

Everyday Digital Emotion Regulation on Social Media: Exploring the Use of Platform Affordances to Support Subjective Well-Being



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Abstract

There has been sustained public and academic concern about the emotional effects of social media on its users. While platforms have focused on removing content that is illegal or harmful at scale, the emotional impact of social media at the individual level remains largely unaddressed. Recent research shows that users experience harm in highly subjective and context-dependent ways, yet platform tools for managing this remain generalised and insufficiently adaptable.

This thesis brings together insights from media effects research and emotion regulation theory to examine how users manage subjectively harmful experiences on social media, and how platform design might better support them in doing so. A mixed-methods approach was used across several studies, each engaging with a different user population and platform context. This was not done to compare user groups directly, but to demonstrate that the lack of customisable, user-centred moderation tools is a systemic issue affecting a wide range of users.

Chapter 4 presents findings from a national survey examining the relationship between media exposure, psychological disposition, and emotional harm during the COVID-19 pandemic. Whilst the Differential Susceptibility to Media Effects Model helped explain variation in responses, it also highlighted the complexity of measuring media harm at scale. Chapter 5 draws on qualitative interviews with survivors of sexual assault to examine how they experience and attempt to manage social media post-trauma, showing a need for more flexible, trauma-sensitive affordances. Chapter 6 focuses on women researchers using Academic Twitter, exploring the emotional effects of comparison and the strategies users employ to manage them, often in the absence of helpful moderation tools. Finally, Chapter 7 builds on the findings of Chapter 6 with a follow-up survey and prototype design study that explores user evaluations of a set of emotion regulation-informed moderation tools. These tools were positively received, particularly for their flexibility and alignment with users' own emotional coping strategies.

Together, these studies show that users are not passive recipients of content but active agents in managing their emotional experiences online. However, current platform designs rarely support this reality. By drawing on both the Process Model of Emotion Regulation and the Differential Susceptibility to Media Effects Model, this thesis offers a new framework for thinking about how digital platforms might

better support emotional well-being. It contributes to the growing field of digital emotion regulation by arguing for moderation tools that are not only scalable, but sensitive to individual differences and user-defined needs.

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List of Abbreviations

ALM	All Lives Matter
API	Application Programming Interface
BLM	. . . . .	Black Lives Matter
CCF	. . . . .	Content Curation Features
COVID-19	. . .	Coronavirus Disease, 2019
CR	. . . . .	Cognitive Reappraisal
CSCW	. . . . .	Computer-Supported Cooperative Work
CSEA	. . . . .	Child Sexual Exploitation Content
CUREC	. . . . .	Central University Ethics Committee
DSCT	. . . . .	Digital Self-Control Tool
DSMM	. . . . .	Differential Susceptibility to Media Effects Model
DT	. . . . .	Distress Tolerance
EER	. . . . .	Extrinsic Emotion Regulation
EMA	. . . . .	[Ecological Momentary Assessment
ER	. . . . .	Emotion Regulation
FOMO	. . . . .	Fear of Missing Out
GDPR	. . . . .	General Data Protection Regulation
HCI	. . . . .	Human Computer Interaction
IGB	. . . . .	It Gets Better
JISC	. . . . .	Joint Information Systems Committee
NHS	. . . . .	National Health Service
OSA	. . . . .	Online Safety Act
OSB	. . . . .	Online Safety Bill
oSEM	. . . . .	online Sexually Explicit Material
PAM	. . . . .	Personal Account Moderation

PMT	Protection Motivation Theory
PCA	Principal Component Analysis
PCM	Personal Content Moderation
PD	Participatory Design
PM	Personal Moderation
PTSs	Post-traumatic Stress Symptoms
PTSD	Post-traumatic Stress Disorder
RD	Relative Deprivation
RF	Random Forest
RFR	Random Forest Regression
RFC	Random Forest Classification
RTA	Reflexive Thematic Analysis
SA	Sexual Assault
SM	Social Media
SMU	Social Media Use
SNS	Social Network Site
SWB	Subjective Well Being
TA	Thematic Analysis
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
UCD	User Centred Design
UGC	User Generated Content
UI	User Interface
UK	United Kingdom
UX	User Experience

1

Introduction

In 1790, Johann Wolfgang von Goethe published his most enduring novel, *The Sufferings of Young Werther*. At the story's close, Werther, the protagonist, kills himself after realising that his love interest, Charlotte, does not return his feelings. The novel became an immediate sensation across Europe and the United States, particularly among young adults [1]. However, the book's success was tinged with public malaise: Reports of young men completing suicide as a result of reading the book spread, alarming authorities to the point where it was banned in multiple cities across Europe. For decades after the book's publication, news outlets ran stories of young men and women found dead, presumably having completed suicide, holding a copy of the book. Yet, historical research on the matter has found that, while there were a small number of suicides associated with the novel, there is no evidence that an epidemic of suicides ever took place [1].

In the 1970s, David Philips coined the term 'the Werther Effect' to refer to media-induced imitation effects of suicidal behaviour: "after stories about suicides had been published in the New York Times, their number rose significantly" [2, p.1]. Since then, academic views on the matter have been mixed: Some studies conclude that media coverage of high-profile suicides is associated with increases in the suicide rate. In other studies, such coverage acts favourably, discouraging vulnerable individuals from engaging in mimicry [2]. Who is hurt by such content,

and who is helped? The question has yet to be settled but evidence indicates that vulnerable adolescents are at higher risk [2]. In response, most media providers over the last five decades have implemented guidelines on how to report suicides and depict them in fictional content, and social media platforms either ban or restrict content depicting or encouraging suicide.

Despite its 18th-century origins, the Werther Effect remains topical today. Every new and popular form of media inevitably draws the attention of researchers, reporters, and regulators alike. Research is conducted, concerns are raised, and changes, whether regulatory or technological, are discussed and implemented. Subsequently, a newer popular media emerges, and the cycle begins again [3]. We are in the midst of such a cycle today, with public narratives about the harms of social media dominating headlines for nearly twenty years and prompting substantial research about the positive and negative effects of different social media content on users.

Currently, social media platform design and governance do not reflect the subjective experience of media use. Unless the content is illegal, social media services are free to dictate what content is restricted or banned (e.g., content encouraging suicide) from their platforms and enforce them as they see fit. If individual users wish to manage their exposure to any other forms of content, they are only *afforded* a limited suite of personal moderation (PM) tools, such as blocking, muting, or unfollowing, to do so. However, research suggests that subjectivity plays a far larger role in experiences of harmful content than the limited suite of features available to users can address.

Many large-scale studies indicate that social media use undermines well-being, others indicate that it has no impact, and others observe a positive effect. This has led to heated debates among researchers, with a variety of conclusions regarding what measures are effective for harm mitigation and for whom [4–8]. The discrepancy in research findings is explicable, in part, by the heterogeneity of the study populations involved and in part by the important role of subjectivity in media use: Media effects theories posit that individual differences strongly determine a media’s psychological

and emotional effects on users. It follows that whether an individual experiences psychological or emotional harm associated with social media use is highly subjective [9], and media effects research has accordingly trended towards studying smaller and well-defined subgroups to better understand how users are affected by media use [10].

While research on the well-being implications of social media use progresses, the emergent human-computer interaction (HCI) sub-field of digital emotion regulation (ER) has begun to examine how users strategically use social media to manage subjective well-being in everyday life [11] and focus on the appropriation of technology to regulate emotions in ways that the platform designers did not necessarily intend [11, 12]. For example, a person may watch a cat video on YouTube to boost their mood or scroll through their Twitter feed as a distraction when feeling anxious about an impending deadline [13]. However, the field has yet to explore how individuals strategically appropriate social media *tools* at their disposal to regulate unwanted emotional responses to social media *use*.

Thus far, social media has been the target of two different research viewpoints, either examining the effect of social media or looking at its use in ER. These approaches have not yet been used in conjunction with one another to explore (1) if and how individuals use social media as a technology to deliberately manage the subjectively harmful effects of interacting with its content and (2) what the implications of that understanding might mean for the future of social media platform design. This thesis aims to provide such a combined perspective in exploring the following research question: How can understanding users' subjectively harmful social media experiences inform the future of platform affordance design?

This thesis adopts a deliberately wide-ranging approach, examining different populations across varied platforms and contexts to investigate whether the challenges users face in regulating subjectively harmful content reflect a broader structural issue, rather than being isolated to specific platforms, content types, or user groups. Platforms are not currently designed to recognise or support the nuanced emotional experiences of their users. By examining diverse user groups, including individuals experiencing pandemic-related distress, survivors of sexual assault, and women

navigating professional pressures on Academic Twitter, this research highlights that the emotional strain of social media is shaped by individual context, yet consistently exacerbated by a lack of flexible, user-centred moderation tools.

Each of these populations encounters harm in different ways and for various reasons, but a shared theme emerges: existing platform moderation tools are too blunt, too static and too generalised to address their needs. These studies collectively reveal that emotional self-regulation in digital environments is often unsupported. This is not because users lack strategies but because platforms fail to offer affordances that are customisable, context-aware or sensitive to individual differences. Therefore, the cross-contextual approach of this thesis serves not to directly compare these populations but to illustrate the breadth of this gap in platform design. The need for greater user agency in managing emotional exposure on social media is not an isolated demand. It is a systemic design challenge that cuts across experiences, identities and platforms.

This approach was realised through four research questions:

- RQ 1: Can differential susceptibility factors predict a decline in subjective well-being for a specific category of social media content?
 - RQ 1.1. Accounting for post-traumatic stress disorder (PTSD) risk factors, are either active or passive use associated with COVID-19-related post-traumatic stress symptoms among adults who do not have direct experience with COVID-19?
 - RQ 1.2 What information can be gleaned about the role of individual differences in the relationship between media use variables and the development of post-traumatic stress symptoms (PTSs)?
- RQ 2: How do users adapt their social media use to manage the effects of subjectively harmful social media use?
 - RQ 2.1. How do survivors describe distressing changes to their social media experience in the wake of sexual assault?

- RQ 2.2. How do users adapt their use of social media to manage exposure to distressing reminders of their sexual assault?
- RQ 3: What ER strategies do users engage with to manage emotional responses to subjectively harmful content?
 - RQ 3.1 How do women researchers regulate emotional responses to contrasting upward social comparison on Academic Twitter?
 - RQ 3.2: How do women researchers engage with personal moderation tools to support ER processes?
- RQ 4: What design changes should be incorporated into curation features to support the regulation of unwanted emotional responses to ambiguous content?
 - RQ 4.1: Amongst women researchers who engage with Academic Twitter, what are the most prevalent emotion regulation strategies, appropriated PM tools for ER, and desired platform changes to support ER?
 - RQ 4.2: How might the intentional inclusion of digital ER intervention design principles support user digital ER processes for Academic Twitter users?

In addressing these research questions, my investigations are restricted by the following:

- I exclusively focus on experiences of subjective harm among adults
- I examine the research questions through the lens of micro-level media effects theory, thereby basing the inferences on observations of individuals and small subgroups [14].
- I predominantly focus on norm-compliant social media content and use. That is, content that does not violate platform guidelines or community standards [15].

- I focus exclusively on content moderation tools provided by the platforms. This excludes third-party browser extensions or digital self-control apps.

This thesis is structured around examining user interactions with social media platforms in increasingly narrow contexts to delve into this exploration.

I begin by investigating if and how information about the role of individual differences can play at a population level, then examine specific subgroups that share specific traits (i.e., similar individual difference traits), and conclude with work that focuses on the individual.

- Chapter 2 provides background theory from multiple disciplines, providing the necessary context for the remainder of the thesis.
- Chapter 3 provides an overview of the methods applied in the present thesis.
- In Chapter 4, I use random forest regression and classification to examine associations between types of social media use, individual differences, and harmful outcomes by examining the relationship between COVID-19-related media use and symptoms of trauma.

This chapter draws on the Differential Susceptibility to Media Effects Model (DSMM) to explore how individual, dispositional, and contextual factors predict subjective experiences of harm at a population level. However, as discussed in the conclusion of that chapter, the variability of the findings, particularly regarding active and passive social media use, highlights the limitations of drawing solely on the DSMM to fully understand how users manage these experiences. Consequently, while the DSMM frames the role of individual differences in media effects, the remainder of the thesis also draws on the Process Model of Emotion Regulation (ER), which enables the investigation of how users attempt to manage and regulate emotional responses to subjectively harmful content. By integrating ER theory, later chapters focus on how users engage with or struggle to use existing platform affordances to regulate their experiences, moving beyond susceptibility to consider coping and emotion regulation strategies.

- Chapter 5 examines how a significant in-person change affects media use and the strategies engaged with to manage the effects of that change. I explore the role of individual context as dimensions of differential susceptibility play in investigating how subgroups of individuals cope with unwanted emotional responses to reminders (triggers) of trauma on social media and their perceptions of how platforms afford or constrain their ability to effectively regulate their emotional responses to content that they find triggers trauma memories. I collect Reddit threads from major public subreddits discussing social media triggers of trauma across sexual assault, rape, post-traumatic stress disorder, and complex post-traumatic stress disorder using the Pushshift application programming interface (API). I then apply thematic analysis to better understand the effect of trauma on a subgroup of individuals with respect to social media use.
- Chapter 6 investigates how users who engage in social comparisons in the course of social media use regulate unwanted emotional responses to subjectively harmful content, and how they engage with platform tools to do so. To explore this question, I conducted thirty-one semi-structured interviews with female researchers to explore how they use social media platform tools to regulate their emotional responses to Academic Twitter.
- In Chapter 7, I adapt the findings from chapter 6 into a survey to better understand how the qualitative findings apply to women researchers who use Academic Twitter. Based on those findings and informed by the thematic analysis from chapter 6, I design high-fidelity prototypes for personal moderation tools that incorporate digital emotion regulation design components and engage target users in their evaluation.
- Chapter 8 discusses research findings, implications, and avenues for future research.
- Chapter 9 concludes this thesis.

1.1 Contributions

This thesis furthers the field of digital well-being and ER by providing the following contributions:

- A quantitative analysis of individual features associated with PTSs among adults who interact with subjectively harmful social media content (COVID-19 content).
- A qualitative study investigating how survivors of sexual assault adapt their social media use in the wake of sexual assault.
- The first qualitative study of how women researchers regulate unwanted emotional responses arising from contrasting upward comparisons in the course of Academic Twitter.
- Design recommendations for personal moderation tools that support ER process for user empowerment.

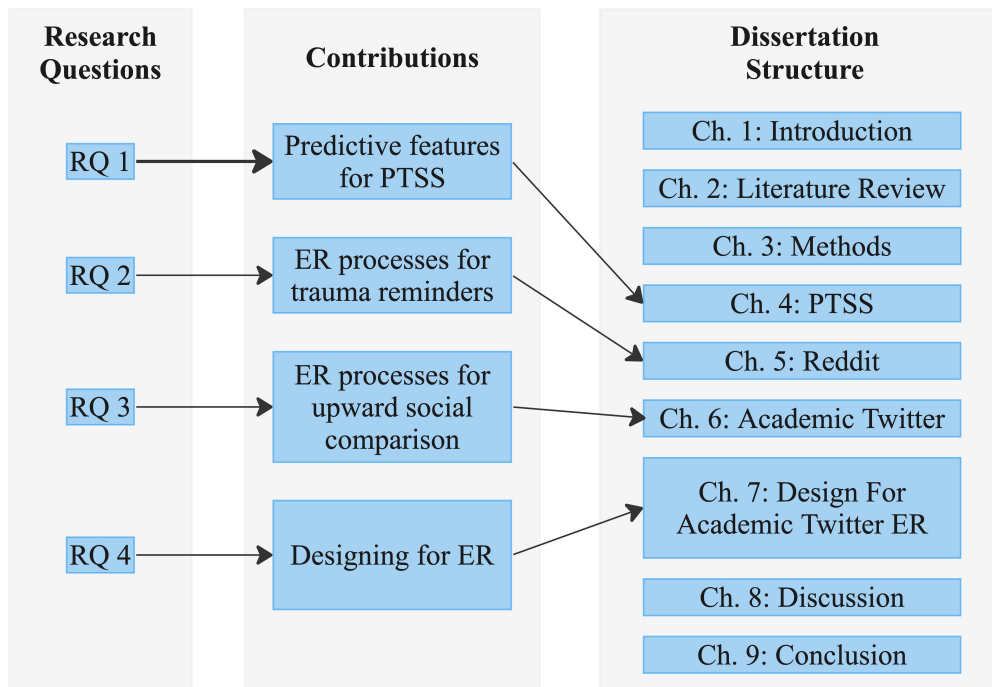


Figure 1.1: Thesis Structure

2

Literature Review

This literature review provides an overview of the relevant theoretical research on the importance of context and individual differences. Given the vast and multifaceted nature of the subject, there is little over-arching background material that pertains to the entire thesis.

2.1 Social Media

2.1.1 Defining Social Media

The term social media has been used to describe a range of online platforms ranging from social network sites, blogs, video-sharing websites, and more. As a result, a broad set of definitions for the term have emerged across disciplines to describe this amorphous set of communication technologies. The term warrants further clarification for this thesis.

Some research treats social media and social network sites as interchangeable, while others define social media in terms of affordances or message construction. Boyd and Ellison's (updated) oft-cited definition is:

social network site is a networked communication platform in which participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-level data; 2) can publicly articulate connections that can be viewed and

traversed by others; and 3) can consume, produce, and/or interact with streams of user-generated content provided by their connections on the site" [16, p.158].

This definition of social network sites (SNSs) has often been erroneously applied to social media, leading to imprecision in some of the literature around social media [17].

Putting the 'Social' in Social Media

To elucidate the term "social media", it is key to examine what makes social media 'social' [18]. Sociality is the extent to which an individual tends to associate with others or engage in social interactions. As an individual understanding of sociality is inherently subjective, so too are perceptions on the extent to which different social media are 'social' [18]. This leads to a wide range of possible operationalisations of the term across disciplines [17–19].

This thesis will adhere to Carr and Hayes' definition that captures the multi-dimensionality of social media without being overly-restrictive:

Social media are internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others [17, p. 50].

This definition presents several advantages: It suggests that in order for users to consider a medium social, it is a prerequisite that they perceive it as affording interaction, regardless of whether it actually does; it's technologically neutral; it is not discipline specific; it is not so broad that it could easily be applied to other means of communication, such as SMS or email [17, 18].

2.1.2 Affordances

James Gibson originally developed the concept of affordance in the context of ecological psychology to designate all kinds of action possibilities latent in the physical environment. His principal argument was that organisms do not perceive the environment objectively but rather perceive it through the possibilities of action

it provides them [20]. For instance, fire can provide warmth and light, but it can also injure. The line between warmth and injury depends on the specific organism's ability to detect the limit. Fire's affordances are therefore defined in terms of its relationship to a specific organism. [21].

Donald Norman later redefined affordances in the context of design as "the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used" [22, p.9]. When this concept was taken up in the field of Human-Computer Interaction (HCI), however, its interpretation became far less consistent. As McGrenere and Ho observe, the incorporation of affordances into HCI introduced "some inherent ambiguities," which have contributed to widely varying usage of the term in the HCI literature [23, p.179].

In the context of HCI social media research, platform affordances tend to be conceptualised along two dimensions: a high level (abstract) or low-level (concrete and feature-oriented) [21]. At a high level, social media platforms afford or constrain certain communicative practices in the community of users at large, while also affording or constraining an individual user to perform a certain action [21]. For instance, at a high level, Twitter's tweet feature affords users the ability to communicate with others on the platform, while the 280-character limit constrains the length of the communication itself. At a low-level, Twitter's blocking feature affords the user the ability to avoid unwanted content produced by the account they have blocked, but it also constrains their ability to see any other content generated by that account.

This thesis explores how users appropriate, or don't appropriate, platform content curation features to support emotional responses to content by analysing participant disclosures about their interactions with social media. As such, this thesis adopts McVeigh, Schultz, and Baym's conceptualisation of vernacular affordances [24]. Vernacular affordances describe "how people themselves understand affordances in their encounters with technology" [24, p.1]. This approach understands affordances from user discussions about their interactions with the technology, deriving affordances from a more "vernacular" understanding provided by users themselves,

who may prioritise different aspects of the platform’s capabilities in other ways than what the designers intended [24].

2.2 Platform Moderation

In the early days of social media, platforms such as Facebook and YouTube relied on relatively small review teams to moderate their content in accordance with limited rules and policies [25]. As public pressure to remove offensive speech mounted, platforms developed more sophisticated and automated systems to support their moderation efforts. Most large platforms now deploy automated site-wide filters to swiftly remove obviously inappropriate posts, such as child sexual abuse and exploitation (CSAE) content and employ large numbers of human moderators to evaluate more ambiguous content [26, 27].

2.3 Personal Moderation Tools

In the context of social media, content moderation involves the structured governance of user-generated content by a social media platform, with the principal objective of mitigating the harmful effects of content, as defined by the platform [28].

Because this top-down approach does not account for cultural, communal, and individual differences in perceptions of harm, platforms provide users with what Jhaver et al. [29] classify as personal moderation tools:

Personal moderation (PM) tools are low-level platform affordances that enable users “to configure their preferences for an activity they want to avoid” [29, p.6] These tools can be separated into two broad categories:

- Personal Account moderation (PAM) tools enable users to avoid future interaction with an account through muting or blocking.
- Personal Content Moderation (PCM) tools enable users to configure or customise certain aspects of their moderation preferences based on specific characteristics of the posts they encounter. These adjustments are specific to individual users and only apply to their accounts. Examples of such tools

include toggles or word filters to screen out particular phrases specified by the user.

Both categories of tools can be employed to manage exposure to norm-violating and norm-compliant content. ***Norm-violating content*** refers to material that breaches a platform’s or online community’s standards. While the exact definition of norm violation varies across platforms, it generally includes topics such as misinformation, misogyny, homophobia, hate speech, child sexual exploitation and abuse content, harassment, and threats of violence [15, 26]. In contrast, ***norm-compliant content*** refers to material that adheres to the platform’s guidelines and is considered acceptable.

This thesis examines how users engage with PM tools native to social media platforms, which, though not intended for ER, may nonetheless be appropriated for that purpose.

By confining its scope to native platform affordances, this thesis examines types of PM tools relatively common across social media platforms (e.g. muting and blocking), thus shedding light on how users engage PM tools, or not, for ER purposes. This approach aims to expose gaps in platform support for users’ subjective well-being and highlight areas of untapped potential for more flexible, user-centred platform design.

The research also deliberately excludes third-party moderation tools for individual users or governance frameworks for content moderation. Such tools require varying levels of user skill to implement and use, ranging from simple browser extensions [30] to frameworks that requiring programming skills to implement [31]. Focusing on native platform tools allows for an examination of what is generally available to the majority of social media users. Including third-party tools would shift the focus away from user practices that emerge organically from universally accessible platform tools and conflate them with intentional design interventions that may not be available to all users.

The majority of research on content moderation has focused on the tools and practices employed by individuals acting as community-wide moderators. Yet, there is a dearth of research on user preferences and design considerations for PCM tools.

Jhaver et al. [29] explored end users' perspectives on PCM tools aimed at reducing exposure to offensive content, such as hate speech. Through a series of design probes presented to 24 interviewees, the researchers examined reactions to various potential tool features. Participants expressed a preference for tools that are context-sensitive, user-friendly, and transparent in their functionality. Notably, fear of missing out (FOMO) made users wary of overly aggressive moderation. The authors concluded that future moderation tools should balance safety with user values and needs, while remaining sensitive to context and competing priorities.

In a survey of 984 adults in the USA, Jhaver et al. [28] examined user preferences for platform-wide moderation in contrast to user-controlled, personalised moderation tools to regulate three categories of platform norm-violating content. Hate speech, sexually explicit content, and violent content. Their findings indicated that perceived negative effects of norm-violating content on others were negatively associated with a preference for personal moderation settings. In contrast, support for free speech was positively associated with this preference across all speech categories. These results underscore the need for platform governance initiatives to consider both actual and perceived media effects of norm-violating speech categories to enhance user satisfaction. Furthermore, their findings suggest that users perceive personal moderation tools not as restricting others' freedom of speech but as a means to assert greater control over their social media content.

The research conducted provides valuable insights into user preferences for personal moderation tools in managing exposure to content that violates platform norms. However, the extant research has not addressed the use of PCM tools to limit exposure to contextually harmful content for the purposes of ER.

2.4 Differential Susceptibility to Media Effects Model (DSMM)

Media effects, "are the deliberative and non-deliberative short- and long-term within-person changes in cognition, emotions, attitudes, beliefs, physiology, and behaviour that result from media use" [14, p.222].

Media use is a broad term that encompasses the use of media types (e.g., social media), the consumption of content that media type conveys (e.g., cat videos) and the technology used to deliver the content (e.g., social media platforms). Media effects research is spread across many disciplines, utilising different definitions, methods, and frameworks.

Valkenburg and Peter's Differential Susceptibility to Media Effects Model (DSMM) acts as a theoretical framework to organise and reconcile media effects research by providing conceptual coherence regarding the roles of, and relationships between, different types of variables [14]. The DSMM provides the necessary structure to identify and understand the variables that predict, moderate, and mediate how individuals are affected by content media use on social media [32–35].

Media effects have three key features: They are conditional, transactional, and indirect. Figure 2.1 is a visualisation of the roles and relationships between individual difference variables, media use, response states, and media effects [35].

2.4.1 Conditional Media Effects

Media effects are conditional. They depend on three types of differential susceptibility variables, which act as predictors and moderators of media use. These 'differential susceptibility' variables are dispositional, developmental, and social and are measurable prior to media use. Proposition 1 of Figure 2.1 depicts the role of differential susceptibility variables as predictors of media effects.

As moderators, differential-susceptibility variables can obscure the relationship between media use and effects [14, 36]. Furthermore, the effects of media use may be difficult to detect because the nature of the relationship between the media use variable and the outcome variable differs depending on the strength of the

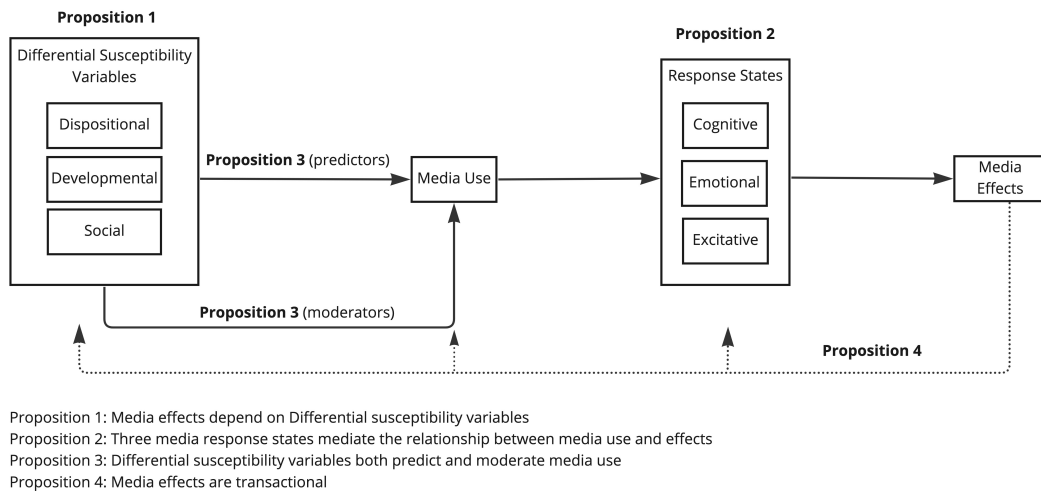


Figure 2.1: Differential Susceptibility to Media Effects Model. Adapted from [14]

moderating differential-susceptibility variable. Proposition 3 of Figure 2.1 depicts the role of differential susceptibility variables as moderators of media use.

Dispositional variables are the person-based traits that predispose the individual's choice and responsiveness to media [14]. Dispositions such as gender, identity, temperament (e.g., neuroticism), identity, and moods (e.g., sadness, happiness) have been shown to predispose media use.

Some dispositions, such as personality and intelligence, are relatively stable (though not unchangeable), while others, such as temperament and motivations, are *transient*, fluctuating over time depending on circumstances. Both transient and stable traits are relevant to determining media use and effect. Research has shown that individuals tend to seek out media that aligns with their disposition [14].

Development, or age, is one of the most important predictors of media use and preferences. Toddlers, for example, typically prefer media with a slow pace, familiar contexts, and simple characters [36, p.39]. Young children evolve rapidly to prefer fast-paced content involving complex characters, and adolescents gravitate towards heavy use of social media and content involving irreverent or risky behaviour [36, p.39].

Social variables are the contextual and social influences that affect users on micro (for example, family, peers), meso (school, church), and macro levels (cultural norms and values)[14, 37]. For example, at a micro-level, parents can forbid or stimulate exposure to certain films or games. At a meso-level, schools can shape the media that users are exposed to through their curricula. At a macro-level, governments can set policies and standards for content-permissibility on public broadcast (e.g. restrictions on nudity and violence).

2.4.2 Transactional

Media effects are transactional: They have a reciprocal causal effect on response states, media use, and differential susceptibility variables [14]. For example, media use may influence a user's response state, which in turn may guide their subsequent media use, potentially creating a reinforcing spiral [38]. Similarly, media use may alter a user's personality over time (i.e., differential susceptibility)[39], thus affecting the type of content consumed (i.e., media use) the medium used, or the intensity/frequency of use [14]. Proposition 4 of Figure 2.1 represents the transactional role of media effects.

2.4.3 Indirect

Cognitive, emotional, and excitative response states are the intervening (mediating) variables that provide the causal link between media effects and media use. These response states occur during media use, potentially mediating other effects [14]. Proposition 2 of Figure 1.2 represents how response states mediate the relationship between media use and media effects.

Per the DSMM, a cognitive response state is the level to which media users selectively attend to, and invest cognitive effort in, understanding and processing media content. The cognitive aspect of empathy (e.g., taking someone's perspective), counter-arguing and absorbing narratives (e.g., rejecting or accepting persuasive arguments), or understanding the content of a social media post, are examples of cognitive response states [14] [38].

An emotional response state includes positive and negative emotional reactions to media content, feelings of sympathy and the emotional aspect of empathy (i.e., experiencing the emotions of an individual in the content)[14].

Finally, an excitative response state refers to the level of physiological arousal that an individual experiences in response to media [14].

Differential susceptibility variables provide the *context* for media use, including social media. Context is "the interrelated conditions in which something exists or occurs "[40], signifying that it is defined in relative (rather than absolute) terms and includes all circumstances surrounding a given process. Interactions between the many dimensions of context are essentially infinite and exceedingly difficult to account for on a large scale.

2.5 The DSMM in Practice

The DSMM has been applied to both qualitative [10]and quantitative [41] research. In the qualitative context, it has been used to structure research investigating the relationship between the interactions between users, media use, and media effects. In the quantitative context, it is used to guide variable selection and analysis.

For instance, van der Wal, Valkenburg, and van Driel used the stages of the DSMM as a guide for an interview study that aimed to enhance their understanding of individual differences in adolescents' reasons for using social media, their approaches to managing mood related to social media, and the effects of social media use (SMU) they experienced [10]. Conducting eight focus groups with 55 adolescents aged fourteen to seventeen, they found that there was substantial homogeneity in adolescents' motives for engaging with social media but heterogeneity in the moods that predicted SMU, their emotional reactions to SMU, and the effects they reported as a result of their SMU [10]. The authors, one of whom is the creator of the DSMM, called for greater focus on the use of the DSMM in qualitative work in order to assess the antecedents and consequences of user's social media activities as understood by the participants themselves. To this author's knowledge,

no published qualitative studies have used the DSMM to investigate adult users' social media use in relation to their well-being.

The DSMM is most commonly applied in studies of media use among children and young adults [41]. Furthermore, it is infrequently applied in instances where adult well-being is the stated outcome (media effect variable) and the type of media in scope is social media.

Charig et al. [42] applied the DSMM to examine the relationship between online sexually explicit material (oSEM) exposure (all content that could be found online) and four media effect variables: Sexual satisfaction, body satisfaction, sexist attitudes, and mental well-being. Perceived realism of oSEM (i.e., how realistic the portrayal of a sexual experience was perceived to be) was assessed as a potential mediator of exposure-outcome relationships. Family communication about sex and gender were included as possible moderators of any relationships (accounting for perceived realism). Using a convenience sample of cisgender, 252 heterosexual cisgender adults and a cross-sectional questionnaire design, they found no significant direct or indirect relationships between oSEM use and the media effects variables.

In a study focused on social media as the type of media used, Coles et al. applied the DSMM to investigate the interaction between social media expression and issue polarisation around the Black Lives Matter (BLM) and All Lives Matter (ALM) movements [41]. They conducted a survey of 321 adult participants one week before the 2016 U.S. presidential election, applying linear regression to assess the relationship between racial resentment (dispositional variable) and BLM (media effect 1) or ALM support (media effect 2), including social media expression (media use) as a moderator. They found that racial resentment (dispositional variable) moderated the connection between social media expression (media use) and support for racial justice movements (media effect). They found that resentment (dispositional variable) was as a strong, independent predictor of support for both ALM and BLM. Resentment (dispositional variable) moderated the relationship between expression (media use) and support for both ALM and BLM, leading to greater polarisation for ALM and lesser polarisation for BLM. Media expression

(media use) only predicted support for either ALM or BLM among respondents with lower levels of resentment (dispositional variables).

Finally, Zhao & Zhou investigated the link between COVID-19-related social media use and mental health among Chinese college students, using the DSMM for theoretical guidance. They surveyed 512 adult participants to measure social media use, COVID-19 stress, negative affect, and mental health indicators like depression and anxiety. [43] This is, to this author's knowledge, one of the only studies to apply the DSMM to adult participants, using social media and measuring well-being as an outcome variable.

The results indicated that greater social media use was associated with poorer mental health outcomes, particularly for individuals highly exposed to COVID-19 stressors. This was further compounded by negative affect, which served as a mediator between social media use and mental health issues. However, the authors noted that individual characteristics (e.g. neuroticism, specific mental health diagnoses) that had not been measured but might explain the observed associations [43].

The DSMM captures the complex and dynamic relationship between differential susceptibility variables, media use, and media effects well across a variety of contexts. Therefore, it will serve as a guide to structure both the quantitative and qualitative work in this thesis.

2.6 Well-Being

The relationship between the use of digital media and well-being is often referred to as 'digital well-being'. Though the term is commonly used in both public and scholarly discourse about the relationship between social media use and well-being, I will not use it in the context of this thesis. The term has gradually become used as a proxy to measure the negative relationship between screen time and well-being outcomes [19] with the two concepts closely linked in public discourse and by major stakeholders, including tech companies who design and sell digital devices [44]. The term is often used in contexts where a causal and unidirectional effect of device

use/social media use well-being is being examined, which does not align with the objectives of the thesis to explore the dynamic, context-dependent relationships between social media use and individual well-being. As such, the more flexible concept of subjective well-being is warranted for this thesis.

2.7 Subjective Well-being

The concept of subjective well-being (SWB) is rooted in the Greek philosophical schools of hedonism and eudaimonism. Eudaimonic well-being is characterised by an individual's ability to function well psychologically and socially through having a sense of purpose, direction, and the capacity to form positive relationships with close social groups and the wider community [45] [46]. Eudaimonia is distinct from happiness: Eudaimonic theories posit that not all outcomes a person desires or values necessarily yield well-being when attained [47].

Hedonic well-being is generally defined as the attainment of pleasure and the avoidance of pain of positive and negative affect, which may vary significantly depending on an individual's state of mind at any given time, and [47]. In the school of hedonic well-being, subjective well-being consists of an individual's cognitive and affective appraisal of their own life. Rather than selecting a specific definition of subjective well-being, I have adopted Diener et al.'s model of SWB, which he considers "a general area of scientific interest rather than a single specific construct" characterised by (1) higher levels of positive affect, (2) lower levels of negative affect, (3) life satisfaction [48]. Positive and negative affect refers to the affective and emotional aspects of well-being [48]. Life satisfaction is the "global assessment of a person's quality of life, according to his chosen criteria" [49, p.478]. Thus, a person may choose to feel sad (higher levels of negative affect) at a particular moment in time and still contribute to life satisfaction. For example, if an individual chooses to listen to sad music on Spotify after a breakup and feels sad, they may view that step as necessary to feeling satisfied with life in the long run. As such, it is more stable than the first two components (though not necessarily immutable) and highly personal, and incorporates elements of Eudaimonic well-being [50].

According to Diener's model of SWB, there are no set criteria for what constitutes "being well" [50]. Instead, SWB is seen as an experienced state that changes over time and depends on factors inside and outside the person, such as their use of social media. As such, what harms that subjective well-being is equally subjective and context-dependent.

2.7.1 The Relationship Between Social Media Use and Well-being

Social media use has been linked to a range of positive and negative well-being outcomes but, there is no general consensus on the nature or direction of this relationship [3]. For instance, while a number of studies have found associations between amount of social media use and decreased well-being, particularly among adolescent users [51, 52] others have found no longitudinal changes to well-being, either positive or negative outcomes [53, 54]. Furthermore, research on older adults has repeatedly found associations between increased subjective well-being and the use of social media [55, 56]. These inconsistencies in the literature suggest that individual and contextual factors, rather than time spent per se, play a more significant role in determining outcomes [57].

Social media activities are frequently dichotomised into active and passive forms of use in media studies and HCI literature [58, 59]. Passive social media use refers to patterns of behaviour that consist of monitoring the lives of others by viewing their social media content [60] [33]. Active social media use refers to patterns of behaviour "that enable direct exchanges between users" [60], including liking, commenting, sending messages, and otherwise engaging with other users privately (e.g., direct messaging) or publicly (e.g., posting a status update) [58].

Meta-analytic evidence suggests that active social media use is more frequently associated with increases in well-being, while passive use is more frequently associated with decreases in well-being [9, 58].

However, these findings are not universal when examining between-group differences across age and gender, indicating that importating moderating factors

may play a role in the strength and direction of the relationship between type of social media use and well-being [9, 33, 35]: Frison et al. found that chatting with other users on Facebook (i.e., active use) predicted positive affect amongst female adolescents but not male adolescents [33], while that passive use predicted depressive symptoms among girls, while active use predicted depressive symptoms amongst boys [33]. Yet, in another study, passive Facebook use was associated more strongly with positive emotions than negative emotions [61]. These differences suggest that additional factors are at play, influencing how individual characteristics can significantly impact the relationship between social media use and well-being.

The persistence of mixed findings across different operationalisations points to several methodological limitations in the existing literature. Studies have employed inconsistent metrics to measure mental health and well-being outcomes, making cross-study comparisons difficult [14, 62]. Additionally, much research has focused on individual platforms (predominantly Facebook) and narrow age ranges, limiting generalisability [9, 33, 35, 52]. The rapid evolution of social media platforms, with their changing user bases and features, further complicates the validity of the active-passive use dichotomy [4, 9].

These inconsistencies suggest that the relationship between social media use and well-being is highly context-dependent, varying according to factors such as timing, location, individual characteristics, and life circumstances. This recognition has prompted researchers to examine situational and temporal factors that may moderate these relationships.

2.8 Contextual Factors in Affective Responses to Social Media Content

The evidence for context-dependent emotional responses to content is further supported by research demonstrating that situational and temporal factors significantly impact users' affective responses to social media content, providing crucial insights into when and why the same content may be beneficial or harmful to different users. This body of work reinforces the central argument that harm is relational

and emerges from the interaction between content characteristics and contextual factors rather than being inherent to content itself.

Environmental and social contexts play a significant role in mediating affective responses to social media content. Bayer et al. deployed a semi-random ecological momentary assessment triggered by posting activity to examine the immediate context of Facebook use [63]. Their findings revealed that location significantly moderated affective outcomes: Facebook use at home was associated with positive mood changes for brief periods after use, while engaging with the platform away from home (e.g., at work or school) was associated with no change or negative mood changes [63]. This suggests that the social and environmental context of use may be as important as the content itself in determining emotional outcomes, supporting the thesis that seemingly neutral content can become harmful depending on where and when it is encountered.

Individual social circumstances may alter how content is interpreted and experienced. Kim and Fingerma's experience sampling study of 310 older adults residing in care homes found that participants reported more positive mood on days with more social media use and more in-person encounters, but only among participants with small social networks [64]. For those with larger social networks, social media use made no difference to mood, suggesting that social media may complement rather than replace offline social connections among socially isolated individuals [64]. This finding illustrates how the same celebratory or social content may be experienced as supportive by more solitary individuals but as irrelevant by those with active offline social lives.

Finally, there is some evidence that biological rhythms influence how content is perceived and processed. Dzogang et al. analysed 800 million tweets over four years and identified consistent circadian patterns in mood expression, with more positive sentiment expressed in the morning and greater negative emotions expressed at night [65]. Building on this work, Castaldo et al. found that these sentiment patterns remained consistent even during major external disruptions, such as COVID-19 lockdowns, suggesting that biological factors significantly influence

how social media content is experienced and expressed [66]. These findings indicate that the timing of social media use throughout the day may be as important as the content consumed; Inspirational content encountered during vulnerable evening hours may be more likely to trigger negative social comparison than the same content viewed during optimistic morning periods.

These contextual findings provide support for understanding why seemingly positive content can become harmful depending on when, where, and by whom it is encountered. They demonstrate that effective approaches to supporting user well-being must account for the complex interplay between content characteristics and contextual factors rather than treating emotional responses to content as universal or static.

2.9 Subjective Experiences of Social Media Content-Based Harm

Exploring Beyond Norm-Violating Content

The mixed and context-dependent findings in social media and well-being research highlight the importance of understanding harm as a subjective experience that extends beyond the effects of norm-violating content. Traditional approaches to content moderation focus primarily on content that violates platform policies, such as explicit hate speech, harassment, or misinformation [15, 26]. However, this approach fails to capture the full spectrum of content that users may experience as harmful to their well-being. Harm is a nebulous concept that has been inconsistently operationalised across disciplines [67] and within HCI research [68]. In computer-supported cooperative work (CSCW) and HCI research, online experiences of safety and harm have become significant areas of focus, with researchers generally adopting contextual definitions that allow users to determine for themselves what safety means to them [68]. This user-centred approach recognises that harm can be broadly conceptualised as something that "can be perceived as a risk, injury, or some undesirable outcome" [68], emphasising the subjective and situational nature of harmful experiences. Scheuerman et al. identify three common perspectives in

HCI research used to categorise social media harms: technical, interpersonal, and content-based [68, p.3]. Content-based harms are most relevant to this thesis, as they focus on the negative psychological and emotional impact of interacting with content on social media. Critically, content-based harms may be intentional or incidental: Incidental content-based harm occurs when users are exposed to content that was not intentionally directed at them but still causes distress [68].

A person of colour reading about racial violence [69], women encountering misogynistic content [70], or individuals with eating disorder histories unintentionally viewing pro-anorexia content, might all be examples of incidental content-based harm [68].

2.9.1 The Overlooked Problem of Seemingly Benign Content

Existing conceptualisations of content-based harm primarily focus on content that is explicitly negative, norm-violating, or illegal. This approach represents a significant limitation in our understanding of social media's impact on well-being, as it overlooks a substantial category of content that can cause subjective harm: seemingly positive, inspirational, or celebratory content that appears benign but can negatively impact well-being depending on individual and contextual factors.

HCI and sociological research across multiple types of content and sub-populations provides compelling evidence that content which appears positive or neutral can produce negative well-being outcomes depending on user characteristics and contextual factors. This body of work demonstrates that the relationship between content and well-being is far more complex and individualised than traditional approaches to content moderation assume.

This oversight is particularly problematic because such content is far more prevalent than obviously harmful content and often goes unrecognised as a potential source of distress. Unlike explicit hate speech or harassment, which platforms can remove and users can report, seemingly positive content may cause cumulative harm that builds over time without being attributed to social media use. The

ubiquity of inspirational content, success stories, fitness content, and celebratory posts means that users are exposed to potentially distressing content far more frequently than obviously harmful material.

Furthermore, the subjective nature of the harm caused by seemingly positive content means that different users can have vastly different responses to the same content depending on their individual circumstances, life experiences, and current mental state. Content that inspires one user may trigger feelings of inadequacy, failure, or distress in another, making it impossible to address through traditional content moderation approaches that rely on universal standards of harm.

Celebratory and Inspirational Content

Research on inspirational fitness content, commonly known as "fitspiration," illustrates how ostensibly positive content can produce mixed well-being outcomes depending on individual susceptibility factors. Fitspiration content is explicitly designed to "inspire viewers towards a healthier lifestyle by promoting exercise and healthy food" [71, p.1003]. However, experimental and correlational studies have consistently found associations between fitspiration exposure and decreased body satisfaction, more negative mood, and increased disordered eating behaviours, particularly among women with certain vulnerability factors [71, 72].

The differential impact of fitspiration content is particularly evident in studies that examine individual difference factors. Christensen et al. found that users with low self-esteem or high internalised weight stigma experienced increased negative affect and disordered-eating urges in response to fitspiration content, while those with high resilience or health-oriented motivations remained unaffected or inspired [73]. This finding demonstrates that the same content can have diametrically opposite effects depending on users' psychological characteristics and current life circumstances.

Importantly, users themselves have reported mixed experiences with inspirational content: Raggatt et al.'s cross-sectional survey of 180 fitspiration content consumers

found that participants reported both positive and negative impacts on their well-being from the same content [74]. Positive benefits included increased motivation to exercise and social connection with supportive fitness communities, while negative effects included feelings of inadequacy or failure when unable to achieve portrayed goals [74]. This co-occurrence of positive and negative effects within the same individuals highlights the complex and nuanced nature of content impact.

Similar patterns emerge with body positivity content, which promotes inclusive and positive conceptualisations of body image. While this content generally produces positive well-being outcomes for women, including higher body satisfaction and positive affect [75], Park et al. found that sexual minority men may experience increased body dissatisfaction and reduced positive affect in response to body positivity content targeted towards men [72]. These findings demonstrate that even content explicitly designed to promote positive body image can have negative effects depending on demographic characteristics and identity factors.

The potential negative effects of positive content extend beyond health and body image to encompass celebratory content about personal achievements and successes. Research suggests that inspirational and celebratory content can negatively affect well-being when it invokes social comparison processes, leading to feelings of inadequacy or failure to meet perceived social expectations.

