take their recoveries into their own hands by turning to the Internet. Already, "online technologies have been cited as positive methods of specifically tailoring knowledge transfer relating to concussion to young athletes" (Ahmed et al., 2010, p. 1880).

Ultimately, the current study is important because there continue to be questions concerning the nature and extent of screen sensitivity among individuals who have sustained a concussion. Ironically, the use of social media has the potential to both hinder and aid the resolution of the condition. Our examination of the circumstances faced by young adults experiencing concussion symptoms will bring awareness to the treatment needs of this population (particularly with regards to guidelines for screen use), and will aid stakeholders identifying effective methods for disseminating treatment guidelines.

Eligibility
In order to be eligible for this study you must:
- have at least one social media account that you have accessed within the last year;
- have a concussion diagnosis (from a physician, psychologist, or nurse practitioner);
- have experienced screen sensitivity (at some point) as a symptom of your injury;
- be between the ages of 18 and 25; and
- be fluent in English

Students experiencing comorbidities (outside concussion) that may impact screen sensitivity are not eligible to participate in this study.

What happens to you if you agree to be in this study?
If you agree to participate in this study, you will be asked to complete a brief screening questionnaire that follows this letter. You will also be asked to provide consent to further contact from researchers. Then, if you meet the eligibility criteria, you will be placed into a recruitment pool and be contacted to set up a one-on-one interview at a later date. Not all individuals who complete the screening questionnaire will be selected to participate in the interview. The target sample size of this study is 5-10 participants.

If you are contacted to participate in the interview, it will occur over Zoom, and your interview will be audio recorded. You will have the option to leave your video on or off, but the video recording of our session will be discarded in any event. The interview will take no longer than 90 minutes to complete. You will be asked to share descriptions of your experiences with screen use over the course of your concussion recovery, as well as your feelings regarding the centrality of social media usage to your identity and information-seeking practices. Your consent to having interviews audio recorded is necessary to participate in the study, as the interviews will be transcribed using artificial intelligence (nVivo Transcription).

What are the possible risks?
It is conceivable that you may experience emotional distress while disclosing information about your concussion symptoms. The semi-structured nature of the interviews may also give rise to topics that you are not prepared to discuss. If you experience any emotional distress, you are encouraged to access resources listed below:

Western University's Mental Health Support:
https://www.uwo.ca/health/psych/index.html

Canadian Mental Health Association – Middlesex Branch:
https://cmhamiddlesex.ca/programs-services/

Good2Talk Confidential Mental Health Support:
    https://good2talk.ca/

Concussion Legacy Foundation Helpline:
    https://concussionfoundation.org/helpline

If you believe that the screen-based nature of the Zoom interviews will exacerbate your symptoms, but you still wish to participate, you may turn off your camera and screen so that you are participating with audio only.

Additionally, there is a possibility that you may be identified as a participant. We will take extensive precautions to protect the confidentiality of all data, but there is still the possibility of a security breach.

In the unlikely event that a security breach occurs (within any of the technologies used in the study), you will be notified directly of the nature and extent of the breach.

How will confidentiality be maintained within this study?
To facilitate contacting you to participate in the interview, we will be collecting your name as well as your phone number and/or email address. Your survey responses will, however, be stored separately from this personal identifying information. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. The data will then be exported from Qualtrics and securely stored on a server at Western University. At no time will researchers have access to any personal or identifying information about participants, beyond the information provided within your survey responses.

Interviews will be recorded and transcribed (via nVivo Transcription) for further data analysis. Your audio file will be stored on the nVivo Transcription server for as long as it takes to transcribe the file (typically no longer than 24 hours). Audio files will be kept to validate the AI transcription. Transcripts will be de-identified (using pseudonyms) before the analysis - no identifying information will be shared or included as part of the data analysis. A master list will be kept, linking pseudonyms to your own name, for the purposes of documenting consent to participate in this research. This master list will be stored in a locked cabinet in Dr. Johnson's research office.

Data collected during these interviews will be used for research purposes, and it may also be used for secondary analysis after finalizing the primary analysis laid out in this letter. It is possible that results from this study will be published in an academic journal and presented as part of a conference paper. Quotations from the interview you participated in may be included in these results. However, these quotes will be sanitized to remove any identifying information before any publication or presentation.   This data may be used for secondary data analysis (i.e., for the purposes of analyses not described in this letter).

Representatives of the University of Western Ontario Non-Medical Research Ethics Board may request access to your study-related records to evaluate the conduct of research. Electronic data will be kept on encrypted drives for a minimum of seven years.