Haimson's examination of "It Gets Better" (IGB) content provides a compelling example of how celebratory narratives can inadvertently cause harm [76]. IGB content promotes the idea that transgender people's lives inevitably improve after transition, presenting an explicitly positive and hopeful message. However, through analysis of 240 Tumblr transition blogs and interviews with 20 transgender bloggers, Haimson found that IGB content negatively impacted well-being among trans people who felt that daily life challenges persisted during and after transition. These individuals experienced "feelings of failure that they were not living up to the narrative, and thus not providing a good example for trans youth" [76, p.8]. This research demonstrates how positive narratives can create unrealistic

expectations that become sources of distress when individual experiences don't align with promoted ideals.

The role of social comparison in mediating responses to celebratory content is further illustrated by research on envy and social media. Krasnova et al. explored how envy arises on Facebook and its impact on users' well-being and behaviour through a survey of 1,193 adult respondents [77]. They found that the most envy-inducing content concerned ostensibly positive life events: travel and leisure activities, social relationships, material possessions, career or academic success, and physical appearance. Importantly, envy was more likely to occur when users compared themselves to similar others, such as peers or friends, especially in domains that were subjectively important to them [77]. This finding suggests that the potential for harm from celebratory content is greatest when it involves social comparison with relevant others in personally meaningful domains.

Dynamic Changes in emotional responses to content

There is some evidence to indicate that perceptions of content may be dynamic: Content that was previously harmless or even positive can become distressing following changes in individual circumstances or life events. This temporal dimension of content-based harm has received limited attention in the literature, but it represents a significant challenge for understanding and addressing the impact of social media on well-being.

Sas and Whittaker's interviews with 24 participants about managing digital possessions after romantic breakups illustrate how life changes can transform the subjective experience of content [78]. Participants described how photos on social media of their former partner, which had previously been sources of happiness and positive memories, began eliciting unwanted negative emotions following the breakup. This transformation occurred without any change in the content itself, highlighting how altered personal circumstances can fundamentally change the emotional impact of social media content.

Similarly, Gak et al.'s exploration of how perceptions of targeted weight-loss advertisements changed over time among members of disordered eating online communities reveals the dynamic nature of content-based harm [79]. Participants described how their past selves would have enthusiastically sought out and engaged with weight-loss ads, viewing them as helpful and motivating. However, during recovery from eating disorders, the same individuals were more likely to perceive identical ads as manipulative and harmful to their health. This shift in perception demonstrates how individual development and changing life circumstances can alter the subjective experience of content over time.

2.9.2 Research Implications

The evidence reviewed above demonstrates that subjective harm from social media content extends far beyond platform-defined violations to include content that appears positive or neutral but can cause distress depending on individual characteristics and contextual factors. This body of research reveals several important theoretical insights and identifies significant gaps in our current understanding.

First, the findings discussed above suggest that subjective experiences of harm are complex and unpredictable, arising from the interaction between content characteristics, individual susceptibility factors, and situational contexts.

Second, the dynamic aspect of content-based harms, wherein previously benign content can become distressing following changes in individual circumstances, highlights the need for more dynamic and personalised approaches to understanding social media's impact on well-being. Current research typically treats responses to content as static, failing to account for how changing life circumstances can alter the subjective experience of social media content.

Finally, the prevalence of seemingly positive content that can cause harm represents a significant blind spot in platform design research. While platforms invest considerable resources in detecting and removing obviously harmful content, the potentially harmful effects of inspirational, celebratory, positive, and perhaps

even neutral content receive minimal attention despite their greater frequency and potential for cumulative impact.

2.10 Rationale for Subgroup Selection

The choice of specific subgroups for investigation in this thesis, COVID-19 content consumers, sexual assault survivors, and Academic Twitter users, is strategically motivated by the need to understand how different types of differential susceptibility factors interact with specific content types to produce subjective harm. Each subgroup represents a distinct context in which seemingly benign, norm-compliant content can elicit emotional harm.

COVID-19 content users : This population was exposed to norm-compliant news content that serves a legitimate public health purpose, but can cause distress depending on individual risk factors and life experience. Examining this population affords insight into how informational content can become subjectively harmful when it intersects with personal vulnerability factors and external stressors.

Sexual assault survivors are a population for whom trauma may alter subjective experiences of previously benign, norm-compliant content, changing everyday social media use into a potential source of distress. This population provides insight into the dynamic nature of content-based harm and how trauma can create new vulnerabilities to seemingly benign content.

Women researchers who use Academic Twitter regularly encounter celebratory and achievement-oriented content that can generate negative emotional responses through social comparison processes, particularly among individuals in competitive professional environments. This context enables an examination of how professional pressures and career concerns can transform inspiring content about academic success into sources of inadequacy and distress.

By examining these distinct contexts, this thesis provides a comprehensive understanding of how subjective harm manifests itself across different types of

content and user populations. Findings from these populations will inform the development of more nuanced and user-centred approaches to platform design, PM tools in particular, to better reflect the complex, subjective nature of social media's impact on well-being.

2.11 Emotion Regulation Theory

Emotions are closely linked to a plethora of social media uses. For instance, people use emotional language and imagery to convey happiness through their social media posts [80]. Other users, in turn, may experience emotions when they view posts made by other users [61, 81].

2.11.1 Emotions

Research literature offers an abundance of definitions of emotion [82]. However, there are two widely agreed-upon features of emotion: (a) it is a response to occurrences that an individual perceives as significant to their personal needs, objectives, or issues; and (b) it involves a combination of physiological, affective, behavioural, and cognitive processes [83]. *Affect* is a high-level term for psychological states involving valuation, "defined as a relatively quick good-for-me/bad-for-me discrimination" [84] that forms two of the three components of SWB [50]. Emotions are more specific negative or positive affective states [84] and thus play an important role in influencing an individual's subjective well-being.

Many approaches to studying emotions exist in contemporary research [83]. However, the present thesis focuses on one specific emotion-related model to explain the relationship between the use of social media platform affordances and subjective well-being.

2.11.2 The Process Model of Emotion Regulation

The process by which an individual shapes their emotions when they occur, or how they are experienced is ER [85]. The concept of ER suggests that emotions

are not something that individuals are passively subjected to, but an experience that can be influenced through situational, cognitive, and behavioural modification [86]. When experiencing an unwanted emotion, individuals can make intrinsic (e.g., changing one’s feelings about a situation) or extrinsic choices (e.g., changing the situation itself) to achieve a desired emotional state. The present thesis focuses on the process model of emotion.

In the context of this thesis, I will adopt Gross’s process model of ER [87], illustrated in Figure 2.2. Gross breaks down the ER process into two components: Emotion generation and emotion regulation. During the emotion generation stage, the individual encounters an internal (e.g., a memory) or external (e.g., a disagreement with a friend) situation, evaluates it (consciously or unconsciously), and has an emotional response to it [84]. Regulation occurs when the individual evaluates their current emotional state with respect to their goals and decides whether or not to modify them [12]. Emotion regulation proceeds broadly in four steps: Identification, strategy selection, implementation of the strategy, and monitoring.

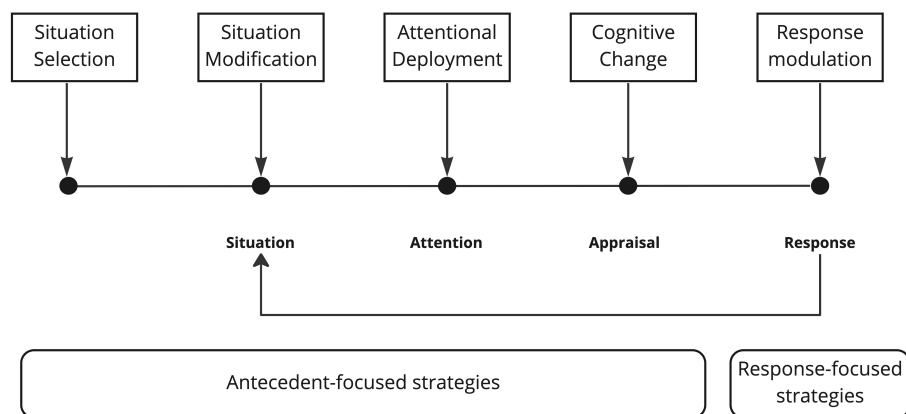


Figure 2.2: Process Model of Emotion Regulation adapted from [85] (with permission)

ER strategies may be either antecedent- or response-focused. An antecedent strategy is implemented when an emotional response is not fully activated (situation

selection, modification, attention deployment, and cognitive change). A response-focused strategy is applied when an emotion is already being experienced (response modulation) [87].

Intrinsic emotional regulation occurs if an individual engages in processes that alter the trajectory of the emotion itself. There are five categories of regulation strategies according to Gross's model: *Situation selection*, *situation modification*, *attentional deployment*, *cognitive change*, and *response modulation*.

Situation selection refers to taking actions to modify the likelihood of finding oneself in a situation that will elicit unwanted emotions before it occurs [84]. Avoidance is a common form of situation selection. For example, one may steer clear of a disagreeable colleague in order to avoid dealing with conflict. While avoidance provides short-term relief, it can become a maladaptive regulation strategy if used excessively, with costs outweighing the benefits in the long-term [88].

Situation modification involves altering an external, physical situation to modify its emotional impact [85]. For example, making a joke in an awkward social situation to break the tension or blocking someone on Twitter to avoid seeing their upsetting tweets in one's timeline.

Attentional deployment involves diverting attention in a given situation in order to alter one's emotional response. A common form of attentional deployment is distraction, which redirects attention within a given situation (e.g. concentrating on a neutral rather than emotion-eliciting aspect of a film scene, or shifting internal focus away from the present (e.g., thinking about fun plans rather than engaging in a frustrating conversation)[88]. In both such cases, shifting one's attention away from emotionally generative aspects of the situation impacts the emotion generative process early, before the emotional states can gain full strength [85].

Cognitive change involves altering one's appraisal of a situation (rather than the situation of itself) in order to modify its emotional meaning [88] [87]. Cognitive change can be applied to alter one's perception of an external situation (e.g., "It is ok that my romantic relationship has ended, it helped me grow as a person") or an internal situation (e.g., "My heart isn't pounding before skydiving because I'm

stressed, it's because I'm excited"). Two common cognitive change strategies are cognitive reappraisal and non-judgemental acceptance of emotion.

Cognitive reappraisal is a type of cognitive change strategy that involves changing the meaning of a situation's emotional impact [88]. Reappraisal may target either the meaning of a potentially emotion-eliciting situation (e.g., "My friend is taking a long time to respond to my message: it must just be because he's busy, not because he's avoiding me"), or its personal relevance (e.g., "This event doesn't directly impact me").

Response modulation occurs late in the emotion generation process, once the emotion is well-developed and refers to directly influencing experiential, behavioural, or physiological aspects of an emotional response. Using substances or relying on deep breathing are commonly used tactics [88]. Suppression, the effort to inhibit an emotional response, is also a common strategy, though it is potentially maladaptive if used excessively [88]

2.11.3 Stress and Emotion

Stress is the "particular relationship between the person and the environment that the person appraises as taxing or exceeding his or her resources and endangering his or her well-being"[89], thus causing a negative affective state [84]. The term 'coping' generally refers to the process of reducing negative emotions, including the emotion of stress, whereas ER is applicable to both up- and down-regulation of both positive and negative emotions [90]

While it is important to distinguish between emotion and stress, there is significant overlap: Where there is stress, there are often emotions, and where there are emotions, even positive ones, there is also stress [91]. Lazarus and Folkman posit that stress, coping, and emotion form a conceptual unit, in which emotion is the superordinate concept including both stress and coping [91]. As such, applying the ER model to situations involving stress is appropriate. The research in this thesis adopts this approach [91].

2.12 Digital Emotion Regulation Intervention Design

In a scoping literature review of thirty-six papers, Slovak et al. identified design components and delivery mechanisms for digital ER interventions [88] and developed a strategic design framework to assist HCI designers in thinking about how the designed intervention is intended to scaffold participants learning and where/when the delivery of such learning occurs [88].

The framework's "how" component differentiates two approaches through which ER skills are acquired: didactic and experiential [88]

- Experiential interventions focus predominantly on bio-feedback or implicit target feedback (i.e., using haptic interaction to push users towards a particular state).
- Didactic interventions aim to build a cognitive understanding of ER by explaining to the participant how, why, when, and where particular ER strategies are appropriate.

The when/where portion of the framework enables designers to consider the timing and context of implementation for technology-mediated interventions and differentiates between two categories of interventions:

- Offline interventions support the development of ER skills in a training environment.
- On-the-spot interventions support the implementation of ER strategies in everyday situations.

The remainder of this section will focus predominantly on literature pertaining to didactic, on-the-spot interventions due to their relevance to users' engagement with social media curation features.

Didactic Components in Digital Emotion Regulation

The main characteristic of didactic components is their emphasis on the dissemination of information and supporting its conscious application, even if it is not immediately done within the targeted social-emotional context. They focus on either providing reminders or cognitive explanations of ER strategies to build participants' cognitive understanding of how, why, where, and when they should be used. In the context of HCI research, didactic interventions usually depend on active cognitive processing to help develop or apply ER strategies.

Many interventions rely on technology to provide information to participants suggesting specific strategies that could be applied to a particular ER need [92–94] or support the development of self-awareness and monitoring over time (e.g., self-reports) [95]. For example, components may provide guidance on the cognitive processes involved in ER. They may explicitly describe the cognitive steps that a participant should take once the intervention has been applied but do not directly facilitate the (experiential) application of interventions to support ER strategies. Additionally, some interventions adopt psychoeducation methods to explain and suggest new emotion regulatory approaches, such as verbal explanations of strategy execution [88].

There are three principal didactic interaction design approaches: (1) reminder-recommender systems, (2) awareness and reflection support, and (3) cognitive models development which differ in when, how, and what kind of information was offered to the users.

Reminder-recommender components are designed to offer users timely suggestions on specific ER strategies that could be used [92, 93, 95–98]. Generally, they provide step-by-step instructions for implementing a specific ER strategy, either through generic (i.e. non-tailored to an individual's personal experience) materials such as a basic outline for performing cognitive reappraisal or deep breathing or recommending additional external resources to the participant. As an illustration, Smyth et al. delivered three daily reminder prompts via smartphone notifications

to participants at semi-random intervals, reminding them of the stress-reducing benefits of breathing exercises [98]

Awareness and reflection components prompt users to reflect on their emotional state and analyse a log of their own emotional states that a user has self-reported or collected via automated tracking in the course of an EMA study. For instance, Bakker et al. employed a custom-designed application that prompted participants to record their emotional states by answering questions on a daily basis, and encouraged users to identify and reflect on possible patterns within a 'mood diary' [99]

Cognitive model development components adopt psychoeducational methods to explain and suggest new ER strategies [97] with an emphasis on providing thorough explanations of how the mind utilises information to teach the participant how, why, where and when ER strategies are useful. These types of interventions take place offline in a therapeutic context (e.g., in a clinical intervention setting) or by embedding it into a game. For instance, Scholten et al. conducted a randomised control trial to test the effectiveness of an emotion management video game incorporating ER education and heart rate variability biofeedback components for adolescents with anxiety symptoms [100].

2.12.1 On-the-spot Components

The core aspect of 'on-the-spot' intervention components is their focus on training ER strategies in real-time during everyday emotional situations. This method emphasises immediate application of the learned skills to a specific emotional context facilitated by either technology-based or in-person interventions. Importantly, this approach does not require nor anticipate skill transfer beyond the immediate situation. In HCI, several systems incorporating on-the-spot elements are designed to address intense emotions in situations such as high-stress work environments (referenced in studies [101–103]), urban driving conditions [104, 105], or during routine experiences of stress and anxiety [93, 106].

These interventions give immediate feedback on how the person is feeling [94, 107] and sometimes suggest ER strategies that are right for the emotions picked up by the

technology [95, 98]. Many studies emphasise the exploration of mechanisms enabling such immediate intervention delivery, which often happens in tandem with other activities [94, 101–105, 108, 109]. Other research approaches involve more instructive methods, like reminders or ecological momentary assessments [92–98, 110, 111].

Regarding interaction design patterns in these interventions, two primary aspects shape their design: the trigger for intervention (user-initiated, system-initiated, or situation-specific) and the duration/timing of support (instantaneous or continuous).

In *user-initiated models*, the user is expected to recognise the need for emotional support and activate the system themselves, with the intervention aiding them subsequently [93–95, 106, 111, 112]. For example, biofeedback [112] requires user engagement with an interactive device for immediate feedback.

System-initiated models [96, 97, 108, 109] rely on the system to detect the need for emotional regulation through biosensing methods and trigger the intervention accordingly, as in Smyth et al.’s work, which used mobile app reminders based on the user’s stress levels determined through EMAs [98].

Components of *situation-specific* models provide continuous support in environments likely to induce stress, such as during driving [104, 105] or in information work settings [102, 107]. For instance, Balters et al. tested the efficacy and safety of haptic-guided breathing exercises through a modified car seat cover while driving under simulated normal and stressful driving conditions [104].

Differences in the timing and duration of the interventions refer to how long the support is provided. Discrete interventions offer immediate information or reminders to assist with ER, including visual reminders of previously learned strategies [97, 98], stress awareness facilitation [107, 111], or suggestions for activities to improve emotional state [95, 96].

In contrast, ongoing support interventions assist users through an ER process until its completion, often through explicit ER strategies such as guided slower breathing patterns [94, 101, 104, 105, 112] or cognitive and attentional interventions [93, 106]. Some systems employ implicit ER strategies, subtly altering behaviour or emotions through targeted feedback, such as haptic interactions [108, 109]. An

example of such a system is *BoostMeUp*, a smartwatch-based ER intervention designed to improve cognitive performance under stress. The intervention achieves this by providing haptic feedback, such as wrist taps simulating heartbeats, in order to induce a calmer state in the wearer [108].

As Slovak et al. point out in their review of digital ER interventions, these intervention components are primarily characterised by their nature and timing of support rather than the specific content of the support. Consequently, there is no inherent link between the types of interaction design mechanisms used (such as user-initiated or system-initiated interventions) and specific families of ER strategies outlined in the Process Model of Emotion or the broader stages of ER (identification, selection, implementation, monitoring). For instance, while current ongoing support components predominantly focus on response modulation techniques, like deep breathing exercises or simulated heart-rate feedback, there is no fundamental reason why these approaches couldn't be adapted to facilitate other types of ER strategies, such as attentional deployment or cognitive reappraisal. Similarly, these methods have the potential to be effectively integrated across all stages of the ER process.

2.12.2 Uneven Support for Digital Emotion Regulation

A review of the digital ER intervention design indicates that across all interventions, there is a dominant focus on response modulation strategies (e.g., deep breathing exercises) to the detriment of strategies such as cognitive reappraisal or attentional deployment. In particular, interventions including on-the-spot and didactic components have not focused on embedding these delivery mechanisms into commonplace situations where users are likely to experience heightened emotions and need easily accessible and immediate support [88]

Furthermore, an examination of the literature reveals virtually no research on how users engage with digital technologies not specifically designed or intended as digital ER interventions or ER support tools, in any digital context [11, 88] including social media. What little existing research there is suggests that users are likely to use them to engage in situation selection strategies in everyday use [12].

2.13 A Consideration of Technology Adoption Theories

This thesis is grounded in digital emotional regulation (DER) theory rather than theories of technology adoption. However, it is important to touch upon how technology adoption theories have been applied in social media research to draw a distinction between this thesis and more commonly applied theoretical frameworks. Major theories in this domain include the theory of planned behaviour, protection motivation theory, and the technology acceptance model, as they inform research on the behaviours that shape decisions to use, or not use, social media platforms. This thesis does not draw on any of these as central theoretical frameworks to examine how users engage with PM tools (i.e. low-level platform affordances) to manage emotional responses to social media content. However, they provide important context for understanding how users decide to engage with social media platforms and are used to inform other interpretations of some findings in other chapters.

2.13.1 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) proposes that behavioural intention is the most significant predictor of behaviour [113]: The more an individual intends to engage in a behaviour, the more likely they are to succeed. According to TPB, behavioural intention is principally influenced by three key factors: Attitudes towards behaviour (perception of the behaviour's consequences), subjective norms (perception of social pressure to perform or not perform the behaviour), and the individual's perceived control over the behaviour (the perceived difficulty of engaging in the behaviour). Cheung and Lee [114] applied TPB to model user participation in online communities and found that perceived behavioural control and subjective norms were key predictors of continued user engagement with platforms. Pelling and White [115] extended this exploration by applying an extended model of TPB to young adult social media users and found that, in addition to TPB's existing

constructs, self-identity¹ emerged as a significant predictor of high-frequency social media use. Baker and White [116] extended this exploration to adolescent social media users, making similar findings for that subpopulation. These findings suggest that users who view social media as an integral part of their self-identity may feel motivated to remain engaged, even when faced with factors that might discourage social media use, providing a valuable lens to explain users' reluctance to adopt potential moderation tools that might limit engagement.

TPB provides valuable insights into intentional technology use but its focus on planning makes it less suitable to exploring the *in situ* ER responses to distressing social media content, particularly where response-focused ER strategies are concerned.

2.13.2 Protection Motivation Theory

Protection Motivation Theory (PMT) explains how behavioural responses to fear appeals. Fear appeals are persuasive messages that evoke fear by highlighting the seriousness of a threat, while offering means to avoid it. According to PMT, individuals engage in two appraisal processes to determine whether to adopt protective behaviours: Threat appraisal and coping appraisal. The individual appraises a threat by assessing how severe they perceive the threat to be, and how vulnerable they feel to it. With coping appraisal, the individual assesses the viability of the recommended protective action by judging if it will be effective, if they can successfully perform it, and if the effort and costs of engaging in the protective behaviours are worthwhile.

Salleh et al [117] found that users were more likely to engage in protective disclosure behaviour on social media when perceiving severe threats and strong coping appraisal when they felt confident in the viability of protective action. Meier et al. [118] applied PMT to Facebook use, and that users with higher threat perception and response efficacy were more likely to reduce self-disclosure

¹in this context, self-identity is "the extent to which engaging in a behaviour is important to an individual's self-concept" [115, p.4]. Self-concept, in turn, is the set of socially constructed roles that reflects the extent to which an individual believes they fulfil the criteria for particular societal roles [115].

or withdraw from platform use altogether. Finally, Mosuavizadeh and Kim [119] found that customisable controls increased users' self-efficacy and reduced threat appraisal, encouraging continued platform use. These findings help to contextualise users' decisions around personal moderate tool usage, especially when they perceive the tools as being inadequate to support the management of subjectively distressing content or if they introduce new tensions such as a fear of missing out.

PMT offers a structured model to explain protective behaviour in response to perceived threats and presumes that individuals respond to them with rational protective actions. However, users' engagement with ER strategies may involve managing responses to content that they may not be rationally appraising as explicit threats that require protective action, but rather as a process of ongoing well-being management.

2.13.3 The Technology Acceptance Model

According to the Technology Acceptance Model (TAM), a user's attitude about a new technology plays a critical role in their determination of whether or not to use it [120]. Key to formulating attitudes about the technology are the perception of 1) its usefulness and 2) its ease of use [120]. Perceived usefulness is the extent to which the user believes the tool will improve performance or outcomes, and perceived ease of use is the degree to which the user perceives the tool to be easy to use [120]. In the context of HCAI research on social media, the model has been extensively applied to explain user engagement with online services and social media platforms.

Gefen et al. [121] extended TAM to online commerce platforms and found that trust in the security of the online system and the vendor and ease of use were significant factors in users' willingness to engage with the platform. Extending that early work to social media, Choi & Chung [122] found that perceived ease of use and perceived usefulness had a substantial effect on users' intention to use social media platforms. Raunier et al. [123] applied TAM to explore reasons for continued Facebook usage among adult users, finding that ease of use and perceived usefulness significantly predicted user satisfaction and continued use of the platform.

TAM offers a clear predictive model for tool adoption based on perceived usefulness and ease of use. However, as discussed with TPB and PMT, its focus on rational evaluation and appraisal makes it less suitable for understanding the emotional and context-dependent nature of user engagement with PM tools for ER purposes.

While these models provide valuable insights into different facets of engagement with technology and occasionally help contextualise findings in this thesis, I do not adopt them as analytical frameworks because of their emphasis on rational evaluation and planning over emotional responses. In contrast, DER theory provides a more appropriate and flexible conceptual framework for this thesis's exploration of the role of PM tools in ER processes because it allows for exploration of how users employ them, or don't, both in the moment (e.g., situation selection) and over time (e.g., cognitive reframing). It therefore allows for a more nuanced exploration of how users experience and manage emotional responses to subjectively harmful content, and captures how users negotiate fluid content perceptions in platform environments that may not afford them dynamic tools to regulate their emotional response to content.

2.14 Social Media and Emotion Regulation

The process model of emotion regulation posits that people process and analyse their emotions and take subsequent actions to regulate their future emotions when desired [84]. It is universally accepted in industry and academia that emotion is a core aspect of the experience of using technology [124]. Indeed, emotions experienced while using technology can shape its appeal [125]. Therefore, it is possible that social media users might adapt their behaviours in order to increase or retain positive emotions experienced after positive engagement and decrease or evade negative emotions experienced after negative or inadequate engagement, and use tools on social media to do so.

2.14.1 Detecting Emotion in Social Media Content

Social media data can provide key insights into users' emotional states through the analysis of text, photo, and even video content [126]. Most commonly, natural-language-processing techniques are used to analyze 'trace' data, including the topics, word patterns, and structure of text elements in a user's data [127].

Implemented in conjunction with methods such as ecological momentary assessment, social media data can offer real-time insight into users' emotional lives both in the moment and over time [126]. Furthermore, data collected from social media provides insights into individuals' social environments, highlighting the subject matter and emotional valence of users' interactions with others.

There is expanding research focusing on the detection of distress signals or negative emotions and mental health disorders in social media content [128]. This type of research generally employs machine learning methods to detect patterns across a range of features such as the language style of user-generated content, engagement metrics, and the intensity of emotion that users convey in public posts, photos (determined by language used in captions as well as the brightness, content and color patterns of the photo itself) [129]. Such features have the potential to identify ER processes and provide insight into the context in which an individual is employing, selecting, and implementing an ER strategy [126].

Although one-time assessments of the emotional sentiment of users' data have been conducted in many studies [128], researchers have only very recently begun to consider the processes behind users' expression of emotions on social media [126]. Seabrook et al. examined the association between emotional instability and depression over time by analysing the presence of positive and negative emotion words in status updates at multiple points in time on Facebook and Twitter. Using correlation analysis, they found that instability in the use of negative emotion words on Facebook was associated with more indications of greater depression and found the opposite on Twitter [130]. This may be especially relevant for future applications to ER because the ability to detect changes in users' emotional experiences – either

over time or in response to the use of specific regulation strategies – is a critical aspect of measuring regulatory flexibility and effectiveness.

2.14.2 Social Media as a Tool for Emotion Regulation

There is very limited observational research focusing on how individuals use existing technologies to support ER processes [11]. Eschler et al. explored how individuals with depression used technology, particularly phones and social media, for ER. They found that people utilised a combination of technologies, such as online videos, discussion forums, games, and music, to regulate their emotions, thoughts, and behaviours [131]. The most common strategy observed was the "mental reset" [131, p.5], which involved using technology to distract oneself from overwhelming negative emotions. Similarly, Kelly et al. conducted a diary study of university students' use of technology to alleviate negative emotions associated with homesickness and found that a wide range of technologies were used for this purpose [132]. Other recent research suggests that people use technology, such as social media, to escape from negative emotions [133] or to maintain emotional balance [134].

Golbeck et al. explored whether coping style can be predicted by analyzing user behaviour on Twitter [135]. Their results showed that a combination of text analysis and behavioural information could be used to build a classifier that can accurately determine whether individuals use primarily adaptive or maladaptive coping styles.

Myrick [13] identified ER as a motive for watching cat videos on social media. In a study of international students' use of music streaming platforms for ER, Wadley et al. found that students regularly and intentionally listened to music on digital platforms services to manage unpleasant emotional states such as sadness and enhance desirable states such as energy and concentration that allowed them to work more effectively [136].

Limited research has explored the use of instant messaging tools for ER. Dolev et al. found that instant messaging tools and social media were used for cognitive reappraisal (CR) and problem-solving [137]. Despite their promise, the use of

platform content curation tools for ER support is a topic that has been under-explored in existing research. In a study of digital ER when coping with bereavement, Dovelung et al. found that adolescents engaging in sustained conversation with an online bereavement support group were more likely to engage in attentional deployment through diverting conversations to topics other than grief, exemplifying the ER strategy of attentional deployment [138].

2.14.3 Unstudied Emotion Regulation in Personal Moderation Tools Research

Although the ER literature has established that social media platforms can serve as tools for ER through content consumption and social interaction, a parallel body of research has examined how users engage with personal content moderation tools, though rarely through an explicit ER lens. These studies reveal that user motivations for employing moderation features often centre on emotional well-being and psychological safety, suggesting these tools function as ER mechanisms even when not conceptualised as such.

Jhaver and Zhang (2025) found that participants frequently prefer personal content moderation (PCM) tools over platform-imposed content moderation because they offer greater agency and flexibility, allowing users to tailor their feeds without censoring others. Although not framed in terms of ER, such preferences reflect a desire to protect well-being, avoid distressing or overwhelming content, and maintain a manageable digital environment. These outcomes align closely with ER goals of managing emotional experiences and maintaining psychological equilibrium.

This pattern of using moderation tools for emotional self-protection is evident across different user populations and platforms. Gak et al. (2022), in their exploration of targeted weight-loss advertisements amongst members of disordered eating online communities, found that participants employed personal moderation tools such as muting, blocking, and reporting to reduce exposure to potentially triggering content [79]. However, participants found these tools largely ineffective in the longer term, with similar adverts continuing to appear despite their efforts.

This highlights both the emotional motivations behind tool use and the limitations of current implementations.

The emotional dimensions of moderation become even more explicit in studies of marginalised communities. Scheuerman et al. [139] documented how transgender users employed technological strategies like content deletion, platform avoidance, and safety research not simply to avoid conflict, but to cultivate emotional comfort in environments where platform designs may enable harm.

Finally, John [140] conducted the first comprehensive classification of features that enable interpersonal disconnection in digital environments, identifying that tools enabling users to block, mute, and unfollow others allow users to manage problematic relationships while remaining active on platforms rather than feeling compelled to leave altogether. However, the author noted that "whether people are using these features in order to manage people or content remains underdetermined" [140, p.13], pointing to the complex interplay between social and emotional motivations in personal content and account moderation practices.

Though these studies were not conducted through the lens of ER theory, they indicate a pattern: users deploy personal moderation tools to support emotional self-protection and well-being management. However, as several studies demonstrate, current tools often fall short of users' emotional needs, highlighting gaps between user intentions and technological capabilities.

The dearth of research examining how individuals engage with low-level social media platform affordances for ER, combined with evidence suggesting users employ personal moderation tools to manage their well-being, presents a compelling opportunity for investigation. This thesis addresses this gap by examining how individuals use content curation features to support ER processes.

2.15 Gaps in The Literature

This chapter reviewed the theory and research pertaining to the relationship between social media use and well-being, social media affordances, personal moderation

tools, differential susceptibility to media effects theory, emotion regulation, and digital emotion regulation intervention design.

The following relevant gaps in the literature were identified:

- Limited research on user appropriation of personal moderation tools for emotion regulation: While some prior work indicates that users employ PM tools to manage their well-being (see 2.14.3), there is a dearth of work examining how users appropriate these existing low-level platform affordances as tools for ER. Existing studies acknowledge emotional motivations behind tool use, but do not explicitly examine these practices through the lens of ER.
- Lack of ER principles' integration into PM tool design: Although there are ER interventions and PM tools are widely available on social media platforms, there is a lack of research on how to incorporate those principles into PM tools.
- Absence of research on dynamic changes in content-based harm experiences over time: Existing work indicates that content previously experienced as benign can become distressing in the wake of a life change (see 2.9.1), yet there is minimal work examining how users adapt their ER strategies and PM tool use in response to those changes in how they perceive content.
- Lack of platform design research on subjective harms associated with positive norm-compliant content: Extant platform design research primarily focuses on the study and prevention of harms associated with norm-violating content but overlooks designing for subjective harms caused by norm-compliant content.
- Dominant focus in digital emotion regulation intervention scholarship on response modulation strategies: There has been a dominant focus in digital ER scholarship on response modulation strategies to the detriment of strategies such as cognitive reappraisal or attentional deployment. In particular, interventions including on-the-spot and didactic components have not focused on embedding these delivery mechanisms into commonplace situations where

users are likely to experience heightened emotions and need easily accessible and immediate support [88].

The gaps identified above indicate a need for research exploring how users appropriate existing low-level platform affordances for emotion regulation purposes, particularly when experiencing norm-compliant content that may nonetheless be subjectively harmful. By addressing these gaps through mixed-methods exploration across diverse user populations and contexts, this thesis aims to inform more nuanced, user-centred approaches to platform affordance design that better support individual well-being in digital environments.

3

Methods

Chapter 2 highlights the multidisciplinary nature of studying experiences of content-based harm on social media. This chapter describes the research methods from HCI used to conduct the research reported in this thesis.

3.1 Common Research Approaches

Human-computer interaction (HCI) is a research field that interfaces between users and machines. HCI is interdisciplinary and often incorporates multiple disciplines, such as computer science, psychology, and ergonomics [141]. HCI research contributions are generally categorised as either empirical, artefact, methodological, dataset, theoretical, survey or opinion [142]. This thesis contributes to empirical research in HCI [141, 142].

3.2 Survey Research

Survey research is defined as a method of collecting information by asking a subset of participants questions, the results of which can be generalized to a wider target population [143] [144]. Surveys are commonly used in descriptive research to estimate specific parameters in a population and describe their associations [145]. Specifically, their purpose is to describe populations, explain behaviours,

and explore uncharted areas of research [146]. Ideally, surveys are well-defined, well-written self-administered questionnaires that an individual responds to without a researcher present [141].

There are numerous types of surveys, many ways of sampling a population, and techniques to collect data from that population [143]. In contemporary times, The Internet is a very popular mode for survey dissemination due to the low cost of gathering data, ease and speed of survey administration, and its capacity to reach a broad range of populations [143] [141].

Survey research is very popular in HCI for these same reasons [141, 147]. However, surveys only provide snapshots of studied phenomena and rely heavily on the subjective views of respondents [148].

3.2.1 Correlation Analysis

A common objective for HCI-related quantitative research is to identify relationships between various factors [141]. The most commonly used statistical method for testing correlation is the Pearson's product-moment correlation coefficient test, which returns a *Pearson's r* correlation coefficient [149]. The value of Pearson's *r* can range from -1.00 to 1.00 [141]. A Pearson's *r* value between two variables of -1.00 indicates a perfectly negative linear relationship, meaning that any increase in one variable's scores will perfectly predict a specific amount of decrease in the other variable's score [141]. Conversely, a Pearson's *r* value of 1.00 between two variables indicates a perfectly positive linear relationship. A Pearson's *r* value of 0 suggests that no linear relationship exists between the two variables: An increase or decrease in one variable does not predict changes in the other [149].

3.3 Nonparametric Statistical Tests

Parametric tests require three general assumptions. The data to be analysed was collected from a population that is normally distributed [141]. Second, the distance between any two given adjacent units of data should be equal. Finally, the variance

in data collected from different groups should be approximately equal for tests that compare the means of different groups [141].

3.3.1 Random Forest Regression

Random forests (RF) are an ensemble method comprising decision trees [150] used for both classification and regression tasks. The use of decision trees presents a widely used non-parametric method for analysing non-normal, non-homogeneous, noisy data [151]. RFs have been commonly used to predict mental health conditions such as post-traumatic stress disorder (PTSD). They consist of multiple decision trees, where each tree uses a random subset of predictor variables at each node of the tree [152]. The prediction is generated by averaging scores across all trees (i.e., the entire forest), allowing for high predictive accuracy while avoiding over-fitting [150].

Random Forests have been used to predict PTSD in a broad range of contexts, demographics, and sample sizes. Augsburger and Galatzer-Levy used random forest classification (RFC) to predict the severity of PTSD among 94 individuals who had been hospitalised following a traumatic experience [153]. Using RF in conjunction with clustering techniques, Siegel et al. identified military-related PTSD subtypes [154]. Random Forest classification has been used to identify people at risk of PTSD using self-reported smartphone patient surveys [155]. Prout et al. (2020) employed regression trees to identify the key predictors of distress during the COVID-19 pandemic, focusing on anxiety, depression, and post-traumatic stress (but did not account for exposure to the pandemic) [156].

3.3.2 Thematic Analysis

Thematic analysis (TA) is a qualitative method for identifying, analysing, and reporting patterns within data [157]. This approach involves systematically searching across datasets (e.g., interviews) to identify recurring patterns of meaning. TA goes beyond mere organisation and description by providing in-depth analysis and interpretation of various aspects of the subject being studied [158].

Reflexive Thematic Analysis

Reflexive thematic analysis (RTA) is an accessible and theoretically flexible approach to qualitative data analysis that enables the researcher to identify and analyse themes in a given data set [159].

Braun and Clarke have situated RTA as a TA approach by differentiating between three main schools of TA: (1) coding reliability TA; (2) codebook TA, and; (3) the reflexive thematic analysis [160].

In reflexive TA, coding is not fixed from the start (e.g. though the use of a coding frame or code book), and codes evolve throughout the course of the coding process [160, 161]. Themes are the product of the researcher's analytical efforts to explore and comprehend patterns of meaning across a dataset and are understood to be meaning-based patterns that emerge, either semantically or conceptually, from the coding process [160].

Braun and Clarke [159, 162–164] propose a six-step procedure to facilitate the analysis and assist the researcher in identifying and focusing on the most significant aspects of a TA. Though the six phases are organised in a logical sequential order, the analysis is not a linear progression through the phases. Instead, the analysis is iterative, requiring the researcher to move back and forth between phases as needed [164].

1. Data Familiarisation The 'familiarisation' phase is a cornerstone of many qualitative analysis methodologies. This stage involves thoroughly reading through the complete dataset, multiple times if necessary, to understand the content in-depth. Such depth of acquaintance is crucial to pinpoint data elements that potentially align with the research question(s). At this stage researchers may transcribe the data manually, as it encourages a deeper connection with the material [162].

2. Generating Initial Codes Codes serve as crucial precursors to themes, acting as concise, descriptive, or interpretive markers for potentially significant pieces of data pertinent to the research question(s) [163].

The process of generating codes is flexible, lacking rigid guidelines on the segmentation of data for coding or the quantity and nature of codes derived from an item of data. A single data item might be subject to various coding interpretations, reflecting multiple meanings, with no strict boundaries on the number of codes one should extrapolate. The critical aspect is ensuring that, once the data coding is complete and the codes are collated, there is sufficient richness and depth in the coding to allow the researcher to explore the emerging patterns in the data and the range of perspectives among participants [159].

3. Identifying Themes Once all pertinent data items have been coded, the researcher shifts their focus from interpreting individual data items to interpreting meaning and significance across the entire dataset. At this point, the researcher examines the coded data to determine if and how items can be combined based on common meaning to form themes or sub-themes, which often involves merging several codes that converge around a similar intrinsic idea or data characteristic into a unified code. Conversely, a specific code might represent a broader narrative within the dataset, ascending to the status of a sub-theme or theme [159].

It's crucial to underscore that themes are not pre-existing elements hidden within the data; instead, they are construed through the researcher's active engagement in interpreting the interconnections among various codes and deliberating how these relationships contribute to the narrative of a given theme. The significance of a theme does not hinge on the sheer volume of corresponding codes or data elements but on whether the constellation of codes and data elements conveys information relevant to research questions [162]. Themes should be differentiated and may even be at odds with one another. Yet, they should collectively contribute to a convincing and transparent illustration of the dataset's landscape [159].

4. Reviewing Themes This stage necessitates a rigorous, iterative examination of the preliminary themes concerning both the coded data segments and the entirety of the collected data [159, 164] in two stages.

First, the coherence among the data segments and codes constituting each potential theme and sub-theme is assessed [161]. If these items and codes form a clear pattern, the researcher can treat the proposed theme or sub-theme as a viable contributor to the dataset's overarching narrative [161]. Then, themes are evaluated within the context of the entire dataset, gauging their efficacy in encapsulating the most fitting interpretation of the data relevant to the research question [157].

The result of this two-step review process is often that codes are added, subtracted, or moved between themes and sub-themes, potentially requiring the themes/sub-themes to be reconfigured [161]. Consequently, analysis from the second and third phases, such as recoding data segments, consolidating codes, eliminating redundant codes, or promoting certain codes to theme or sub-theme status, might need to be reiterated.

5. Defining and Naming Themes At this stage, the researcher defines and further refines the themes they intend to present for their analysis. By defining and refining, Braun and Clarke mean “identifying the ‘essence’ of what each theme is about (as well as the themes overall), and determining what aspect of the data each theme captures” [157, p. 92].

During the refinement process, it's essential to determine whether any theme encompasses sub-themes, which are essentially “themes-within-a theme” [157, p. 92]. Sub-themes provide structure and establish a hierarchy of meaning within the data when the theme is large is large and complex.

6. Producing the Report Once the researcher has a set of fully developed themes, they can delve into the final analysis and write-up of the data.

The write-up should present ample evidence of the themes' presence in the data, meaning sufficient data extracts should be included to establish the prevalence of each theme [157, 161]. It is advisable to select striking quotes that convey the essence of the intended point while avoiding unnecessary complexity. Each quote should represent an instance of the issue at hand and support the researcher's

narrative of the data. Furthermore, the narrative should aim to make an argument relevant to the research question(s) in scope, not merely describe the data [157].

3.3.3 User-Centred Design

User-Centred Design (UCD) places the user at the forefront of the design process, focusing on understanding user needs, behaviours, and preferences through research and iterative testing [165]

The concept of 'user-centred design' originated from research conducted in Donald Norman's laboratory at the University of California San Diego (UCSD) in the 1980s. It gained widespread recognition following the publication of the co-authored book, "User-Centered System Design: New Perspectives on Human-Computer Interaction" [166]. Norman further developed this concept in the *Psychology of Everyday Things* [22], in which he recognised the importance of understanding user needs and interests while focusing on design usability [166]. While there is no single way of conducting user-centred design, I adopt Rogers, Preece, & Sharp's [167] four basic phases of user-centred design: (1) requirements discovery, (2) designing alternatives, (3) prototyping, and (4) evaluation.

Requirements Discovery This phase involves understand the context in which the product will be used. Methods such as user interviews, surveys, and contextual inquiries may be used to gather relevant information.

Solution Design This stage involves translating the insights from Phase 1 and defining clear goals and criteria that the product must meet to address user needs.

Prototyping This phase involves exploring potential solutions to address identified user requirements, such as prototyping and usability testing.

Evaluation The final phase involves evaluating the effectiveness of the design solutions through usability testing and feedback from users. Users are observed interacting with prototypes or mock-ups to identify issues and receive feedback and suggestions for improvement. Iterative testing and refinement are conducted to ensure that the final design meets user needs and achieves the desired goals.

In this thesis I generally follow user-centred design in Chapter 7 by interpreting data from (1) semi-structured interviews to understand requirements for personal moderation tools, (2) applying digital emotion regulation intervention design principles to the development of (3) prototype, and (4) engage users in evaluating the prototypes and providing feedback.

3.3.4 Prototype Design

According to Mackay's & Beaudouin-Lafon, "A prototype is a concrete representation of either a portion or the entirety of an interactive system" [168, p.10]. A prototype has multiple layers of functionality and can address a range of needs, focuses on a specific goal and means of use, emphasises usability and is improved iteratively through design [169].

This thesis implements Mackay's & Beaudouin-Lafon's taxonomy of prototype design, according to which prototypes are designed along five dimensions: Representation, Precision, interactivity, lifecycle, and scope [169].

Representation pertains to the physical form of the prototype, ranging from basic sketches to wireframes and comprehensive computer simulations.

In this thesis, I build a functional prototype using Figma. Functional prototypes consist of either operational software applications or hardware that implement some or the entire design, enabling users to interact with them as though they are the actual system.

Precision relates to the detail level, varying from basic and informal to extensively refined: I produce a high-fidelity prototype in this thesis.

High-fidelity prototypes are typically computer-generated and incorporate all the pertinent visual details of the screen or hardware's appearance.

Interactivity indicates how users can engage with the prototype, which can range from pre-recorded demonstrations to fully interactive experiences. The prototype created in this thesis is a fixed-path prototype:

Fixed-path prototypes facilitate restricted interaction by adhering to a predefined path through the interface. The user "interacts" by selecting the appropriate part of the drawing or screen, prompting the designer to reveal the next page or screen.

Lifecycle outlines the anticipated development of the prototype, from quickly-created disposable prototypes to those that become integral parts of the final product. The prototype created for this thesis is an early-stage iterative prototype.

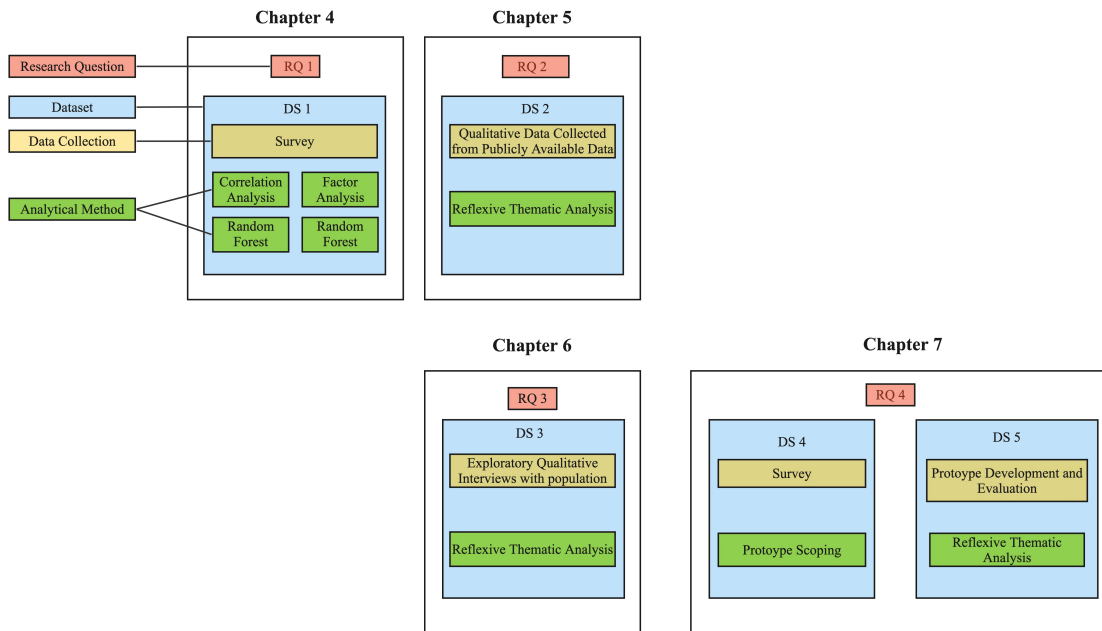
Iterative prototypes reflect the evolution of the design process. Crafting these prototypes can be challenging due to the balancing act between progressing towards the final solution and venturing into new, unforeseen design directions. These directions might either be integrated into the design or discarded entirely.

Scope defines the extent of the final system that the prototype represents.

I design a path-based prototype for this thesis in order to examine specific scenarios illustrating how the system would function in a specific real-life context. The prototypes concentrate on the features and interactions pertinent to the scenario in question, even if these prototypes represent only a fraction of the full functionality.

3.3.5 Implementation of Methods in the Present Thesis

Scientific knowledge depends on empirical research that expands knowledge through observations and systematic data collection. This data may be qualitative or quantitative, objective or subjective, collected in controlled settings or in the field. In HCI, a range of methods are used to make empirical contributions,



DS1: Survey data from UK adults

DS2: Reddit posts from trauma support subreddits

DS3: Interview data with early-career women researchers based in the UK

DS4: Survey data from women researchers who use Academic Twitter

DS5: Prototype design and prototype evaluation transcript

Figure 3.1: Thesis Research Roadmap

including but not limited to: Experiments, user testing, interviews, surveys, focus groups, and more [142].

3.4 Research Ethics

All of the included in this thesis were reviewed and approved by the Central University Research Ethics Committee¹ (CUREC). CUREC is responsible for the ethical review of research involving human participants and personal data, as well as setting the university's policy on such research. The CUREC references for each chapter are included in table 3.1. The completed forms can be found

¹<https://governance.admin.ox.ac.uk/central-university-research-ethics-committee>

in the appendices.

Chapter	Study	CUREC
Chapter 4	Study 1	CS_C1A_20_007-1
Chapter 5	Study 2	CS_C1A_22_018
Chapter 6	Study 3	CS_C1A_22_024
Chapter 7	Study 4	CS_C1A_22_024_001
Chapter 7	Study 5	CS_C1A_23_024

Table 3.1: Ethical Approval Information for the studies in the present thesis

Before running each study, I asked participants to read an information sheet explaining the study’s high-level purpose and outlined the university’s data-protection practices. Before participating in any study, participants signed a consent form that presented all relevant information as required by Article 14 of the EU General Data Protection Regulation (GDPR). All data collected was treated as strictly confidential and handled in compliance with the Data Protection Act 2018 provisions. Due to the potentially sensitive nature of the data involved (e.g., discussions of health conditions and trauma), special care was taken to ensure confidentiality.

Interview and Workshop Data Initially, audio of interviews was recorded locally on the researcher’s departmental password-protected computers (i.e., using Zoom’s local recording feature) then uploaded to the password-protected folders on the research team’s access-controlled OneDrive within the University network to which only authorised researchers had access. Recordings were deleted from laptops as soon as they had been transferred to password-protected folders on the research team’s OneDrive within the University network.

No video recordings were made of any participant. Audio recordings were transcribed using Microsoft Word’s local automatic transcription feature on the research group’s access-controlled OneDrive. Transcripts were stripped of identifying information and stored in password-protected folders on the HCI research team’s OneDrive within the University network. Audio recordings were permanently deleted no more than three weeks after participant engagement with the study.

At this stage, transcripts were moved to the access-controlled group folder on OneDrive within the University network and became visible to other members of the Oxford research group.

Survey Data Survey responses were transferred over a secure connection from the Joint Information Systems Committee (JISC) Online Surveys platform to password-protected folders. They were manually redacted to remove potentially identifying information (e.g. name). Once these were anonymised, they were moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group. Unredacted survey responses were permanently deleted from the online survey platform no more than three weeks after participant engagement with the study; audio recordings were also deleted.

4

News Hurts...Sometimes: Exploring the Link Between Disaster-Related Social Media Usage and Trauma During the COVID-19 Pandemic

4.1 Introduction

The COVID-19 pandemic led to rapid and unpredictable changes to daily life for millions of adults across the United Kingdom (UK). Research on prior epidemics of infectious diseases, such as Ebola or SARS, has demonstrated high rates of mental health problems among survivors, victim families, medical professionals, and the general public [170]. While most mental health problems associated with the pandemic will gradually disappear over time, post-traumatic stress symptoms (PTSDs) may last for a prolonged period and result in serious distress and disability [170]. While it is still early to estimate the full extent of the relationship between the COVID-19 pandemic and trauma, the National Health Service (NHS) strategy unit estimates that between 2021 and 2023, there will be approximately 230,000 new referrals for post-traumatic stress disorder (PTSD) across England as a direct or indirect result of the pandemic [171] among both those who were exposed to the virus and those who were not.

News about the pandemic was disseminated rapidly through both traditional and social media. This made it difficult to escape a deluge of information about death and infection statistics, footage of tragedy and struggles of patients and key workers on the front line of hospitals, and constantly changing public safety measures. Existing research in traditional media studies suggests that individuals who are only exposed to disaster media coverage of a traumatic event can experience symptoms of post-traumatic stress associated with that event. In cases of indirect exposure from traditional media, it is unclear whether the presence of certain risk factors associated with the development of PTSD (e.g., mental health history, gender) or the amount of media used is more significant in predicting the development of PTSs [172] [173]. The degree to which such findings, primarily drawn from traditional media (e.g. television), are applicable to social media is unclear.

Unlike traditional media, social media does not limit users to being passive consumers of content [174]. They may use social media as both producers (active users) and consumers (passive users) of content, both of which have been associated with either decreases or increases in well-being, depending on factors such as age or platform selected [33] [52] [35] [9]. While spending more time using social media to access COVID-19 information was associated with greater levels of PTSs among the general population [175], there is no research on the role of active or passive social media use, time spent accessing COVID-19-related content on social media, and PTSs for individuals that have not been directly exposed to the pandemic.

To address this gap in the literature, I explored the following overarching question and sub-questions: Can differential susceptibility factors predict a decline in subjective well-being for a specific category of social media content?

1. Accounting for PTSD risk factors, are either active or passive use associated with COVID-19-related post-traumatic stress symptoms among adults who do not have direct experience with COVID-19?
2. What information can I glean about the role of individual differences in the relationship between media use variables and the development of PTSs

I conducted a cross-sectional survey of 352 UK adults who were not directly exposed to COVID-19. I collected data on time spent using both traditional and social media, forms of social media use across platforms, PTSs, and data on objective risk factors that have been associated with PTSD and PTSs in the literature. Given the lack of consensus on the role certain risk factors play in the development of PTSs across different forms of media, I collected data on a broad range of possible risk factors to gauge the relative importance of the selected media variables in relation to them. The relative importance of predictive variables was calculated using random forest regression and classification.

These findings demonstrate the inherent challenges in establishing causal relationships between individual difference variables and contextually harmful media content in a heterogeneous populations, providing context for the remainder of this thesis's focus on evaluating how users respond to subjectively harmful social media content through mixed methods approaches applied to well-defined user groups.

While the Differential Susceptibility to Media Effects Model (DSMM) provides a valuable framework for understanding how individual differences shape media effects and why similar content may affect users differently, the mixed results yielded within a heterogeneous population indicate the need for a complementary, more granular approach to understanding how users's experiences of subjective social media harm can inform the future of platform design. Specifically, this will involve examining specific subgroups and individual-level strategies for managing emotional responses to subjectively harmful content in subsequent chapters.

To that end, this thesis employs two complementary theoretical lenses. This chapter draws on the DSMM for population-level analysis to examine which differential susceptibility factors predict harm, but as the mixed and complex findings will demonstrate, this approach has significant limitations for understanding user agency and coping strategies. The subsequent chapters therefore shift to the Process Model of Emotion Regulation to examine how specific subgroups actively manage their emotional responses to subjectively harmful content both with, and without, the use of platform affordances.

4.2 Background

4.2.1 Post-traumatic Stress Disorder

PTSD is a type of trauma and stressor-related disorder that manifests as psychological distress following exposure to a traumatic event [176]. As a result, many sufferers experience persistent trauma-related emotions, physical ailments, and reduced social and work functioning [177]. Initial assessment of post-traumatic stress is performed using the PTSD Checklist (PCL-5) from The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [176]. Diagnosis of PTSD requires that the event consists of "actual or threatened death, serious injury, or sexual violence" [176]. Therefore, individuals who indirectly experience a traumatic event by watching or reading about a disaster cannot be diagnosed with PTSD, regardless of symptoms of post-traumatic stress (PTSs).

A combination of objective and subjective risk factors influences the development of PTSD. The principal objective risk factors are: Identifying as a female, having a history of anxiety disorders, depression, and a history of PTSD [178–180]. Young age [181], being an ethnic minority [182], low socio-economic status (SES) and low education are also possible risk factors for PTSD [183]. Subjective risk factors depend on an individual's perception of the event as traumatic [184]. Such factors include perceived proximity to the traumatic event, the subjective experience of the trauma as a threat, dissociation in the face of the threat, and personality traits of the individual [184].

4.2.2 COVID-19 and PTSs

There is evidence that the COVID-19 pandemic is associated with an increase in mental health concerns amongst the global population: In a meta-review of seventy-one papers published during the first six months of 2020, Liu et al. found that anxiety, depression, insomnia, and PTSD were prevalent mental health disorders across nine national populations [185]. In the UK specifically, a survey of 3074 adults conducted during the first 6 weeks of lockdown (March-May 2020) found

that women, young people (18–29 years), those from more socially disadvantaged backgrounds, and those with pre-existing mental health problems were at risk of experiencing worse mental health outcomes during the pandemic [186].

The shift from working outside of the home to working from home [187], perceived vulnerability to the virus [188], and living in isolation have been identified as risk factors for developing COVID-related traumatic stress and a decline in mental well-being among the general population [189]. These findings suggest that individual circumstances and perceptions play a significant role in mental health outcomes relating to a pandemic both among directly and indirectly exposed individuals.

4.2.3 Media Exposure to Traumatic Events

Events such as war [190], natural disasters [191], terrorist attacks [173], and pandemics [43] have been treated as disasters in the context of empirical research. Controlling for direct exposure, time spent watching television coverage of terrorist attacks or natural disasters is positively correlated with mental health effects for periods spanning one month to several years after initially viewing the images [190–193].

Risk Factors

Specific objective and subjective risk factors have been identified for indirect exposure to disasters via the media [175, 194].

Age: Research on age as a risk factor for PTSs associated with disaster media use has yielded mixed results: Younger adults were found to be more at risk of PTSs where the disaster was a bombing [195], and older adults were at higher risk of developing PTSs in instances of bioterrorism [196]

Gender: Associations between gender, PTSs, and media use are mixed and vary depending on cultural context [197]. Gender has not been associated with disaster media-related PTSs in cases of indirect exposure to 9/11 coverage via television news coverage [198]. Yet, across American and Israeli population samples for multiple disasters, women reported more PTSs associated with disaster media use than men

[173, 199]. Conversely, higher levels of exposure to traditional media coverage of Typhoon Hato were associated with greater levels of PTSs in men than women [191].

Pre-existing Mental Health Conditions: Research has found that individuals who experienced symptoms of anxiety and trauma in the past were more likely to view more television coverage of the event than those who had not [200]. In a study of 898 young adults conducted during the early days of the COVID-19 pandemic (April-May 2020), those who reported either confirmed or suspected pre-existing mental health conditions were significantly more likely to score above the clinical threshold for PTSD compared to those with no diagnosis [201]. The authors did not control for direct and indirect exposure to COVID-19. Controlling for the number of hours of event coverage consumed, a survey of adolescents who had not been exposed to the Boston Marathon bombings found that those who had experienced trauma prior to the bombing experienced more PTSs than those who had not [202].

Feelings of identification with individuals: Existing research suggests that identification with disaster victims can be a risk factor for developing PTSs associated with disaster media use. In individuals who had not been directly exposed to a sniper event, identifying with victims of a traumatic event either as resembling self, family member, or friend was associated with higher levels of PTSs at both low and high levels of television viewing of the traumatic event [203]. Concurrent findings were made in a panel study measuring PTSs associated with only media exposure in students within 35 days and 6 months of 9/11 [204].

Proximity: Geographic proximity has been shown to play a key mediating role between media use and PTSs. For instance, in research examining the disaster media effects of the 9/11 attacks on the World Trade Centre, higher rates of PTSs were observed in those closer to the towers [205]. Similarly, a survey conducted two years after the Oklahoma City bombing on school children living within one hundred miles from the disaster found that participants experienced symptoms of PTSs related to print and television disaster content, even if they had not been exposed to the disaster, or directly knew anyone who had [173].

4.2.4 Social Media use and PTSs

Though not as thoroughly researched as traditional media, evidence suggests that a similar association may exist between time spent using social media and PTSs. In the wake of the Paris terrorist attacks in 2015, a survey of 1760 French participants found that those with moderate and high levels of exposure to social media content about the attack tended to report higher levels of PTSs than in those who viewed less television or used less social media [206].

Recent evidence suggests that exposure to COVID-19-related news content in the initial stages of the outbreak was associated with negative affect, anxiety, depression and stress both among individuals directly exposed to the virus and those who were not [175]. Li et al. found that front-line nurses experienced lower levels of PTSD than either a) members of the general public who were not directly exposed to the virus or b) nurses not involved in caring for COVID-19 patients [207]. The authors theorised that, due to China's strict isolation policy during the early stages of the pandemic epidemic, non-frontline nurses and the general public felt compelled to consume more COVID-19 media to keep informed about the pandemic, which, in turn, led to symptoms of trauma [207].

4.2.5 Active and Passive Social Media Use

As described in 2.6, social media use is frequently classified as either active or passive in media studies and HCI research [58, 59]. Passive use involves viewing others' content without interaction [33, 60], while active use includes behaviours that facilitate direct exchanges, such as commenting, messaging, or posting [58, 60]. While active use is generally associated with enhanced well-being and passive use with reduced well-being [9], research findings are mixed, with variations observed across age and gender groups [33, 61].

Such inconsistencies suggest that individual differences may significantly influence the psychological effects of social media use. They may also reflect challenges in consistently measuring well-being outcomes, a longstanding issue in media research [14, 62]. Moreover, most studies focus on specific platforms or narrow age groups

[9, 33, 35, 52], which limits generalisability. Given the evolving nature of platforms and their diverse user bases and features [4], the active-passive dichotomy itself has been called into question [9].

4.3 Methods

I conducted an internet-based survey using *JISC Online Surveys*, with recruitment conducted through *Prolific Academic*. The collection was carried out over two days in October 2020. Participants were selected as a stratified sample representative of the UK population in terms of age, sex, and ethnicity [208]. The online survey did not allow participants to leave questions blank. However, participants were given the option to select a 'prefer not to respond' option for every question, which was treated as missing data.

4.3.1 Demographics

Total Household Income, Age, and Education were measured as interval variables and adapted from a recent study by [43]. Gender was adapted from [209], and ethnicity was measured as a categorical variable adopted from the Harmonised Ethnicity Standard by the UK Government Statistics Service [210].

4.3.2 Feelings of Proximity to COVID-19

Location was determined following the Nomenclature of Territorial Units for Statistics (NUTS) hierarchical classification of administrative areas for the UK [211].

The demographic variables were assessed before conducting further analysis: For ethnicity and gender, categories with low numbers of observations were combined into one 'other' category. Specifically, 'Mixed/Multiple Ethnic Groups', 'Arab', and 'Other' were combined to form a new 'Other' Category. Three categories from Gender, 'Trans Male/Trans Man', 'Trans Female/Trans Woman', 'Genderqueer/Gender non-Conforming', and 'Different identify', were combined to form a new 'Other' category. The Income variable was reduced from 13 levels to 10 and the last four levels of Income were combined to form a new variable labelled '£80,000 and above'.

The last six levels of the Age variable were combined to form a new level '65 and above', and two intermediary categories were reduced from eight to six levels. The last three levels of Education were combined to form a new level 'Graduate Degree And Above'. Finally, all categorical and ordinal variables were re-coded into dummy variables for the Random Forest Regression and Categorisation using the FastDummies package in R in order to perform the Random Forest regression and classification and to facilitate the correlation analysis.

4.3.3 Exclusion of Direct Experience to COVID-19

Given that the aim was to examine only secondary effects of exposure to COVID-19, cases corresponding to direct exposure to COVID-19 as defined by Criterion A (Exposure) for PTSD according to the DSM-V were removed from the analysis [176].

Participants were asked if they had 1) been infected by COVID-19, 2) known someone close to them who was either infected with COVID-19, 3) known someone who died as a result of contracting COVID-19, or 4) been exposed to it as part of their professional activities. Responses were 'no' (coded as 0) or 'yes' (coded as 1) for each item. Any participant who responded 'yes' or 'decline to respond' to at least one item was excluded from the study.

4.3.4 Environment

Participants were asked about how the pandemic had affected their working status to gauge whether they are working at home, outside the home, a combination of the two or were unemployed during the pandemic.

One item measured change in working situation. 'Are you currently working from home because of the COVID-19 pandemic?' Response options were 1) Yes. I currently only work from home. 2) Yes, I mostly work from home but still leave the house for work sometimes. 3) No. I mostly/only work at a workplace different to my home. 4) No. I am currently unemployed or furloughed. 5) No. I worked from home before the pandemic and still do.

4.3.5 COVID-19 Stressors

One dichotomous item, adapted from the checklist for COVID-19-related stressors [212] measured isolation caused by the pandemic with the statement 'I lived alone for a long time due to the COVID-19 pandemic'. Response options were Yes/No.

One dichotomous item measured perceived vulnerability to COVID-19 with the statement, 'I consider myself to be part of a group that is at higher risk of developing severe COVID-19 symptoms.' Response options were Yes/No.

4.3.6 Prior Diagnosis of Mental Health Condition

Prior diagnoses of anxiety, depression, and PTSD were assessed using dichotomous items questions adapted from [213]. Response options were Yes/No.

4.3.7 Measures of Post-Traumatic Stress

The PTSD Checklist for the DSM, Fifth Edition (PCL-5) [214] was used to assess the severity of PTSs. The 20-item checklist was measured using a 5-point Likert scale, ranging from 0 (not at all) to 4 (extremely) and includes four sub-scales that map the PTSD symptom clusters of the DSM-5 [176]. The internal consistency of the scale was evaluated with Cronbach's alpha. Item scores were summed into a total PTSD symptom severity score ranging from 0–80. A score of 31 or above was treated as indicative of probable PTSD. [176].

4.3.8 COVID-19 Social Media Time

This construct measures the general amount of social media use to obtain information about COVID-19. An assessment tool adapted from a prior study by Lin & Utz [61] was modified to measure time spent on social media accessing COVID-19 information.

The construct of social media use was measured using five items in a grid question format: 'On average, how many hours per day have you spent accessing COVID-19-related information using the following media since the lockdown began

on March 23, 2020? 1) Facebook 2) Instagram 3) YouTube 4) Twitter 5) WhatsApp 6) TikTok 7) Snapchat 8) LinkedIn'. Options once again ranged from 'Less than 1 hour per day' to 'More than 12 hours per day'. The scores of the five items were averaged to form the social media use index and the internal consistency of the scale was evaluated using its Cronbach's alpha score and the items were averaged to form the social media use index.

4.3.9 COVID-19 Traditional Media Use

The construct was measured using five items in a grid question format: "On average, how many hours per day have you spent accessing COVID-19-related information, using the following media, since lockdown began on March 23, 2020?" 1) Television, 2) Newspapers, 3) Radio 4) Webpages (excluding social media) 5) Other. Options once again ranged from 'less than 1 hour per day' to 'more than 12 hours per day'. The score of the five items was averaged to form the Traditional Media Use Index. Internal consistency of for the scale was assessed with a Cronbach's alpha score.

4.3.10 Social Media Use

I adapted the questions from the Multidimensional Scale of Facebook Use to measure both general and COVID-19-related social media use across multiple social media platforms [33]. All questions from the original questionnaire were loaded onto three factors: *Active public Facebook Use*, *Active private Facebook use*, and *Passive Facebook Use* on a seven-point Likert scale. I selected this particular scale because it had demonstrated good validity and reliability and it was easier to adapt to multiple social media platforms than other comparable scales [215]. Questions like: 'How often do you visit a Facebook profile of someone that does not belong to your friends list?' was modified to 'How many times per day do you look at social media content posted by someone you are not friends with, are not following, or being followed by?'

One of the two original items pertaining to active private use was dropped due to redundancy when applied to multiple social media platforms. Furthermore, the scale was adapted to ask participants about their COVID-19 social media active

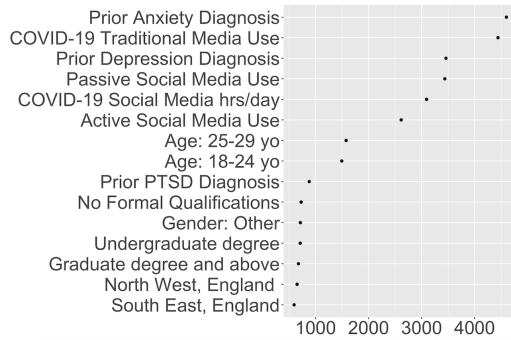


Figure 4.1: Random Forest regression of PCL-5 sum scores (Top fifteen features ranked in order of increases in node purity)

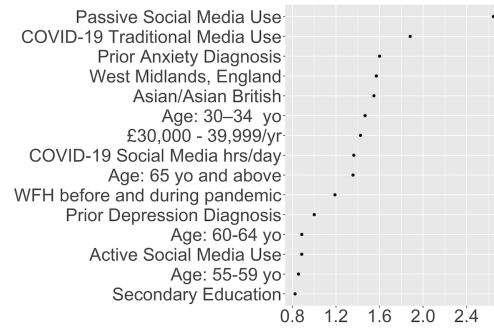


Figure 4.2: Random Forest classification predicting PCL-5 Binary Score (Top fifteen features ranked in order of mean decrease in Gini Index)

and passive use (e.g. 'How many times per day do you chat privately with someone on social media about COVID-19?'). The item was dropped from the general social media use patterns questionnaire was also dropped from the COVID-19 social media use patterns questionnaire.

Due to the changes made to the scale for general social media use and COVID-19 social media use, the deletion of an item from both the COVID-19 and general versions of the questionnaire, and the application of the questionnaires to multiple social media platforms, a principal component analysis (PCA) was conducted to examine whether and how the structure differed from the original scale applied to Facebook. A variance/co-variance matrix was employed for the PCA.

4.3.11 Random Forest Regression and Classification

A Pearson's r correlation analysis was run on all study variables, including the categorical and ordinal variables re-coded as dummies, resulting in 63 variables. Variance inflation was also calculated. Both analyses indicated collinearity between several predictive variables. Given that the aim of this study was to identify key predictors of PTSs and the presence of mixed variable types, I chose to retain all of the variables rather than perform feature selection. I chose to analyse the data using Random Forest regression and classification, as they provide for nonlinear and nonparametric modeling frameworks.

I built a random forest predictive model for both regression and classification, including all the variables as predictors *randomForest* package in R [216]. I analysed the ranking of predictor variables, which were used to identify the relative importance of the selected media variables as key predictors of PTSs from the pool of explanatory variables. Using random forests for variable selection addresses the impact of individual predictor variables in addition to the multivariate interactions with other predictor variables. This methodology presents an advantage over univariate techniques where problems are highly dimensional and variables highly correlated [217] which is often the case with observational data collected from human subjects.

In this instance, I used (1) Regression trees to predict the severity of PTSs, using the PCL-5 score, and (2) Classification trees to identify if a participant has PTSs above the clinical threshold ('high PTSs').

4.4 Results

4.4.1 Response Sample

The initial study sample population of individuals who had not been directly exposed to COVID-19 consisted of 366 cases and constituted a representative sample of the UK population in terms of age, gender, and ethnicity, and location [210]. Fourteen of these cases were missing more than 10% of their response data, and were eliminated from the analysis.

Social Media Use - A principal component analysis (4.1) was conducted on the 10 items from the scales for COVID-19 Active Use, Active Use, COVID-19 Passive Use, and Passive use. A scree plot and parallel analysis indicated a two-factor solution explaining 61.34% of the total variance. Due to the assumptions of covariance, oblique rotation was applied to the components.

All items pertaining to passive use and private chatting loaded onto one factor, yielding a scale with good internal consistency [218] of $\alpha = 0.82$, $M = 2.00$, and $\sigma = 0.83$. All items pertaining to active and public use, both general and COVID-related, loaded onto the other, yielding a scale with acceptable internal consistency [218] $\alpha = 0.78$, $M = 1.23$, $\sigma = 0.49$.

Items	Passive Use	Active Use
Viewing content posted a friend, someone they are following/being followed by	0.86	-0.12
Viewing content posted by someone they are not friends with, following/being followed by	0.84	-0.08
Viewing content posted by a friend, someone they are following/being followed by about COVID-19	0.74	0.16
Viewing content posted by someone they are not friends with, following/being followed by	0.78	0.08
Chatting privately with someone on social media	0.57	0.09
Chatting privately with someone on social media about COVID-19	0.41	0.17
Publicly posting a written message about COVID-19 on social media	0.19	0.61
Publicly posting a photo on social media	0.09	0.77
Publicly posting a written message about COVID-19 on social media	-0.04	0.92
Publicly posting a photo related to COVID-19 on social media	-0.07	0.90

Table 4.1: Principal Component Analysis, Social Media Use

4.4.2 Post-traumatic Stress Score

The scores of the 20 items from the PCL-5 questionnaire were averaged to form the PCL-5 index. It yielded a high internal consistency of ($\alpha = 0.94$). The mean of the index was $M = 0.67$, with a standard deviation of $\sigma = 0.7$. By design, participants did not meet DSM-5 Criterion A for direct exposure to trauma and no assumption or diagnosis of probable PTSD was made for individuals who scored above 31. Instead, a new variable ‘PCL-5 Binary Score’ was created by dichotomising the PCL-5 Sum scores. Scores of less than 31 correspond to ‘Low PTSs’ and scores above 31 to ‘High PTSs’ [219][220]. The cumulative distribution function of PCL-5 sum scores indicated that over 90% of the data fell below the threshold score of 31, indicating a strong class imbalance for the PCL-5 Binary Score.

4.4.3 Media Use Scales

The mean of the COVID-19-related social media time index was $M = 1.35$, $SD = 1.08$ with a Cronbach’s alpha $\alpha = 0.912$. A larger mean indicates more average hours of daily use. The mean of the COVID-19-related traditional media use index was $M = 1.77$, $SD = 1.32$ and Cronbach’s alpha $\alpha = 0.81$. The scores on five types of traditional media use were averaged to form the traditional media use index. A higher number indicates more hours of daily use of COVID-19-related traditional media use. All Cronbach’s alpha values cleared the 0.70 threshold [218], indicating high internal reliability.

A Pearson's *r* correlation analysis was run on all study variables, including the categorical and ordinal variables re-coded as dummies, resulting in 63 variables. Due to the table's substantial length, the full table is included in Appendix A.1.

4.4.4 Prediction of Post-Traumatic Stress Symptoms

Random Forest Regression: For classification, the prediction from each tree was a class membership (e.g., Low COVID-19 PTSs/High COVID-19 PTSs), and the final prediction was calculated using a majority voting scheme (whereby the predicted class is the same as the majority class). For RF regression, the final prediction from was calculated by averaging the prediction from individual trees. I used 500 decision trees in the ensemble. For split-point selection, I employed the square root of the total number of predictors while constructing regression trees, whereas for classification trees, I used one-third of the total predictors [150]. Predictor importance from regression trees was obtained based on an increase in node purity (important features would be associated with a larger increase in node purity), whereas predictor importance from classification trees was based on the mean decrease in the Gini index, which measures how important a variable is to estimating the outcome variable across the entire variable: A higher mean decrease in the Gini index signifies a more important variable.

For the RF classification model, all PCL-5 scores were converted to a binary score. Per clinical guidance, a score above a cutoff of 31 can be treated as 'probable PTSD' [219, 220]. The classification model was weighted to correct for a severe class imbalance. Both classes (low PTSs/high PTSs) were allocated a class weight that was inversely proportional to the number of observations in the class.

The calculated average difference between the predicted and observed PCL-5 scores on an 80-point model was $RMSE = 5.04$ and the mean absolute error $MAE = 3.61$ with predicted PCL-5 sum scores ranging from 1.42 to 48.48. The features that most contributed to the regression model's predictive power (measured as an increase in continuous PCL-5 sum score) were, in order of decreasing importance 4.1: Prior Anxiety Diagnosis, Daily COVID-19 Traditional Media Use, Prior Depression

Diagnosis, Passive Social Media Use, Daily COVID-19 Social Media Time, Active Social Media Use, Age: 18-24, Age: 25-29, and Prior Diagnosis of PTSD.

Random Forest Classification The RFC model, which treated PCL-5 scores above 31 (high PTSs) as a positive class and PCL-5 scores below 31 as the negative class (low PTSs), selected variables ranked by Mean Decrease in Gini. The RFC yielded a model with an accuracy of 0.99, a sensitivity of 1, and a specificity of 0.992. The top features contributing to the model were, in order of decreasing importance (4.2): Frequency of Private Social Media Use, Daily COVID-19 Traditional Media Time, Prior Diagnosis of Anxiety, Location: West Midlands UK, Ethnicity: Asian/Asian British, Age 30-34, Income: £30,000-£39,000/yr, Daily COVID-19 Social Media Time, Age 65 and Above, Working from Home since before the pandemic, and Prior Diagnosis of Depression.

4.5 Discussion

4.5.1 Passive and Active Social Media Scales

A PCA of the scales for COVID-19 Active Use, Active Use, COVID-19 Passive Use, and Passive Use yielded a two-component scale. This suggests that active and passive use behaviours are stable across both non-disaster and disaster content. Those who tend to use social media when interacting with non-disaster social media will follow similar patterns when dealing with COVID-19 content. While further research is necessary to determine if such behaviours apply to other types of disaster content or if the effect is specific to COVID-19, this finding implies that digital mental health interventions that target type of social media use may be effective in reducing distress related to the use of disaster media content on social media, as well as others.

4.5.2 Importance of Features in Predicting Post-Traumatic Stress Symptoms

Per the random forest regression (4.1), the top eight features in the RF regression produced a considerably larger increase in node purity than the other features. Per the RF classification (4.2) the top eleven features of the classification produced a

greater mean decrease in Gini coefficient, after which values increased noticeably, signifying a drop in predictive importance. In this section, I discuss the placement of media variables in the feature rankings, as well as the role of non-media variables that are important in both models.

Passive Use In the RF regression, passive social media use, active social media use, and COVID-19 social media time were all ranked closely together in the model. This was not the case for the classification model, in which passive use was the most important predictor of PTSs above the clinical threshold for PTSD. The findings are consistent with both the majority of research on passive use, which is associated with negative mental health outcomes [221] [33] [59] and research on traditional media use, which is by default passive [174]. This conclusion is further supported by the importance of time spent consuming traditional media predictors in both models, consistent with existing research on television and print disaster media use [190] [173]. The paramount importance of passive social media use suggests that type of media use is the feature most relevant to predicting high levels of PTSs associated with disaster-related content. However, its importance may be moderated by the interaction of individual difference variables as discussed below.

Active Use The importance of active use in the regression model, but not the classification model is an interesting and somewhat unexpected finding. Its importance in the regression indicates that active use may be important in predicting increases in COVID-19-related PTSs but less so in predicting clinical levels of PTSs.

Non-Media Variables

Only participants who had not been exposed directly to COVID-19 were included in the sample. Several of the most relevant predictors were individual difference variables that were not traditional or media use variables, highlighting that while media use is understandably an important factor, it is not the sole factor. Random Forests indicate which features are more predictive than others, but they do not explain the relationship between the predictive variables or between the predictive

variables and the outcome. In this study, the use of linear and logistic regression was not viable due to the high degree of collinearity among variables. Therefore, the insights I can gain about the role of individual differences in this study are limited.

It is interesting to note that, among the non-media variables, only some of the age variables (being 18-24, 25-29, and 30-34) and one of the education variables (having an undergraduate degree) were both significantly correlated with any media variables and top predictive features in either the RF regression or the RF classification. This lack of overlap, combined with high VIF scores, may indicate that the relationship between individual difference variables, media use, and development of indirect PTSs is challenging to determine at a population level, and would be better studied at the subgroup or individual level.

Prior Mental Health Diagnoses Prior diagnosis of an anxiety disorder is the most important feature in the RF regression and the third most important feature in the RF classification. Prior diagnosis of depression was also an important predictive feature for both models. These findings are consistent with its importance as a subjective risk factor for PTSD [178] [184] and disaster media-related trauma [200, 201], suggesting that it is an important individual risk factor for developing PTSs through both indirect and direct exposure and disaster media-related trauma symptoms. This continuity of findings suggests that prior diagnoses of anxiety and depression are strong predictors of PTSs.

Interestingly, a prior diagnosis of PTSD was not a high-ranking predictive feature in the RF classification and was a low-ranking predictive feature in the RF regression. These results do not concur with most research on PTSD risk factors [184] or traditional media studies [202]. They are consistent with research specific to COVID-19 and PTSs: Ashby et al. found that prior trauma was predictive of PTSs related to COVID-19 only among Asian-American respondents [222]. These findings are consistent given that 83.3% of the final sample participants identified as White (which hews closely to the actual proportion in the UK population of 86%).

4.5.3 Inconsistent Findings

Being 18-24 and 25-29 was an important predictive feature for the RF regression, and being 30-34, 55-59, 60-64, or 65 and above were among the top predictive features for the RF classification.

These scattered results are consistent with the lack of clear association between age and overall COVID-19-related PTSs among indirectly exposed adults [195, 196, 202]. Correlation analysis may provide more information on the peculiar relationship: This analysis revealed significant correlations between younger age groups, forms of social media use, and time spent using both traditional and social media. Furthermore, these results are consistent with existing research that younger adults tend to experience more significant mental distress [186]. This may support the complementarity hypothesis [223] that younger adults in their mid-20s to mid-30s tend to be heavier users of media in general.

Being 55 and above was negatively correlated with passive use, public use, Traditional COVID-19 media time, and social media COVID-19 time, and was significantly and positively correlated with feeling at risk of COVID-19. The correlations may therefore suggest that feeling at risk of COVID-19 may be a strong moderator for COVID-19-related PTSs in older, indirectly exposed adults.

Findings suggest that among individuals not directly exposed to COVID-19, forms of social media use and time spent consuming COVID-19 media (both traditional and social) are strong predictors of COVID-19-related PTSs for younger adults, whereas among older adults, perceived COVID-19 vulnerability is a stronger predictor of COVID-19-related PTSs.

Location

Classification results indicate that living in the West Midlands is associated with high COVID-19 related PTSs but not correlated with any media variables. The West Midlands includes Birmingham, Sandwell, and Solihull: local lockdown measures in those areas had come into force shortly before the survey was run, prohibiting

individuals from meeting different households in private settings due to infection rates that were nearly double the national average [224].

The importance of this region in the classification suggests that feeling close to the event and identification with individuals in the community affected by it may contribute to the development of PTSs through indirect media exposure, even in the absence of direct exposure. This corroborates findings from PTSD research [184] and findings on the role of proximity and identification associated with media use [203][204].

Interestingly, there is no overlap between the locations included in the regression model and the classification: The North West, South East were weak predictors of increases in PCL-5 sum scores, but not in the classification. Similarly, they were not all particularly hard hit (relative to the rest of the UK) at the time of the first national lockdown or around the time of the survey. This discrepancy may have several explanations: The predictive strength of location is moderated by other confounding variables more strongly at sub-clinical PCL-5 scores than scores above the clinical threshold.

Gender

Gender was not among the top predictive features in either classification or regression. The relative lack of importance of identifying as female reflects the scattered results from media studies literature [173, 191, 197–199] suggesting that gender is not a particularly important risk factor in predicting PTSs associated with disaster-related content for both tradition and social media use.

Identifying as non-binary was a predictive feature for RF regression. It is difficult to draw conclusions regarding the subgroup identifying as non-binary: While it could be that non-binary individuals are more likely to have experienced trauma, and experience re-traumatisation via indirect media exposure to COVID-19 content, the subgroup was exceptionally small (7 participants). Identifying as non-binary as a predictive feature of increases in PTSs could be a coincidence due

to the small sample size. A study with a far greater proportion of non-binary participants is needed to draw conclusions.

Ethnicity

Identifying as Asian or British Asian was a predictor of COVID-19-related PTSs above the clinical threshold, consistent with findings that Asian-Americans experienced greater COVID-related PTSs than White individuals [222]. These findings support prior research on individuals identifying as Asian [222]: Ashby et al found that only Asian-American participants who had not previously experienced trauma symptoms experienced high levels of COVID-19-related trauma [222].

The link between ethnicity and COVID-19 PTSs is complex and may be mediated and moderated by other factors. Ethnic identity, social networking, and family cohesion may act as protective factors for mental health [225] and are activated at higher levels of cumulative trauma, protecting participants from the effects of COVID-19 PTSs [222].

An alternative explanation could be that ethnicity is a mediator for location. The West Midlands area of the UK has the second highest level of Asian/British Asian inhabitants after London [226], which ranks (albeit low) as a predictive feature for both the regression and the classification. Therefore, ethnicity may simply act as a mediator for location.

Working from Home

Working from home (WFH) with no change in working status since before the pandemic was a predictive feature in the RF classification model. This result was surprising given prior research associating a change to working from home with a decline in mental well-being [189]. WFH with no change in status was not correlated with any other variables selected by either the regression or classification model, high COVID-19 PCL-5 scores, or increases in COVID-19 PTSs. It was, however, positively and significantly correlated with being 50-54 yo, which in turn was positively and significantly correlated with making under £10,000/yr and having a secondary education. This suggests that the association between working from

home prior to the pandemic may be moderated by other socio-economic variables that were exacerbated by the effects of the pandemic. If so, the association between age, socio-economic status, and education would reflect prior research on risk factors for PTSD [183]. For instance, participants who transitioned to working from home were perhaps more likely to develop depression or anxiety during the lockdown, which are subjective risk factors for developing PTSD [178] [184].

Income

An income of £30,000-£39,000 is a prominent feature in the classification model. Its presence in the model is unexpected. While low income has been found to be a risk factor in PTSD, particularly among women [227], there has not been any substantial research on the link between average income and post-traumatic stress. Making £30,000-39,000/yr is significantly correlated with participants living in Scotland (where the median income in 2020 was £25,616, while in England it was £31,461 [228]), which may suggest that income and location may have interacted in unexpected ways to produce certain specific heretofore unmeasured factors for high PTSs. Further exploration of the relationship between income, location, and the experience of media-related trauma is needed.

Education

In both models, a wide range of educational backgrounds are predictive of increases in PTSs or PCL-5 scores above the clinical threshold, contradicting existing research that low education is a risk factor for PTSD [183]. In the regression model, having no formal qualifications, an undergraduate degree, a graduate degree or higher predicted increases in PCL-5 scores. In the classification model, only having a Secondary Education is a weak predictive feature for PTSs above the clinical threshold.

A possible explanation for this discrepancy may be that education is indirectly associated with environmental factors, which may have a stronger association with media use or PTSs [184].

A proposed explanation for the persistent association between low levels of education and socio-economic status in PTSD research is that adults with higher

levels of education tend to develop coping methods for PTSD because their greater social and economic resources enables them to avoid direct exposure to violence or natural disasters, and affords them greater resources to cope with the aftermath of a traumatic event if they do experience one [229]. Education's relative lack of importance in the findings could be explained by the lack of exposure in the sample population: The link between education and symptoms of PTSs is either weak or non-existent in adults who did not have direct experience with COVID-19 because exposure was not a factor in this study.

4.5.4 COVID Risk

Being a part of a group at heightened risk of COVID-19 and living alone during the pandemic were not among the top predictors of COVID-19-related PTSs among indirectly exposed adults, contrary to my expectations. Based on existing literature, it would have been reasonable to expect that perceiving oneself as vulnerable to COVID-19 would have been a high-ranking predictive feature for COVID-19-related trauma. However, it appears that feelings of vulnerability are middling. Yet, the correlation table demonstrates that COVID risk is strongly and positively correlated with both old age (being over the age of 60) and being unemployed or furloughed. This correlation suggests that feeling at risk may act as a moderator for age for belonging to an older age group, which was an important feature for both the classification and the regression,

4.6 Limitations

There are considerations regarding the interpretation of this analysis. Random Forests produce predictive models with degrees of accuracy that come at the cost of interpretability. Their 'black box' nature limits the potential to understand specific interaction terms used to build the model [178]. Moreover, the observed associations between the selected features are not evidence of causality.

It should also be stressed that symptoms of depression and anxiety, respectively, overlap with some symptoms of PTSD and are co-morbid with the disorder [230]

[231]. The degree to which these findings explore the relationship between potential risk factors and symptoms of post-traumatic stress, as opposed to the relationship between certain risk factors and a broader range of symptoms associated with mental and emotional distress is therefore not clear. For greater granularity, future surveys including valid scales to measure anxiety and depression should be included to distinguish general mental health outcomes from PTSs.

Another limitation relates to timing: This study was performed in October 2020, between the UK's first and second national lockdown. However, several local lockdowns had taken place during the months since the initial lockdown ended. Furthermore, the study was performed at a time when cases of death and infection were rapidly rising: The contextual factors may therefore have caused individuals to report the symptoms that they were experiencing at the time of the survey, rather than their longer-term recollection, creating the potential for recency bias [232].

4.7 Implications for Future Work

Social media platforms focus primarily on eliminating and restricting content for which there is a consensus of harm, such as child sexual exploitation and abuse content, or material promoting self-harm on social media. Yet, the findings in this chapter indicate that harm could be incurred from far more innocuous sources, such as news content. My findings suggest, however, that for some people exhibiting certain traits, disaster-related news content can lead to high levels of PTSs and therefore lower subjective well-being. Given the critical role of news content in keeping the public informed of ongoing crises, protecting users from distress while enabling them to stay informed presents a significant challenge.

Empowering users to control their exposure to content in a more fine-grained and personalised manner may be an effective means of mitigating the harmful effects of social media content. While social media platforms generally provide users with means to curate their content (e.g. filtering out content that is deemed sensitive, muting keywords), there is a dearth of research on the use of such tools to mitigate unwanted emotional effects of exposure to content [12]. In particular, there is a

dearth of research on user engagement with features to manage the emotional effects of content not deemed sensitive or banned but which is nevertheless subjectively harmful to a particular individual or group.

For example, a user who feels the presentation of relevant disaster-related content, including news, could be tailored to reduce the likelihood of harm to those individuals who are susceptible. For instance, for unfolding disasters with high proximity to the user, news content could be made to convey essential safety-related information in a distilled or calm form, without content of high emotional valence, such as inclusion of video or image footage of sick or dying individuals, as was common by mass media outlets during the COVID-19 pandemic. One additional option would be to give users the choice to view news in 'safe mode' for when they, feel overwhelmed or emotionally fatigued. The benefits of social over traditional media are that different people can easily be presented with tailored versions of the same story. This may be, however, at odds with existing engagement-driven incentive structures online, which may explain why outlets include as much high-valence content as possible to attract views and engagement [233].

4.7.1 Theoretical Implications and the Shift to Emotion Regulation

The findings in this chapter demonstrate that individual differences and context play a crucial role in shaping responses to social media content, consistent with the DSMM. The DSMM helped clarify why some users are more vulnerable to experiencing post-traumatic stress symptoms from COVID-19-related social media content, particularly highlighting the role of pre-existing mental health conditions and situational stressors. However, the results were mixed in important ways. While some individual factors predicted greater susceptibility to harm, other patterns, such as the role of active social media use, were inconsistent.

These mixed findings reflect the DSMM's position that media effects are conditional and context-dependent, shaped by a complex interplay of individual, developmental, and social factors. Yet, while the DSMM helps explain how

individual differences shape media effects and why the same content affects users differently, it does not account for how individuals actively manage and regulate their emotional responses when confronted with distressing content. The following chapters, therefore, shift to Gross's process model of ER as their primary theoretical framework. While the DSMM continues to provide a lens for understanding how individual differences and context shape vulnerability to harm, the process model of ER becomes the central analytical lens to examine how users manage these emotional responses through a range of ER strategies, such as attentional deployment, cognitive reappraisal, and situation modification [85]. Subsequent chapters therefore draw on the Process Model of Emotion Regulation and related concepts from digital ER intervention design to examine how users manage emotional responses to content in specific contexts. This shift in focus to ER allows for a more granular examination of user strategies across specific contexts and informs platform design recommendations.

4.8 Conclusion

I conducted this study to explore the role of social media use in predicting symptoms of post-traumatic stress in an adult population indirectly exposed to COVID-19. I found that passive social media use is a more important predictor of COVID-19-related social media PTSs symptoms than other variables previously associated with disaster media-related trauma. These results suggest that news-related trauma symptoms, type of social media use, and exposure to disaster-related social media content can interact with individual differences in ways that are difficult to measure within a heterogeneous population. This finding is consistent with the mixed results on the impact of social media use on subjective well-being [3, 10]. In other words, these quantitative findings provide fairly high-level and broad findings that specific subgroups are more likely to experience high levels of PTSs, but those findings are limited in depth.