This study employs three third-party platforms to collect data: (1) Qualtrics; (2) Zoom; and (3) nVivo Transcription. Privacy policies can be found online for each respective platforms:

Qualtrics:
        https://www.qualtrics.com/privacy-statement/

Zoom:
        https://zoom.us/privacy

nVivo Transcription:
        https://help.mynvivo.com/nvtranscription/Content/NVT_data_security.htm

Western's Qualtrics server is based in Ireland. Western's Zoom server and the nVivo Transcription server are both located in Canada.

What are the benefits associated with participating in this study?
If you choose to participate in this study, you may benefit from having the opportunity to give voice to your lived experience with concussion symptoms and screen use in an open, non-judgmental context.

Other benefits to society may result from this study. It is hoped that this research will bring increased awareness to post-concussion syndrome. It will help to expose how this condition affects young adults' screen use in both negatively and positively perceived ways. Expert stakeholders might consider updating formal suggestions that could arise from a study like this one to reflect an increasingly digital landscape. Additionally, other health actors, like clinicians, who looking are looking to use social media to share concussion information, could reference a study like this one to inform their practices.

What are the costs and compensations associated with participation?
As compensation for your participation in the interview, you will receive an electronic $20 gift card to Amazon.ca. You will only receive this compensation if you are selected to participate in the interview.

Do you have to be in the study?
You do not waive any legal rights by participating in this research study. Your participation in this study is voluntary. You may refuse to participate, decline to answer any questions, and you may withdraw from the study at any time. You may also withdraw your data from the study up until the time when data analysis begins by emailing Dr. Johnson directly.

You consent to participate by completing this survey.

If you have any questions about your rights as a research participant, or the conduct of this study, you may contact:

The Office of Human Research Ethics
(519) 661-3036 or (844) 720-9816
ethics@uwo.ca

This letter is yours to keep.

Appendix F: Semi-Structured Interview Guide

Exploring the relationship between screen sensitivity and social media usage among young adults who have sustained a concussion

Main Research Questions
What is it like for concussed young adults to use screens and social media as they:
(a) attend to their online identities and obligations (e.g., relational upkeep, school)?
(b) obtain information on the Internet about current concussion management strategies to aid their recoveries?

Interview Guide
- Can you tell me about your concussion injury?
  - Additional prompts:
    - When did it happen?
    - What has the response been of friends/family/classmates/teammates?

- Tell me about the symptoms you experienced with your concussion
  - Additional prompts:
    - How long did they last?
    - Which ones persisted?
    - How did they change over time?
    - What was the general impact on your life?

- What types of screens (e.g., cellphone, television, computer, etc.) do you use?
  - Has the type of screens that you use changed since your injury? If so, how?

- How often do you use screens?
  - Has this frequency changed since your injury? If so, how?

- Describe which social media platforms you use.
  - Has this changed since your injury?
  - What do you use these platforms for? (e.g., Do you use them to connect with friends and colleagues?)
  - When do you use social media? Is there a pattern to your use?

- How do you feel about your social media use?
  - Describe any attempts to remove yourself from screens for prolonged periods of time (ranging from greater than an hour to days and even weeks/months).
  - How do you think your social media use compares with your peers, in terms of time spent?
  - Do most of your peers use social media in a way that is similar to the way that you use social media?

- Do you consider yourself to have an online identity (i.e., maintaining a consistent presence on social media platforms)?
    - Tell me about your online identity (Alternatively: How you do view it? What does it mean to you?)
    - How do you maintain your online identity?
        - Can you maintain your online identity without screens?
    - Has this online identity changed since your injury? If so, how?
        - How does this change make you feel?

- Traditionally, concussion guidelines encouraged a period of "cognitive rest," where patients would remove themselves from screens until symptoms started to resolve: Have you heard this term used in clinical settings in relation to your recovery? Describe your experiences.
    - Do you feel like your relationship with social media has been taken into account in relation to screen use guidelines you may have encountered?

- In what places have you sought information to aid your recovery (e.g., from clinicians such as physiotherapists, occupational therapists, and physicians, and from social media and online platforms such as Facebook, Instagram, Twitter, and Reddit)?
    - How have these different sources of information changed your behaviour to aid in your recovery?
    - What do you feel are the benefits to accessing online concussion information?
    - What do you feel are the risks to accessing online concussion information?
    - How has accessing online concussion information affected your relationship with traditional clinicians?

- Are there any other areas you wish to discuss relating to concussion and the use of screens and online platforms?

NOTE: To extend the discussions, I responded to answers by asking variations of "What is/was this like?" or "Can you describe a recent or vivid memory relating to this?"

Curriculum Vitae

Name:
Elise Purdy

Post-Secondary Education and Degrees:
University of Western Ontario
London, Ontario, Canada
MHIS

University of Western Ontario
London, Ontario, Canada
BA (Hons)

Related Work Experience:
Graduate Proctor
University of Western Ontario
2022-2023

Graduate Teaching Assistant
University of Western Ontario
Winter Semester and Fall Semester, 2021