The significant role of passive social media use in predicting high levels of COVID-related PTSs among those who had not been directly exposed to the pandemic suggests that social media use should be examined closely in forthcoming digital

well-being research and may be a target for digital health intervention. However, as demonstrated by the analysis in this chapter, the DSMM's focus on differential susceptibility provides limited insight into how users actively manage their emotional responses to distressing content or how platform affordances might support these efforts. To address this gap, subsequent chapters adopt the Process Model of Emotion Regulation as the principal framework to examine user strategies across specific contexts and inform platform design that better supports user well-being.

5

Investigating How Sexual Assault Survivors Manage Exposure to Trauma Reminders on Social Media

5.1 Content Warning

This chapter contains discussions of the following sensitive topics:

- sexual assault
- sexual abuse of children
- self-harm
- death
- discrimination
- violence
- stereotypes
- coarse language

I have removed details and graphic content wherever possible.

In this chapter, I examine how users’ needs and preferences for PM tools are affected by a shift in disposition (see 2.4).

5.2 Introduction

Chapter 4 investigated the effect of changes in media use on subjective well-being. My results highlighted the challenges of using quantitative methods to understand the relationship between differential susceptibility variables (predictive variables) and content-based harm (PTSs) media use (active/passive use) for a **specific type of norm-compliant content** among a relatively heterogeneous population. These high-level findings suggested that users could benefit from greater flexibility in their PCM tools for informative and potentially harmful content. In this chapter, I examine the effect of in-person changes on media use.

In this chapter, I apply thematic analysis to better understand the effect of a major trauma on a subgroup of individuals with respect to social media use. I investigate how these individuals cope with the resulting unwanted emotional responses to reminders (triggers) of that trauma on social media. I also examine their understanding of how platforms afford or constrain their ability to effectively regulate their emotional responses to traumatic content. This research draws on a thematically relevant set of posts collected from selected sub-Reddits posted by victims of sexual assault, and their descriptions of post-assault social media experiences. In total, I retained 427 posts for thematic analysis.

Subreddit	Subreddit Description
r/rapecounselling	Rape counseling: care and support for sexualized trauma
r/sexualassault	Community of sexual assault survivors and allies
r/adultsurvivors	Therapy from the Hivemind
r/rape	A resource for survivors and their loved ones
r/molested	A safe place for survivors of molestation
r/PTSD	A community those with PTSD or their friends, family, or partners with PTSD.
r/CPTSD	A support community for those affected by Complex Post Traumatic Stress
r/traumatoolbox	Peer support for survivors

Table 5.1: Subreddits used with summary descriptions

After a sexual assault, individuals may feel intense emotional and stress responses when exposed to reminders of their experience. Such reminders may be explicitly

related to the subject of sexual assault (e.g., a news story about a rape) or more specific to the survivor's personal experience (e.g., seeing their attacker).

Managing exposure to triggers on social media may prove particularly difficult for survivors: Social media platforms are not designed to respond to the impact that a major life change may have on a user's content or contact preferences [234], leaving users to manage their exposure.

While HCI research has investigated the traumatising effect of specific content (e.g., #MeToo content), scant work focuses on whether/how this disruptive physical life event impacts their digital experience on social media, or how they adapt their social media use to address those changes. Therefore, I consider:

1. How do survivors describe distressing changes to their social media experience in the wake of sexual assault?
2. How do users adapt their use of social media to manage exposure to distressing reminders of their sexual assault?

I explore these questions by thematically analysing descriptions of post-assault social media experiences from 427 posts collected from trauma support subreddits.

5.3 Background

5.3.1 Sexual Assault and Trauma Reminders on Social Media

Sexual assault refers to sexual contact or behaviour that occurs without the victim's consent [235] and is a distressingly common form of violence: Approximately one-third of women are victims of sexual assault, and one in five experience attempted or completed rape throughout their lifetime [236]. Sexual assault is a potentially traumatic experience associated with mental and behavioural health complications, such as anxiety, suicidality, emotional dysregulation and PTSD [236]). In the wake of a traumatic sexual assault, survivors may develop trauma triggers. Triggers can be anything that the affected individual associates with their traumatic experience,

provoking fear or distress [237]. Some triggers may be readily identifiable, such as a person or place associated with experience; others "do not necessarily have a meaningful relationship to the traumatic event (e.g. a pattern of light, a particular sound)" [237]. Therefore, people, things, places, or sounds that were previously innocuous can be made triggering by the experience of sexual assault. Exposure to triggers can cause severe distress, often leading survivors to avoid them, which may lead to negative experiences.

5.3.2 Exposure to Sexual Assault Triggers on Social Media

Identifying and managing exposure to triggers on social media may pose a challenge to survivors. Social media platforms favour static life trajectories in which a user's content and contact preferences remain essentially unchanged and are not designed to adapt to the disruptive life events that may drastically affect what or who they want to engage with online [234]. Yet, the overwhelming majority of sexual violence is perpetrated by friends, family members, and acquaintances [238], all of which are part of online social networks.

Platform algorithms may also create automatic reminders of a traumatic experience: Meta and Instagram's year-in-review feature automatically post a highlight reel of the people, experiences, and places that are most relevant to users over the past year; this has previously been criticised for surprising users with reminders of a recently deceased loved one [239].

In a similar vein, Gak et al. found that users recovering from eating disorders were often targeted for weight loss advertisements, concluding that "interests such as diets that once felt relevant can be brought up as triggering reminders of past issues"[79, p.10].

Recommendation algorithms may also promote content that reminds survivors of their sexual assault. In a study examining the effects of sexual assault-related content on survivors, study participants described employing PM tools across social media platforms to tailor their feeds to minimise distress [236]. These strategies included muting words or hashtags, adjusting location settings, filtering

content, unfriending individuals, or restricting certain users' ability to send private messages. During periods of intense news coverage, many participants chose to mute terms such as 'sexual assault', '#MeToo', or the names of specific perpetrators to manage their exposure [236]. While survivors acknowledged the value and utility of these tools, they also expressed frustration at their limitations: For example, muting specific words on Twitter did not always filter out those same terms when used in article headlines [236].

5.4 Methodology

Prior HCI research has found that individuals who've experienced a traumatic event tend to commonly seek out support through online communities of individuals who have experienced similar events, allowing them to engage in interpersonal communication, produce reciprocal understanding, seek and provide social support, and seek and provide advice [240]. As such, I determined that these subreddits would provide a wealth of disclosures about the common experiences and struggles that sexual assault survivors may face in their everyday use of social media.

5.4.1 Special Ethical Considerations

CUREC approved this study before data collection began B.1. Due to the sensitive nature of sexual assault, I imposed limitations on the study beyond what is required for CUREC approval to minimise the risk of re-identification and respect users' expectations of privacy.

Reddit's terms of service and community rules were reviewed to confirm that data was available for public use, and communities with rules explicitly prohibiting the use of data for research were excluded from the analysis.

While including usernames and quotes is a common practice in qualitative social media research [241], where the topic is sensitive (such as trauma and sexual abuse), there may be outsised safety or privacy risks to those data subjects if their content is shared beyond its intended context [242]. Consequently, no direct quotes are used in this chapter in order to minimise the risk of re-identification: Instead, quotes

included in this study are paraphrased from existing non-deleted posts to preserve pseudonymity: I paraphrased each quote by breaking it down into its thematic analysis codes and then manually reconstructed an equivalent passage. I compared the paraphrased quote to the existing quote to verify consistency, and then Googled it to confirm anonymity [243]. Furthermore, I only included the oldest relevant public support communities (those not requiring moderator approval to join) with large user memberships (over 10000 users) to further reduce the possibility of re-identification.

5.4.2 Data Collection

I collected data from subreddits using the Pushshift API. Pushshift is a social media data collection, analysis, and archiving platform created and maintained by the moderators of the r/datasets and subreddits with the express purpose of making Reddit data available to researchers [244]. The data set was updated frequently and included user-generated content dating back to Reddit's inception in 2008 and ending on May 1st, 2023 [245]

The r/sexualassault, r/rape, r/molested, r/rapecounselling, r/adultsurvivors were included in the analysis. I also included the r/ptsd and r/cptsd in the analysis due to the large size of the communities and the prevalence of rape and sexual assault leading to post-traumatic stress [246].

The following search parameters were set for the keyword search:

- subreddit names: r/sexualassault, r/rape, r/molested, r/rapecounselling, r/adultsurvivors, r/ptsd, r/cptsd, r/traumatoolbox.
- keywords: A case insensitive search for names of the top ten most popular platforms, measured by monthly active users, at any point from 1997 (e.g., MySpace) to March 2023 [247] [248]. Vernacular abbreviations for the platforms (e.g., IG instead of Instagram), multiple iterations for the platform name (e.g., Facebook and Meta), "social media", "platform", and "social network" were included.

- Title and text of post: The title and body of the relevant Reddit post were retrieved. The remainder of the thread was not included.
- Date and Time: Date and time the original post was published.
- Alphanumeric post IDs: The API generated unique IDs were collected in place of Reddit's username to reduce the chances of re-identification.

All data was downloaded to .csv files. The full data set can be found in the supplementary materials file for this thesis.

5.4.3 Data Processing

Before beginning the thematic analysis, the data was manually sorted for relevance using the following criteria.

For posts extracted from the r/sexualassault, r/rape, r/rapecounselling, and r/adultsurvivors subreddits:

- These were retained if they contained discussions about the use of social media in the wake of the user's assault.
- Any posts describing second-hand experiences (e.g., a user discussing their partner's sexual assault), or incidentally mentioning the use of social media unrelated to an experience of sexual assault, were excluded.

The posts extracted from the r/CPTSD and r/PTSD forums were sorted in two rounds.

- In the first round:
 - Posts were included if they contained first-hand disclosures of sexual assault.
 - In instances of ambiguity where the nature of the trauma was unclear, the post was not included.

- In the second round, posts that did not contain content on social media use after the assault or assaults was excluded.

The breakdown of collected vs. analysed posts is shown in Table 5.2.

Subreddit	Collected	Discarded: Not Sexual	Discarded: Not Social Media	Analysed
r/rapecounselling	340	NA	164	176
r/sexualassault	155	NA	105	50
r/adultsurvivors	136	NA	94	42
r/rape	235	NA	150	85
r/molested	24	NA	17	7
r/PTSD	283	227	17	39
r/CPTSD	694	624	44	26
r/traumatoolbox	35	28	2	5
Total	1902	879	593	430

Table 5.2: Collected vs. analysed posts by subreddit

5.4.4 Analysis

I followed Braun and Clarke’s six phases of thematic analysis as described in 3.3.2 adopting a mainly inductive and semantic approach. Inter-rater reliability was not established, as it was inconsistent with Braun and Clarke’s reflexive thematic analysis process [157].

I familiarised myself with the aggregated data set by reading through it and taking down detailed notes in NVivo, documenting each potential theme or pattern emerging from the cases. The codes were then aggregated into subthemes and themes. A second researcher performed a similar thematic analysis of the interview data separately, and differences were resolved through discussion.

5.5 Results

This section presents the thematic analysis of collected data. All quotes are paraphrased to limit the possibility of re-identification. The data set is included in the supplemental materials. The codebook can be found in Appendix B.2.

Two major themes were conceptualised from posts largely in alignment with this chapter's two research questions: (1) Changes to the Social Media Experience and (2) Managing Reminders.

5.5.1 Changes to the Social Media Experience

Unwanted Contact from the Attacker

An attacker making repeated unwanted attempts to make contact, using friend requests or direct messaging, was a prevalent source of distress for posters:

My attacker messaged me saying, "Stop going around spreading lies. We both know I never did anything you're accusing me of. You're just crazy like your mom. You best keep my name outta your mouth." Now I'm terrified.

Where posters had previously taken action to block the attacker or make themselves more difficult to identify on social media (e.g., deleting their accounts and remaking private accounts under pseudonyms), they discussed being distressed by the attacker's repeated efforts to circumvent the measures in place.

I completely changed every social media account from when we were dating...I thought I'd blocked all of his accounts so he wouldn't find me and thought I was safe, but I wasn't. He found me on Twitter and DM'd me from a creepy account he used to degrade women...I blocked him and changed my privacy settings, but it triggered the worst panic attack since I ended things. I don't understand why he can't leave me the fuck alone.

In some instances, the attacker indirectly contacted the survivor using a third-party account that was not blocked, such as that of a mutual friend or family member.

In addition to experiencing repeated unwanted private contact from their attacker, posters were harassed on public social media forums by the attacker's social group, creating feelings of distress. In a small number of cases, those mutual contacts messaged the survivor to discredit the survivor or voice their support for the attacker.

Fear of Surveillance

Even in the absence of direct contact or harassment, fear and anxiety from the knowledge that they were being surveilled by the attacker on social media was a prevalent concern among posters. They described instances of their attacker repeatedly liking their content (e.g., liking Facebook posts), viewing their content (e.g., viewing Instagram stories), or checking their social media profiles (e.g., viewing a LinkedIn profile), all of which induced severe anxiety.

He was actively viewing all of my stories, etc. He would constantly watch me even though I had unfollowed him on all my accounts. I blocked him on everything after that because I didn't want him to know what was happening in my life. He was very strategic about it: He'd like pictures that I was in that were posted by mutual accounts, would look at my LinkedIn profile, and claimed to be a member of a student organisation I was a part of. He's never messaged me directly (even before he was blocked) and only does things that are 'innocent'...I was going through my list of followers on Twitter earlier today and realised that he's been following me from an old account he used to have for gaming stuff. When I looked into it, I realised that my account is the only one he follows.

It's been three years and I don't know why he's trying to be spiteful/stalk me? I'm not sure...Either way, when I discovered that I'm the only person he follows, my anxiety skyrocketed: It was so bad that I started crying and I couldn't breathe. Even though he's being indirect about it, all I wanted was to scream at him to leave me in peace.

Fear of being watched through social media also manifested from the fear of indirect contact through mutual friends or acquaintances who might "report back" to the attacker.

Distressing Content

A large proportion of posters disclosed experiencing negative emotional responses and stress when exposed to social media content that elicited reminders of their sexual assault. In some instances, the content was directly related to their experience, such as content about sexual assault. In others, the connection was less direct, making it difficult for the survivor to anticipate distress.

Content by or about the Attacker :

Posters described experiencing strong negative emotional responses to seeing their attacker's content on social media denouncing sexual assault:

He frequently re-posts and writes supportive comments on posts advocating for women's rights or making strong anti-sexual assault statements. It makes me furious.

Seeing content posted by friends and family that indicated a positive relationship with the attacker was distressing, particularly where the posters had previously disclosed the sexual assault to them.

My friend recently ran into my attacker at a concert and dropped a selfie with him on her Instagram story. It's not the first time she's done that, so I got upset with her...she didn't take the picture down, she just hid me and a few friends from being able to see it.

Seeing content on social media that indicated that their attacker was doing well in life elicited strong feelings of anger and injustice:

I see him living his easy life on social media every now and then, and it really bothers me; it's disgusting that he could do that to me. The fact that he gets to live his life and be happy after what he did to me is appalling.

Content Related to Sexual Assault

Posters described being exposed to a wide range of content that triggered reminders of their assault and elicited strong emotional responses. Distressing content included discussions of sexual assault or advocacy such as the #MeToo movement, content blaming or minimising the experience of sexual assault victims, and posts discussing fetishes that contained elements of non-consensual role-playing.

Unexpectedly Distressing Content

Posters described being caught by surprise by distressing content that they had not expected to see or were not aware would trigger severe stress responses.

Unexpectedly encountering content by or about their attacker elicited strong experiences of stress. Posters frequently described their attacker 'popping up' on

their social media feed unexpectedly and causing significant distress. In certain cases, posters investigated the reason for the surprising appearance, only to discover that they unknowingly had interests, friends, co-workers, or online communities in common with the attacker.

An old friend from college posted pictures from a recent vacation, and he was in every single one, cuddling and hugging her. I guess they must be dating. It was a massive shock, and seeing him pop out of the blue made my anxiety go through the roof.

Coming across content that was indirectly associated with the sexual assault was also a source of distress that posters found difficult to manage. One survivor described experiencing severe anxiety after watching a video clip of an actor who bore a strong resemblance to her attacker. Another described feeling shame when seeing old posts from a time before her assault:

I can't look at my Facebook profile without melting down because all of my photos from before because I was trying to look good. When I see those I just wonder, was I asking for it?

One survivor described being unable to see *any* 'happy' content without experiencing deep feelings of stress or injustice.

Automated Recommendations

In other instances, the unexpected appearance of their attacker on their feed resulted from an automated recommendation from a social media platform, despite having made efforts to block or remove the attacker from their social media environment:

Lately, when I scroll on Instagram, I've been seeing my attacker and his friends accounts pop up under the 'recommended' or 'people you may know' sections. I block them ASAP, but fuck, it still makes me feel sick.

5.5.2 Managing Reminders

The posters described a variety of methods to manage the effects of sexual assault reminders, many of which align with the process model's ER strategies. Their methods included monitoring their attacker and managing online experiences through the use of PM tools. In some cases, posters also sought out deliberately distressing content.

Monitoring the Attacker

The use of social media as a tool to monitor attackers emerged as a common form of situation selection, though posters did not always disclose the motivation for doing so. In instances where a motive was provided, posters described doing so for emotional and physical safety or as a form of compulsion.

Where safety was the primary motivation, posters disclosed tracking their attacker in order to feel safe, and posters periodically monitored their social media for information about their attacker's location and movements to ensure that they would be able to avoid them.

Do any of you ever find yourselves thoroughly checking your attacker's social media?...I'll search his name on Google to see where he hangs out. It has actually helped me avoid him many times.

Some posters also monitored attackers out of concern that they might have been abusing significant others or family members, though none described taking any further action.

Another prominent motif was monitoring the attacker as a form of compulsion. The posters recognised that monitoring their attacker and following their social media activity was stressful, but found themselves unable to stop 5.5.2:

I finally added him on Facebook, and I'm completely obsessed. I'm always thinking about what happened, and it's even in my dreams. The more I think about it, the more everything feels unreal. I know this fixation is basically self-harm and it's really scaring me.

Fixation on Triggering Content

Posters described being fixated on sexual assault content, which may act as a form of attentional deployment where attention is directed towards the distressing stimulus. In some cases, they described being exposed to content incidentally and then finding themselves unable to stop. In others, they intentionally sought out content to trigger distress.

I do this thing where I watch a lot of violent porn to trigger flashbacks and freak myself out on purpose because I feel like if I'm not having flashbacks often, I'm not really traumatised. Does anyone else do this?

Social Media as a Distraction Tool

Posters described using social media to distract themselves from thinking about their assault and the negative emotions associated with it, as a coping mechanism that they felt was unhealthy. Distraction represents a form of attentional deployment strategy, whereby individuals redirect their attention away from distressing thoughts and emotions towards alternative content to regulate their emotional response to a given situation.

Personal Moderation Tools

Posters extensively used PAM tools on social media in the wake of sexual assault as situation modification or selection.

Posters particularly described using account moderation tools to prevent future contact with their attacker:

I blocked him on everything so he couldn't get in touch again. He had an old Meta account that he hadn't used for ages and tried to contact me with that. I just blocked him again.

Another approach was to engage in avoidance of painful reminders by employing blocking or unfollowing to prevent contact from the attacker's mutual contacts who had overtly expressed support for the attacker or discredited the survivor's experience.

My sister gas-lit me and told me it never happened. I'll be honest, I was suicidal for a whole week after that. I almost went through with it...but I didn't. I blocked her Facebook after that because I didn't want to have to see her.

Withdrawal From Social Media

A number of posters disclosed that they had withdrawn from social media, deleted it entirely, or continued to use it despite wanting to withdraw for fear of having to explain to social contacts why they'd done so. This withdrawal acts a form of situation selection.

Deleting and Remaking Social Media to Prevent Contact

Posters described deleting all social media accounts in order to prevent their attacker from being able to monitor their activities or contact them. In some instances, posters remade their accounts under pseudonyms and with privacy settings to maintain their social media presence while limiting their attackers' visibility.

In some cases, posters deleted all of their social media accounts after their attacker had circumvented their use of PAM tools as described in section 5.5.1 to stop bullying by their attacker's supporters.

Deleting Social Media to Avoid Content-based Reminders

A small number of posters disclosed deleting their social media accounts because they could not cope with the volume of distressing content they encountered, potentially engaging in a radical form of situation selection. However, it was unclear whether they had used PCM tools to manage exposure prior to taking that step.

5.6 Discussion

The analysis of this data indicates that posters' experience of social media changed substantially in the wake of sexual assault, both in terms of how they experienced contact and interactions. Posters described responding negatively to content that directly or indirectly reminded them of their attacker, content on the topic of sexual assault, or content reminding them of a specific feature of their assault. Posters also experienced distress when contacted by their attacker, or people connected to the attacker. In response to these post-assault changes to media use, posters managed their exposure to such reminders by using PAM tools or other means to prevent contact from people associated with the attack. When posters were unable to manage the effects of their exposure, they deleted accounts or withdrew from social media entirely.

5.6.1 Changes in Social Media Experiences

Posters described changes to their social media experience in the wake of sexual assault. The findings on distress caused by repeated exposure to sexual assault disclosures of others and content about sexual assault are consistent with previous work on the subject [236].

Furthermore, users expressed experiencing distress upon being exposed to content by or about their attacker in the wake of their assault. Though not discussed in detail in the posts, the fact that the attacker appeared on their social media feed in the wake of the assault suggests that they were acquainted with the attacker before the assault, which is consistent with existing statistics on perpetrators of sexual assault [238]. The ramifications of being socially enmeshed from a PM perspective are discussed in 5.6.3.

However, the more nebulous concerns around being watched by an attacker are novel. Posters described feeling distressed by the knowledge or suspicion that their attacker was monitoring them, particularly when surveillance persisted beyond the point at which the poster used PAM tools to protect their privacy. In most of the posts belonging to this subtheme, the posters did not know why their attacker was maintaining visibility on their social media activity. The prevalence of this theme in this data indicates that the topic warrants further investigation.

5.6.2 Detecting Emotion Regulation Strategies

The strategies that posters described using to manage the effects of trauma reminders align with established ER strategies: Blocking, unfollowing, and muting act as situation modification strategies, while withdrawal from, and deletion of, social media are forms of avoidance, a type of potentially maladaptive situation selection.

Findings also indicate that users engaged in several forms of attentional deployment: Using social media as a means of distraction acts as a way of directing attention away from distressing emotions, while fixating on triggering content may be a form of rumination, where attention is redirected towards, rather than away from, the distressing stimulus. While rumination is often regarded as maladaptive [249],

there is limited understanding of the motives behind intentional self-triggering, which I discuss in greater detail in 5.6.4.

The prevalence of engagement with potentially maladaptive strategies, such as avoidance and rumination, suggest that existing low-level platform affordances may not adequately support healthy ER for trauma survivors. The reliance on avoidance-based strategies, whilst providing short-term relief, may limit survivors' ability to engage in adaptive ER over time. The reliance on drastic measures such as account deletion and withdrawal indicates that current tools may be insufficient to manage the subjective and context-dependent effects of trauma reminders on social media. This presents a complex challenge: While avoidance may be a maladaptive strategy in the long-term, uncontrolled exposure is associated with negative mental well-being outcomes. To address this dilemma, clinical settings employ gradual controlled exposure to triggers guided by a practitioner as an effective treatment method [250]. Developing PM tools that enable users to limit their exposure to triggers and gradually re-introduce them into their environment could be a viable approach to managing exposure to trauma reminders in the future, without placing users in an 'all-or-nothing' situation.

While avoidance is a maladaptive strategy to cope with trauma triggers, uncontrolled exposure is associated with negative mental well-being outcomes. Gradual controlled exposure to triggers guided by a clinical practitioner is an effective method of treatment. Tools developed to allow users to limit their exposure to triggers and gradually re-introduce them into their environment could be a viable approach to treatment in the future.

5.6.3 Moderating Contact, Not Content

PAM tools were used extensively to limit contact with people directly or indirectly connected to the assault, as well as content containing reminders of those individuals. Interestingly, posters did not describe using PCM tools to manage exposure to distressing content. There are two possible and likely explanations for this: The first is that PCM tools work sufficiently well for content-based harms arising from

content about sexual assault, such as news stories about the #MeToo movement, and therefore posters did not feel the need to discuss them on Reddit. The second is that these tools may be inadequate for managing more personal and specific reminders.

The thematic analysis suggests that the person-centred nature of the content-based harms in question may explain the lack of engagement with PCM tools. In instances where the content was distressing due to the person posting (i.e., the attacker), managing exposure to the account was a suitable approach to prevent further distress. However, in cases where the content was about the person but not generated by them (e.g., a third-party posting about the attacker), content moderation tools would not be effective, depending on the platform affordances: On platforms such as Twitter or Meta favouring text-based user-generated content (UGC), keywords and phrases – including names – could be muted. However, if the individual is not tagged in the post, muting or filtering content would be ineffective on image-focused platforms such as Instagram.

Scott et al.'s framework for trauma-informed platform design recommends providing users with additional tools to enable them to filter and curate imagery associated with trauma. However, the tools described in that work apply to content-based harms closely associated with the subject of the trauma in question, and applicable to a larger group, such as an image of a trafficking victim. To avoid content containing imagery of a specific person, platforms could provide users with facial recognition filtering tools. Meta previously employed auto-tagging to automatically identify users in photos but discontinued that service amidst concerns about misuse of personal data. A pared-down version of the service could prove useful by enabling users to exclude specific people from imagery [251].

The ability to limit exposure to harmful content containing reminders of specific people may benefit the user by 1) removing the need to sever social connections with mutual friends or contacts in order to avoid triggers and 2) reducing anxiety associated with the possibility of being surprised by triggering of people.

5.6.4 Self-Triggering

Posters described intentionally seeking out reminders of their sexual assault either through content that reminded them of the assault, or by looking through their attacker's accounts.

Though self-triggering has been widely observed, there is limited research on the motivations behind the practice. Bellet et al. found five categories for self-triggering motives: Managing emotional states to avoid numbing, controlling PTSD symptoms, aligning internal distress with external experiences, and making meaning of traumatic events. A prevalent motive for self-triggering among trauma posters was maintaining steady levels of symptoms to prevent unexpected elevation in symptoms, and to make sense of their experience by repeatedly revisiting aspects of the trauma. Their findings that "alarmingly, self-triggering can become compulsive, ego-dystonic, and difficult to curtail for many individuals" [252, p.751] is consistent with the posters' descriptions of the behaviour as a "fixation" (see 5.5.2) that posters felt unable to stop.

Creating platform tools that empower users to find a middle ground between complete avoidance and self-triggering may present a valuable tool to manage exposure to content. X already provides a PM tool that allows users to mute content containing specific hashtags, keywords, or phrases for a preset period of time; this could be applied to intermittently block or mute accounts.

5.6.5 Understanding Individual Susceptibility to Trauma Reminders

The findings in this chapter align with those in Chapter 4 and DSMM theory, which emphasise that media effects vary based on individual and contextual factors. The highly personalised nature of trauma triggers observed in this chapter illustrates how individual life experiences can create differential susceptibility to harm from the same social media content: What serves as a neutral post for most users becomes intensely distressing for survivors based on their specific context and experiences. While the DSMM helps to explain why response to content can vary both within the

same individual and between people, the challenges participants described in using PM tools underline the complexity of managing exposure to such harms in practice.

5.7 Future Work

The findings in this chapter indicate that designing PM tools that enable survivors of sexual assault to better manage their exposure to subjectively harmful content may empower them to regulate their emotional responses to personal and specific reminders of trauma in the context of social media use. HCI literature on trauma-informed social media design has proposed principles to design platforms that reduce the likelihood of experiencing trauma online but "stops short of providing specific concrete designs or guidelines, as the exact decisions will vary based on specific scopes of practice and business needs" [239]. Given the highly personal nature of the triggers observed in this work, applying Scott et al.'s recommendations to elicit the perspectives of the trauma survivors and involve them in platform creation and development [239] aligns well with my findings that triggers are highly personal and difficult to manage.

5.8 Limitations

I examined posts on eight public subreddits to analyse self-disclosures related to the use of social media in the wake of sexual assault. I acknowledge that the data may not fully represent the broader population of social media users who've experienced sexual assault, as 1) not everyone engages with Reddit, 2) not all survivors who use Reddit necessarily engage with the subreddits in scope, and 3) not all survivors who encounter and manage triggers social media triggers discuss them on Reddit.

Furthermore, I recognise that the absence of interaction and collaboration with posters poses certain limitations: If analysis inaccurately represents the experiences and intentions of sexual abuse survivors, the methodology employed in this chapter does not provide a way for posters to correct or clarify findings [253]. Nonetheless, I consider this method robust enough to offer a preliminary understanding of the

tools and strategies that sexual assault survivors use to manage the unwanted emotional responses to social media triggers. Engaging with survivors in greater depth about their specific strategies and needs could provide further valuable insights into developing trauma-informed PM tools.

Finally, this study was explicitly designed to examine how social media can evoke unwanted emotional responses related to trauma, and how users attempt to regulate these experiences. As such, it focused primarily on the adverse effects of social media use. While participants did not spontaneously discuss positive outcomes, such as empowerment or community-building, this does not mean that such outcomes were absent. Rather, they were outside the scope of the research questions and methodological design. Future work might investigate how moderation tools designed to reduce harmful exposure can be implemented in ways that preserve, or even enhance, the potential for positive engagement with content related to trauma.

5.9 Conclusion

This chapter examined how the experience of social media can change after a sexual assault and investigated how users adapt to those changes by analysing 430 posts from trauma support subreddits in which posters discussed the use of social media in the wake of sexual assault. I found that survivors experienced severe distress from being contacted by people associated with the assault on social media, as well as from content that reminded them of the assault. They managed their distress by employing various ER strategies, including a range of PAM tools and non-assisted approaches such as self-triggering, but did not describe using PCM tools. These findings suggest that existing PM tools, and PCM tools in particular, do not adequately moderate exposure to content that acts as a reminder of their specific assault, as opposed to sexual assault more generally.

6

Exploring the Role of Personal Moderation Tools in Regulating Emotional Responses to Upward Comparisons on Academic Twitter

6.1 Introduction

Chapter 5 applied thematic analysis to understand how major life changes can influence users' experiences of harm in the course of social media use. I observed that social media users who had experienced sexual trauma faced significant difficulties in managing their exposure to personally distressing content, negatively impacting their well-being. These results were illustrative of the need for more individual control with respect to moderating such content. However, the post-hoc nature of the analysis did not provide detailed information on how design changes or greater flexibility in affordances could assist users in the regulation of unwanted emotional responses.

In the present chapter, I examine a different use case to better understand how changes and improvements in the available tools may assist with regulation of unwanted emotional responses on social media platforms. To do so, I investigate unwanted emotional responses to social comparison on Academic Twitter. While the life experiences involved are less traumatic in nature than those of the previous

chapter, the study of users' behaviour and reaction to various events is nevertheless helpful in investigating the use of PM tools to manage well-being.

This chapter investigates the varied impact of positively curated content in social media posted on Academic Twitter. Many researchers treat Academic Twitter as the prime venue for engaging in self-promotion through posting about academic or professional achievements [254] without necessarily providing context for successes or discussing the experiences of failures. Examining researchers' emotional responses to these *glory posts* and how they manage those responses provides a context in which to study a clear dimension of upward comparison (professional success) for a well-defined set of users (women researchers).

The following questions are therefore investigated in this chapter:

- *RQ1: How do women researchers regulate emotional responses to contrasting upward social comparison on Academic Twitter?*
- *RQ2: How, if at all, do users appropriate PM tools to support ER processes in this context?*

I conducted and analysed thirty-one exploratory semi-structured interviews with women researchers to better understand the ER strategies and PM tools they use to regulate their emotional responses to upward social comparisons.

6.2 Background

6.2.1 Digital Technologies for Emotion Regulation

Existing research on the relationship between ER strategies and social media use focuses almost exclusively on the use of social media as a means to alleviate or dissipate negative emotions through interaction with uplifting content [13], receiving support online [255], and instant messaging with others on social media platforms [137]. These were associated with improved positive affective states.

Other scenarios are possible. Adults who spend significant amounts of time on social media are frequently exposed to the positively curated content of their

peers, leading them to evaluate their own relative status. Indeed, experiences of social comparison on social media are extremely common across a wide range of contexts and content [77]. Social media posters may emphasise positive images of themselves to others by curating and sharing content presenting an idealised appearance or announcing personal and professional achievements, even if to a large and often unknown audience [256].

Other research has explored the diverse and contradicting affective responses that exposure to such positively biased content may elicit: Posts may act as a source of inspiration for some [8], but elicit feelings of envy, depression, and anxiety for others [77, 257, 258]. As set out in 2.11.2, when experiencing such unwanted emotions, users engage in ER strategies to upregulate or dampen them [84].

Despite the potential for negative emotions when viewing positively biased content, social media users in certain contexts feel obligated to do so – even if resulting comparisons are linked to feelings such as jealousy, anxiety, and stress [259]. Their use is often linked to a fear of missing out (FOMO) on information or opportunities (e.g., job openings or peer activities) that they believe are important in their lives. These situations often involve upward social comparisons. There is currently a gap in research on the role of PM tools to manage unwanted emotional responses to such scenarios.

6.2.2 Social Comparison

Social comparison theory posits that individuals have a fundamental drive to evaluate their opinions and abilities and may do so by comparison [260] [261]. However, individuals do not always do so objectively and impartially, leading to biased self-perceptions [261]. Individuals may compare themselves to others who they perceive as better off (upward), worse off (downward), or similar (lateral), depending on their motives [261] along one or more dimensions of comparison. The dimension refers to the aspect of self being compared, such as body image [262] or professional success [77]. Upward comparison occurs when the goal is self-improvement: Observing

someone who is successful in some aspect can provide information about how to improve oneself by becoming more like the target of comparison [263].

Social media platforms provide users with a broad range of opportunities to share and curate information about every aspect of their lives and create ideal conditions for upward social comparisons in certain contexts [257]. Upward comparison with others based on glory posts and happy events, such as work achievements and holidays, can induce feelings of anxiety [77], depression [264] [265] [266], and inadequacy [257]. When faced with such feelings, individuals will regulate their emotions in order to change how they feel. Some ER strategies can promote mental well-being, while others are detrimental to it [267].

6.2.3 Academic Twitter

Academic Twitter is a forum where academics share stories of successes and failures and where academic careers, professional identities, and scholarly communities are formed [254]. For researchers and academics, engaging with Academic Twitter has the potential to yield significant rewards such as increased research impact, beneficial collaborations, and increased readership [268]. Unsurprisingly, the perceived rewards are such that academic institutions encourage researchers, particularly those at the beginning of their career [269], to engage with Academic Twitter. However, doing so can have detrimental effects on mental health: Reading tweets about success may lead users to engage in upward social comparisons with other researchers on the platform, leading to unwanted feelings such as depression and anxiety [257]. Some Academic Twitter users, such as women early career researchers, may be more likely to engage in strong upward comparisons with others, leading to unwanted emotions and negative effects on well-being [270] [271] [272].

6.3 Methods

6.3.1 Participant Recruitment

Recruitment

Recruitment was conducted by tweeting about the study and informing participants that, "the study investigates how women in research experience tweets about professional/academic success from others in their field." C.2 Each participant was screened for eligibility using the JISC online survey platform [273] prior to being invited to schedule an interview. Each participant had to confirm that they: 1) identified as a woman, 2) were over the age of eighteen, 3) were based in the United Kingdom, 4) met the criteria for early career researcher as defined by UK Research and Innovation [274] and 5) were an Academic Twitter user. All participants were compensated for their time with a £10 Amazon voucher.

Procedure

I interviewed 31 women researchers between November 2022 and April 2023. Twenty-eight interviews were conducted remotely on Zoom and Microsoft Teams, and three were conducted in person.

One week before the interview, participants received an email requesting they look through their Twitter feeds for content that elicited negative responses and take screenshots of them for reference see(Appendix C.3). The semi-structured interviews were conducted in three parts:

Part one pertained to general expectations for Academic Twitter as a community and feelings of upward comparison. Participants were asked about the content they expected to see when engaging with Academic Twitter, the types of content that elicited unwanted emotional responses, and the general factors that influenced how strongly they tended to respond to such tweets.

Part two investigated unwanted emotional responses to upward comparison. Participants were asked to discuss the posts they had taken screenshots of before the interview and what they thought had triggered negative responses. They were also asked what strategies they employed when experiencing such reactions.

Part three concerned user engagement with Twitter’s PM tools for ER of upward comparisons. Users were shown a copy of Table 6.1, describing the available PM tools. They were given time to review the controls and asked if they used any of them to manage unwanted feelings when confronted with success stories from others in their field.

In *Part Four*, participants were asked about the strategies they would like to (but did not currently) use and hypothetical changes to the platform that they felt would better support ER.

Mute	Sort	Block	Unfollow
<p><i>Mute word or phrase from notifications</i> You don't see any notifications for tweets with selected keywords/phrases</p>	<p><i>Lists</i> You can organise accounts into lists and choose to see tweets from those lists on your account</p>	<p><i>Block Account</i> You no longer receive notifications from the blocked account. The account holder won't be notified but will see that you've blocked them if they visit your profile.</p>	<p><i>Unfollow Account</i> You no longer wish to see an account's Tweets in their home timeline. You can still view them on an as-needed basis by visiting their profile</p>
<p><i>Mute notifications from specific accounts</i></p>	<p><i>Topics</i> The Topics you follow are used to personalise the Tweets, events, and ads that you see and show up publicly on your profile</p>		
<p>Mute Tweets that contain particular words, usernames, emojis, hashtags, or phrases You don't see any tweets on your timeline or notifications with these keywords (until you unmute, 24 h, 7 days, 30 days)</p>			

Table 6.1: Twitter Content Control Tools [275]

The complete interview guide can be found in Appendix C.4.

The significance of qualitative research stems from its ability to offer a comprehensive perspective on the subject of study, primarily through the use of subjective qualitative data [276]. The study design provided participants with space to share their thoughts and request clarification as needed. Follow-up questions were asked, and additional probing was conducted where appropriate. This approach enabled adherence to a structured question set while maintaining the flexibility to explore relevant topics in greater depth or to skip questions that had already been addressed.

6.3.2 Language and Framing Considerations

The term "gloryposting" is introduced in this chapter as an analytical shorthand to refer to social media posts prominently featuring academic achievements or successes. It is important to clarify that this term was developed specifically for analytical clarity after data collection was completed and was intentionally not used in any participant-facing materials, including recruitment documents or

interview questions. During interviews, participants were instead asked neutral and open-ended questions about their experiences with content related to academic successes, allowing them to describe their emotional responses and perceptions freely without any implicit negative framing. This methodological choice was made to avoid biasing participants' responses or unintentionally discouraging positive expressions of academic achievement, particularly given the recognised importance of such posts for visibility and professional support, especially among women and marginalised groups.

6.3.3 Demographics

All participants identified as women researchers. In their interviews, the majority of participants (19/31) identified as early-career researchers, and all but three participants studied or worked at a university. The participants' ages ranged from 26 to 49, with a median age of 31 and a mean age of 32.2. They researched or studied 21 different fields. Nineteen out of 31 participants identified as early career researchers (including PhD students).

6.3.4 Data Analysis

All interview recordings were automatically transcribed in Otter.ai and manually checked for accuracy. I then analysed the data employing reflexive thematic analysis [157]. The codebook can be found in C.5 and the interviews are contained in supplementary materials.

I familiarised myself with the aggregated data set by reading through it and taking down detailed notes. I then documented each potential theme or pattern emerging from the cases and coded each interview in NVivo. This process produced 99 codes that were subsequently clustered into themes. A second researcher performed their thematic analysis of the interview data separately, and discrepancies were resolved through discussion.

Participant	Age	Field of Research	Role	Workplace	Time in Role
P1	38	Cyber Security	PhD Student	University	3 years
P2	29	Archaeology	Research Associate	Museum	>1 year
P3	27	Psychology & Statistics	Postdoc. Researcher	University	1 year
P4	27	HCI	PhD Student	University	3 years
P5	29	Sociology	Postdoc. Researcher	University	1 year
P6	26	Synthetic Biology	PhD Student	University	4 years
P7	27	Cyber Security	PhD Student	University	4 years
P8	28	Cyber Security	PhD Student	University	4 years
P9	41	Archaeology	Ind. Researcher	Independent	3 years
P10	27	Art History	PhD Student	University	3 years
P11	26	HCI	PhD Student	University	3 years
P12	27	Biology (Zoology)	PhD Student	University	4 years
P13	35	Education	PhD Student	University	2 years
P14	29	Social Science	PhD Student	University	5 years
P15	29	HCI	PhD Student	University	3 years
P16	31	Criminology	Postdoc. Researcher	University	2 years
P17	34	Disability Inclusion	PhD Student	University	>1 year
P18	34	Education	Senior Lecturer	University	5 years
P19	34	Law	PhD Student	University	3 years
P20	40	Computer Science	Sr. Research Fellow	University	7 years
P21	49	Psychology	Assoc. Prof.	University	<10 years
P22	48	Medical Sociology	Sr. Lecturer	University	7 years
P23	39	Law	Sr. Lecturer	University	1 year
P24	33	Education	Lecturer	University	2 years
P25	37	Education	Lecturer	University	2 years
P26	26	Social Psychology	Lecturer	University	1 year
P27	32	Chemistry Education	Lecturer	University	2 years
P28	46	Atmospheric Physics	Professor	University	4 years
P29	33	Soc.Sci & Comp. Sci	Assoc. Prof.	University	5 years
P30	30	Cultural Mgmt	PhD Student	University	2 years
P31	30	Psychology	Sr. Researcher	Private Sector	>1 year

6.4 Thematic Analysis Findings

This section presents a reflexive thematic analysis of the interview data. In some instances, quotes from the interviews are used to illustrate and contextualise the themes. To protect anonymity, participants are referred to by using ‘P’ for participant, followed by a participant number.

6.4.1 General Academic Twitter Expectations

All interview participants expected to see announcements about conferences, job opportunities, publications in their field, and positive news about awards received and career changes; they felt that engaging with Academic Twitter was either a formal requirement (e.g., a requirement imposed by their institution or supervisor) or critical to career advancement.

6.4.2 Academic Twitter Use

Academic Twitter use was the principal reason that participants engaged with Twitter, with nearly half of participants reporting that it constituted 50% of their interactions with the platform.

Personal Context Factors

For most interview participants (19/31), work satisfaction was an important factor in determining the strength of negative emotional responses to upward comparisons. In particular, feelings about recent positive or negative life changes seemed to have a particularly strong impact on the strength of negative emotional reactions to glory posts.

Participants who dealt with chronic illness or disability expressed similar feelings of being disadvantaged relative to their peers because they could not produce the same volume of work as those peers, perceiving it as a severe disadvantage.

I've had a recent disappointment at work, like if there's something that hasn't gone the way I planned it to go...in the few days preceding seeing something where I'm already kind of primed for feeling like I'm falling behind...I then feel worse about it [P12].

Participants also discussed how their well-being outside of work impacted their emotional response to glory posts on Academic Twitter. Several participants talked about how their feelings outside of work affected their general well-being and susceptibility to strong negative emotions in response to social comparisons on Academic Twitter.

Career Stage

All participants agreed that being at an early and precarious stage of one's academic career played a role in determining how much viewing content on Academic Twitter would positively or negatively impact their mental health.

Yeah I've been on Academic Twitter since I started my PhD. And I think if you'd asked me that question, you know, 5 to 10 years ago, I would have had a very different response than I have now. Now, I'd say

that other people's success is not to my detriment any longer, I have the job, I have the job I want, I have the security I want. So I don't feel that I'm in competition with my colleagues in the field. If anything, I'm just really excited to see their success and to see their contributions to the field. But when I was coming out of PhD I probably would have told you the opposite. [P18].

6.4.3 **Targets of Comparison**

Many different types of celebratory tweets were identified as eliciting unwanted feelings of comparison, the most predominant of which were tweets about achievements from others at a similar career stage in a similar field, tweets that highlight missed opportunities, and tweets that highlight inequalities in academia.

Many (16/31) participants cited that they felt stronger negative reactions to success content from people in their field who were at a similar or less advanced career stage.

if it's somebody that I know when we've gone for similar jobs, then I might be a bit more sort of jealous about it. I think it like, oh, you know why? You know, they're further along than I would you know, why didn't I get this? [P17]

Participants also cited strong responses to glory posts when they felt that the researcher in question was significantly inflating the importance of the achievement.

Glory posts emphasising membership in an in-group that the participant was not a part of or that highlighted benefiting from circumstances beyond the participant's control, such as nepotism, led to feelings of frustration and a sense of unfairness.

Participants reported stronger unwanted emotional responses to upward comparisons when content highlighted systemic inequality in academia that they felt negatively affected them. One interview participant from the Global South explained:

They were basically tweeting about wishing the conferences would think there's something about like, having notification dates a little bit sooner, because not all of us are able to apply for a visa appointment, and then get a you know, 10 year travel history in a day. So I think that kind of tweet felt very personal to me. And I think that's also something I struggle with in academia, and how unequal academia is, especially to people from the Global South, who don't have these privileges as Americans and North Americans and Europeans primarily...And

sometimes I wonder if like, if I don't have to spend that much time, you know, worrying about whether or not I can enter your country, I could probably do a bit more work and worry less about the admin stuff and actually do more research [P.8]

6.4.4 Antecedent Emotion Regulation Strategies Used

Many participants engaged in a range of strategies to deal with the unwanted emotions associated with glory posts on Twitter. I categorised the strategies according to Gross's process model of emotion [84].

Situation Selection

Avoiding Academic Twitter was a common strategy, with participants taking steps to avoid using Twitter with the express purpose of not being exposed to content about others' achievements.

Participants discussed being selective about the accounts followed, removing the Twitter app from their mobile devices , and turning off notifications for the app to avoid being exposed to glory posts on Academic Twitter.

The use of digital self-control tools (DSCTs), such as setting device limits on the amount of time spent on Twitter, or the use of browser extensions that block access to Twitter to make access to Twitter more difficult, was employed by a small number of participants. A small number of interview participants discussed that they had employed DSCTs in the past to limit their use of Academic Twitter but had found them too easy to override.

Situation Modification

A small number of participants engaged in strategies that modified their Twitter environment in order to change the emotional impact of seeing glory posts. A small number of participants used muting and blocking to reduce the likelihood that they would continue to experience unwanted emotional responses to content. Certain participants disclosed using problem-solving strategies by logging off of Academic Twitter and focusing on their work.

In certain instances, interviewees discussed wanting to spend less time on Academic Twitter. This was viewed as the viable alternative to leaving Twitter altogether due to a fear of missing out on content that could impact professional development.

Yeah. I mean, ideally, I'd like to never go on it but I don't feel that's possible because so much happens on Twitter, that's where I see calls for articles or grants or collaborations...so I'll try to use Twitter less rather than cutting it out completely, although that would be my preference. So if I ever leave academia, I'm never going on Twitter again. I will not feel bad about that at all, it will be the best day of my life. Not because I'm leaving academia, but because I don't have to go on Twitter. [P24]

6.4.5 Response-Focused Strategies

Attentional Deployment

Participants used distraction as a strategy to alter the emotional impact of glory posts. Certain participants did so by switching to different content on Twitter in order to stop thinking about the stress induced by seeing glory posts, while others preferred to focus on negative news coverage on social media for lengthy periods of time.

Participants also engaged in offline methods of distraction, such as seeking comfort or enjoyment:

I guess, it's just like, my coping strategy that I kind of developed for this is to do things that like, make me feel happy. So, you know, I'm not gonna lie, sometimes when I feel shit because someone's been tweeting about how amazing they are, I'm just gonna go get myself like some cake and sip a cup of coffee, and that usually sorts me out [P25].

Some researchers sought comfort in other ways to manage their unwanted emotions, such as discussing their feelings with a trusted other person or by doing an activity that they enjoy to alleviate the unwanted emotions.

Response Modulation

A substantial proportion of respondents *vented* about glory posts in an effort to release negative emotions by expressing frustration to partners and friends, either verbally or in group message chats.

I like venting to a friend. There's a couple of friends, particularly friends that I've met on Twitter, who are my kind of like, go to people. And usually when there's something kicking off on Twitter, I'll voice note them on WhatsApp, and we'll have some long conversation around like, 'Oh, I'm really angry about it.' [P26]

Participants also suppressed their emotional responses by ignoring them, either by continuing to scroll and ignoring the emotional response to brush the feeling off: "But I think most of the time. I close it and bottle it up.[P20]"

Cognitive Change

Reappraisal was a common ER strategy: many participants engaged in reappraisal as a means of reframing the meaning or personal relevance of a post by either re-evaluating how they felt about a particular piece of content or by seeking external opinions on their feelings from people of trust, such as academic supervisors or partners.

So it's mainly a process of kind of thinking and reflecting and you know, why am I feeling like this? What is this emotion about? What do I want to do with this? It's not helpful to feel like this. So how am I going to make sense of this? [P21]

Strategic Tolerance of Emotional Discomfort

The majority of participants were aware of the emotional discomfort elicited by reading glory posts, yet expressed that they were willing to endure it if doing so yielded, or had the potential to yield, rewards in the form of research knowledge or career advancement information.

So they could be like, oh, like, here's our new paper, and this is what it's showing. And that's like, that's cool. Because it's kind of like, okay, I'm fine about it. And you might kind of compare yourself a little bit and feel a little bit like, "Oh, I wish I'd done that, like, that's so cool. What you've done in that paper, that's like amazing research." And sometimes you do get that little bit of panic and anxiety, but you're ok with being uncomfortable because like, you get useful information out of it. [P25]

Interestingly, participants were consciously aware of engaging in a cost–benefit analysis when choosing to tolerate discomfort, both when reflecting on past tolerance and when anticipating how such tolerance might influence future professional and well-being outcomes.

6.4.6 The Desire to Engage with More Strategies

Many participants expressed a desire to engage with different or additional ER strategies to help them regulate unwanted emotional responses to glory posts.

Cognitive Reappraisal

A large proportion of respondents (26/31) expressed a desire to change how they felt about glory posts on Academic Twitter, emphasising the desire to have no emotional response or experience positive emotions for the person posting.

I think that I mean, just like very hypothetical terms, what would be helpful is like, if you could look at those tweets, and just at the same time somehow remind yourself of like, what it is that you're doing. And like, actually, you have a lot of things to be proud of, yeah. That you get in the moment, like, you're not thinking about that and you get lost, you get caught up in it. And then it takes, at least for me, personally, it takes a long time to then detach yourself from that, and remind yourself of what you've been doing. [P6]

In certain instances, participants expressed a desire to reframe the content as a source of inspiration to work on their research rather than a catalyst for negative feelings.

I would like to, when something like that happens, I would like it to motivate me instead of like, making me feel a little bit down. And but I don't quite know how, because I think things like that I can use as motivation to really focus. In terms of how no idea, ideally, I would like to just after reading something like that, just shut everything off and then work for like five hours. [P8]

Situation Modification

Participants cited a desire to be more selective about the accounts they followed going forward.

If I could go back in time I would not follow everyone. Because it's actually mess. My account is a mess. I get tweets from everyone and that's not necessary. I would be more selective. So as things stand, I follow everyone who follows me, and I follow more. Yeah, I would probably have like, I don't know, 100 people, maximum, not 1000 2000 people, that will be the difference. I need to change that. [P22]

A small proportion of participants wanted to use PM tools to support ER processes in response to glory posts.

...I think I could probably do with making much more use of lists in the sense that people who I know post about EU law and add them to a specific list because that's basically all they do. And I like having them in one space where I can look at that if I want to...so I don't randomly get, you know, angry and sidetracked by people who aren't relevant to me talking about their accomplishments.

However, enthusiasm for these future strategies was very limited. Few participants expressed a desire to use lists, blocking, muting, topics and unfollowing to support ER processes going forward.

Situation Selection

A desire to use Academic Twitter less or stop using Academic Twitter altogether was expressed by participants. However, it was qualified as somewhat hypothetical, as many didn't feel that they could feasibly do so without missing out on important information.

Okay, I get it. I think the only one that I would have is I wish I felt able to delete my Twitter. Like, I think now, it's not so much of an issue. But I definitely had this thing where I was like, if I could just feel like I wouldn't like it wouldn't be a professional mistake to not be on Twitter, I would just delete it. [P14]

6.4.7 Lack of Perceived Benefits from Strategy Engagement

Certain participants did not feel that they would benefit from making any changes moving forward. A substantial proportion of participants was happy with how they interacted with Academic Twitter and did not feel a need to engage with any additional strategies.

I think that that's really I think I'm kind of happy with how I use Twitter...It's a useful tool to me at the moment, I think I've kind of curated a way of tweeting that works for me. [P26]

6.4.8 Reasons for Non-Engagement with PM tools

In addition to the various ER strategies documented in previous sections, some participants offered insights into their reasons for not engaging with PM tools to curate their content exposure.

Limited Understanding of Personal Moderation Tools

About one-third of participants discussed having incomplete knowledge about PM tools, indicating an awareness of their existence but confusion or uncertainty about how they worked. Participant 27 noted, "Now, I didn't know that was possible either. So that is good. So I can mute a particular hashtag?", revealing a gap in practical knowledge about tool capabilities. This lack of detailed understanding discouraged active exploration of tool functionality and subsequent use.

Perceived Expectations of Resilience

Perceived cultural norms within academia significantly influenced participants' moderation behaviours. Participants identified social expectations that discouraged reliance on PM tools, suggesting an implicit pressure towards resilience or direct confrontation of negative feedback within academia. Participant 20 captured this succinctly:

And also, I think it's, it's all about kind of how the whole experience of academic exercises that we have to go through, you know, after 10 years of dealing with disappointment, dealing with failures, and then how you could always try to either find out a way for you to get out of it. Or, you know build up the resilience, so you don't have to care about every little thing that upsets you.

This expectation discouraged PM tool adoption by implicitly framing their use as unnecessary or even indicative of weakness.

Fear of Missing Important Content

A frequently voiced concern was the risk of missing important information due to PM tools' algorithmic filtering or blocking functionalities:

Because like, yeah, you know, if it's someone that I follow because they published papers that are interesting and relevant to my research, I don't really want to mute them, or, you know, like, what do you block, 'Thesis'? Like, you can't— you can't block those words [P6].

Such concerns highlight how the fear of missing crucial content or opportunities strongly discouraged tool usage.

6.4.9 Desired Changes to the Platform

Many participants (n=22) expressed a desire for a range of changes to the Twitter platform to support the regulation of unwanted emotional responses to upward comparisons on Twitter. Several participants strongly expressed the desire to edit their tweets, a tool only available to Twitter Blue users at the time [277].

Dynamic Selective Exposure Option The most commonly desired platform change was the ability to curate their Twitter feed to allow for greater capacity to curate the type and timing of exposure to content on their feeds.

...I could go into Twitter and be like, "I just want to look at like sports things right now". So I can go on Twitter without looking at Academic Twitter, or I want to only look at posts about people whining about academia rather than people posting their successes. Then on days when I just know I don't have the capacity to deal with people being like, 'I'm so amazing, and my research is incredible.' I wouldn't have to look at it. [P12]

Some participants specifically discussed a tool that would enable them to customise content or keyword warnings for tweets tailored to their needs in addition to existing 'sensitive content' tools that exist on the platform.

Following a Hashtag Participants expressed that following a hashtag would alleviate the emotional strain of using Academic Twitter, as it has the potential to reduce the amount of time spent on the platform sifting through content that is both unhelpful and elicited social comparisons.

So I guess I would like to be able to follow particular hashtags. So that if there was an event, rather than having to keep searching the hashtags, but I could just get notifications about that particular one for a short period of time. Or even a longer period of time, if it was say, like, like a Twitter book group or something like that. So it could keep track of it without having to be like so constantly sifting through useless info, including people bragging about their accomplishments. [P27]

Stealthy Blocking A small number of participants expressed in a tool that would enable them to block a contact without that account being able to ascertain that they had been blocked.

Facilitating Useful Connections With Others] Participants discussed a desire to find other relevant researchers with greater ease than Twitter's current search tool afford.

I don't know if this would help with it or not, but it can just be hard to find the people that you want to find...there are accounts for these big groups that like have a study group or something aimed at PhDs but they're huge. And it's hard actually just to easily find other people that you might want to connect with...it's hard to find a group of like minded people, there's, there's a lot of work and it takes a lot of time to build up those networks and as a result you've got to spend a lot of time on Twitter and scroll through a lot of tweets, and read about so many achievements. It just makes me feel bad. And there's also, it's relatively hard to flog yourself to others, the only way I've ever found really is like the search function, which is to say quite rubbish. [P13]

Tone Checking Several participants expressed interest in a tool that would encourage users to reflect on the tone of their tweets before posting them.

If there is something that can incentivize it on technological level, I don't know maybe sound something like super stupid, but if someone writes an overly positive post, like "I'm super excited, and it's so great, and I'm so lucky!" with a lot of emojis, then, there can be a notification

saying, do you need so many smiley emojis? Are you sure you're not overly positive? It's, I'm not necessarily saying that I like this idea. But yeah, maybe it's like a reality check. And if somebody feels super happy, they shouldn't, you know, restrain themselves from expressing themselves. But I think there is perhaps misbalance of the language we use about positive things like it's too polarising that positive things are only positive and then negative things are silent, because there are not tangible so that it creates this, you know, this big disparity in my opinion. [P11]

In some instances, participants also discussed a desire for tools that would recommend the inclusion of additional useful information and context to the glorypost for readers, such as a research thread.

Higher Word Count A number of participants talked about increasing the word count of tweets to support ER processes. Participants reasoned that higher word counts would allow researchers to write longer form content about their research as opposed to breaking it up into threads.

...another thing that I don't like about Twitter is the threads, like academics do this multipart tweet thing that is actually writing a personal blog and you have to read it. Right. So as I think it be like, all this 'I am delighted stuff' is coming from the limited words, because people are not able to express themselves. Clearly, academics don't use Twitter in the way that it was intended, we want to write papers about ourselves or research. Instead of blogs, we're using Twitter...if there wasn't a word limit, people wouldn't start with, I'm delighted. They would keep a background until you get there. You would hate to hear their whole background story, that they were the first person who went to university in their family. And you know, when they try to apply for this promotion, etc. Yeah, it's, it's not like while you're walking around in a department people shouting "I'm delighted! I'm so pleased! I'm so glad." I think the word count is definitely a big part of the reason for bragging language. [P22]

Cognitive Change Participants discussed a desire for tool that would remind them of their own achievements and put them into context.

I think that I mean, just like very hypothetical terms, what would be helpful is like, if you could look at those tweets, and just at the same time somehow remind yourself of like, what it is that you're doing. And

like, actually, you have a lot of things to be proud of, yeah. In the moment, like, you're not thinking about that and you get lost, you get caught up in it. And then it takes, at least for me, personally, it takes a long time to then detach myself from that, and remind myself of what I've been doing. I don't know how that could be, like, implemented as a feature. So yeah, I don't know. [P6]

6.4.10 External Changes

A small number of participants expressed that no changes to the platform would help support ER processes. The reflexive thematic analysis indicates that the reasoning for this lack of enthusiasm stems from a perceptions that the changes needed are cultural rather than technical, and should occur within academia at large. For instance:

But I think the big things are a change in the culture in academia, because academic Twitter just reflects academia more broadly, it's all the inequalities and the problems within academia, get played out on Twitter. [P21]

Normalising Failures A common sub-theme was normalising discussions of failure on Academic Twitter to provide others with more context:

And what I found very cool recently is that some especially established researchers, when there is announcements about papers for certain conferences, they tweeted things like, "Well, I submitted three papers and all three got rejected", and you see that this comes from an established researcher, so it means they have achieved certain things in their research. And yet, they are willing to say that they got papers rejected or even one paper crushed completely. So yeah, helping us realise in the community that it's fine to be rejected to get negative news. Just because it's happened to you, it is just a reflection of your project at this stage, not your professional skills. [P11]

Improved Media Training Interview participants felt that social media training to make researchers aware of the impact of their posts on fellow researchers would be beneficial.

I do think Twitter training could be better, definitely. Academics should be more aware of the potential impacts is probably important, because you know, we're all kind of all part of that culture.. [P25]

6.5 Discussion

The interviews reported in this chapter explored how women researchers perceive the utility of Twitter's PM tools to support ER on the platform.

The interviews revealed that participants did not extensively use PM tools to support ER in response to social media.

6.5.1 Experiences of Upward Social Comparison on Academic Twitter

Experiences of unwanted feelings associated with social comparisons when engaging with Academic Twitter were strongest when researchers known personally to the participant published glory posts in a similar field of research or tweets that they felt set unrealistic expectations. These findings are consistent with existing social comparison research on the relationship between passive consumption of success theatre and experiences of inferiority or envy [278, 279] where the comparison occurs along similar dimensions, in this case, field of expertise and career stage.

6.5.2 Perceptions of Injustice and Unequal Treatment

Participants' experience of negative emotional responses to tweets that highlight systemic inequality within academia, or tweets from individuals who they perceived as privileged, is consistent with literature on relative deprivation (RD). RD theory posits that when individuals perceive that they receive lesser rewards compared to similar others despite expending similar levels of effort, they experience feelings of injustice [280]. Responses to such feelings can manifest as emotional, physical, or mental stress symptoms [281]. These perceptions are consistent with feelings that the culture of academia is the root cause of unwanted emotional responses to social comparisons and design changes and perceptions that the PM tools were not helpful for ER support.

However, it is unclear to what degree the subjective perceptions of reward and injustice align with the objective effort and rewards. Other users may curate their image on Academic Twitter to be positively biased, thus depriving others of context

needed to gauge the similarities or differences and 1) whether the dimension of comparison is in fact similar and 2) the amount of actual effort put into a reward. The opacity of making comparisons could explain the appreciation that participants described for other researchers who shared their failures, along with their successes.

About one-third of respondents reported stronger unwanted emotional responses to upward comparisons when content highlighted systemic inequities. The prevalence of this theme suggests that academic communities may have a role to play in supporting effective emotional regulation by engaging in interventions that address inequality in academia and research. However, this work focused on women, the majority of whom did not identify themselves as members of minority groups. It is unclear to what degree these results affect other subgroups within academia, be they under- or over- represented groups within research.

6.5.3 Technology Adoption Perspectives on PM tool Non-Engagement

Although this thesis is primarily grounded in digital emotion regulation theory, the reasons participants gave for not engaging with PM tools align to some extent with existing behavioural models of technology adoption discussed in Chapter 2, specifically the TPB 2.13.1 and, to a lesser degree, the TAM 2.13.3.

The knowledge gaps regarding PM tool functionality directly undermine participants' ability to assess perceived usefulness, a core construct of the TAM, as users cannot evaluate whether tools will meet their needs without understanding what those tools actually do.

Participants' willingness to refrain from using PM tools in order to avoid missing important information suggests that participants were engaging in a cost–benefit analysis, weighing professional risks against the well-being benefits of using PM tools for emotion regulation. This type of evaluation aligns with the attitudes towards behaviour component of the TPB, where intentions are shaped by beliefs about the consequences of a behaviour.

The concerns some participants expressed about using PM tools, due to a perceived expectation of resilience within academia, reflect the influence of subjective norms (the perception of social pressure to perform or not perform a behaviour), which may discourage the use of tools that support well-being, is also consistent with the TPB. These findings indicate that incorporating technology adoption theories into future research on the use and development of PM tools for ER purposes would be beneficial.

6.5.4 Engagement with Emotion Regulation Strategies and Use of PM tools

Participants' perception that engagement with Twitter is quasi-compulsory may indicate that researchers could benefit from receiving formal instruction on how to use Academic Twitter, and social media training in general, in order to gain awareness of how to balance self-promotion and research dissemination with reducing the risk of emotional harm to other users.

The lack of engagement with PM tools, combined with the prevalence of technologically unassisted ER strategies suggests that PM tools are not perceived as affording support for certain ER strategies, consistent with the prevalence of desired platform changes as a theme. For instance, most participants wished for more flexibility in controlling what appears in their feed and when. Some changes are already feasible using the lists function [275]: Users can choose what lists appear on, or are hidden from, their timeline but must do so manually. In fact, participants noted specifically that the function was too cumbersome and inconvenient to use.

Yet, participants also specifically articulated that changes to platform affordances would not support ER processes, indicating they may feel that such interventions are not wanted, or even needed for ER purposes.

6.5.5 Design Implications: Desired Changes to PM tools

What insights do the interviews offer regarding social media platform design changes that could support ER when engaging with glory posts on Academic

Twitter? This section synthesises key findings related to design approaches for PM tools that align with specific ER practices. It further suggests that such interventions should emphasise user control and be informed by digital ER design principles, as discussed in 2.12.

Designing for Variability in User Experiences: Responding to Differential Susceptibility The design of the PM tools presented in this chapter incorporates the variability in user experiences highlighted throughout this thesis and conceptualised within the DSMM. As the findings of this chapter and Chapter 5 demonstrate, users' emotional responses to social media content are shaped by individual differences and contextual factors, making a one-size-fits-all approach to harm reduction and prevention insufficient. The flexible and customisable features proposed in this chapter aim to address this complexity by giving users greater control over their own content experiences, incorporating DSMM principles into practical, user-centred solutions that support diverse strategies for ER.

General Design Features A key thread running through the desired changes that participants discussed in the interviews was the need for dynamic control over the PM tools to meet their changing needs. In the interviews, participants expressed that their need for ER support fluctuated depending on contextual factors such as illness, work satisfaction, and career stage. While this finding does not provide a clear-cut answer where specific PM tools are concerned, it is consistent with existing research on the important role of tailoring ER strategies to individuals and their changing contexts [282] when developing effective ER intervention [283]. Furthermore, the desire for control and customisation implies, perhaps, that users may not want tools that fully automate their ER support and retain a level of manual control. However, the desire for automation was not explicitly touched upon and will be explored further in the next chapter.

Reappraising Content Users expressed a desire for tools that support cognitive reframing of content to elicit no emotional response or serve as a source of motivation. These were consistent with cognitive reappraisal, an ER strategy within the cognitive change family of ER strategies. The process of cognitive change involves changing one's thinking about a situation to alter its emotional impact [85] and is a very well-researched mechanism of ER [284]. Prior work has found that digital technologies may act as useful self-help resources [285]. However, it is not well understood exactly how such interventions scaffold learning cognitive reappraisal, with prior research yielding mixed results [258, 286]. In this instance, interview participants indicated that the tool could just be a simple reminder of their own accomplishments and circumstances. This suggests that text-based on-the-spot intervention, such as a pop-up, may be appropriate.

Extrinsic Emotion Regulation Cognitive reappraisal triggers that start or support users' in-the-moment ER process may be best suited to single-point, on-the-spot support as a reminder when the user experiences an unwanted emotional response to a glorypost.

Participants expressed a desire for a tool that encourages users to reflect on the tone and content of their tweet before posting to reduce the probability that it will elicit unwanted emotions in others. Unlike the other desired tools discussed, it relies on users' engagement in regulating the emotions of others in the context of online communication, thus making it a form of extrinsic emotion regulation (EER), wherein it is "an action performed with the goal of influencing another person's emotion trajectory" [287, p.4].

Though the process model of ER can be applied to both extrinsic and intrinsic ER processes, the former has been far less well-researched in both online and offline contexts [287, 288]. In two studies exploring the effectiveness of extrinsic ER strategies in text-based communication on social media, Nozaki & Mikolajczak found that strategies encouraging others to engage in cognitive change and response modulation strategies were effective in upregulating their negative emotions [288].

The decision to choose one's words in order to prevent someone else from experiencing unwanted emotions has not been explored in ER literature. However, given that word choice is a form of self-censorship, or an effort to select a situation in which another user is less likely to experience an unwanted emotion, I would posit that it is a form of extrinsic situation selection. Future research on the use of such strategies, as well as the tools to support them, requires further examination.

Dynamic Personal Content Moderation Participants expressed a desire to dynamically control the timing and nature of the content they were exposed to during their Twitter use, consistent with a situation modification strategy.

Some changes are already feasible using the lists function [275]: Users can choose what lists appear on, or are hidden from, their timeline but must do so manually. A time-bounded functionality, which exists for blocking and muting keywords/phrases, could provide a relatively rapid workaround for the problem. Features that enable topic labeling for particular tweets may allow users to filter by topic and may also provide a short-term solution for individuals who need to alter the content they are exposed to for short periods of time.

Reducing Exposure to Irrelevant Content Participants discussed a desire to curate their Twitter experience to limit the amount of time spent on the platform and improve the efficiency of the search. Such a tool could, therefore, support both situation modification and situation selection, as its intended use is to avoid using Twitter as much as possible and moderate the content and contacts to which they are exposed.

Another variation on this desired tool was the capability to follow hashtags to target subjectively relevant content and reduce the amount of searching and scrolling required. Thus, this tool would similarly reduce the amount of time spent on Twitter and the probability of being exposed to content that elicited unwanted emotions.

Considerations for Future Work An important consideration that emerged through reflecting on these findings is the potential unintended consequence of PM tools that filter or avoid posts about academic success. While participants described the emotional strain of encountering upward comparison content, particularly in competitive academic contexts, success-sharing on Academic Twitter also plays a vital role in community-building, visibility, and professional networking, especially for women and other marginalised groups. There is already concern within academic communities that women may feel discouraged from sharing their successes for fear of negative social judgments or contributing to others' distress. Therefore, while the findings of this study support the development of tools to help users manage harmful emotional responses to social comparison, future research should also consider how such tools can avoid reinforcing existing gendered silencing or limiting positive academic discourse. Rather than focusing solely on filtering or hiding content, future work might explore ways to support users in reframing or contextualising content, or providing them with strategies for managing emotional responses without restricting others' expression. Balancing these complex social dynamics should be a central consideration in the design and implementation of PM tools.

6.6 Conclusion

In this chapter, I explored the ER strategies that users engage in to regulate emotional responses to unwanted upward comparisons when encountering glory posts, as well as the PM tools used to support those processes. I found that participants engaged in a wide range of ER strategies to manage unwanted emotional responses to glory posts but only rarely appropriated existing PM tools, as they only support a narrow range of ER strategies. Participants also discussed their desires for hypothetical ER tools that they would like to be integrated into the platform in the future. I concluded with a discussion on the implications of these findings for designing future PM tools that support digital ER processes.

7

Adapting Digital Emotion Regulation Design Principles To Personal Moderation Tools

7.1 Introduction

Chapter 6 explored the ER strategies that users engage within the context of Academic Twitter use.

This chapter further explores how users appropriate existing platform tools for ER and delves into possible design changes that users need to address Academic Twitter digital ER needs *in situ*. I use the data from 6.4 to explore two key design questions:

- Amongst women researchers who engage with Academic Twitter, what are the most prevalent ER strategies, appropriated PM tools for ER, and desired platform changes to support ER?
- How might the intentional inclusion of digital ER intervention design principles support user digital ER processes for Academic Twitter users?

Following exploratory sequential design principles, in study 4 I conduct a survey designed based on themes from 6.4 to gain further insight into user ER strategies

in the context of Academic Twitter use and their desire for greater ER. Based on those findings, in study 5 I develop prototypes for ER support following digital ER design practices and conduct a user-centred design usability session in which users evaluate their usability as ER support tools.

7.2 Methods

A survey was developed based on the themes extracted from the reflexive thematic analysis of parts 2-4 of the interviews. The broader questions pertaining to the relevance of personal context were not included, as the purpose of the survey was to delve deeper into questions about interactions with the platform. The full survey wording can be found in the Appendix D.3.

7.2.1 Pilot Study

A pilot survey study was conducted with ten participants to ensure the survey questions were clear to respondents before deploying it. Participants were recruited from the university through convenience sampling and no notable changes were made to the questionnaire.

7.2.2 Recruitment

I recruited women researchers using the same selection criteria as in 6.3.1 Participants answered questions in an internet-based survey using *JISC Online Surveys*, with recruitment conducted on Twitter and Reddit. It was run between July 2023 and August 2023 and 106 complete responses were retained. The initial questions were directed to the inclusion criteria. Eligible participants continued with the background questions about their demographics, career status, and Twitter use. Participants then answered questions about their career stage and their employment status.

The remainder of the survey consisted of questions based on the interview questions, with response options corresponding to the themes and codes produced in 6. Participants were asked about the types of success posts that elicited unwanted emotional responses and the strategies and tools used to address those emotions.

They were then asked about the strategies they'd like to engage with for ER and platform changes that would support ER processes.

7.2.3 Demographics

105/106 responses were retained. One response was excluded because the respondent did not consent to all of the elements on the consent portion of the survey.

As shown in 7.1, respondents were aged between 23 and 58, with a mean age of 30.4. Nearly all respondents worked or studied at university (94%). 68.6% were doctoral students and early-career researchers working on fixed contracts, and 76.19% identified as White.

Demographics	
Age	23-28 (22.86%), 29-34 (38.10%), 35-40 (19.05%), 41-46 (10.48%), 47-52 (7.62%), 53-58 (1.90%)
Ethnicity	White (76.19%), (White and Other:3.81%), Chinese (5.71%), Pakistani (1.90%), Indian (1.90%) Other Asian background:(3.81%), Other (3.81%), Prefer not to say (0.95%)
Career Stage	Doctoral Student (38.01%), Early Career Researcher (30.48%), Mid-career Researcher (19.05%) Senior Researcher (10.48%), Other (1.90%)
Employer/Education	University (94.29%), Private Sector (0.95%), Government (0.95%), Non-profit Organisation (3.81%)
Contract	Fixed-term contract (40.95%), Indefinite contract (26.67%), None: Student not employed as researcher (28.57%) Indefinite contract (26.67%), Other (3.81%)

Table 7.1: Demographics

Respondents worked or studied in forty-one different fields, with Computer Science (14.29%), Psychology (11.42), Law (8.57%), Media Studies (4.76%) and Education (3.81%) being the most overrepresented.

An extract of survey data can be found in Appendix D.3. The full data set is included in the supplementary materials for this thesis.

7.3 Survey Results

7.3.1 Academic Twitter Use

Most respondents solely (21.9%) or mostly (58.1%) used Twitter for academic and professional purposes. Furthermore, the vast majority used Academic Twitter passively more than posted, with 91.1% of participants doing so occasionally,

frequently, or very frequently, whereas only 61.9% posted content on Academic Twitter occasionally, frequently, or very frequently.

7.3.2 Targets of Comparison

I identified twelve response options for categories of tweets that elicit unwanted emotional responses to upward contrasting comparisons from participants. In the survey, I asked participants, "What kinds of celebratory tweets from other researchers make you feel bad by comparison?" with the wording options reflecting the codes developed from the interviews.

Many different types of celebratory tweets were reported as triggering unwanted feelings of comparison. The most commonly cited were tweets about achievements by others at a similar career stage within a similar field (74.3%), followed by tweets that set unrealistic expectations for early career researchers (62.9%), tweets highlighting inequalities in academia (56.2%), and tweets that drew attention to missed opportunities (51.4%) (see bar chart). In addition, tweets celebrating professional successes from individuals the respondent knew personally, regardless of field, also elicited strong emotional responses (25.7%). A further 34.3% of respondents reported being affected by tweets about achievements, such as presentations or publications, shared by other researchers in venues they themselves were interested in.

Comparatively few participants (10.5%) expressed negative emotional responses to researchers posting content about personal achievements, such as buying a house or marriage.

Tweets by researchers discussing their success without providing personally relevant context, such as tweeting about a paper acceptance without providing any information on its contents (31.4%), or tweets that inflated the importance of a success led respondents to compare themselves to the person posting and experience unwanted emotions as a result. Furthermore, glory posts from someone who, respondents subjectively felt did not deserve their success for personal reasons (27.6%), elicited feelings of unfairness and comparison. Success tweets emphasising membership in an in-group that they were not a part of (41.9%), or that highlighted

benefitting from circumstances beyond their control (39%), led to feelings of frustration and a sense of unfairness.

7.3.3 Emotion Regulation Strategies Employed

Participants were asked about the strategies they used to regulate unwanted emotional responses to gloryposts. The strategies were divided over two questions that primarily addressed strategies for preventing future unwanted emotional responses to gloryposts. Separating out the two questions reduced cognitive strain on participants while allowing for the inclusion of all response options.

Antecedent Strategies

To determine what antecedent ER strategies respondents engaged with to manage the survey asked "What do you do, if anything, in order to reduce the likelihood that you'll experience negative emotional responses to tweets about achievements in the future?"

78.8% of participants engaged in one or more strategies to deal with the unwanted emotions associated with success posts on Twitter. I categorised the strategies according to Gross's process model of emotion [84].

Situation Selection Being selective about the accounts they followed was the most common strategy (55.2%) employed, followed by avoiding the use of Academic Twitter as much as possible (47.6%).

Participants also removed the Twitter app from their mobile devices (17.1%), and turned off notifications for the app (25.7%) to avoid being exposed to content about successes on Academic Twitter.

Some participants use of digital self-control tools [30]. These included setting device time limits on the amount of time spent on Twitter (13.3%), and browser extensions that block access to Twitter, (5.7%) to limit time spent using it or to make it less distracting (1%).

Situation Modification A small proportion of participants engaged in strategies that modified their Twitter environment in order to change the emotional impact of seeing successful tweets. Some participants used blocking (2.9%) and muting (14.3%) to reduce the likelihood that they would continue to experience unwanted emotional responses to content. Certain participants disclosed using problem-solving strategies by logging off of Academic Twitter and focusing on their work (38.1%).

Response-Focused Strategies

Attentional Deployment Participants used distraction as a strategy to alter the emotional impact of positive Academic Twitter content. Certain participants did so by switching to different content on Twitter in order to stop thinking about the stress induced by seeing glory posts (25.7%), while others preferred to focus on negative news coverage on social media for lengthy periods of time (18.1%) or to engage in offline methods of distraction, such as seeking comfort in food or activities that they enjoyed (13.1%).

Response Modulation A substantial proportion of respondents *vented* about success posts in an effort to release negative emotions by expressing frustration to partners and friends, either verbally or in group message chats (46.7%). Participants also suppressed their emotional responses by ignoring them, either by continuing to scroll or to brush the feeling off.

Cognitive Change Reappraisal was a common ER strategy: many participants engaged in reappraisal as a means of reframing the meaning or personal relevance of a post by re-evaluating how they felt about a particular piece of content (39.7%).

7.3.4 The Desire to Engage with More Strategies

A large proportion of respondents (63.2%) expressed a desire to change how they felt about success posts on Academic Twitter, emphasising the desire to have no emotional response or experience positive emotions for the person posting.

Situation Selection A desire to stop using academic Twitter altogether was expressed by 14.3% participants. 2.9% wanted to use external tools such as browser extensions or device settings such as setting time limits. Participants cited a desire to be more selective about the accounts they followed (17.1%) going forward.

Situation Modification Some respondents also expressed interest in using various content management strategies, including unfollowing (8.6%), blocking (7.6%), muting (5.7%), and organizing content through lists (4.8%). Only one participant (1%) indicated a desire to use the Topics tool more frequently in the future.

No changes A substantial proportion of participants (18.1%) were happy with how they interacted with Academic Twitter and did not feel a need to engage with any additional strategies moving forward.

7.3.5 Personal Moderation Tool Use

The survey delved into the specifics of the participants' awareness of PM tools and how frequently they used them for ER purposes. In this section of the survey, participants were given a description of each tool's functionality and asked about the frequency of use on a 5-point Likert scale of 'Never' to Very Often. In the event participants had not been aware of the PM tools prior to seeing the descriptions in the survey, two additional response options were included. Participants could indicate that, having been made aware of the PM tool in question, they planned to use it in the future to manage unwanted feelings associated with Academic Twitter use, or not.

Content Curation Feature Use										
Frequency of Use	Block	Lists	Mute Emojis	Mute Hashtags	Mute Notifications	Mute Usernames	Mute Words	Topics	Unfollow	
Never	60.9	75.9	79.3	62.1	58.6	58.6	66.7	71.3	33.3	
Rarely	19.5	5.7	0.0	14.9	11.5	16.1	10.3	5.7	23.0	
Sometimes	11.5	2.3	1.1	3.4	14.9	9.2	2.3	4.6	26.4	
Often	4.6	1.1	0.0	0.0	5.7	4.6	1.1	1.1	9.2	
Very Often	1.1	1.1	1.1	2.3	3.4	1.1	2.3	1.1	3.4	
Unaware	2.3	13.8	18.4	17.2	5.7	10.3	17.2	16.1	4.6	
Unaware and may use	1.1	5.7	1.1	6.9	0.0	3.4	5.7	5.7	4.6	
Unaware and no plans to use	1.1	8.0	17.2	10.3	5.7	6.9	11.5	10.3	0.0	

Table 7.2: Academic Twitter Personal Moderation Tool Use

20% of respondents did not engage with any PM tools to manage their emotional responses to glory posts (see Appendix D.3). Lists and Muting emojis were the least used tools and 'Unfollow' was the most commonly used (see Table 7.2).

Furthermore, 63.8% of participants were unaware that all forms of muting included a time-bounding function. Among those who learned about the feature during the study, 77.6% indicated they did not intend to use it in the future.

7.3.6 Desired Changes to the Platform

To quantify which changes to the Twitter platform could support ER processes in the context of Academic Twitter, the survey asked respondents which changes to the platform, if any, they felt would support ER processes.

Situation Selection Approximately one-third of respondents (31.4%) wanted a tool that would help them find relevant people more easily.

Participants expressed that following a hashtag (2.9%) would alleviate the emotional strain of using Academic Twitter, as it has the potential to reduce the amount of time spent sifting through content that is both unhelpful and elicited social comparisons.

13.3% of participants wanted the ability to bookmark their Twitter feed to allow for greater capacity to curate the type and timing of content that appears there. 9.4% wanted a tool that only displays a glory post if it contained information useful to them.

Situation Modification 14.3% of respondents supported a modification to the use of the block tool which would block an account holder without the affected account holder being aware. 6.7% desired the capacity to set up customised content or keyword warnings for tweets that are tailored to individual needs. Furthermore, (10.5%) supported a tool that would display an automatically re-worded version of a glory post containing language more neutral to the user without modifying how it was published or how it appears to others.

Cognitive Change A tool that encourages the user to re-evaluate how they think and feel about a glory post by thinking about the broader context of the post and reminding themselves of their own accomplishments was a popular option among respondents (30.5%). Over one-quarter (26.7%) of participants wanted a tool that would enable them to use the glory post as a source of motivation to achieve their own goals.

Changes to Support Extrinsic Emotion Regulation A small number of participants wanted a higher character count for posts on Twitter to support ER processes (8.6%). A substantial proportion of participants (38.9%) expressed interest in a tool that would encourage researchers posting on Twitter to reflect on the tone of their tweets before posting them, and 28.6% were interested in a tool that would suggest adjustments to the content of their tweets in order to make them more useful to an academic audience. As previously noted, comparatively few respondents were interested in a tool that would automatically reword glory posts to use neutral language.

No Changes 37.1% of participants responded that no changes to the platform would help support ER processes, while 6.7% did not want any changes because they were happy with the way Twitter functions.

7.4 Discussion of Study 4

The survey yielded interesting results to complement the qualitative findings from the previous chapter.

Responses to the questions about existing PM tools designed to support ER showed a general lack of enthusiasm, as reflected in Table 7.2, and consistent with broader findings from Chapter 6. While most participants were familiar with tools such as blocking, muting notifications, and unfollowing, at least 10% had not previously been aware of several other available PM options. When provided with brief explanations of these lesser-known tools, participants were generally unlikely

to indicate that they would use them in future, with the exceptions of blocking and unfollowing, which were already more widely used and understood.

At first glance, this low level of engagement with existing PM tools might suggest a lack of interest in ER support. However, this perspective would overlook a crucial distinction between the tools currently offered and the kinds of support participants might value. As discussed in 6.5.3, participants' non-engagement with PM tools appears may stem from several of the following barriers: incomplete knowledge about PM tool functionality, which undermines users' ability to evaluate whether these tools would be useful for their needs, fear of missing important professional content, which leads users to view the costs of using PM tools as outweighing the benefits, and cultural expectations of resilience within academic communities that discourage tool use. Rather than indicating disinterest in ER support, the survey's pattern of low engagement with PM tools, combined with high interest in platform changes, supports the interpretation that these barriers are limiting adoption.

Taken together, the findings point to a significant gap between users' needs and the tools currently available to them. Participants demonstrated a clear interest in managing emotional experiences online, but expressed a need for tools that are more adaptable, context-sensitive, and psychologically informed.

7.5 User-Centred Design for Emotion Regulation PM Tools

Study 4 built upon the qualitative work in the previous chapter and sought to understand the prevalent strategies and desired changes among women researchers using Academic Twitter. Study 5 aimed to understand how to design for digital ER [147, 289]. I used high-fidelity prototypes to obtain preliminary feedback on design decisions and elicit deeper reflections on their utility as digital ER tools, as well as the role of user autonomy and control in PM for subjective well-being.

I designed prototypes for PM tool that incorporated digital ER intervention design components that could be integrated into extant Twitter platform design. These designs were derived from the theme of desired platform from Chapter 6,

and implemented into component design using Slovak et al.'s [88] digital design framework for ER.

7.5.1 Design Work

In preparation for co-design activities, mock-ups were created on the Miro platform. These mock-ups were generated for the three most popular survey options for changes to the Twitter user interface to be used as support for ER, with attention paid to addressing the adoption barriers identified in Chapter 6 around perceived usefulness. The goal was to keep the mock-ups as rudimentary and close as possible to descriptions from the interviews while incorporating elements of digital ER intervention components in the design where appropriate 6.4.

7.5.2 Prototyping Process

I began by mocking up a wireframe for each of the prototypes on the Miro platform. I collaborated with another researcher to refine the design elements and test the layout before adapting them to high fidelity prototypes on Figma. Throughout the design process, we considered how to address the key adoption barriers identified in Chapter 6, particularly ensuring the tools would demonstrate clear usefulness to potential users. The flat lays for all three prototypes are included in the supplementary materials folder.

Prototype 1: Tone Checking for Academic Twitter

38.7% of respondents had expressed interest in a tool that would encourage researchers posting about successes on Twitter to reflect on the tone of their tweets before publishing them. 28.3% responded positively to a tool would suggest adjustments to the content of their tweets to produce content useful to an academic audience. In mocking up the prototype, descriptions from the qualitative analysis in 6.4.9 were drawn upon for the design. I discuss in Chapter 6 that, from the passive user's perspective, this tool serves as a kind of extrinsic situation modification tool [287] in that it modifies what the active user (the user authoring to glory post) was

preparing to say, allowing the passive user to not experience the negative emotions associated with the post. The resulting design included the following properties:

- **Didactic:** I produced a tool that suggests stylistic and content-related changes consistent with being extrinsically helpful in reducing or eliminating users' feelings of upward comparison (e.g., neutral language) or in enhancing their willingness to strategically tolerate the discomfort of being exposed to glory posts to retain access to useful information.
- **System initiated:** The tool automatically activates as a pop-up when the presence of boastful academic language is detected.
- **On-the-spot:** The pop-up window appears as the user is about to post the glory post
- **Discrete:** The pop-up window disappears as soon as the user has either gone through with the suggestions or dismissed the prompt.

The full wireframe for the tool showing the navigation flow included in D.4.1.

Prototype 2: Cognitive Reappraisal

A substantial proportion of participants expressed an interest in a tool that would help them reframe content eliciting unwanted emotional responses as either eliciting no negative emotion (30.2%), or serving as a source of motivation. In particular, participants expressed that reminders of their own circumstances and accomplishments would help to re-contextualise the glory posts and reduce their negative feelings.

Having identified these as forms of cognitive reappraisal (CR) in the qualitative study, I drew upon my prior findings and existing CR literature to design the prototype. In the interviews from 6.4, participants discussed their desire to be able to remind themselves of their own unique achievements and challenges in order to either have no emotional response to glory posts or, in some instances, use the glory post as a source of motivation to achieve their own goals. In addition to

these qualitative findings, I built upon existing literature on CR to develop a user-triggered, on-the-spot tool. I was guided by Beck's model of cognitive restructuring, which involves: (a) identification of negative thinking and its connection to negative emotions (b) evaluating the accuracy of those thoughts; (c) reconsidering biased thinking; and (d) generating an alternative, more adaptive understanding of one's self and life circumstances [290, 291].

- **Didactic:** The user pre-writes a personally relevant message to themselves as a reminder of their accomplishments and limitations. The user also has the option to include a personal message of motivation to achieve their goal. During the pre-writing process, they may activate one or both using a toggle interface. Additionally, they can include a motivational message to close Twitter and get back to work if they wish. When the user encounters a glory post, they have the option to press a background button that will trigger a pop-up window allowing them to either go back to Twitter or close the app.
- **User-triggered:** Upon experiencing an unwanted emotional response to glory posting, the user can click on a button on the bottom right corner of the offending post, triggering the pop-up.
- **On-the-Spot:** The pop-up window appears when the user clicks on the relevant button.
- **Discrete:** The pop-up window may be dismissed one of two ways. The user can close it and continue using Twitter, or choose to exit Twitter altogether to allow the user to process the reappraisal.

The full wireframe for the tool showing the navigation flow included in D.4.2.

Prototype 3: Finding Relevant People

31.1% of survey respondents wanted a tool that would help them find relevant researchers more easily. In the qualitative study, I identified this as a form of situation selection, which would enable the user to spend less time on Twitter

and reduce exposure to glory posts. This tool differs from the other two in that while it has the effect of supporting digital ER processes, in practice, it is an extension of Twitter's existing search functionality, making it more akin to existing tools that users appropriate for ER than an ER tool in and of itself. I developed a prototype for specialised search tool that fulfilled participants' desire to find relevant researchers more easily. Based on the preferences expressed by participants in Chapter 6, I included search parameters that enable researchers to search for each other using the 'reSearch' tool that included parameters for general geographical location, field of research, and conferences/publications of interest. I envisioned that to be discoverable on Twitter, a researcher had to voluntarily enter their information into the ReSEARCH database.

The full wireframe for the tool showing the navigation flow included in D.4.3.

7.6 Procedure

7.6.1 Recruitment

Survey participants were selected for the follow-up study if they 1) had consented to be contacted for a follow-up study at the conclusion of the survey, and 2) had selected one or more of the three most popular design changes. Participants were compensated for their time with a £10 Amazon voucher.

7.6.2 Evaluation Session

The session began with a brief discussion of the selected survey participants' responses regarding the specific modifications or additions to Twitter's curation tools that would be helpful in supporting ER processes. The script for the evaluation session can be found in Appendix D.4.4.

In a modified version of a think-aloud protocol [289], the participants accessed the relevant hi-fi prototype on their smartphone and talked us through their interaction with the tool, asking questions and expressing opinions along the way. Once they had become familiar with the tool, they were asked to discuss what they liked and didn't like about it, whether they would use it, and why. The sessions lasted 15-25 minutes.

7.7 Thematic Analysis

The data was analysed using thematic analysis as set out in 3.3.2 and [289]. The codebook can be found in Appendix D.4.5

After data collection, all evaluation sessions were automatically transcribed in Otter.ai and manually checked for accuracy. To further familiarize ourselves with the data, myself and another researcher coded the data separately to generate initial codes and themes and reviewed the initial codes and themes together, discussing and resolving differences in coding.

7.7.1 Results and Analysis

Five participants participated in the workshops, reviewing two prototypes each. The adapted search engine was reviewed twice, the tone checker was reviewed four times, and the cognitive reappraisal tool was reviewed on three occasions.

7.7.2 Themes

All participants stated they liked the three tools that support their ER processes and would use them if they were implemented.

7.7.3 Cognitive Reappraisal

All of the participants who interacted with the cognitive reappraisal tool stated that they would use the option if it was available to them.

I think it can help with like, if you wrote something, when you're feeling when you're in a better place, then it can help you remind yourself oh, you know, yes, they, they said they had a Nature paper acceptance, whatever. But this is, this is something positive, here's something positive that happened to me, I also have these kinds of experiences. And also, I like the option of closing Twitter as well. Because, you know, like, when you see these kinds of things, it can kind of get you into the doomscrolling when it would be better to like, take a second to process. I think this is more helpful on the, you know, some of the perspective of the person who's seeing these kinds of things. [WP3]

Users also emphasised the desire for tools that afforded them the flexibility to accommodate temporary changes in their own individual life experiences and immediate contexts, such as the temporary emotional distress caused by a rejected grant proposal or conference paper.

If you have some particular deadlines or are feeling particularly stressed, you might want to have it for a certain amount of time. But outside of that you might feel okay to see those things. For example...say you've applied for a fellowship. And around the time of the acceptance, you might want to mute things about it or you might want to have this context about tweets about that fellowship, in case you're not the one who got it, and other people have got it right. Whereas outside of that period, you might be fine to hear that.[WP3]

Including a User-Defined dynamic content filtering feature

Only one user preferred having the button to activate the cognitive reappraisal pop-up in the background of all tweets. The other participants found the perpetual presence of the pop-up icon to be too passive and were concerned that they would simply ignore its presence in the long-run. In discussing changes to the cognitive reappraisal tool, WP4 proposed the inclusion of a feature that would enable users to include a keyword/phrase parameter that would trigger the appearance of the icon.

if it was customised, and it would come up with a particular like key, like, you could obviously block keywords, or would there would be particular keywords that you would find, like about academic success, that would be there and then it would pop up. And that would be like a reminder of like, oh, yeah, this is available. This gives me a thing, rather than just being there on everything, and maybe kind of getting missed. [WP4]

7.7.4 Tone-Checking

Three of the four participants who evaluated the tone-checking tool expressed that it would benefit them if others used it and expressed that they would use it to benefit others.

7.7.5 Suggestion vs Automation

All three of the participants agreed with the suggestion to make manual changes rather than the inclusion of an automated feature (e.g., Grammarly) that would replace the text. They felt that automatically writing the text would be too invasive.

One participant was concerned that others might find the suggested changes excessive and patronising [WP3]. As a compromise, one participant suggested that a Twitter tutorial aimed at educating researchers about the possible negative effects their posts could have on others would be a viable solution.

7.7.6 Search Tool

Both participants who reviewed the search engine agreed that it was useful and alluded to its utility as both a means to 1) facilitate professional connections and collaborations and 2) to minimise exposure to glory posts.

In the case of the search tool, one participant articulated that a visual representation of the search results in the form of a heatmap would increase the efficiency of the tool even further and maximise the utility of time spent on the platform.

You know, I want to know how many people I know in South Africa or Brazil who are looking at the same issues that I'm looking at. And is there anybody in those spaces? Where have I got gaps? Where might it be helpful to reach out to somebody? And Twitter seemed like the best resource and basis for developing those more systematic networks. So anything that could help you find those people and connect with them would be really useful [WP5]. Plus, I get to minimise how much time I'm on there.

7.8 Discussion of Study 5

7.8.1 User-Response Evaluations of Digital ER Support Tools

The participants in this user-centred design study responded favourably to the early prototypes of the tools. These preliminary findings suggest that integrating digital emotion regulation (ER) intervention design principles into Twitter could be a viable way to provide users with ER support in their social media use.

The positive user responses to the prototypes indicate that addressing the adoption barriers identified in Chapter 6 may be key to successful PM tool design. Participants showed enthusiasm for tools that clearly explained their functionality (addressing knowledge gaps), supported well-being without compromising professional utility (addressing cost–benefit concerns), and allowed users to control when and how interventions occurred.

The inclusion of such design features appears to mitigate previously identified barriers to PM tool adoption and may positively influence the adoption of ER strategies, as evidenced by participants’ desire for even greater customisation options than those proposed in the prototypes.

In particular, participants wanted to tailor the cognitive reappraisal tool to suit their specific circumstances, reinforcing the findings from Chapters 5 and 6 about the importance of PM tools that adapt to individual needs and contexts.

The range of proposed PM tools that emerged as the most popular survey options supports these findings, suggesting that users: 1) want a range of options to support different ER strategies, and 2) prefer varying levels of support when engaging with these strategies. This implies that support for ER does not need to follow an all-or-nothing approach, as described in [88], but could instead take the form of a hybrid model that integrates digital ER design principles into PM tool development. Participants’ preference for maintaining control over their tools and determining when interventions occurred further reflects a desire for greater agency over their social media curation.

In future work, I intend to conduct this research on a larger scale to better understand how user ER needs can be met to inform future PM design. I also plan to test this process in other contexts and platforms to better understand user needs for PM tools that provide ER support.

7.8.2 A Willingness to *Not* Engage in ER

The results from study 5 indicate that users are willing to endure a certain level of discomfort at certain times, but not others: When evaluating the cognitive

reappraisal tool, participants discussed the importance of being able to adapt interventions to their temporary emotional states and immediate contexts.

These findings align with the analysis in 6.4.5, wherein participants described consciously weighing the professional benefits of viewing potentially distressing content against the emotional costs. This strategic approach to managing discomfort aligns with research on distress tolerance (DT), which is "the perceived capacity to withstand negative emotional and/or other aversive states (e.g., physical discomfort), and (b) the behavioural act of withstanding distressing internal states elicited by some type of stressor" [292]. Essentially, distress tolerance is the capacity to *tolerate* unwanted emotional states, while ER is the process that individuals engage in to *influence* the experience of emotions.

DT research has found a relationship between the capacity for such tolerance and the choice of ER strategy. Jeffries et al. found that low DT predicts the use of maladaptive strategies [293]. The flexible, user-centred features that participants valued in the prototype evaluations align with these prior findings, indicating that PM tools should support both users' agency to strategically tolerate discomfort in situations where they feel it is beneficial to do so, and provide support for adaptive strategies when tolerance is not desired.

7.9 Limitations

The principal limitation of the study is its relatively small sample sizes of $n=105$ for the survey and $n=5$ for the follow-up design study. At this preliminary stage, the collection of quantitative data was simply used to orient ourselves towards the ER strategies and PM tools that may be prevalent among the larger subgroup of women Academic Twitter users.

In the future, I will extend the quantitative analysis to make statistical inferences about the data and extend this usability testing.

7.10 Conclusion

The survey findings supported the findings from Chapter 6 that participants from the target demographic only engage with a narrow range of PM tools to support ER processes. Participants expressed enthusiasm and support for all three prototypes and found them theoretically suitable for digital ER support. Participants appreciated the agency that the tools provided to reduce the unwanted emotional impact of social media use but wanted even greater *flexibility*. In particular, they wanted to be able to adapt how the cognitive reappraisal tool could be applied to their specific mood or to address short-term changes in their lives.

8

Discussion

This chapter discusses the results presented in Chapters 4, 5, 6, and 7. It offers my interpretation of those findings and highlights the challenges that emerged throughout the research.

8.1 Understanding and Designing for Social Media Harms: The Complementary Contributions of the Differential Susceptibility to Media Effects Theory and Emotion Regulation Theory

This thesis demonstrates how the Differential Susceptibility to Media Effects Model (DSMM) and the Process Model of Emotion Regulation can be used in a complementary manner to better understand aspects of social media-related harms and guide the development of more effective user-centred interventions.

While the DSMM provided a crucial theoretical foundation for understanding the variability and subjectivity of social media harms by highlighting how dispositional and contextual factors shape users' experiences, the Process Model of Emotion Regulation offered a more actionable lens to examine how users attempt to manage these experiences in everyday practice: The studies in this thesis indicated that

while the DSMM effectively explains variability in susceptibility to media effects, it does not account for how users actively manage those effects. To address this gap, the Process Model of Emotion Regulation was employed as a framework for understanding the strategies users adopt to manage emotional responses. This framework was particularly valuable for examining user interactions with existing platform features and determining what additional support they want.

The emphasis on ER theory allowed for a deeper focus on user strategies, the limitations of current platform affordances, and the design of tools to better support ER, all of which emerged as central themes across the empirical studies.

By using the DSMM to inform an understanding of how and why social media harms differ across individuals and contexts and applying the Process Model of Emotion Regulation to examine how users respond to these harms, this thesis highlights the importance of recognising the highly individualised and context-sensitive nature of social media experiences. The complementary use of these frameworks led to the development of user-centred, flexible moderation tools that reflect the diversity of user experiences and emotional needs. Together, the DSMM and ER theory illustrate the value of adapting and combining theoretical approaches in response to empirical insights, moving from broad models of media susceptibility to more targeted, intervention-focused solutions that account for the complexity of social media use.

8.2 Personal Moderation Needs are Dynamic and Subjective

Currently, social media platforms restrict or ban a relatively narrow spectrum of content or conduct on their platforms, such as illegal content (e.g., CSEA) or sensitive (e.g., nudity) [294].

However, the findings from Chapters 4 to 7 indicate that individuals are adversely affected by a far broader spectrum of subjectively harmful content. Furthermore, my findings across all four research chapters indicate that an individual's subjective

experiences influence their cognitive and emotional responses to social media content. In particular:

- Individuals cannot necessarily predict which content will elicit those unwanted responses.
- In-person changes can affect what an individual experiences as detrimental.
- Transient changes in individual circumstances affected emotional responses to content, leading to short-term intrapersonal changes in the appraisal of content as harmful, helpful, or innocuous.

Findings indicate that users employ PAM and PCM tools to manage the inconsistent and sometimes unpredictable effects of exposure to content. Yet, the results from Chapters 5-7 suggest that these tools do not meet users' moderation needs across a wide range of situations: Both survivors of sexual assault and users of Academic Twitter described the emotional toll of being exposed to certain types of content in ways that felt overwhelming or unavoidable. For survivors, seeing posts related to their attacker could be deeply distressing, sometimes prompting them to disconnect from social media entirely. Academic Twitter users, in a similar way, spoke of the emotional strain caused by repeated exposure to others' professional achievements, which could trigger feelings of inadequacy or pressure. At the same time, many felt unable to take a break because of the platform's role in maintaining professional visibility. Although the nature of the content differed, both groups expressed the same underlying need: more flexible and granular control over what they see, when they see it, and whose content they are exposed to. Designing adaptable PM tools that empower users to control their exposure to subjectively harmful social media experiences is key to preserving well-being. My findings indicate that relatively simple changes to existing PM tools may be sufficient in some instances, such as providing more granular time-bounding options for the Twitter muting tool. In others, entirely new tools may need to be designed. In either case, platforms need to include users more extensively in the design and

evaluation process for extant personal moderation tools to be aware of user needs and implement tools to address them.

The findings across empirical chapters consistently show that moderation needs vary within users and over time. Factors such as emotional state, life events, and social context all influence how users perceive and respond to content. As such, a static, one-size-fits-all approach to personal moderation is insufficient.

8.3 The Value of Avoidance

Avoidance emerged as a particularly complex and often misunderstood ER strategy. ER research has found that while avoidance alleviates emotional distress in the short term, it can reduce the capacity to regulate emotions over time and has been linked to the development and maintenance of disorders such as depression and social anxiety [86] [295] [296]. While ER research has focused on the downsides of avoidance as a strategy, analogous findings from other areas of psychology may provide some insight into the value of avoidance.

Research on digital self-control has shown that individuals often procrastinate, deliberately avoiding tasks even when they recognise that this avoidance may lead to negative consequences [297]. Procrastination as a strategy assumes that the future self will be more capable of dealing with a particular activity than the present self. When the assumption is incorrect, it can be associated with adverse subjective well-being effects [297]. However, when the future self is more capable of dealing with the situation, avoidance is a rational and beneficial strategy [298]. ER tolerance may operate similarly, where sometimes escape is an effective option if the individual's appraisal of their future capacity to engage in adaptive ER is accurate.

Findings from this thesis indicate that users do not necessarily resort to avoidance or engage in ER in the face of unwanted emotional responses to content. Rather, the findings in Chapters 6 and 7 indicate that users are willing to tolerate distress if it is subjectively valuable for them to do so. However, developing distress tolerance is not the panacea of subjectively harmful social media experiences: Excessive tolerance (sometimes referred to as overtolerance) can be associated with deleterious subjective

well-being outcomes [298]. Furthermore, the capacity for DT is highly context-dependent: Factors like lack of sleep and stress have been found to lower individual DT [298]. Therefore, a more practicable option would be to investigate solutions that the individual user can adapt to their specific and immediate circumstances, thus potentially reducing a propensity for avoidance.

As such, the question of what constitutes an appropriate level of avoidance stems from subjective needs and experiences and is likely shaped significantly by individual differences and situational factors. Interventions that help users discern when avoidance is beneficial or detrimental, both for momentary emotional relief and for overall subjective well-being, are a fertile area for future research.

8.4 Designing with Emotion Regulation in Mind

Findings from Chapters 5 and 6 reveal that users employ tools for purposes beyond simply preventing exposure to content or contact. They also use them to manage their emotional well-being. For example, a user who blocks someone's account on social media because they find their content distressing is removing the possibility of being exposed to that subjectively harmful content. From an ER perspective, the user has appropriated the tool to support their avoidance strategy. Such findings indicate that PM tools that align with ER strategies allow users to shield themselves from harm and actively shape their experiences online.

The findings of Chapter 7 indicate that the prototypes developed, such as tone checking, were received favourably precisely because they provided options without imposing restrictions. These tools respected users' autonomy while addressing gaps in current platform affordances. Rather than simply avoiding distress, participants used these features to reflect, to delay reactive engagement, or to manage information flow in ways that supported well-being. Considering specific ER strategies in the design of PM tools may offer valuable design insights. Since individuals have a limited range of ways to regulate their emotions [86], focusing on supporting these internal processes instead of trying to prevent every possible instance of harm can help narrow and clarify design goals.

8.5 Potential Pitfalls of Designing for User Empowerment

Thus far, I've argued that users should be afforded greater control in how they manage subjectively harmful experiences that arise during social media use. However, it must be considered that if users are given significant freedom to choose who and what they see on social media, they may not always choose in their own long-term interests or the interests of others. This section discusses some potentially undesirable consequences of user choice and how those may be counteracted.

This thesis has focused on the subjective experience of individual social media users. However, users are part of networks, social groups, and societies. An underlying thread of this thesis has been the lack of emphasis that social media platforms and researchers place on individual needs at the expense of larger user groups. Nevertheless, making changes to serve the needs of individual users also has the potential to impact the collective.

Substantial research has found that personalising online content creates filter bubbles and reinforces echo chambers. Users have little or no direct input or visibility into the personal moderation process. Therefore, the responsibility for creating filter bubbles and echo chambers lies primarily with platforms. However, scholars have posited that providing users with more granular control over their personal moderation could lead to users simply creating echo chambers through their curation choices [299], thus replacing one ill with another. While the argument is reasonable, there is empirical support for a scenario where users are empowered to curate their online experiences, and the prevalence of filter bubbles and echo chambers is reduced.

Algorithmic participatory design research has found that when people participate in building systems, those systems become more transparent to them, and they gain a deeper understanding of how the systems work [300]. Users who understand how their personal moderation tools work and have a high degree of control over them may be empowered to consciously expand their content horizons, choosing to include a broader range of sources and perspectives. Furthermore, transparency

in the process is likely to foster trust in PM tools, which may make users more likely to engage with platforms [301].

Involving users in the design of transparent curation features could be a viable third way to mitigate or reduce the prevalence of filter bubbles and echo chambers online and lead to systems that are more transparent, equitable, and aligned with user needs [301] while simultaneously supporting subjective well-being and user-empowerment by balancing autonomy and automation.

8.6 Future Work

The empirical findings from this thesis indicate that integrating digital ER design principles into both tools explicitly intended for managing emotional processes and those designed for other purposes (e.g., search engines or tone checkers) may be an effective strategy for empowering users to manage their experiences of subjective harm online.

The findings from Chapter 7 are preliminary, highlighting the need for further research to explore the appropriate depth, breadth, and scope of integrating digital ER design practices into PM tools. To support this, I intend to involve users as key stakeholders in a participatory design process, with the aim of empowering them to take greater control over their social media experiences..

I first intend to develop a more granular understanding of how users use existing PM tools and analogue ER strategies to regulate emotional responses to content through in-situ longitudinal data collection, using methods such as mobile ecological momentary assessments and diary studies. Those findings will inform a range of co-design activities with Twitter users to support flexible ER when using social media. In the longer term, these research processes should be applied across multiple platforms to understand how user needs and perceived affordances differ or converge across platforms.

9

Conclusion

The central question addressed in this thesis was: **How can understanding users' subjectively harmful social media experiences inform the future of platform affordance design?**

I intentionally adopted a layered, mixed-methods approach that moved from large, heterogeneous populations to narrower, more defined user groups across different platforms and contexts to address that question. The aim was not to focus on harm within any one type of user experience but to demonstrate that the limitations of existing PM tools and the emotional strain these limitations create are common across a wide range of social media contexts. Chapter 4 established a foundation by applying the Differential Susceptibility to Media Effects Model (DSMM) to explore population-level predictors of post-traumatic symptoms related to social media use during the COVID-19 pandemic. While the DSMM helped explain variability in harm across individual and contextual factors, the findings were mixed, suggesting that susceptibility alone does not fully explain users' experiences.

In subsequent chapters, I adopted the Process Model of Emotion Regulation as my central framework to better understand how users cope with distressing content. In Chapter 5, I explored how survivors of sexual assault engage with social media post-trauma, revealing that many relied on self-regulation strategies to cope with harmful exposure, often without perceiving existing moderation tools as effective,

which underscored the need for more flexible, trauma-informed digital support. Chapter 6 focused on women researchers navigating emotional responses to social comparison on Academic Twitter. Again, participants described using a range of ER strategies, but few engaged with platform moderation tools to support those processes, which pointed to a mismatch between available affordances and user needs. I built upon these findings in Chapter 7 by designing and evaluating high-fidelity prototypes for tools that incorporate digital ER design principles. These prototypes were well received, with participants particularly valuing the control and flexibility they offered for managing emotional responses.

Across these diverse contexts, a consistent theme emerged: platform tools for personal moderation are ill-equipped to support the dynamic and subjective nature of emotional responses online. Users are not passive recipients of platform-supplied content, but active participants in managing their personal digital experiences. Yet, current platform design fails to adequately reflect this reality.

Taken together, these findings contribute to a growing body of research advocating for emotion-aware design in digital well-being. They call for platforms to go beyond blunt, generic moderation features and instead develop tools that empower users to regulate their experiences in ways that align with their needs, histories and goals.

Future work should extend this research across platforms and populations, deepen participatory design practices with affected communities, and continue exploring how digital ER principles can inform transparent, user-centred PM tool design.

Appendices



Chapter 4 Supplementary Materials

A.1 Pearson's R Correlation Tables

Pearson's R Correlations

	COVID-19 Traditional Media hrs/day	COVID-19 Social Media hrs/day	Active Social Media Use (times/day)	Passive Social Media Use (times/day)	Feeling at Risk of COVID	Prior Diagnosis: Anxiety	Prior Diagnosis: PTSD	Prior Diagnosis: Depression	White	Asian/Asian British	Black / African / Caribbean / Black British	Other Ethnicity	North East	North West	Yorkshire and the Humber	East Midlands, England
COVID-19 Traditional Media hrs/day																
COVID-19 Social Media hrs/day	0.78***															
Active Social Media Use (times/day)	0.34***	0.56***														
Passive Social Media Use (times/day)	0.23***	0.31***	0.42***													
Feeling at Risk of COVID	-0.07	-0.07	0.01	0.06												
Prior Diagnosis: Anxiety	0.01	-0.03	0.04	0.1	0.11*											
Prior Diagnosis: PTSD	0.06	0.01	0.06	0.02	0.07	0.33***										
Prior Diagnosis: Depression	0.01	-0.06	0.01	0.04	0.14*	0.52***	0.23***									
White	-0.11*	-0.17**	-0.04	-0.06	0.13*	0.14**	0.09	0.15**								
Asian/Asian British	0.04	0.02	-0.04	0.03	-0.09	-0.14**	-0.06	-0.11*	-0.73***							
Black / African / Caribbean / Black British	0.15**	0.33***	0.22***	0.09	-0.06	-0.04	-0.03	-0.06	-0.38***	-0.05						
Other Ethnicity	0.02	0.03	-0.04	-0.01	-0.06	-0.03	-0.04	-0.06	-0.47***	-0.06	-0.03					
North East	0.03	0.03	-0.01	0.05	-0.02	0.05	-0.04	-0.02	-0.08	-0.01	0.06	0.11*				
North West	-0.02	-0.03	-0.02	-0.07	-0.09	-0.09	-0.07	-0.11*	-0.09	0.1	0.05	-0.03	-0.07			
Yorkshire and the Humber	-0.06	-0.03	-0.05	-0.02	0.09	0	0.08	0.07	-0.02	-0.02	-0.05	-0.06	-0.06	-0.10*		
East Midlands, England	0.15**	0.15**	0.12*	0	0.06	-0.06	-0.06	-0.01	0.05	0.01	-0.05	-0.06	-0.06	-0.11*	-0.09	
West Midlands	-0.03	-0.03	-0.07	-0.02	-0.08	0.04	0.03	-0.01	-0.08	-0.04	-0.05	-0.01	-0.06	-0.11*	-0.09	-0.1
East of England	-0.08	-0.06	0.02	0.07	0.06	0.02	0.03	-0.02	0.07	-0.07	0.01	-0.02	-0.07	-0.12*	-0.1	-0.1
London	0.14*	0.15**	0.11*	0.07	-0.12*	-0.07	0.02	-0.14**	-0.20***	0.08	0.23***	0.07	-0.07	-0.13*	-0.1	-0.11*
South East	-0.01	-0.04	-0.1	0.01	0.05	0.08	-0.1	0.09	0.03	-0.02	-0.06	0.02	-0.07	-0.13*	-0.1	-0.11*
South West	0	-0.03	0.03	-0.09	-0.06	0.08	0.12*	0.1	0.04	-0.01	-0.06	-0.02	-0.07	-0.12*	-0.1	-0.10*
Wales	-0.04	-0.04	-0.03	0.04	0.1	0.03	-0.05	0.01	0.11*	-0.08	-0.04	-0.05	-0.05	-0.09	-0.07	-0.08
Scotland	-0.04	-0.06	-0.07	-0.07	-0.07	0.03	-0.06	0.03	0.02	-0.03	-0.05	0.04	-0.06	-0.11*	-0.09	-0.09
Northern Ireland	-0.07	-0.05	0	0.02	-0.04	-0.03	-0.06	-0.03	0.02	-0.05	-0.03	0.06	-0.03	-0.06	-0.05	-0.05
No Formal Qualifications	0.04	-0.05	-0.04	-0.1	-0.01	-0.08	-0.03	-0.1	0.07	-0.05	-0.03	-0.03	-0.03	0	0.03	0.02
Secondary Education A-levels/High School	0	-0.05	-0.02	-0.15**	-0.04	0.1	0	0.04	0.16**	-0.13*	-0.07	-0.05	-0.04	0.1	0	-0.04
Diploma	0.08	0.14**	0.07	0.11*	0	0.07	0.07	0.09	0.04	-0.06	-0.07	0.07	0.04	-0.09	0.02	0.04
Technical/Community College	-0.07	-0.07	-0.03	-0.06	0.08	-0.05	-0.03	0.02	0.13*	-0.12*	-0.06	-0.03	-0.07	-0.05	-0.07	-0.01
Undergraduate Degree (BA/BSc/other)	-0.03	0.03	0.06	0.15**	-0.04	-0.01	-0.05	-0.04	-0.15**	0.19***	0.07	-0.05	0.02	0.06	0.11*	-0.03
Graduate Degree (MA/MSc/MPhil/other) and Above	0.01	-0.04	-0.08	-0.07	0	-0.07	0.04	-0.06	-0.12*	0.06	0.09	0.07	0.05	-0.06	-0.1	0.04
Unsure	-0.03	-0.02	0.03	0.05	0.09	-0.03	-0.01	0.09	0.02	-0.02	-0.01	-0.01	-0.01	0.15**	-0.02	-0.02
18-24 yo	0.13*	0.15**	0.09	0.12*	-0.1	0.09	0.1	-0.01	0.03	0.01	0.14**	0.01	0.05	-0.08	0.06	0.12*
25-29 yo	0.11*	0.18***	0.15**	0.18***	-0.09	0.06	0.01	0.04	0.04	-0.08	0.12*	-0.05	0.02	-0.05	-0.02	-0.03
30-34 yo	0.03	0.05	-0.05	0.15**	-0.09	0	-0.01	-0.05	-0.08	0.09	0.02	-0.01	-0.06	0.02	0.03	0.02
35-39 yo	0.04	0.04	0.01	-0.06	-0.09	0.01	-0.02	0.06	-0.05	-0.04	0	-0.05	0.01	-0.08	0	0
40-44 yo	-0.06	-0.05	-0.03	0.07	-0.02	-0.02	0.01	0.01	-0.1	0.12*	-0.01	0.01	0.15**	-0.03	-0.01	-0.06
45-49 yo	0.04	0.02	0.02	-0.05	-0.11*	0.08	0	0.07	-0.08	0.02	0.09	0.05	0	0.06	0.07	-0.09
50-54 yo	0.01	0.02	-0.05	-0.05	-0.03	-0.1	0.05	-0.05	-0.02	0.06	-0.05	0	-0.06	0.02	-0.08	0.02
55-59 yo	-0.09	-0.07	-0.03	0	-0.11*	-0.02	0.06	0.06	-0.07	0.09	-0.05	-0.02	-0.01	-0.03	0.05	0
60-64 yo	-0.08	-0.13*	-0.03	-0.14**	0.17**	-0.04	0.05	0.01	0.08	-0.06	0.01	-0.06	-0.02	0.04	-0.03	0.02
65 yo and above	-0.06	-0.09	-0.03	-0.1	0.23***	-0.05	-0.04	-0.09	0.1	-0.06	-0.06	-0.04	-0.03	0.02	0.01	0
Only work from home	0.1	0.05	-0.02	0.02	-0.1	0	-0.04	-0.01	-0.15**	0.14**	0.09	0	-0.03	0.08	-0.11*	-0.01
Mostly from home	0.02	0.07	0.06	0.08	-0.06	-0.05	0.02	-0.07	-0.07	0.04	0.06	0.02	0.12*	-0.07	-0.07	-0.01
Mostly/only work at a workplace different to my home	0.02	0.05	0.01	-0.02	-0.05	0.01	-0.03	0.12*	-0.09	-0.09	0.01	-0.11	0.01	-0.04	0.04	0.01
Currently unemployed or furloughed	-0.08	-0.1	0	-0.04	0.17**	0.09	-0.01	0.11*	0.04	-0.08	-0.09	0.12*	-0.06	-0.05	0.13*	-0.05
Worked from home prior to pandemic, still do	-0.06	-0.05	-0.05	-0.01	0	-0.03	0.04	-0.05	0.05	0.01	-0.05	-0.06	-0.01	0.1	-0.05	0.1
Less than £10,000/yr	-0.01	-0.03	0.01	-0.05	0.03	0.03	-0.01	0.02	0.01	-0.07	-0.05	0.14**	-0.07	-0.09	-0.02	0.04
£10,000 - £15,999/yr	0.16**	0.14*	0.04	0.03	-0.03	-0.01	0.03	0.09	0.01	-0.04	0	0.03	0.03	0.03	0.08	0
£16,000 - £19,999/yr	-0.03	-0.04	-0.01	0.06	0.06	0.04	0.17**	0.03	0.04	-0.05	-0.06	0.04	0.03	0.04	0.05	-0.03
£20,000 - £29,999/yr	-0.01	-0.03	-0.01	0.02	0.05	-0.01	-0.03	-0.01	0.12*	-0.14*	0.01	-0.03	0.12*	-0.05	0.04	0.02
£30,000 - £39,999/yr	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.04	0.03	0.02	-0.03	-0.03	-0.05	-0.01	0.06	-0.05	-0.03
£40,000 - £49,999/yr	-0.07	-0.05	-0.02	0	-0.02	-0.03	-0.11*	-0.03	0.02	0.02	-0.02	-0.02	-0.04	-0.07	0	0
£50,000 - £59,999/yr	0.01	0.01	-0.08	0	-0.03	0.01	0.04	-0.07	-0.13*	0.24***	-0.05	-0.07	-0.01	0.07	-0.06	-0.03
£60,000 - £79,999/yr	0	0.14*	0.18***	0	0	-0.04	0.03	-0.02	0.23***	-0.02	0.23***	-0.04	-0.03	-0.01	-0.07	-0.07
£80,000 - £89,999/yr	0.03	-0.02	0.01	0.04	0.05	-0.05	-0.04	-0.03	0.03	0	-0.03	-0.04	-0.04	-0.06	0.14**	0.01
£90,000/yr and above	-0.01	0	-0.04	-0.04	-0.03	-0.06	-0.04	-0.07	-0.02	-0.02	0.06	0.11*	0.04	0.06	-0.06	0.1
Male	-0.03	-0.01	-0.01	-0.01	0.01	-0.09	-0.08	-0.17**	-0.01	0.01	0.02	-0.02	-0.04	-0.05	-0.06	0.07
Female	0.03	0.01	-0.03	0.08	-0.01	0.04	0.06	0.13*	0.01	0	-0.02	0	0.04	0.06	0.05	-0.06
Neither Male Nor Female	0	-0.01	0.13*	0.08	0.01	0.18***	0.07	0.14**	0.01	-0.05	-0.02	-0.03	-0.02	-0.05	0.04	-0.04
Lived Alone During the Pandemic	0.03	0.04	0.02	0.02	0.07	0.01	-0.03	0.08	0.04	-0.09	-0.01	0.06	-0.03	0	0.09	0.01
PCL-5 Sum Score	0.30***	0.27***	0.22***	0.25***	0.1	0.41***	0.21***	0.38***	0.07	-0.05	-0.07	-0.01	-0.04	0.04	0.02	0.02
PCL-5 Binary Score	0.23***	0.19***	0.23***	0.14*	0.07	0.31***	0.25***	0.24***	0.05	-0.1	-0.05	0.1	-0.01	-0.02	-0.02	0.02

p < .001 ***, p < .01 **, p < .05 *

Pearson's R Correlations

	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland	No Formal Qualifications	Secondary Education	A-levels/High School Diploma	Technical/Community College	Undergraduate Degree (BA/BSc/other)	Graduate Degree (MA/MSc/MPhil/other) and Above	Unsure	18-24 yo
COVID-19 Traditional Media hrs/day																
COVID-19 Social Media hrs/day																
Active Social Media Use (times/day)																
Passive Social Media Use																
Feeling at Risk of COVID																
Prior Diagnosis: Anxiety																
Prior Diagnosis: PTSD																
Prior Diagnosis: Depression																
White																
Asian/Asian British																
Black / African / Caribbean / Black British																
Other Ethnicity																
North East																
North West																
Yorkshire and the Humber																
East Midlands, England																
West Midlands																
East of England	-0.1															
London	-0.11*	-0.12*														
South East	-0.11*	-0.12*	-0.13*													
South West	-0.10*	-0.11*	-0.12*	-0.12*												
Wales	-0.08	-0.08	-0.09	-0.09	-0.08											
Scotland	-0.09	-0.1	-0.11*	-0.11*	-0.1	-0.07										
Northern Ireland	-0.05	-0.05	-0.06	-0.06	-0.05	-0.04	-0.05									
No Formal Qualifications	-0.05	0.08	-0.05	-0.06	-0.05	0.05	0.02	0.1								
Secondary Education	-0.1	0.05	-0.07	0.04	-0.05	0.11*	0.04	-0.07	-0.06							
A-levels/High School Diploma	0.13*	-0.01	-0.08	-0.01	-0.02	0	0.01	0.03	-0.07	-0.18***						
Technical/Community College	0.02	0.12*	-0.01	0.01	0.03	-0.01	0.02	0	-0.06	-0.15**	-0.16**					
Undergraduate Degree (BA/BSc/other)	-0.02	-0.08	0.07	-0.01	-0.03	-0.09	-0.03	0	-0.11*	-0.30***	-0.31***	-0.26***				
Graduate Degree (MA/MSc/MPhil/other) and Above	0	-0.05	0.09	0.08	-0.01	0	-0.03	0	-0.08	-0.22***	-0.22***	-0.19***	-0.37***			
Unsure	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.02	-0.01	-0.01	-0.02	-0.02	-0.02	-0.04	-0.03		
18-24 yo	0.12*	-0.07	-0.01	-0.08	-0.01	0.01	-0.06	0.01	-0.05	-0.07	0.32***	-0.05	-0.07	-0.08	-0.02	
25-29 yo	0.01	0.06	0.11*	0.03	-0.04	-0.06	-0.03	-0.04	-0.04	-0.03	-0.01	0.03	0.06	-0.04	-0.01	-0.08
30-34 yo	-0.02	0.07	-0.07	0.09	-0.03	-0.03	-0.02	-0.05	-0.05	-0.07	0.04	-0.08	0	0.1	-0.02	-0.09
35-39 yo	0.04	-0.02	-0.02	0.02	-0.03	-0.07	0.16**	-0.04	-0.04	0.02	-0.02	0.03	0.03	-0.02	-0.01	-0.08
40-44 yo	0.03	-0.07	0	0	0.01	-0.02	0.01	0.05	0	-0.14*	-0.02	0.03	0.11*	0	-0.02	-0.12*
45-49 yo	-0.02	-0.06	0.06	-0.01	-0.03	-0.03	-0.01	0.09	-0.05	-0.04	-0.01	0.06	0.01	0	-0.02	-0.09
50-54 yo	-0.02	0.01	-0.04	-0.04	0	0.11*	0.06	0.02	-0.04	0.13*	-0.03	-0.03	0	-0.04	-0.02	-0.09
55-59 yo	-0.1	0.02	-0.02	0.07	-0.01	0.01	0.01	0.01	0.08	0.11*	-0.09	-0.02	0.01	-0.05	-0.02	-0.1
60-64 yo	-0.03	-0.02	-0.03	0.03	0.02	0.03	-0.07	0.02	0.02	0.03	0.02	0.02	-0.12*	0.06	-0.03	-0.15**
65 yo and above	0	0.04	-0.03	-0.06	0.04	0.01	0	-0.01	0.11*	0.05	-0.17**	0.02	0	0.03	0.14*	-0.12*
Only work from home	-0.01	-0.04	0.09	0.02	-0.05	0.05	-0.05	-0.05	-0.12*	-0.04	-0.05	-0.05	0.1	0.08	NaNNA	-0.07
Mostly from home	-0.04	-0.02	0.13*	0.04	0.03	-0.01	-0.11	0	-0.06	-0.12*	-0.03	-0.07	0.06	0.13*	NaNNA	0.02
Mostly/only work at a workplace different to my home	0.01	0.03	-0.09	0	-0.07	0.03	0.07	0.05	0.07	0.11*	0.07	0.01	-0.1	-0.08	NaNNA	-0.08
Currently unemployed or furloughed	0.04	0.01	-0.07	-0.04	0.08	-0.01	0.02	-0.01	0.04	0.1	0.02	0.1	-0.07	-0.12*	NaNNA	0.17**
Worked from home prior to pandemic, still do	-0.02	0.01	-0.05	-0.01	-0.04	0.06	-0.09	0.01	-0.05	-0.01	-0.05	-0.04	0.04	0.05	NaNNA	-0.1
Less than £10,000/yr	0.01	-0.04	-0.03	0.04	0.12*	0.04	-0.06	0.07	0.03	-0.03	0.13*	0.1	-0.14*	-0.02	NaNNA	0.18**
£10,000 - £15,999/yr	0.03	0.03	-0.12*	-0.09	0.05	0	0	-0.05	0.1	-0.02	0.06	-0.03	-0.08	-0.08	NaNNA	0.03
£16,000 - £19,999/yr	-0.03	-0.07	-0.09	0.04	0.09	0	0.01	0.01	-0.04	0.09	-0.03	-0.02	0.04	-0.07	NaNNA	0.01
£20,000 - £29,999/yr	0	0.06	-0.03	0	0	-0.01	-0.08	-0.04	0.21***	-0.01	0.01	0.02	-0.05	-0.03	NaNNA	-0.06
£30,000 - £39,999/yr	-0.08	-0.04	-0.02	-0.02	-0.05	0.09	0.15**	0.02	-0.06	-0.05	0.01	-0.02	0.08	-0.02	NaNNA	-0.11*
£40,000 - £49,999/yr	0	0.09	0.12*	-0.01	-0.02	-0.01	-0.03	0	-0.07	-0.05	0	0.09	-0.01	-0.01	NaNNA	0.03
£50,000 - £59,999/yr	0.04	0	0.04	0.13*	-0.11*	-0.04	-0.03	-0.05	-0.04	0	-0.01	-0.06	0.05	0.01	NaNNA	-0.07
£60,000 - £79,999/yr	0.14*	-0.02	0.06	0.01	-0.02	-0.05	0.04	-0.04	-0.03	-0.05	0.06	-0.03	0.02	0	NaNNA	-0.02
£80,000 - £89,999/yr	-0.05	0	0.05	-0.01	0	-0.04	-0.01	-0.03	-0.02	-0.07	-0.08	-0.06	0.09	0.08	NaNNA	0.01
£90,000/yr and above	-0.01	-0.07	0.11*	-0.08	-0.07	-0.05	-0.03	0.06	-0.03	-0.01	-0.01	-0.07	0	0.08	NaNNA	0.09
Male	0.02	0	0.06	0.07	-0.1	0.04	-0.07	0.06	0.01	-0.06	0.03	0.09	-0.06	0.04	-0.05	0.05
Female	-0.05	-0.01	-0.05	-0.07	-0.07	-0.03	0.08	-0.05	0.06	-0.04	-0.07	-0.09	0.07	-0.04	0.05	-0.1
Neither Male Nor Female	0.1	0.02	-0.05	0.01	0.09	-0.04	-0.04	-0.02	-0.02	0	0.05	-0.01	-0.02	-0.01	-0.01	0.18***
Lived Alone During the Pandemic	-0.06	-0.07	0.01	-0.02	-0.07	0.06	0.07	0.05	0	-0.1	-0.02	0.09	0.01	0.03	-0.02	0.04
PCL-5 Sum Score	-0.07	0.01	-0.05	0.04	-0.01	0.02	0.03	-0.04	-0.05	0.01	0.03	-0.02	0.09	-0.11	-0.03	0.21***
PCL-5 Binary Score	-0.1	0.06	-0.04	0.06	-0.04	0.01	0.05	0.01	0.02	0.01	-0.05	0.01	0.04	-0.04	-0.02	0.13*

p < .001 ***, p < .01 **, p < .05*

Pearson's R Correlations

	25-29 yo	30-34 yo	35-39 yo	40-44 yo	45-49 yo	50-54 yo	55-59 yo	60-64 yo	65 yo and above	Only work from home	Mostly from home	Mostly/only work at a workplace different to my home	Currently unemployed or furloughed	Worked from home prior to pandemic, still do	Less than £10,000/yr	£10,000 - £15,999/yr
COVID-19 Traditional Media hrs/day																
COVID-19 Social Media hrs/day																
Active Social Media Use (times/day)																
Passive Social Media Use (times/day)																
Feeling at Risk of COVID																
Prior Diagnosis: Anxiety																
Prior Diagnosis: PTSD																
Prior Diagnosis: Depression																
White																
Asian/Asian British																
Black / African / Caribbean / Black British																
Other Ethnicity																
North East																
North West																
Yorkshire and the Humber																
East Midlands, England																
West Midlands																
East of England																
London																
South East																
South West																
Wales																
Scotland																
Northern Ireland																
No Formal Qualifications																
Secondary Education																
A-levels/High School																
Diploma																
Technical/Community College																
Undergraduate Degree (BA/BSc/other)																
Graduate Degree (MA/MSc/MPhil/other) and Above																
Unsure																
18-24 yo																
25-29 yo																
30-34 yo																
35-39 yo	-0.07															
40-44 yo	-0.07	-0.08														
45-49 yo	-0.09	-0.11*														
50-54 yo	-0.07	-0.09	-0.1													
55-59 yo	-0.08	-0.1	-0.09	-0.11*												
60-64 yo	-0.12*	-0.15**	-0.13*	-0.13*	-0.09											
65 yo and above	-0.1	-0.12*	-0.10*	-0.15**	-0.11*	-0.15**										
Only work from home	-0.01	0.07	0.16**	0.15**	0.04	0	-0.07	-0.12*	-0.19***	-0.09						
Mostly from home	-0.05	0.06	-0.02	0	0.1	0	-0.08	-0.03	0.01	-0.19***						
Mostly/only work at a workplace different to my home	0.04	0.06	0.07	-0.06	0.09	0.04	0.12*	-0.06	-0.14*	-0.27***	-0.18***					
Currently unemployed or furloughed	0.02	-0.14**	-0.14*	-0.08	-0.14**	-0.11*	0.01	0.13*	0.19***	-0.42***	-0.27***	-0.39***				
Worked from home prior to pandemic, still do	-0.03	-0.02	-0.08	0.01	-0.05	0.14**	0.01	0.09	-0.01	-0.17**	-0.11*	-0.15**	-0.24***			
Less than £10,000/yr	-0.04	-0.03	-0.04	-0.07	-0.06	0.12*	-0.04	0.04	-0.06	-0.15**	-0.09	-0.07	0.25***	0		
£10,000 - £15,999/yr	0.13*	-0.04	-0.01	-0.05	0.01	0	0.02	-0.09	0.05	-0.1	-0.09	-0.09	0.18**	0.08	-0.11*	
£16,000 - £19,999/yr	-0.04	-0.03	-0.04	0.02	-0.06	-0.1	-0.04	0.18***	0	0.01	-0.01	-0.06	0.07	-0.02	-0.11	-0.11*
£20,000 - £29,999/yr	0.06	0	-0.01	-0.05	0.01	-0.02	0	-0.03	0.11*	-0.07	0.04	0.02	0	0.03	-0.17**	-0.18**
£30,000 - £39,999/yr	-0.08	0.03	0.01	0.17**	-0.05	0.06	0.02	-0.08	0.06	-0.01	0.02	-0.07	0.02	0.02	-0.15**	-0.15**
£40,000 - £49,999/yr	0	0	-0.01	-0.02	0	-0.05	0	0	0.01	0	0.06	-0.08	-0.09	-0.04	-0.11*	-0.12*
£50,000 - £59,999/yr	-0.04	0.15**	0.04	-0.07	0.01	0.05	-0.01	-0.01	-0.03	0.12*	0.07	0.03	-0.15**	-0.03	-0.11*	-0.11*
£60,000 - £79,999/yr	0.07	-0.06	0	0.04	-0.01	0.07	0.07	-0.04	0.07	-0.03	0.15**	-0.13*	-0.04	-0.07	-0.07	-0.07
£80,000 - £89,999/yr	-0.04	-0.05	0.1	-0.02	0.01	-0.05	0	0	0.04	0.03	0.05	-0.05	0.01	-0.06	-0.06	-0.06
£90,000/yr and above	-0.05	-0.06	0.01	0.05	0.1	-0.02	-0.06	-0.06	0.11	-0.03	0.02	-0.03	-0.1	0.04	-0.07	-0.07
Male	-0.01	0.04	0.01	0.02	-0.01	-0.05	-0.11*	0	0.05	0	0.01	0.1	-0.06	-0.07	-0.04	0.02
Female	0	-0.05	-0.02	0	0.06	0	0.13*	-0.02	0.02	-0.03	0.02	-0.01	0.02	-0.07	0.01	-0.03
Neither Male Nor Female	0.05	0.03	0.04	-0.05	0.03	-0.04	-0.05	-0.06	0.07	-0.06	0.01	-0.07	0.15**	-0.04	0.09	0.02
Lived Alone During the Pandemic	0.1	0.05	0	-0.01	-0.11*	-0.01	0.06	-0.05	-0.01	-0.07	0.1	0.02	0.02	-0.08	0.09	0.05
PCL-5 Sum Score	0.26***	0.01	0.05	-0.02	-0.06	-0.03	-0.1	-0.08	-0.1	0.05	-0.09	-0.05	0.1	-0.07	-0.03	0.09
PCL-5 Binary Score	0.24***	-0.05	0.04	-0.03	-0.02	-0.02	-0.07	-0.08	-0.03	-0.03	-0.04	-0.04	0.11*	-0.05	0	0.07

p < .001 ***, p < .01 **, p < .05*

Pearson's R Correlations

	£16,000 - £19,999/yr	£20,000 - £29,999/yr	£30,000 - £39,999/yr	£40,000 - £49,999/yr	£50,000 - £59,999/yr	£60,000 - £79,999/yr	£80,000 - £89,999/yr	£90,000/yr and above	Male	Female	Neither Male Nor Female	Lived Alone During the Pandemic	PCL-5 Sum Score
COVID-19 Traditional Media hrs/day													
COVID-19 Social Media hrs/day													
Active Social Media Use (times/day)													
Passive Social Media Use													
Feeling at Risk of COVID													
Prior Diagnosis: Anxiety													
Prior Diagnosis: PTSD													
Prior Diagnosis: Depression													
White													
Asian/Asian British													
Black / African / Caribbean / Black British													
Other Ethnicity													
North East													
North West													
Yorkshire and the Humber													
East Midlands, England													
West Midlands													
East of England													
London													
South East													
South West													
Wales													
Scotland													
Northern Ireland													
No Formal Qualifications													
Secondary Education													
A-levels/High School Diploma													
Technical/Community College													
Undergraduate Degree (BA/BSc/other)													
Graduate Degree (MA/MSc/MPhil/other) and Above													
Unsure													
18-24 yo													
25-29 yo													
30-34 yo													
35-39 yo													
40-44 yo													
45-49 yo													
50-54 yo													
55-59 yo													
60-64 yo													
65 yo and above													
Only work from home													
Mostly from home													
Mostly/only work at a workplace different to my home													
Currently unemployed or furloughed													
Worked from home prior to pandemic, still do													
Less than £10,000/yr													
£10,000 - £15,999/yr													
£16,000 - £19,999/yr													
£20,000 - £29,999/yr	-0.17**												
£30,000 - £39,999/yr	-0.15**	-0.24***											
£40,000 - £49,999/yr	-0.11*	-0.18***	-0.16**										
£50,000 - £59,999/yr	-0.11	-0.17**	-0.15**	-0.11*									
£60,000 - £79,999/yr	-0.07	-0.11*	-0.1	-0.07	-0.07								
£80,000 - £89,999/yr	-0.06	-0.09	-0.08	-0.06	-0.06	-0.04							
£90,000/yr and above	-0.07	-0.11*	-0.09	-0.07	-0.07	-0.04	-0.04						
Male	-0.07	0	-0.02	0.01	0.06	0.02	-0.03	0.07					
Female	0.06	-0.02	0.04	0	-0.05	-0.01	0.04	-0.06	-0.86***				
Neither Male Nor Female	0.02	0.08	-0.07	-0.05	-0.03	-0.03	-0.03	-0.14*		-0.14**			
Lived Alone During the Pandemic	0.1	0.1	0	-0.1	-0.12*	-0.08	-0.07	-0.08	0.03	-0.04	0.01		
PCL-5 Sum Score	0.05	0.05	-0.06	-0.09	0	0.02	0.03	-0.05	-0.14*	0.07	0.24***	0.08	
PCL-5 Binary Score	0.02	0.1	-0.09	0	-0.07	-0.01	0.01	-0.06	-0.1	0.03	0.25***	0.08	0.76***

p < .001 ***, p < .01 **, p < .05*

B

Chapter 5 Supplementary Materials

B.1 CUREC Application CS_C1A_22_018 and supporting materials



The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics review process has been established to ensure that research involving human participants is conducted in a way that respects the dignity, rights, and welfare of participants, and minimises risk to participants, researchers, third parties, and to the University itself. It is assumed that all members of the University will take their responsibilities and obligations seriously, and will ensure that their research involving human participants is conducted according to established principles and good practice in their field and in accordance, where appropriate, with legal requirements.

Before completing this form, please refer to the [guidance](#) and [flowchart](#) on the Research Support website. Only type-written forms will be accepted. Completed application forms should be emailed, along with relevant supporting documents, to your [Departmental Research Ethics Committee \(DREC\)](#) or to ethics@socsci.ox.ac.uk from your ox.ac.uk email address.

Please contact your [DREC](#) or the [SSH IDREC](#) if you have any questions about completing this form or the review process.

Advisory text is highlighted in yellow and should be deleted before finalising the document.

SECTION A: Filter for CUREC 2 application		
This section determines whether the application for ethics review should be made using this form (CUREC 1A) or the CUREC 2 form (for research with more complex ethical issues).		
Please indicate with an 'X'.	Yes	No
1. Does the research involve the deception of participants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Are the research participants vulnerable in the context of the research, or classed as people whose ability to give free and informed consent is in question ? For example, <ul style="list-style-type: none"> • Participants aged 16 or under (also answer question A5); • Participants aged 16 – 18 (refer to competent youths for guidance); • adults at risk; Note the University's Safeguarding Guidance and Code of Practice and its implications for researchers involving young people or adults at risk.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. By taking part in the research, will participants be at risk of criminal prosecution or significant harm?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Does your research raise issues relevant to the Counter-Terrorism and Security Act (the Prevent Duty), which seeks to prevent people from being drawn into terrorism? Best Practice Guidance 07 on the Prevent Duty provides further guidance.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If you answered 'No' to all the questions above, go to Section B. If you answered 'Yes' to any question above, continue to question 5 below.		
5. Is your project covered by a CUREC Approved Procedure ?	<input type="checkbox"/>	<input type="checkbox"/>
If yes, list the CUREC Approved Procedure(s) you will follow		
If you answered 'Yes' to ANY of questions 1-4, and answered 'No' to question 5, stop completing this form and do not submit it for ethical review. You will instead need to submit a CUREC 2 application form . If you answered 'Yes' to any of questions 1-4, and your project is covered by an		

Approved Procedure, **go on to Section B**. If more than one Approved Procedure applies, contact the SSH IDREC or your DREC for advice on whether a CUREC 2 form should be submitted instead.

SECTION B: Researchers

1. Name of Principal Investigator or student's supervisor	Prof. Reuben Binns (Co-Principal Investigator)	
2. Department or Institute	Computer Science	
3. University of Oxford email address	reuben.binns@cs.ox.ac.uk	
4. Name of Principal Investigator or student's supervisor	Prof. Max Van Kleek (Principal Investigator)	
5. Department or Institute	Computer Science	
6. University of Oxford email address	max.van.kleek@cs.ox.ac.uk	
Copy and paste the following six rows as necessary to complete for each additional researcher who will be involved in this study, including student(s) and those external to the University.		
7. Name of researcher or student	Claudine Tinsman	
8. Department or Institute	Computer Science Cyber Security CDT	
9. University of Oxford email address	claudine.tinsman@cs.ox.ac.uk	
10. Role in research	Student	
11. Degree programme, if student research	DPhil	
The whole research team		
12. Have the researchers undertaken research ethics and integrity training?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
13. Please provide details of any research ethics and integrity training undertaken, including the dates of the training. Alternatively state relevant research experience.	Research Integrity Course for Engineering and Technology (11/05/2020)	
14. State any conflicts of interest and explain how these will be addressed.	None	

SECTION C: The research project

1. Title of the research project	Comparing emotion regulation strategies for social media use across support communities on Reddit	
2. Anticipated start date of the aspect of the research project involving human participants and/ or personal data (dd/mm/yy).	Upon receipt of ethics approval	

3. Anticipated research end date (dd/mm/yy).	31/12/2022
4. Provide a brief lay summary of the aims and objectives of the research. This should cover the questions it will answer and any potential benefits. (max 300 words)	
<p>This project aims to explore how individuals seeking online support to cope with difficult life experiences employ emotion regulation strategies when social media use elicits unwanted reminders (directly or indirectly) of those experiences.</p> <p>Our research questions are:</p> <ul style="list-style-type: none"> • What kinds of social media content and use lead to unwanted emotional responses among individuals who've experienced trauma, sexual assault, mental illness, or addiction? • What, if any, emotion regulation strategies do users from across these groups adopt when faced with unwanted emotional responses to social media use or content? • Do common emotion regulation strategies emerge across these different groups? <p>As research on this topic is limited, we plan to collect user accounts of triggering social media use posted to relevant public Reddit support communities over the last five years.</p> <p>There is little existing research on the strategies used when social media use triggers unwanted reminders of a difficult or traumatic experience. Exploring, comparing, and analysing the strategies that users who have experienced PTSD, sexual assault, mental illness and substance abuse will enable us to lay the groundwork for future design work to support users in coping with harmful social media use.</p> <p>Data will be collected from the Pushshift data set using the Pushshift API. Requests to the API and conversions to .csv format from JSON will be performed using a Python script.</p>	
5. Please indicate the methods to be used (indicate with an 'X'):	
Analysis of existing records	<input type="checkbox"/>
Snowball sampling (recruiting through contacts of existing participants)	<input type="checkbox"/>
Use of casual or local workers e.g. interpreters (refer to guidance in BPG 01: Researcher safety)	<input type="checkbox"/>
Participant observation	<input type="checkbox"/>
Covert observation	<input type="checkbox"/>
Observation of specific organisational practices	<input type="checkbox"/>
Participant completes questionnaire in hard copy	<input type="checkbox"/>
Participant completes online questionnaire or other online task (refer to guidance in BPG 06: Internet-mediated research)	<input type="checkbox"/>
Using social media to recruit or interact with participants (refer to guidance in BPG 06: Internet-mediated research)	<input type="checkbox"/>
Participant performs paper and pencil task	<input type="checkbox"/>
Participant performs verbal or aural task (e.g. for linguistic study)	<input type="checkbox"/>
Focus group	<input type="checkbox"/>

Interview (refer to guidance in BPG 10: Conducting research interviews)	<input type="checkbox"/>
Audio recording of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Video recording of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Photography of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Others (please specify below)	<input checked="" type="checkbox"/>
Collection of publicly accessible data user posts and comments on Reddit	
<p>6. Provide a brief summary of the research design and methods. What will research participants be asked to do? (max 300 words) Please also submit a copy of the questions participants will be asked, if applicable, or some information about the sorts of topics that will be covered.</p>	
<p>This section does not strictly apply as research participants will not be approached.</p> <p>We will conduct our research as follows: <u>Search 1: Searching for posts</u></p> <p>Within the large support subreddits focusing on trauma, sexual assault, addiction, and mental illness, we will perform boolean searches for posts and comments about social media experiences that unwanted emotional responses. Searches will contain the phrase "social media", as well as the names of specific social media platforms such as 'Facebook'. CT will search for all results going back five years from the date when the data collection is performed.</p> <p><i>Search parameters</i></p> <p>We plan to collect only the following information from posts:</p> <ul style="list-style-type: none"> • Name of subreddit • Post title • Post text • Time and date of post • Post ID: This is a unique base 36 identifier assigned by the API. It is necessary to retrieve the comments for a specific post • Corresponding comments text (this is the text of comments on the collected posts) • Time and date of comments <p>CT will handle the data collection and storage as follows:</p> <ul style="list-style-type: none"> • CT will search for relevant posts on the Pushshift dataset using the Pushshift API and download data to a .csv file on CT's department-issued password-protected laptop. No usernames will be collected. • The file will be uploaded to a password-protected OneDrive folder on the University server, accessible only to her and her supervisor. The local .csv file will be deleted from CT's laptop as soon as it has been uploaded. • CT will sort through the collected posts for inclusion. Posts that contain the searched keywords but are not relevant to the topic of social media use eliciting unwanted emotional responses will be discarded. Posts describing second-hand (e.g., a friend 	

describing a friend's experience with social media triggers) will be discarded even if relevant to the research topic.

- All excluded posts will be deleted permanently from the file.

Search 2: Collecting Comment IDs

Once the relevant posts have been retained, CT will perform a second search for the comments on the relevant posts, as it is not currently possible to simultaneously collect posts and comments in one operation using the API. CT will use the post ids collected in the search to retrieve the corresponding comment IDs.

Data Collection and Storage

CT will handle the retrieval and storage of comment IDs as follows:

- CT will search for relevant Comment IDs in the Pushshift dataset using the Pushshift API and download them to a .csv file on CT's department-issued password-protected laptop. No other data will be collected at this stage
- The file will be uploaded to a password-protected OneDrive folder on the University server, accessible only to her and her supervisor.
- The local .csv file will be deleted from CT's laptop as soon as the data has been uploaded to One Drive.

Search 3: Searching for Comment Text

CT will search for comment text using the comment IDs in the Pushshift dataset using the Pushshift API. Only the following information will be collected about the comments:

- Comment text
- Time and date of the comment
- Name of subreddit

Data Collection and Storage

CT will handle the data collection and storage as follows:

- Collected comment data will be downloaded to a .csv file on CT's department-issued password-protected laptop.
- The file will be uploaded to a password-protected OneDrive folder on the University server, accessible only to CT and her supervisor
- Data will be merged with the existing .csv containing posts.
- The local .csv file will be deleted from CT's laptop as soon as it has been uploaded.
- The uploaded .csv file containing comment IDs and text will be deleted permanently from One Drive as soon as that data has been transferred over to the .csv file containing data about posts.

Data Cleaning

CT will sort through the collected comments for inclusion. The following will be excluded:

- Comments that contain the searched keywords but are not relevant to the topic of social media use that elicits unwanted emotional responses will be discarded.
- Comments describing second-hand (e.g., a friend describing a friend's experience with social media triggers) will be discarded even if relevant to the research topic.

All excluded comments will be deleted permanently from the file.

Data De-Identification

CT will search the dataset for any potentially identifying information (for example, the name of someone's location) and redact it. Once all the contents of the file have been de-identified, CT will transfer it to a OneDrive folder on the University server accessible to other researchers in the group. This final dataset will remain stored in this location for at least 10 years.

The Python script used to retrieve data from the API and convert the JSON files will also be stored in this folder.

Data Analysis

Using a grounded theory approach, we will perform thematic analysis of posts and comments pertaining to:

- Social media use that triggers unwanted emotional responses
- Emotion regulation strategies adopted for managing those responses if such information is present in the collected content.
- Comparison of emotion regulation strategies across groups and platforms

7. List the location(s) where the research will be conducted, including any other countries.	Remotely, analysis of existing publicly accessible data on Reddit		
8. Clarify which parts of the research will be conducted in-person and which will take place remotely, e.g. online .	All research will take place online.		
9. If your research involves fieldwork or travel and your department requires a travel risk assessment, will you have completed and returned a risk assessment form beforehand? Please indicate with an 'X'. (This must be approved by your department before you travel. If you are travelling overseas, you are advised to take out University travel insurance .) Refer to guidance available from your Department, the Safety Office , the Social Sciences Division , and the Humanities Division , and on travel for University business .	Yes	<input type="checkbox"/>	
	No	<input type="checkbox"/>	
	Not required in this instance	<input checked="" type="checkbox"/>	
10. In the case of international or collaborative research, explain how you will address any ethical issues specific to the local context. Please provide details of the local review, approval or permission obtained or required. Refer to the BPG 16: Social science research conducted outside the UK . If there will be no local review, explain why not. Please mention any stakeholder or community engagement that has been/ will be undertaken in relation to the research Please also address any physical or psychological risks for Oxford researchers and local fieldworkers in Section G .			

NA	
11. Name of departmental/ peer reviewer (if applicable)	NA
12. External organisation funding the research and grant reference (if applicable)	NA
13. Please refer to the CUREC Best Practice Guidance and list any that have been used to develop your research.	NA

SECTION D: Recruitment of research participants

1. Number of participants	NA	
2. How was the number of participants decided?	NA	
3. Age range of participants	NA	
4. Inclusion criteria	NA	
5. Exclusion criteria	NA	
6. Indicate with an 'X' all intended recruitment methods Please submit copies of the recruitment material that will be used, e.g. advertisement text, introductory email text.	Poster advert	<input type="checkbox"/>
	Flyer	<input type="checkbox"/>
	Email circulation	<input type="checkbox"/>
	Social media (e.g. Twitter, Facebook)	<input type="checkbox"/>
	Website	<input type="checkbox"/>
	In-person approach	<input type="checkbox"/>
	Snowball sampling	<input type="checkbox"/>
	Recruitment sites (e.g. Mechanical Turk)	<input type="checkbox"/>
	Existing contacts or volunteer database	<input type="checkbox"/>
	Other (please specify):	<input checked="" type="checkbox"/>
This section is not applicable		
7. How will potential participants be identified and approached?	NA	
8. Will informed consent be obtained from the research participants or their parents/guardians? If not, please explain why not.	NA	

<p>9. For each activity or group of participants, explain how informed consent will be obtained from the participants themselves and/ or their parents/ guardians, if applicable. How will their consent be recorded?</p> <p>Please submit copies of all participant-facing materials for review. E.g.:</p> <ul style="list-style-type: none"> • Recruitment material (e.g. emails, posters) • Information for participants to read (or hear) before they agree to take part (e.g. written information or, if applicable, an outline oral information script). • A document to record informed consent. <p>Further guidance and templates.</p>	<p>NA</p>
<p>10. Provide details of any payments and incentives and the rationale for providing these. Further guidance in Best Practice Guidance: 05 Payments and incentives in research.</p>	<p>NA</p>
<p>11. Describe how participants</p> <ul style="list-style-type: none"> • may withdraw from the study • may withdraw any personal information they have provided from the study <p>State any limits to withdrawal, for example once the data has been anonymised or at some other specified stage prior to publication. Make sure participants are aware of any withdrawal limits.</p>	<p>NA</p>

SECTION E: Research data

All information provided by participants is considered research data for the purpose of this form. Any research data from which participants can be identified is known as [personal data](#); any personal data which is sensitive is considered [special category data](#). Management of personal data, either directly or via a third party, must comply with the requirements of the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018, as set out in the [University's Guidance on Data Protection and Research](#).

In answering the questions below, please also consider the points raised in the [Data Protection Checklist](#) and [Data Protection Screening Assessment](#) and whether, for higher-risk data processing, a separate [Data Protection Impact Assessment](#) may also be required for the research. Advice on research data management and security is available from [Research Data Oxford](#) and your local IT department. Advice on data protection is available from the [Information Compliance team](#).

For guidance on conducting internet-mediated research, refer to CUREC’s [Best Practice Guidance 06: Internet-mediated research](#).

1. What data will be collected? (Indicate with an ‘X’)

Screening documents	<input type="checkbox"/>	Task results (e.g. questionnaires, diaries)	<input type="checkbox"/>
Consent records (e.g., written consent forms, audio-recorded consent, assent forms)	<input type="checkbox"/>	IP addresses (refer to Best Practice Guidance 09: Data collection, protection and management for guidance)	<input type="checkbox"/>
Contact details for the purpose of this research only	<input type="checkbox"/>	Field notes	<input type="checkbox"/>
Contact details for future use (guidance)	<input type="checkbox"/>	Photographs	<input type="checkbox"/>
Opt-out forms	<input type="checkbox"/>	Information about the health of the participant (including mental health)	<input type="checkbox"/>
Audio recordings	<input type="checkbox"/>	Previously collected (secondary) data	<input type="checkbox"/>
Video recordings	<input type="checkbox"/>	Data already in the public domain. Specify the source of the data: Posts and comments on public subreddits	<input checked="" type="checkbox"/>
Transcript of audio/ video recordings	<input type="checkbox"/>	Other, please specify:	<input type="checkbox"/>

2. During the course of the research, where will **each type of** research data be stored?

Once all the contents of the file have been de-identified, CT will transfer it to a OneDrive folder on the University server accessible to other researchers in the group. This final dataset will remain stored in this location for at least 10 years.

Search 1:

- The collected data will be downloaded to a .csv file on CT’s department-issued password-protected laptop. No other data will be collected at this stage.
- The file will be uploaded to a password-protected OneDrive folder on the University server, accessible only to her and her supervisor.
- The local .csv file will be deleted from CT’s laptop as soon as the data has been uploaded to One Drive.

Searches 2 and 3 will follow the same procedure.

Once the final data set has been de-identified, CT will transfer it to a OneDrive folder on the University server accessible only to other researchers in the group. This final dataset will remain stored in this location for at least 10 years.

3. Who will have access to the research data during the project?	<p>During the data collection and analysis phases, only the researchers named on this CUREC will have access to the data.</p> <p>Once the final data set has been de-identified, CT will transfer it to a OneDrive folder on the University server accessible only to other researchers in her research group.</p>		
4. Please complete this section if your research involves the use of secondary (i.e. previously collected) data.	Please indicated with an 'X'.	Yes	No
	Are data access agreements in place for access to and use of this secondary data? (If so, please attach these.)	<input type="checkbox"/>	<input type="checkbox"/>
	Did the individuals agree that their data could be used for this purpose?	<input type="checkbox"/>	<input type="checkbox"/>
	<p>Could anyone (including members of the research team) link the data back to an individual or individuals? If this is a possibility, please explain how the associated ethical issues will be addressed:</p>	<input type="checkbox"/>	<input type="checkbox"/>
5. How do you intend to share the research data at the end of the project?	Depositing in a specialist data centre or archive	<input type="checkbox"/>	
	Submitting to a journal to support a publication	<input type="checkbox"/>	
	Depositing in an institutional repository	<input type="checkbox"/>	
	Dissemination via a project or institutional website	<input type="checkbox"/>	
	No plans to share the data	<input type="checkbox"/>	
	<p>Other (please specify):</p> <p>The dataset of posts and comments will not be made publicly available. We may share relevant subsets of the data with other researchers on a case-by-case basis, subject to the recipient's agreement, in writing, that they will neither share the dataset with other researchers nor make it publicly available.</p> <p>No quotes will be used in the final written publication as they are easily discoverable by search engines and can be traced back to a particular username.</p>	<input checked="" type="checkbox"/>	
6. How do you intend to report and disseminate the results of the research? (Indicate with an 'X')	Thesis publication	<input checked="" type="checkbox"/>	
	Publication in a peer reviewed journal	<input checked="" type="checkbox"/>	
	Publicly available report	<input type="checkbox"/>	
	Conference presentation	<input checked="" type="checkbox"/>	
	Publication on a website	<input type="checkbox"/>	
	Pre-registration	<input type="checkbox"/>	
	Report to a research funder	<input type="checkbox"/>	
	Providing participants with a lay summary of the results	<input type="checkbox"/>	
	Submission for academic assessment	<input type="checkbox"/>	
	<p>Other (please specify):</p>	<input type="checkbox"/>	

7. Explain what will happen to the data at the end of the research project.
This question must be answered for each type of data, including completed consent forms.

Once all the contents of the file have been de-identified, CT will transfer it to a OneDrive folder on the University server accessible to other researchers in the group. This final dataset will remain stored in this location for at least 10 years.

SECTION F: Protection of research participants and their personal data

1. How identifiable will the participants be from the research outputs ? (Indicate with an 'X')	Directly identifiable from the information included	<input type="checkbox"/>
	Pseudonymised / indirectly identifiable	<input checked="" type="checkbox"/>
	Not identifiable – data is anonymous	<input type="checkbox"/>
	Other, please specify:	<input type="checkbox"/>
2. To what extent will the data be de-identified ? How identifiable will any individuals be from the research data? Describe any measures you will take towards assuring confidentiality , potential risks to confidentiality.	Individuals cannot be directly identified: No usernames will be collected during the collection phases. Furthermore, CT will search the final dataset for any potentially identifying information (for example, the name of someone's location) and redact it. Furthermore, we will only be collecting data from large public subreddits (e.g more than 10,000 users).	
3. How will you ensure that third parties (e.g., interpreters and transcribers) are aware of and adhere to the measures described in this form?	No third parties will be involved.	

SECTION G: Risks and benefits of the research

1. Will the research involve topics that could be considered [sensitive](#)? If so:
- Please provide more detail or supporting information (such as the interview questions) to show the range of questions;
 - Explain what steps will be taken to reduce risk of distress;
 - Consider seeking advice from within your Department or from the ethics committee including whether the application might benefit from additional ethics review (e.g., via a CUREC 2 application).

Please see the attached document titled [ethics_support.pdf](#)

2. Describe any additional burden or risks to the participants and the steps you will take to address these.

See F.2

3. Describe any physical or psychological risks to the researcher(s) (including local fieldworkers or research assistants) and the steps you will take to address these.

Physical safety

There are no risks to physical safety. Data collection will be conducted online from the computer science department and there will be no contact with human participants.

Psychological Safety and Mental Health

The Reddit content we plan to analyse will contain descriptions of traumatic experiences, including accounts of sexual assault and trauma. The DPhil student conducting the data collection and analysis has prior training in managing secondary trauma: CT has four years of experience as both a college peer supporter and trained Nightline listener. As part of those roles, she has undergone training for vicarious trauma management. She has also familiarised herself with the Managing Secondary Trauma in Social Science Research resources available on the social sciences research website.

She will also check in regularly with her supervisor and PI regarding her mental health. If she feels the need for additional support, she will reach out to my peer supporters and the counselling service.

All other members of the group who plan to examine the data will be informed of relevant resources (e.g the Secondary Trauma in Social Science Research resources) before they begin to analyse the data.

4. Describe any benefits of the research, both to participants and to others.

There is little existing research on the strategies used when social media use triggers unwanted reminders of a difficult or traumatic experience. Exploring, comparing, and analysing the strategies that users who have experienced PTSD, sexual assault, mental illness and substance abuse will enable us to lay the groundwork for future design work to support users in coping with harmful social media use.

5. Give details of any other ethical issues or relevant information.

See [ethics_support.pdf](#)

SECTION H: Professional guidelines

Please indicate with an 'X' at least one set of professional guidelines you will follow.

Research specialism/ methodology	Association and guidance	
Anthropology	Association of Social Anthropologists of the UK	<input type="checkbox"/>
Computer Science	ACM Code of Ethics and Professional Conduct	<input checked="" type="checkbox"/>
Criminology	British Society of Criminology Statement of Ethics	<input type="checkbox"/>
Education	British Educational Research Association Ethical Guidelines for Educational Research	<input type="checkbox"/>
Geography	American Association of Geographers Statement on Professional Ethics	<input type="checkbox"/>
History	Oral History Society of the UK Ethical Guidelines	<input type="checkbox"/>
Internet-mediated research	Association of Internet Researchers Ethical Guidelines British Psychological Society: Ethics Guidelines for internet-mediated research Association for Computing Machinery Code of Ethics and Professional Conduct	<input type="checkbox"/>
Management	Academy of Management Code of Ethics	<input type="checkbox"/>
Political Science	American Political Science Association (APSA) Guide to Professional Ethics in Political Science	<input type="checkbox"/>
Politics	Political Studies Association. Guidelines for Good Professional Conduct	<input type="checkbox"/>
Psychology	British Psychological Society Code of Ethics and Conduct	<input type="checkbox"/>
Social research	Social Research Association: Ethical Guidelines	<input checked="" type="checkbox"/>
Socio-legal studies	Socio-Legal Studies Association: Statement of Principles of Ethical Research Practice	<input type="checkbox"/>
Sociology	The British Sociological Association: Statement of Ethical Practice	<input type="checkbox"/>
Visual research	ESRC National Centre for Research Methods Review Paper: Visual Ethics: Ethical Issues in Visual Research	<input type="checkbox"/>
Other professional guidelines	List any other guidelines used here.	<input type="checkbox"/>

SECTION I: Endorsements and signatures

Please ensure this form is endorsed by the [Principal Investigator](#) (or student's supervisor), the Head of Department (or nominee) and, if student research, by the student themselves.

The SSH IDREC Secretariat accepts either option below. If you have a [DREC](#), check which signature option it prefers.

- **Option 1: direct email endorsements**

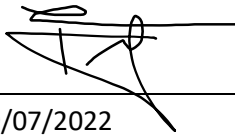
Each of the signatories should submit an email from a University of Oxford email address, indicating their acceptance of the responsibilities listed below.

- **Option 2: signatures**

Please scan the signed form and email it to us as a PDF. Pasted images of signatures cannot be accepted.

Endorsement by the Principal Investigator/ student supervisor and student, if applicable

I/ we the researchers understand my/ our responsibilities as Principal Investigator (and student, if applicable) as outlined in the guidance on the CUREC website. I/ we declare that the answers above accurately describe the research as presently designed, and that the ethics committee will be informed of any changes to the project which affect the answers to this form.
I/ we will inform the relevant IDREC if the Principal Investigator changes.

Name of Principal Investigator	Prof Reuben Binns
Principal Investigator's signature	Instead of a signature, endorsement may be provided by an email confirming the points above.
Date	19/07/2022
Name of student (if applicable)	Claudine Tinsman
Student's signature	
Date	19/07/2022

Departmental endorsement – from the Head of Department or nominee
(Another senior member of the department may sign where the head of department is the Principal Investigator, or where the Head of Department has appointed a nominee. Example nominees include Deputy Head of Department, Director of Research, or Director of Graduate/ Undergraduate Studies.)

On the basis of the information available to me, I confirm that:

- I am aware of the research proposed and have read this application;
- To the best of my knowledge, the proposed design and scientific methodology do not raise ethical concerns;
- I support this research in principle, subject to ethical and other necessary reviews.
-

Signature	Instead of a signature, endorsement may be provided by an email confirming the points above.
Name	
Role	
Date	

Supplemental Materials: Comparing emotion regulation strategies for social media use across support communities on Reddit

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1 Research Objectives

This project aims to explore how individuals seeking online support to cope with difficult life experiences employ emotion regulation strategies when social media use elicits unwanted reminders (directly or indirectly) of those experiences.

Our research questions are:

1. What kinds of social media content and use lead to unwanted emotional responses among individuals who've experienced trauma, sexual assault, mental illness, or addiction?
2. What, if any, emotion regulation strategies do users from across these groups adopt when faced with unwanted emotional responses to social media use or content?
3. Do common emotion regulation strategies emerge across these different groups?

As research on this topic is limited, we plan to collect user accounts of triggering social media use posted to relevant public Reddit support communities over the last five years. Data will be collected from the Pushshift data set using the Pushshift API [4]. Requests to the API and conversions to .csv format from JSON will be performed using a Python script.

We understand that there are significant concerns regarding the collection and analysis of publicly accessible data from social media platforms on such sensitive topics. In the absence of a standard CUREC-approved procedure for our research, we have put together a research plan and methodology that addresses potential ethical concerns for such research.

2 Background: The Ethical Ambiguity of "Public" Data Collection and Analysis

Publicly accessible data can be put to a wide range of secondary uses that pose privacy and safety risks individuals and wider online communities. A number of high-profile research scandals have highlighted concerns around the use of publicly available data for research purposes.

2.1 Examples of Public Data Use Controversies

Between November 2014 and March 2015, Emil Kirkegaard, then a postgraduate student at Aarhus University, created a user profile on the OKCupid data website and proceeded to scrape the service for profile information including age, gender, location, sexual orientation, and username for nearly 70,000 users and collected responses to the 2,600 most popular questions on the site about topics such as recreational drug use and religion [11]. The data set was subsequently published on the Open Science Framework (it has since been taken down), along with an analysis of the data. When asked if he had done anything to anonymise the published data, he simply stated, "No. Data is already public" [19]. In the wake of the data set's publication, Aarhus University stated publicly that Kirkegaard had not been working on behalf of the university for the project [15] though it is not clear if he sought any ethical approval from his institution prior to conducting the research. The incident led to a strong and immediate backlash in the press and among researchers [19]

In 2016, a group of researchers published a study purported to reveal the identity of British artist Banksy, who has long sought to keep his identity private [9]. They analyzed the spatial patterns of Banksy’s artworks around London and Bristol, tracked a particular individual who had been named by the Daily Mail as likely to be Banksy [9], and searched electoral rolls and news archives for the suspected individual’s current and former addresses, as well as locations that he frequented regularly. The researchers then mapped these locations against those of Banksy’s public artworks and concluded that the individual named by the Daily Mail was likely Banksy. In their publication, the authors stated that they were “aware of, and respectful of, the privacy of [name redacted] and his relatives” despite having tracked the individual and their family in a highly invasive manner [13]. The authors later stated that the study had been reviewed by an independent ethics review board [13].

Finally, perhaps the most notorious example or dubious ethical practices for social media is the “emotional contagion” Facebook study in 2014. After manipulating the news feeds of nearly 690,000 users to study the effects of emotional contagion, Facebook shared the collected data set with a researcher at Cornell University, who published the study in the Proceedings of the National Academy of Science (PNAS). Facebook had not engaged in any independent review prior to creating that data set, nor was it required to do so. It later transpired that Cornell’s institutional review board found that no review was needed because the researcher had not been involved in the data production and collection process [12].

These examples illustrate how data sets often contain surprises, even when they are ostensibly public and anonymous and may affect individuals, groups, or entire communities. A “publicly available” database that meets the exclusion criteria for institutional ethics review may have significant privacy impacts for a subject when multiple public data sets are analyzed in conjunction with one another [13]

2.2 Positions on “Public” Data Use

Within research communities and across institutional review boards, there is a lack of consensus regarding the ethical practices that researchers should adhere to when collecting the use of public data for research purposes and if, or when, using social media constitutes human subject research [13] [18]. The necessity of obtaining informed consent from users for the purposes of collecting publicly available data on social media is not clear cut, and there are broadly three schools of thought on the matter.

The first is that is that an effort should always be made to collect informed consent from individuals who have produced data: However, it may not be reasonably feasible, or necessary, to collect informed consent from every single user in these cases [16]. The second is that only information shared on social media platforms requires informed consent if it is collected from closed or private or closed groups [16]. The third is that there is no need to engage in any kind of ethics review process for collecting such data: A recent meta-analysis of 727 academic publications published between 2010 and 2020 using Reddit as a data source indicates that the vast majority of studies collecting data from the platform did not seek ethical review because such studies are either explicitly exempt, or authors did not feel the need to seek it [14].

At a high level, ethical research involving human subjects and their data involves 1) informed consent, 2) anonymity, 3) confidentiality, and 4) harm minimisation [16]. We have put together a research plan that respects those tenets to the extent that it is reasonable and proportionate to do so.

3 Implementation of Ethical Practices in The Proposed Study

3.1 Data Collection

CT plans to search archives of subreddits in the Pushshift data set pertaining to trauma and sexual assault for posts and comments about social media experiences that elicit unwanted emotional responses using boolean searches from public subreddits which focus on experiences of trauma.

3.1.1 Pushshift API

Pushshift is a social media data collection, analysis, and archiving platform that has been collecting Reddit data since 2015 and making it available to researchers via its API. The data set is updated frequently and includes historical data back to Reddit’s inception[3]. It was created and is currently maintained by the moderators of the r/data sets subreddit [4].

While it is not entirely clear whether Pushshift has been deployed with Reddit’s explicit consent or approval, it has been used extensively for published academic papers since it has become operational [14] [3]. We found no evidence of Reddit having taken action against either 1) Pushshift for its ongoing data collection or 2) against any researchers who have published research using Pushshift. We are therefore confident that we can use Pushshift without violating Reddit’s terms and conditions. However, we realise that there are specific features of the Pushshift API that need to be addressed.

Once Pushshift ingests posts, comments, and metadata from Reddit’s API, it is possible that comments deleted from Reddit may still exist on the Pushshift [8]. While users have the option to request the removal of their content from the service, they may be unaware that the data set exists and is used by researchers [14]. There is a lack of consensus surrounding the ethics of curating data that may have been deleted by users [6], particularly in instances where the data has potentially been collected without the users’ express consent and pertains to sensitive topics [6]. Given this ambiguity, we intend to make our research data set available on a case-by-case basis, only sharing access to data subsets that are necessary to fulfil specific research requests [10]

3.1.2 Risks to Users: Consent and Anonymity

Obtaining informed consent from all Reddit users is manifestly impractical in the context of our research. However, given the sensitive nature of our topic, we will take proportionate steps to mitigate risks of user identification at this stage by respecting the principles of data minimisation. As such, we will collect no more than the amount of data that is strictly necessary to address our research questions [7]. Specifically:

- Name of subreddit
- Post title
- Post text
- Time and date of post
- Post ID: This is a unique base 36 identifier assigned by the API. It is necessary to retrieve the comments for a specific post
- Corresponding comments text (this is the text of comments on the collected posts)
- Time and date of comments

Please note that we will not collect any usernames as doing so is not necessary to address our research questions and introduces an unnecessary risk of re-identification.

3.1.3 Privacy: Private vs. Public Data

Public subreddits are those in which posts are visible to anyone on the internet: Reddit usernames or subreddit membership are not necessary to access content from these communities. Private communities require explicit permission from moderators to join and content is only visible to members. Users who are members of private communities likely have an expectation that their discussions will not be disseminated beyond the confines of their communities [17], we will not collect data from those sources.

If there are instances where community guidelines for public subreddits have stipulated that collection and analysis of public content require prior approval from moderators, we will request permission from moderators and provide them with a full overview of the study before collecting and analysing data originating from that subreddit. If moderators decline our request to collect data originating from a particular subreddit, we will not do so.

Finally, certain subreddits may position themselves as small communities rather than public fora, setting up a potential mismatch between researchers’ views of Reddit as a public space and users’ understandings of the communities they are participating in [14], blurring the lines between public and private spaces. As a precaution, we will only collect data from the largest relevant public subreddits, with at least 10,000 users at the time of this submission.

3.2 Data Storage

3.2.1 Confidentiality and Anonymity

We will adhere to standard CUREC 1A compliant practices to ensure that the collected data is both stored in a manner that is confidential and de-identified to the extent that it is possible to do so.

1. CT will perform relevant searches to collect data and download it to a .csv file to the researcher's department-issued password-protected laptop.
2. The file will be uploaded to a password-protected OneDrive folder on the University server, accessible only to one researcher. The local .csv file will be deleted from the laptop as soon as it has been uploaded.
3. CT will manually review the posts and comments for any potentially identifying information (for example, the name of someone's location) and redact it. Once all the contents of the file have been de-identified, they will transfer it to a OneDrive folder on the University server accessible to other researchers in their group who may assist in the data analysis.
4. CT will manually review the collected posts for topic inclusion (see Part II)
5. Once the researchers have sorted through the posts, all irrelevant posts will be deleted permanently from the .csv file.

3.3 Publication and Access to Research Data

We plan to take several steps to maintain confidentiality and anonymity during and after the publication phase.

3.3.1 Use of Quotes

No direct quotes will be used in the publication. Direct quotes from Reddit are easily discoverable by search engines and can be traced back to a particular username [14]. While including usernames and quotes is a common practice in qualitative social media research [2], where subreddit content is potentially sensitive (such as where the content pertains to accounts of trauma and sexual abuse), there may be outsourced safety or privacy risks to those data subjects if their content is shared beyond its intended context [5]. Instead, we will paraphrase quotes and clearly indicate to readers that no direct quotes were used.

3.3.2 Restriction of Access to data set

The data set of posts and comments will not be made publicly available. While we generally strive for open and reproducible research practices, the safety and well-being of the users who provided the content being analysed is a priority owing to the sensitive nature of the topics being discussed. We will consider sharing relevant subsets of the data with other researchers on a case-by-case basis, subject to the data recipient providing written agreement that they will neither share the data set nor make it publicly available [6] [10].

3.4 Additional Concerns: Risks to Researchers

3.4.1 Physical Safety

There are no risks to physical safety. Data collection will be conducted online from the computer science department and there will be no contact with human participants.

3.4.2 Psychological Safety and Mental Health

The Reddit content we plan to analyse will contain descriptions of traumatic experiences, including accounts of sexual assault, suicide and addiction. The DPhil student conducting the data collection and analysis has prior training in managing secondary trauma: CT has four years of experience as both a college peer supporter and trained Nightline listener. As part of those roles, she has undergone training for vicarious trauma management. She has also familiarised herself with the Managing Secondary Trauma

in Social Science Research resources available on the social sciences research website [1]. She will also check in regularly with her supervisor regarding her mental health. If she feels the need for additional support, she will reach out to my peer supporters and the counselling service.

References

- [1] Managing Secondary Trauma in Social Science Research.
- [2] AYERS, J. W., CAPUTI, T. L., NEBEKER, C., AND DREDZE, M. Don't quote me: reverse identification of research participants in social media studies. *npj Digital Medicine* 1, 1 (Aug. 2018), 1–2. Number: 1 Publisher: Nature Publishing Group.
- [3] BAUMGARTNER, J., ZANNETTOU, S., KEEGAN, B., SQUIRE, M., AND BLACKBURN, J. The Pushshift Reddit Dataset. *Proceedings of the International AAAI Conference on Web and Social Media* 14 (May 2020), 830–839.
- [4] BAUMGARTNER, J. M. Pushshift Reddit API Documentation, July 2022. original-date: 2017-08-17T22:49:30Z.
- [5] DYM, B., AND FIESLER, C. Ethical and privacy considerations for research using online fandom data. *Transformative Works and Cultures* 33 (June 2020).
- [6] FIESLER, C. Ethical Considerations for Research Involving (Speculative) Public Data. *Proceedings of the ACM on Human-Computer Interaction* 3, GROUP (Dec. 2019), 1–13.
- [7] FRANZKE, A. S., BECHMANN, A., ZIMMER, M., ESS, C., AND OF INTERNET RESEARCHERS, A. Internet Research: Ethical Guidelines 3.0. Tech. rep., 2020.
- [8] GAFFNEY, D., AND MATIAS, J. N. Caveat Emptor, Computational Social Science: Large-Scale Missing Data in a Widely-Published Reddit Corpus. *PLOS ONE* 13, 7 (July 2018), e0200162. arXiv:1803.05046 [cs].
- [9] HAUGE, M. V., STEVENSON, M. D., ROSSMO, D. K., AND LE COMBER, S. C. Tagging Banksy: using geographic profiling to investigate a modern art mystery. *Journal of Spatial Science* 61, 1 (Jan. 2016), 185–190.
- [10] HUANG, X., XING, L., BRUBAKER, J. R., AND PAUL, M. J. Exploring Timelines of Confirmed Suicide Incidents Through Social Media. In *2017 IEEE International Conference on Healthcare Informatics (ICHI)* (Park City, UT, USA, Aug. 2017), IEEE, pp. 470–477.
- [11] KIRKEGAARD, E. O. W., AND BJERREKÆR, J. D. The OKCupid dataset: A very large public dataset of dating site users. *Open Differential Psychology* (Nov. 2016).
- [12] KRAMER, A. D. I., GUILLORY, J. E., AND HANCOCK, J. T. Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences* 111, 24 (June 2014), 8788–8790. Publisher: Proceedings of the National Academy of Sciences.
- [13] METCALF, J., AND CRAWFORD, K. Where are human subjects in Big Data research? The emerging ethics divide. *Big Data & Society* 3, 1 (June 2016), 2053951716650211. Publisher: SAGE Publications Ltd.
- [14] PROFERES, N., JONES, N., GILBERT, S., FIESLER, C., AND ZIMMER, M. Studying Reddit: A Systematic Overview of Disciplines, Approaches, Methods, and Ethics. *Social Media + Society* 7, 2 (Apr. 2021), 205630512110190.
- [15] RESNICK, B. Researchers just released profile data on 70,000 OkCupid users without permission, May 2016.
- [16] SLOAN, L., AND QUAN-HAASE, A. *The SAGE Handbook of Social Media Research Methods*. SAGE, Jan. 2017. Google-Books-ID: 9oewDQAAQBAJ.
- [17] TOWNSEND, L., AND WALLACE, C. Social Media Research: A Guide to Ethics. Tech. rep., The University of Aberdeen.

- [18] VITAK, J., PROFERES, N., SHILTON, K., AND ASHKTORAB, Z. Ethics Regulation in Social Computing Research: Examining the Role of Institutional Review Boards. *Journal of Empirical Research on Human Research Ethics* 12, 5 (Dec. 2017), 372–382. Publisher: SAGE Publications Inc.
- [19] ZIMMER, M. Addressing Conceptual Gaps in Big Data Research Ethics: An Application of Contextual Integrity. *Social Media + Society* 4, 2 (Apr. 2018), 2056305118768300. Publisher: SAGE Publications Ltd.

B.2 Reddit Codebook

Reddit Codebook

Theme	Subtheme	Sub-Subtheme	Code	
Managing Reminders	Delete Social Media	Due to Bullying		
		To Prevent Attacker From Making Contact		
		Change SM Behaviour to Not Be Identified		
	Fixation on Triggering Content			
		Social Media as Distraction		
	Withdrawal from Social Media			
		Perceived Inability to Withdraw for Social Reasons		
	Keeping Tabs		Feeling of Control and Safety-Done	
			General (Motivation Not Disclosed)	
			Obsessively keeping track or Self-Triggering	
			See if they've Reoffended	
				Desire to Warn Attacker's Significant Other or Family of Abuser
	Personal Moderation		Add Attacker	
			Block	
				Block Attacker
				Block Friends of Attacker
				Block Own Friends or Family for Supporting Attacker
			Follow Attacker's Family Member	
			Inaction	
			Unblock	
		Unfollow		
			Unfollow Attacker	

Changes to the Social Media Experience

Unfollow friends and Family of Attacker

Contact		
	Direct Contact	Attacker Using Different Account for Contact DM from Attacker Friend Request From Attacker Threats
	Indirect Contact	Triggered by Attacker Circumventing Blocking
	Third-Party Contact	Contacted by Friends or Family of Abuser
Fear of Attacker Keeping Tabs		
Social Media Automatically Reminds of Abuser		
Social Media Harassment	By friends and/or Family of Abuser	
Triggers	General Sexual Content News Triggers on Social Media	Victim-Supporting Content About Rape
	Triggered By Unexpectedly Seeing Attacker on Social Media	
	Triggered by User-Generated Content About Attacker	Triggered by Seeing Friends or Family in Contact with Attacker Triggered by Attacker Denouncing Sexual Assault Triggered by Positive Content about Attacker

Triggered by Positive Content About Friends of Attacker	Triggered by Seeing Content About Attacker Doing Well
Unexpected Non- Sexual Assault Triggers	Reminders of Life Before SA Seeing Someone Who Looks Like Attacker Happy Content

C

Chapter 6 Supplementary Materials

C.1 CUREC Form

Central University Research Ethics Committee (CUREC)

CUREC 1A Form for Application form for research projects in the social sciences and humanities with less complex ethical issues



The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics review process has been established to ensure that research involving human participants is conducted in a way that respects the dignity, rights, and welfare of participants, and minimises risk to participants, researchers, third parties, and to the University itself. It is assumed that all members of the University will take their responsibilities and obligations seriously, and will ensure that their research involving human participants is conducted according to established principles and good practice in their field and in accordance, where appropriate, with legal requirements.

Before completing this form, please refer to the [guidance](#) and [flowchart](#) on the Research Support website. Only type-written forms will be accepted. Completed application forms should be emailed, along with relevant supporting documents, to your [Departmental Research Ethics Committee \(DREC\)](#) or to ethics@socsci.ox.ac.uk from your ox.ac.uk email address.

Please contact your [DREC](#) or the [SSH IDREC](#) if you have any questions about completing this form or the review process.

Advisory text is highlighted in yellow and should be deleted before finalising the document.

SECTION A: Filter for CUREC 2 application

This section determines whether the application for ethics review should be made using this form (CUREC 1A) or the CUREC 2 form (for research with more [complex ethical issues](#)).

Please indicate with an 'X'.	Yes	No
1. Does the research involve the deception of participants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Are the research participants vulnerable in the context of the research, or classed as people whose ability to give free and informed consent is in question ? For example, <ul style="list-style-type: none">• Participants aged 16 or under (also answer question A5);• Participants aged 16 – 18 (refer to competent youths for guidance);• adults at risk; Note the University's Safeguarding Guidance and Code of Practice and its implications for researchers involving young people or adults at risk.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. By taking part in the research, will participants be at risk of criminal prosecution or significant harm?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Does your research raise issues relevant to the Counter-Terrorism and Security Act (the Prevent Duty), which seeks to prevent people from being drawn into terrorism? Best Practice Guidance 07 on the Prevent Duty provides further guidance.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If you answered 'No' to all the questions above, go to Section B. If you answered 'Yes' to any question above, continue to question 5 below.

5. Is your project covered by a CUREC Approved Procedure ?	<input type="checkbox"/>	<input type="checkbox"/>
If yes, list the CUREC Approved Procedure(s) you will follow		
<p>If you answered ‘Yes’ to ANY of questions 1-4, and answered ‘No’ to question 5, stop completing this form and do not submit it for ethical review. You will instead need to submit a CUREC 2 application form. If you answered ‘Yes’ to any of questions 1-4, and your project is covered by an Approved Procedure, go on to Section B. If more than one Approved Procedure applies, contact the SSH IDREC or your DREC for advice on whether a CUREC 2 form should be submitted instead.</p>		

SECTION B: Researchers	
1. Name of Principal Investigator or student’s supervisor	Prof. Max Van Kleek
2. Department or Institute	Computer Science
3. University of Oxford email address	max.van.kleek@cs.ox.ac.uk
Copy and paste the following six rows as necessary to complete for each additional researcher who will be involved in this study, including student(s) and those external to the University.	
4. Name of researcher or student	Claudine Tinsman
5. Department or Institute	Computer Science
6. University of Oxford email address	claudine.tinsman@cs.ox.ac.uk
7. Role in research	Student
8. Degree programme, if student research	DPhil
9. Name of researcher or student	Prof. Reuben Binns
10. Department or Institute	Computer Science
11. University of Oxford email address	reuben.binns@cs.ox.ac.uk
12. Role in research	Professor
13. Name of researcher or student	Petr Slovak (Senior Lecturer)
14. Department or Institute	King’s College London, Dept of Computer Science
15. Email address	petr.slovak@kcl.ac.uk
16. Role in research	External collaborator
17. Name of researcher or student	A. Jess Williams
18. Department or Institute	King’s College London, Dept of Computer Science
19. Email address	amy_jess.williams@kcl.ac.uk

20. Role in research	External collaborator	
The whole research team		
21. Have the researchers undertaken research ethics and integrity training?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
22. Please provide details of any research ethics and integrity training undertaken, including the dates of the training. Alternatively state relevant research experience.	Claudine Tinsman: Research Integrity Course for Engineering and Technology (11/05/2020)	
23. State any conflicts of interest and explain how these will be addressed.	None	

SECTION C: The research project

1. Title of the research project

Coping with social comparisons on Academic Twitter: An investigation of emotion regulation strategies

2. Anticipated start date of the aspect of the research project involving human participants and/ or personal data (dd/mm/yy).

NB: As soon as ethics approval is granted

3. Anticipated research end date (dd/mm/yy).

30 June 2023

4. Provide a brief lay summary of the aims and objectives of the research. This should cover the questions it will answer and any potential benefits. (max 300 words)

Study Aim 1

RQ 1: How do strategies for coping with self-threatening social comparison differ or resemble each other across different social media content and platforms among women?

The purpose of this research project is to explore and compare the strategies that users adopt to cope with unwanted emotional responses to upward social comparisons in two different scenarios: Twitter posts about professional success on Twitter, and fitness inspiration content on Instagram.

While these platforms, content, and users are superficially different, the psychological mechanisms of social comparison when exposed to social media content, as well as the mechanisms for regulating those responses, should theoretically be similar. Therefore, it stands to reason that certain platform tools should be helpful and desired across multiple social medial platforms.

To allow for maximum flexibility, we will split this study into two parts and submit two separate CURECs: One for the group of Twitter users being interviewed, and one for the

Instagram users being interviewed. This CUREC only applies to the Twitter group. We will submit a CUREC for the Instagram study at a later date.

- RQ1: How do women researchers experience harm from academic success posts on Twitter?
- RQ1.1: How do women researchers/researchers mitigate the harm of exposure to such content?

Study Aim 2

RQ 2: How do existing tools on Twitter hinder or help users to implement their desired coping strategies when experiencing self-threatening upward social comparisons on social media?

Using data collected from one-on-one, semi-structured interviews, we aim to extract preliminary information on how platform affordances may be modified to support existing and desired coping strategies. We will also ask users to fill out an 11-item questionnaire on the social comparison orientations (the INCOM scale) to help guide future work. The preliminary findings on potential platform design modifications will inform the design of later co-design study that seeks to investigate RQ 2 further.

5. Please indicate the methods to be used (indicate with an 'X'):

Analysis of existing records	<input type="checkbox"/>
Snowball sampling (recruiting through contacts of existing participants)	<input type="checkbox"/>
Use of casual or local workers e.g. interpreters (refer to guidance in BPG 01: Researcher safety)	<input type="checkbox"/>
Participant observation	<input type="checkbox"/>
Covert observation	<input type="checkbox"/>
Observation of specific organisational practices	<input type="checkbox"/>
Participant completes questionnaire in hard copy	<input type="checkbox"/>
Participant completes online questionnaire or other online task (refer to guidance in BPG 06: Internet-mediated research)	<input checked="" type="checkbox"/>
Using social media to recruit or interact with participants (refer to guidance in BPG 06: Internet-mediated research)	<input checked="" type="checkbox"/>
Participant performs paper and pencil task	<input type="checkbox"/>
Participant performs verbal or aural task (e.g. for linguistic study)	<input type="checkbox"/>
Focus group	<input type="checkbox"/>
Interview (refer to guidance in BPG 10: Conducting research interviews)	<input checked="" type="checkbox"/>
Audio recording of participant (you will generally need specific consent from participants for this)	<input checked="" type="checkbox"/>

Video recording of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Photography of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Others (please specify below)	<input type="checkbox"/>

6. Provide a brief summary of the research design and methods. What will research participants be asked to do? (max 300 words)
Please also submit a copy of the questions participants will be asked, if applicable, or some information about the sorts of topics that will be covered.

Structure

Participants will be asked to engage in a 25-35-minute interview with a researcher about their experience with academic Twitter.

Approximately one week before the interview, participants will be receive an email asking them to:

1. Complete the Iowa Netherlands Comparison Orientation Measure (INCOM) questionnaire online (see [Twitter_INCOM.pdf](#))
2. Look through their Twitter feeds for content that elicits negative responses and screenshot them for the interview (see [Task emails.docx](#)). They will not be asked to show these screenshots to researchers, merely to describe and comment on what it is that elicited an unwanted emotional response to content that other researchers have posted about their successes. They will also receive a reminder email three days before the interview.

If they do not complete the task in advance, they will be given a few minutes at the beginning of the interview to do so. If they are unable to do so, they will be asked to describe the experience in general terms.

Interview Structure: Group 1 (Twitter)

-Start by informing participants that they can take a break at any point during the interview if discussions of sensitive emotional or mental health experiences come up or stop the interview if need be.

Question 0:

Icebreaker question:

So I see that you are a BLANK (fill in with current academic position). How long have you been in that role?

- If hasn't been in the position long: Ask about how they like their new position
- If has been in position long: Ask about how they like the environment.

Question 1: Before this interview, we requested that you go through your Twitter feed and keep an eye out for posts from other researchers about their successes to which you have an emotional response that you don't like. Were you able to do that?

- If yes: We'll come back to that later.
- If not: Please go ahead and open your Twitter feed on your laptop or your phone, whichever you primarily use to look at Twitter. Take about a few minutes (2) to

scroll through your Twitter feed for posts about success from other academics that you have an emotional response to that you don't like.

Question 2a: What do you mainly use Twitter for? Is it primarily for professional purposes or other things?

→ If not purely for professional purposes: **Question 2b:** How much of your Twitter use is professional?

Question 2c: What kinds of content do you expect to see in the context of your professional Twitter use?

Question 3: When we recruited for this study, we asked if participants have a love-hate relationship with academic Twitter. Could you describe what that means to you?

Question 4: When you see Tweets that researchers in your field have posted about their success:

What are the kinds of content that lead you to compare yourself to another researcher talking about their success on Twitter and have a negative reaction?

- In general
- Let's go over the content you collected...what is it about these tweets that sparked a negative reaction?

(Question 4b: Ask these if they don't come up naturally)

1. How much do think you tend to compare yourself to other academics?
2. Which kinds of researchers do you tend to compare yourself to?
 - i. le same stage, senior, below (more of a tendency to engage in upward, downward, or lateral)
 - ii. Do you think the stage your career (how recent/how long) plays a role in that? Did you feel differently in the past before you were at this stage?

Question 5: Do you generally feel similarly about these kinds of Tweets, or do you think there are there specific factors that affect how you respond to them?

For example, whether something specific has just happened in your life, a deadline, etc.

Question 6:

When you encounter the upsetting tweets we discussed above and have an unwanted emotional response to them, what do you tend to do? Do you use specific tools or follow particular strategies?

Share with them the Twitter prompt ([Twitter Prompt.docx](#)) of strategies and ask them to talk about what they do.

Question 7: What would you like to be able to do when you experience those unwanted emotional responses to this kind of content?

End of interview script: Thank you so much for participating in this interview. As a reminder, you can withdraw from this study completely until three weeks from now (insert relevant date in interview). After that point, your interview will be transcribed and anonymised, so removal of your data will be done on a best effort basis.

7. List the location(s) where the research will be conducted, including any other countries.	The research will take place entirely online unless the participant is local to Oxford and wishes to do the interview in person. In that case, the interview will take place in a conference room in the department of Computer Science.		
8. Clarify which parts of the research will be conducted in-person and which will take place remotely, e.g. online .	See C.7		
9. If your research involves fieldwork or travel and your department requires a travel risk assessment, will you have completed and returned a risk assessment form beforehand? Please indicate with an 'X'. (This must be approved by your department before you travel. If you are travelling overseas, you are advised to take out University travel insurance .) Refer to guidance available from your Department, the Safety Office , the Social Sciences Division , and the Humanities Division , and on travel for University business .	Yes	<input type="checkbox"/>	
	No	<input checked="" type="checkbox"/>	
	Not required in this instance	<input checked="" type="checkbox"/>	
10. In the case of international or collaborative research, explain how you will address any ethical issues specific to the local context. Please provide details of the local review, approval or permission obtained or required. Refer to the BPG 16: Social science research conducted outside the UK . If there will be no local review, explain why not. Please mention any stakeholder or community engagement that has been/ will be undertaken in relation to the research Please also address any physical or psychological risks for Oxford researchers and local fieldworkers in Section G .			
Participant compensation (approx. £220 worth of Amazon vouchers, £10 per participant) will be paid for Future Leaders Fellowship Fund awarded to Petr Slovak, a senior lecturer at King's College London. This project is a collaboration with both Dr. Slovak's and one of the post-doctoral researchers in his group, Dr. A. Jess Williams.			
11. Name of departmental/ peer reviewer (if applicable)	NA		
12. External organisation funding the research and grant reference (if applicable)	Future Leaders Fellowship (Petr Slovak) MR/T041897/1 - Medical Research Council		

13. Please refer to the CUREC Best Practice Guidance and list any that have been used to develop your research.	BPG 06: Internet-mediated research BPG 05: Payments and Incentives in Research BPG 02: Ethnographic and Other Types of Qualitative Research
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SECTION D: Recruitment of research participants

1. Number of participants	Approximately 10-15 participants depending on attrition	
2. How was the number of participants decided?	Approximately 10-15 participants is sufficient gather a sufficient amount of data for this amended study	
3. Age range of participants	18 and over	
4. Inclusion criteria	<p>Twitter Group Participant:</p> <ul style="list-style-type: none"> • Is 18 years or older • Identifies as a woman • Uses Twitter to follow other researchers and keep up to date with research • Is a researcher as defined by UKRI. This includes everyone who is a doctoral student or at a more advanced stage of their research career. <p>If we have more interest than spaces for the study, we will select participants from as broad a range of fields and levels of experience as possible.</p>	
5. Exclusion criteria	Does not meet inclusion criteria	
6. Indicate with an 'X' all intended recruitment methods Please submit copies of the recruitment material that will be used, e.g. advertisement text, introductory email text.	Poster advert	<input type="checkbox"/>
	Flyer	<input type="checkbox"/>
	Email circulation	<input checked="" type="checkbox"/>
	Social media (e.g. Twitter, Facebook)	<input checked="" type="checkbox"/>
	Website	<input type="checkbox"/>
	In-person approach	<input type="checkbox"/>
	Snowball sampling	<input type="checkbox"/>
	Recruitment sites (e.g. Mechanical Turk)	<input type="checkbox"/>
	Existing contacts or volunteer database	<input checked="" type="checkbox"/>
Other (please specify):	<input type="checkbox"/>	

<p>7. How will potential participants be identified and approached?</p>	<p>See Academic Twitter Recruitment.docx</p> <p>Recruitment via Twitter:</p> <ul style="list-style-type: none"> • Researchers will Tweet the recruitment post on Twitter and ask other researchers to retweet it.
<p>8. Will informed consent be obtained from the research participants or their parents/ guardians? If not, please explain why not.</p>	<p>Yes</p>
<p>9. For each activity or group of participants, explain how informed consent will be obtained from the participants themselves and/ or their parents/ guardians, if applicable. How will their consent be recorded?</p> <p>Please submit copies of all participant-facing materials for review. E.g.:</p> <ul style="list-style-type: none"> • Recruitment material (e.g. emails, posters) • Information for participants to read (or hear) before they agree to take part (e.g. written information or, if applicable, an outline oral information script). • A document to record informed consent. <p>Further guidance and templates.</p>	<p>Participants will recruited using Academic Twitter Recruitment.docx as described in D7</p> <p>The recruitment message contains a link to a form on JISC see (Information and consent.pdf). The form includes</p> <ul style="list-style-type: none"> -information sheet -screening questionnaire: If participants are eligible to participate, they will be redirected to: -consent form -basic information survey (field of research, age, current position, contact information) <p>As part of the consent form, users will be asked to consent to engaging in the pre-interview survey (Twitter_INCOM.pdf) as well as the pre-interview task (Task Emails.docx)</p>
<p>10. Provide details of any payments and incentives and the rationale for providing these. Further guidance in Best Practice Guidance: 05 Payments and incentives in research.</p>	<p>£10 Amazon voucher per participant. The interview involves substantial engagement from participants that warrants suitable remuneration for adult participants' time.</p>
<p>11. Describe how participants</p> <ul style="list-style-type: none"> • may withdraw from the study • may withdraw any personal information they have provided from the study <p>State any limits to withdrawal, for example once the data has been anonymised or at some other</p>	<p>Prior to the interview/during the interview: The participants may withdraw from the study at any time prior to their interview by emailing Claudine Tinsman at claudine.tinsman@cs.ox.ac.uk and stating that they wish to withdraw from the study. Should that occur, we will delete the participant's</p>

<p>specified stage prior to publication. Make sure participants are aware of any withdrawal limits.</p>	<p>contact information and all personal information provided from our password-protected folder.</p> <p>After the interview Limit to withdrawal: Data anonymisation will occur no more than <u>three weeks</u> after participants take part in the interview. After that point, it may not be possible to remove a participant's personal information or data they have provided for the interview, but we will do so on a best effort basis. Participants will be reminded of this limitation at the end of their interview</p>
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SECTION E: Research data

All information provided by participants is considered research data for the purpose of this form. Any research data from which participants can be identified is known as [personal data](#); any personal data which is sensitive is considered [special category data](#). Management of personal data, either directly or via a third party, must comply with the requirements of the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018, as set out in the [University's Guidance on Data Protection and Research](#).

In answering the questions below, please also consider the points raised in the [Data Protection Checklist](#) and [Data Protection Screening Assessment](#) and whether, for higher-risk data processing, a separate [Data Protection Impact Assessment](#) may also be required for the research. Advice on research data management and security is available from [Research Data Oxford](#) and your local IT department. Advice on data protection is available from the [Information Compliance team](#).

For guidance on conducting internet-mediated research, refer to CUREC's [Best Practice Guidance 06: Internet-mediated research](#).

1. What data will be collected? (Indicate with an 'X')

Screening documents	<input checked="" type="checkbox"/>	Task results (e.g. questionnaires, diaries)	<input type="checkbox"/>
Consent records (e.g., written consent forms, audio-recorded consent, assent forms)	<input checked="" type="checkbox"/>	IP addresses (refer to Best Practice Guidance 09: Data collection, protection and management for guidance)	<input type="checkbox"/>
Contact details for the purpose of this research only	<input checked="" type="checkbox"/>	Field notes	<input type="checkbox"/>
Contact details for future use (guidance)	<input checked="" type="checkbox"/>	Photographs	<input type="checkbox"/>
Opt-out forms	<input type="checkbox"/>	Information about the health of the participant (including mental health)	<input type="checkbox"/>

Audio recordings	<input checked="" type="checkbox"/>	Previously collected (secondary) data	<input type="checkbox"/>
Video recordings	<input type="checkbox"/>	Data already in the public domain. Specify the source of the data:	<input type="checkbox"/>
Transcript of audio/ video recordings	<input checked="" type="checkbox"/>	Other, please specify:	<input type="checkbox"/>

2. During the course of the research, where will **each type of** research data be stored?

Questionnaires for individuals who do not fulfil the study criteria

Potential participants will be directly redirected to a screening message on JISC that ends the survey (See annexe). No information is saved about responses that do not meet the screening criteria.

For participants who pass the screening: Email addresses and full names are collected for further contact regarding study details. Participants are advised that there may be more eligible candidates than the available number of spaces for the interviews. They are asked if researchers may retain their contact information for future similar studies if they are not selected for the current study.

If participants consent to be contacted, we will store their contact information in password-protected folders on the research team’s OneDrive within the University network. That information will be deleted from JISC as soon as it is transferred over to the password-protected folders. Password-protected folders will only be accessible to the researchers listed by name on this CUREC. King’s College researchers (Petr Slovak and A. Jess Williams) will be given access to the folders via their external institutional email addresses.

Responses to the screening survey and contact information will be deleted from the JISC platform as soon as the contact information has been extracted in an excel spreadsheet or PDF.

If a participant is selected for an interview, their contact information will be retained in password-protected folders on the research team’s OneDrive within the University network. That information will be deleted from JISC as soon as it is transferred over to the password-protected folders.

If a participant is eligible but is not selected for the study, their contact information will be deleted from the spreadsheet as soon as the second workshop has concluded. We allow for this delay in case a participant drops out of the workshop before it takes place, and a replacement is needed.

Consent

Individuals who are selected to participate are directed to an electronic information and consent form on JISC (see [Information and consent.pdf](#))

If they consent to all items on the form, their consent information will be retained in password-protected folders on the research team's OneDrive within the University network.

Interview data

Remote Interviews: Audio recordings of interviews will be recorded locally on the researchers' departmental password-protected computers directly (i.e. using Zoom's local recording feature) and then uploaded to the password-protected folders on the research team's OneDrive within the University network. Recordings will be deleted from researchers' laptops as soon as they are transferred to password-protected folders on the research team's OneDrive within the University network.

In person Interviews: Audio recordings of research participants will be recorded locally using dictaphones. The mp3 files will be transferred to the researchers' departmental password-protected computers directly and uploaded to the password-protected folders on the research team's OneDrive within the University network.

Recordings will be deleted from researchers' laptops as soon as they are transferred to password-protected folders on the research team's OneDrive within the University network.

Transcription of audio recordings will be performed using Word's automatic transcription feature on OneDrive and checked manually. These transcriptions will be stored in password-protected folders on the research team's OneDrive within the University network. Once the transcriptions are complete, the original audio recordings will be deleted. Anonymised transcripts will be manually redacted to remove personally identifying information. Once these are anonymised, they will be moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.

King's College researchers (Petr Slovak and A. Jess Williams) will be given access to the folders via their external institutional email addresses.

After redaction, transcripts will no longer be sensitive. From these transcripts, we may select quotes to include in our research publications.

Survey Data

	<p>Survey responses will be transferred over a secure connection from Online Surveys to the password-protected folders on the research team’s OneDrive within the University network. They will transferred and stored as a .csv file.</p> <p>Surveys will be manually redacted to remove personally identifying information (e.g. name). Once these are anonymised, they will be moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.</p>		
3. Who will have access to the research data during the project?	<p>Only the researchers listed in Section B will be given access to any of the audio recordings, pre-redacted transcripts and surveys, consent forms, and contact information. However, after de-identification, transcripts will be made available to other members of our research group.</p> <p>King’s College researchers (Petr Slovak and A. Jess Williams) will be given access to the folder via their external institutional email addresses.</p>		
4. Please complete this section if your research involves the use of secondary (i.e. previously collected) data.	<p>Please indicated with an ‘X’.</p>	Yes	No
	Are data access agreements in place for access to and use of this secondary data? (If so, please attach these.)	<input type="checkbox"/>	<input type="checkbox"/>
	Did the individuals agree that their data could be used for this purpose?	<input type="checkbox"/>	<input type="checkbox"/>
	Could anyone (including members of the research team) link the data back to an individual or individuals? If this is a possibility, please explain how the associated ethical issues will be addressed:	<input type="checkbox"/>	<input type="checkbox"/>
5. How do you intend to share the research data at the end of the project?	Depositing in a specialist data centre or archive	<input type="checkbox"/>	
	Submitting to a journal to support a publication	<input checked="" type="checkbox"/>	
	Depositing in an institutional repository	<input type="checkbox"/>	
	Dissemination via a project or institutional website	<input checked="" type="checkbox"/>	
	No plans to share the data	<input type="checkbox"/>	
	Other (please specify): Share de-identified interview transcripts and survey responses on request	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. How do you intend to report	Thesis publication	<input checked="" type="checkbox"/>	
	Publication in a peer reviewed journal	<input checked="" type="checkbox"/>	

and disseminate the results of the research? (Indicate with an 'X')	Publicly available report	<input type="checkbox"/>
	Conference presentation	<input checked="" type="checkbox"/>
	Publication on a website	<input checked="" type="checkbox"/>
	Pre-registration	<input type="checkbox"/>
	Report to a research funder	<input type="checkbox"/>
	Providing participants with a lay summary of the results	<input checked="" type="checkbox"/>
	Submission for academic assessment	<input type="checkbox"/>
	Other (please specify):	<input type="checkbox"/>

7. Explain what will happen to the data at the end of the research project. This question must be answered for each type of data, including completed consent forms.

Contact information for participants who participated in the study (including consent data) will be stored as described in section E.2 for at least 10 years after publication.

Contact information for participants who did *not* participate in the study but consent to be contacted for other studies will be retained as described in section E.2 for at most three years after publication.

Audio recordings for interviews will be deleted as soon as transcripts are finalised.

Transcripts from interviews will be downloaded as PDFs and stored in the sensitive folder. After redaction, they will be moved to the non-sensitive folder, along with anonymised transcripts. These will be retained for at least 10 years after publication.

Survey responses will be stored in a .csv file and stored in the sensitive folder. After redaction, they will be moved to the non-sensitive folder. These will be retained for at least 10 years after publication.

SECTION F: Protection of research participants and their personal data

1. How identifiable will the participants be from the research outputs ? (Indicate with an 'X')	Directly identifiable from the information included	<input type="checkbox"/>
	Pseudonymised / indirectly identifiable	<input type="checkbox"/>
	Not identifiable – data is anonymous	<input type="checkbox"/>
	Other, please specify:	<input type="checkbox"/>
2. To what extent will the data be de-identified ? How identifiable will any	Consent forms: Will not de-identified but will be stored in a password-protected folder on group's One Drive.	

<p>individuals be from the research data? Describe any measures you will take towards assuring confidentiality, potential risks to confidentiality.</p>	<p>Demographic Questionnaire Data: Data will be password-protected OneDrive folder on the University server which will only be accessible by the named researchers.</p> <p>Audio recordings: Transcription of audio recordings will be performed using Word’s built-in transcription feature on OneDrive. No de-identification will take place at this stage: However, once the interview has been transcribed, the recording will be deleted.</p> <p>Interview Transcripts: Once each interview has been transcribed, words will be replaced (names of people, places and things) with generic tokens (e.g. instead of ‘my friend Jane’ we transcribe ‘my friend X’). The participant’s name will be replaced with a unique ID. A record of names and corresponding IDs will be maintained in a password-protected folder available only to the researchers named on this CUREC.</p> <p>If a participant has not withdrawn from the study three weeks after their interview, their name will be permanently deleted from the record of names and participant IDs.</p> <p>Survey responses:</p> <p>The .csv file containing survey responses will be manually redacted to remove the participant’s name and replace it with a unique ID. A record of names and corresponding IDs will be maintained in a password-protected folder available only to the researchers named on this CUREC.</p> <p>Once responses are anonymised, they will be moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.</p>
<p>3. How will you ensure that third parties (e.g., interpreters and transcribers) are aware of and adhere to the measures described in this form?</p>	<p>No third parties will be used.</p>

SECTION G: Risks and benefits of the research

1. Will the research involve topics that could be considered [sensitive](#)? If so:
 - a. Please provide more detail or supporting information (such as the interview questions) to show the range of questions;
 - b. Explain what steps will be taken to reduce risk of distress;
 - c. Consider seeking advice from within your Department or from the ethics committee including whether the application might benefit from additional ethics review (e.g., via a CUREC 2 application).

No. However, discussing unwanted emotional responses may bring personal mental health issues to the fore. They will be aware of the topics covered in the interview (see [Information and consent.pdf](#)). Participants will be informed that they are free to take a break or step away should they need a break during the interview.

2. Describe any additional burden or risks to the participants and the steps you will take to address these.

We do not anticipate any ethical, emotional, physical risks to our participants. As indicated above, all research staff have received appropriate ethics training.

3. Describe any physical or psychological risks to the researcher(s) (including local fieldworkers or research assistants) and the steps you will take to address these.

We do not anticipate any ethical, emotional, physical risks to our researchers. As indicated above, all research staff have received appropriate ethics training and will conduct any in-person interviews and during business hours.

4. Describe any benefits of the research, both to participants and to others.

-Participants will receive a £10 Amazon voucher to compensate them for their time.

5. Give details of any other ethical issues or relevant information.

No additional ethical issues are anticipated.

SECTION H: Professional guidelines

Please indicate with an 'X' at least one set of professional guidelines you will follow.

Research specialism/ methodology	Association and guidance	
Anthropology	Association of Social Anthropologists of the UK	<input type="checkbox"/>
Computer Science	ACM Code of Ethics and Professional Conduct	<input checked="" type="checkbox"/>
Criminology	British Society of Criminology Statement of Ethics	<input type="checkbox"/>
Education	British Educational Research Association Ethical Guidelines for Educational Research	<input type="checkbox"/>
Geography	American Association of Geographers Statement on Professional Ethics	<input type="checkbox"/>
History	Oral History Society of the UK Ethical Guidelines	<input type="checkbox"/>
Internet-mediated research	Association of Internet Researchers Ethical Guidelines British Psychological Society: Ethics Guidelines for internet-mediated research Association for Computing Machinery Code of Ethics and Professional Conduct	<input checked="" type="checkbox"/>
Management	Academy of Management Code of Ethics	<input type="checkbox"/>
Political Science	American Political Science Association (APSA) Guide to Professional Ethics in Political Science	<input type="checkbox"/>
Politics	Political Studies Association. Guidelines for Good Professional Conduct	<input type="checkbox"/>
Psychology	British Psychological Society Code of Ethics and Conduct	<input type="checkbox"/>
Social research	Social Research Association: Ethical Guidelines	<input type="checkbox"/>
Socio-legal studies	Socio-Legal Studies Association: Statement of Principles of Ethical Research Practice	<input type="checkbox"/>
Sociology	The British Sociological Association: Statement of Ethical Practice	<input type="checkbox"/>
Visual research	ESRC National Centre for Research Methods Review Paper: Visual Ethics: Ethical Issues in Visual Research	<input type="checkbox"/>
Other professional guidelines	List any other guidelines used here.	<input type="checkbox"/>

SECTION I: Endorsements and signatures

Please ensure this form is endorsed by the [Principal Investigator](#) (or student's supervisor), the Head of Department (or nominee) and, if student research, by the student themselves. **The SSH IDREC Secretariat accepts either option below. If you have a [DREC](#), check which signature option it prefers.**

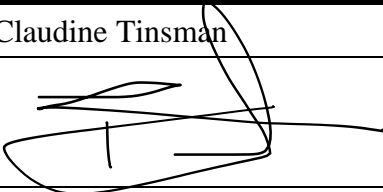

- **Option 1: direct email endorsements**
Each of the signatories should submit an email from a University of Oxford email address, indicating their acceptance of the responsibilities listed below.
- **Option 2: signatures**

Please scan the signed form and email it to us as a PDF. Pasted images of signatures cannot be accepted.

Endorsement by the Principal Investigator/ student supervisor and student, if applicable

I/ we the researchers understand my/ our responsibilities as Principal Investigator (and student, if applicable) as outlined in the guidance on the CUREC website. I/ we declare that the answers above accurately describe the research as presently designed, and that the ethics committee will be informed of any changes to the project which affect the answers to this form.

I/ we will inform the relevant IDREC if the Principal Investigator changes.

Name of Principal Investigator	Prof. Max Van Kleek
Principal Investigator's signature	Direct Endorsement by Email
Date	
Name of student (if applicable)	Prof. Reuben Binns
Signature	Direct Endorsement by Email
Date	
Name of student (if applicable)	Claudine Tinsman
Student's signature	
Date	15/08/2022
Name of student (if applicable)	Dr. Petr Slovak
Signature	Direct endorsement by email
Date	
Name of student (if applicable)	Dr. A. Jess Williams
Signature	
Date	19.08.22

Departmental endorsement – from the Head of Department or nominee
(Another senior member of the department may sign where the head of department is the Principal Investigator, or where the Head of Department has appointed a nominee.
Example nominees include Deputy Head of Department, Director of Research, or Director of Graduate/ Undergraduate Studies.)

On the basis of the information available to me, I confirm that:

- I am aware of the research proposed and have read this application;
- To the best of my knowledge, the proposed design and scientific methodology do not raise ethical concerns;
- I support this research in principle, subject to ethical and other necessary reviews.
-

Signature	Instead of a signature, endorsement may be provided by an email confirming the points above.
Name	
Role	
Date	

C.2 Academic Twitter Recruitment Poster

What is the study about?

This study investigates how women in research experience tweets about professional/academic success from others in their field. Data collected from this study will be used to research tools that support digital well-being for researchers.

What participants are we looking for?

You **use Twitter** to follow other researchers in your field.

You are a **researcher**: You're either a doctoral student or at a more advanced stage of your research career.

You **identify** as a woman.

You **are** at least 18 years old.



Participants receive a £10 Amazon voucher for their time

What does the study involve?



Scan this QR code to learn more and sign up

Part 1: A brief survey (~5 minutes) and keeping an eye on your Academic Twitter use for a few days before the interview.

Part 2: A 25-35 minute remote or in-person interview (for Oxford locals only).

For further questions email claudine.tinsman@cs.ox.ac.uk

Follow this link or scan the QR code to learn more about the study and sign up: <https://oxford.onlinesurveys.ac.uk/at>



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OXFORD

C.3 Academic Twitter Reminder Email

Subject: Academic Twitter Study: Keeping an Eye on Your Academic Twitter Use Before the Interview
Date: Tuesday, 2 April 2024 at 19:29:54 British Summer Time
From: Claudine Tinsman <claudine.tinsman@linacre.ox.ac.uk>
To: <participant@participant.blank.ac.uk>

Hello [Participant],

Your Academic Twitter Study Interview is at [TIME] on [DATE].

Between now and the time of your interview, please try to do the following:

When scrolling through your Twitter feed, please keep an eye out for posts from other researchers about their successes. Focus on the ones that elicit an emotional response from you that you don't like. Whenever you come across one, please screenshot and save it somewhere it can quickly be retrieved during the interview. I won't ask you to show me the actual posts; we'll use them as discussion points during the interview. If something comes up that you don't feel comfortable discussing, that is completely fine: Don't feel pressured to do so.

If you have any questions, please don't hesitate to send me an email at claudine.tinsman@cs.ox.ac.uk.

Best,

Claudine Tinsman

DPhil Candidate | Centre for Doctoral Training in Cyber Security | Department of Computer Science
| University of Oxford

C.4 Interview Script

Interview Structure and Script: *Coping with social comparisons on Academic Twitter: An investigation of emotion regulation strategies* (Ethics Reference: CS_C1A_22_024)

Participants will be asked to engage in a 30-minute interview with a researcher about their experience with academic Twitter (Group 2).

Prior to the interview, both groups will be asked to look through their Twitter feeds for content that elicits negative responses and screenshot them. They will not be asked to show them to researchers, merely to describe and comment on what it is that elicited an unwanted response to content that other researchers have posted about their successes. In the event that they do not complete the task in advance, they will be given a few minutes at the beginning of the interview to do so. If they are unable to do so, they will be asked to describe the experience in general terms.

At the end of the interview, participants will be asked to respond to a prompt that lists the existing tools available to users on each platform as a reference.

Interview Structure: Group 1 (Twitter)

Question 0:

Icebreaker question:

So I see that you are a BLANK (fill-in with position). How long have you been in that role?

→ If hasn't been in the position long: Ask about how they like their new position

→ If has been in position long: Ask about how they like the environment

Purpose of this question: Connect to a later question: Duration of spent in a role might colour how much or little they compare themselves. For example, someone who has just been promoted might experience a decrease in social comparison tendencies.

Question 1: Before this interview, we requested that you go through your Twitter feed and keep an eye out for posts from other researchers about their successes to which you have an emotional response that you don't like. Were you able to do that?

→If yes: We'll come back to that later.

→If not: Please go ahead and open your Twitter feed on your laptop or your phone, whichever you primarily use to look at Twitter. Take about a few minutes (2) to scroll through your Twitter feed for posts about success from other academics that you have an emotional response to that you don't like.

Question 2: What do you use Twitter for? Is it primarily for professional purposes or other things?

→ If not purely for professional purposes:

Question 2b: How much of your Twitter use is professional?

Question 2c: What kinds of content do you expect to see in the context of your professional Twitter use?

Sets up what the user's expectations are for the platform: There are expectations for the types of content that users can and should post. I.e., there are acceptable kinds of professional content to post (ie links to relevant papers) vs unacceptable content (professional bragging).

Per informal interviews + pilots, expectations violations theory may come into play here (they do in some of the informal chats I've had with people). The question is, is there a relationship between expectancy violations and social comparisons? I.e., Is the fact that expectancy violations are forcing individuals to engage in SC that is the problem? Or is the expectancy violation a separate problem?

This might set up some interesting insights about the fact that it isn't so much the fact that someone else has achieved things that is the problem; it's violated expectations.

Question 3: When we recruited for this study, we asked if participants have a love-hate relationship with academic Twitter. Could you describe what that means to you?

Provide some general context to what they like/don't like about this aspect of the platform broadly. They may talk about excessive notifications, etc. Ideally, they will talk about other academics on the platform bragging.

Question 4: When you see Tweets that academics in your field put about their success:

1. What are the kinds of content that lead you to compare yourself to another researcher talking about their success on Twitter and have a negative reaction?
 - a. In general
 - b. Let's go over the content you collected...what is it about these tweets that sparked a negative reaction?

Question 5: Do you generally feel similarly about these kinds of Tweets, or do you think there are there specific factors that affect how you respond to them?

For example, whether something specific has just happened in your life, a deadline, etc.

Reasoning: Provides some contextual information

Question 6:

When you encounter the upsetting tweets we discussed above and have an unwanted emotional response to them, what do you tend to do? Do you use specific tools or follow particular strategies?

Share with them the Twitter prompt of strategies and ask them to talk about what they do.

Reasoning: Provides information about the coping strategies that they employ. These may be internal (eg logging off) or they may use tools to help them. The prompt with the list of tools that help them control how they manage their use (eg muting/blocking).

Question 7: What would you like to be able to do when you experience those unwanted emotional responses to this kind of content? Don't worry about whether its actually technically possible or not.

Reasoning: Provides information about the coping strategies that they WANT to employ. May provide insight on the tools or functionalities lacking from the platform.

End of interview script after end of recording: Thank you so much for participating in this interview. As a reminder, you can withdraw from this study completely until three weeks from now (insert relevant date). After that point, your interview will be transcribed and anonymised, so the removal of your data will be done on a best-effort basis after that point. Do you have any further questions?

C.5 Codebook

Academic Twitter Interview Codebook

Theme	Subtheme	Code
Desired Emotion Regulation Strategies	Cognitive Change	Source of Motivation
	None	
	Situation Modification	Block More Lists Make Meaningful Connections on Twitter Time Blocking
	Situation Selection	Be More Selective Use Twitter Less
Emotion Regulation Strategies Employed	Attentional Deployment	Distraction
	Cognitive Change	Non-Judgemental Acceptance Reappraisal
	Response Modulation	Suppression Venting
	Situation Modification	Comfort Seeking Problem Solving
	Situation Selection	Avoidance External Tools
Expectations for Academic Twitter Content	Academic Discussions	
	Content About Opportunities	
	Content About People's Work	

Personal Context	Professional Achievements
	Career Stage
	Job Satisfaction
	Mood and General Wellbeing
	Precurity of Status
Desired Platform Changes	
	Cognitive Reappraisal
	Dynamic Exposure to Content
	Personalized Sensitive Content Warnings
	Show only Relevant Content at Relevant Time
	Thread Splitting Based on in-situ Needs
	Tone Checking
	Inclusion of Additional Useful information
	Follow Hashtag
	Stealth Blocking
	Higher Word Count
	Make easier to find similar people
Platform-External changes	
	Cultural Changes
	Normalizing Failures
	Social Media Training
Targets of Comparison	
	Achievements at Relevant Venues
	Benefit from Circumstances Beyond Control
	Bragging About Achievement Without Context or Information
	Exaggerating the Importance of a Success
	Feelings Of Exclusion
	Highlights Inequalities in Academia
	Highlights Missed Opportunity
	Personal Success
	Tweets from Acquaintances in Same Field
	Tweets from Someone Who Doesn't Deserve Their Success (Perceived)

Tools Used	Sets Unrealistic Expectations
	Not Used
	Block FOMO Lists Mute Sort Topics Unfollow
	Unaware
	Lists Mute Sort Topics
	Used
	Block Lists Mute Report Sort Topics Turn off notifications Turn on notifications Unfollow
Twitter Use Type	Mixed Use
	Professional Mainly
	Professional Only
Non-Engagement with Personal Moderation Tools	Limited Understanding of Personal Moderation Tools
	Perceived Expectations of Resilience
	Fear of Missing Out on Important Content
Strategic Tolerance of Discomfort	

D

Chapter 7 Supplementary Materials

D.1 CUREC Form for Survey and Prototype Evaluation

Central University Research Ethics Committee (CUREC)

CUREC 1A Form for Application form for research projects in the social sciences and humanities with less complex ethical issues



The University of Oxford places a high value on the knowledge, expertise, and integrity of its members and their ability to conduct research to high standards of scholarship and ethics. The research ethics review process has been established to ensure that research involving human participants is conducted in a way that respects the dignity, rights, and welfare of participants, and minimises risk to participants, researchers, third parties, and to the University itself. It is assumed that all members of the University will take their responsibilities and obligations seriously, and will ensure that their research involving human participants is conducted according to established principles and good practice in their field and in accordance, where appropriate, with legal requirements.

Before completing this form, please refer to the [guidance](#) and [flowchart](#) on the Research Support website. Only type-written forms will be accepted. Completed application forms should be emailed, along with relevant supporting documents, to your [Departmental Research Ethics Committee \(DREC\)](#) or to ethics@socsci.ox.ac.uk from your ox.ac.uk email address.

Please contact your [DREC](#) or the [SSH IDREC](#) if you have any questions about completing this form or the review process.

Advisory text is highlighted in yellow and should be deleted before finalising the document.

SECTION A: Filter for CUREC 2 application

This section determines whether the application for ethics review should be made using this form (CUREC 1A) or the CUREC 2 form (for research with more [complex ethical issues](#)).

Please indicate with an 'X'.	Yes	No
1. Does the research involve the deception of participants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Are the research participants vulnerable in the context of the research, or classed as people whose ability to give free and informed consent is in question ? For example, <ul style="list-style-type: none">• Participants aged 16 or under (also answer question A5);• Participants aged 16 – 18 (refer to competent youths for guidance);• adults at risk; Note the University's Safeguarding Guidance and Code of Practice and its implications for researchers involving young people or adults at risk.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. By taking part in the research, will participants be at risk of criminal prosecution or significant harm?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Does your research raise issues relevant to the Counter-Terrorism and Security Act (the Prevent Duty), which seeks to prevent people from being drawn into terrorism? Best Practice Guidance 07 on the Prevent Duty provides further guidance.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If you answered 'No' to all the questions above, go to Section B. If you answered 'Yes' to any question above, continue to question 5 below.

5. Is your project covered by a CUREC Approved Procedure ?	<input type="checkbox"/>	<input type="checkbox"/>
If yes, list the CUREC Approved Procedure(s) you will follow		
<p>If you answered ‘Yes’ to ANY of questions 1-4, and answered ‘No’ to question 5, stop completing this form and do not submit it for ethical review. You will instead need to submit a CUREC 2 application form. If you answered ‘Yes’ to any of questions 1-4, and your project is covered by an Approved Procedure, go on to Section B. If more than one Approved Procedure applies, contact the SSH IDREC or your DREC for advice on whether a CUREC 2 form should be submitted instead.</p>		

SECTION B: Researchers	
1. Name of Principal Investigator or student’s supervisor	Prof. Max Van Kleek
2. Department or Institute	Computer Science
3. University of Oxford email address	max.van.kleek@cs.ox.ac.uk
Copy and paste the following six rows as necessary to complete for each additional researcher who will be involved in this study, including student(s) and those external to the University.	
4. Name of researcher or student	Claudine Tinsman
5. Department or Institute	Computer Science
6. University of Oxford email address	claudine.tinsman@cs.ox.ac.uk
7. Role in research	Student
8. Degree programme, if student research	DPhil
9. Name of researcher or student	Hayoun Noh
10. Department or Institute	Computer Science
11. University of Oxford email address	hayoun.noh@cs.ox.ac.uk
12. Role in research	Student
13. Degree programme, if student research	DPhil
14. Name of researcher or student	Petr Slovak
15. Department or Institute	King’s College London, Dept of Computer Science
16. Email address	petr.slovak@kcl.ac.uk
17. Role in research	External collaborator
18. Name of researcher or student	A. Jess Williams
19. Department or Institute	King’s College London, Dept of Computer Science

20. Email address	amy_jess.williams@kcl.ac.uk	
21. Role in research	External collaborator	
The whole research team		
22. Have the researchers undertaken research ethics and integrity training?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
23. Please provide details of any research ethics and integrity training undertaken, including the dates of the training. Alternatively state relevant research experience.	Claudine Tinsman: Research Integrity Course for Engineering and Technology (01/02/2023) Hayoun Noh: Research Integrity Course for Engineering and Technology (06/02/2023)	
24. State any conflicts of interest and explain how these will be addressed.	None	

SECTION C: The research project

1. Title of the research project	
Coping with social comparisons on Academic Twitter: An investigation of emotion regulation strategies	
2. Anticipated start date of the aspect of the research project involving human participants and/ or personal data (dd/mm/yy).	NB: As soon as ethics approval is granted
3. Anticipated research end date (dd/mm/yy).	30 December 2023
4. Provide a brief lay summary of the aims and objectives of the research. This should cover the questions it will answer and any potential benefits. (max 300 words)	
<p>This study is a follow-up to CS_C1A_22_024_001</p> <p>The purpose of this research project is to explore and compare the strategies that users adopt to cope with unwanted emotional responses to upward social comparisons in the context of Academic Twitter Use.</p> <p>RQ1: Do women early-career researchers experience unwanted feelings associated with upward comparisons when engaging with Academic Twitter?</p> <p>RQ2: What emotion regulation strategies do women early career researchers engage with in the face of upward social comparison on Academic Twitter?</p>	

RQ3: How do those users appropriate Twitter's content control features to moderate emotional responses to upward social comparisons?

We previously conducted 31 interviews with researchers who identify as women about how platform affordances may be modified to support their existing and desired coping strategies.

In this phase of the research, we will develop and conduct a survey that aims to expand upon those previous findings using the JISC Online Surveys platform.

Based on the results of the survey and the preceding interviews, we will develop high fidelity prototypes for changes to Twitter's content curation features to support emotion regulation processes in researchers.

We will then conduct small group or one-on-one workshops (depending on participant availability and scheduling) with 10 to 15 researchers to obtain feedback on the usability and practicality of the redesigned features.

5. Please indicate the methods to be used (indicate with an 'X'):

Analysis of existing records	<input checked="" type="checkbox"/>
Snowball sampling (recruiting through contacts of existing participants)	<input type="checkbox"/>
Use of casual or local workers e.g. interpreters (refer to guidance in BPG 01: Researcher safety)	<input type="checkbox"/>
Participant observation	<input type="checkbox"/>
Covert observation	<input type="checkbox"/>
Observation of specific organisational practices	<input type="checkbox"/>
Participant completes questionnaire in hard copy	<input type="checkbox"/>
Participant completes online questionnaire or other online task (refer to guidance in BPG 06: Internet-mediated research)	<input checked="" type="checkbox"/>
Using social media to recruit or interact with participants (refer to guidance in BPG 06: Internet-mediated research)	<input checked="" type="checkbox"/>
Participant performs paper and pencil task	<input type="checkbox"/>
Participant performs verbal or aural task (e.g. for linguistic study)	<input type="checkbox"/>
Focus group	<input checked="" type="checkbox"/>
Interview (refer to guidance in BPG 10: Conducting research interviews)	<input checked="" type="checkbox"/>
Audio recording of participant (you will generally need specific consent from participants for this)	<input checked="" type="checkbox"/>
Video recording of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Photography of participant (you will generally need specific consent from participants for this)	<input type="checkbox"/>
Others (please specify below)	

participants will review a high fidelity prototype sent to them on their phone or laptop	<input checked="" type="checkbox"/>
<p>6. Provide a brief summary of the research design and methods. What will research participants be asked to do? (max 300 words) Please also submit a copy of the questions participants will be asked, if applicable, or some information about the sorts of topics that will be covered.</p>	
<p>Structure</p> <p><u>Survey</u> Participants will be asked to complete a 10-15 minute survey online about their experience with academic Twitter. A copy of the survey questionnaire is attached. It includes information and consent forms (TWITTER_survey.pdf).</p> <p><u>Workshops</u> Prior to the workshop, survey participants who consented to be contacted for a follow-up study and provided their names and email addresses will be invited to participate in the workshop via email (see Workshop_Invitation.emlptl). The email will contain a link to a JISC Online Surveys form containing participant information sheet, consent form, and a short questionnaire about they use Twitter on their digital devices (See Workshop_consent.pdf). The form will contain a link to an online calendar from which they will be able to choose time slots for the workshops.</p> <p>10-15 participants will be invited to participate in one-on-one or small group workshops (depending on participant availability) (Workshop_script.docx). During the workshop, participants will be asked to scan a QR code on their mobile phones. Scanning the code will enable them to access a link to the prototypes on their mobile phones. The participants will be asked to go through the prototype and provide verbal feedback about its suitability for emotion regulation.</p> <p>Participants will not be required to download anything on their mobile phone or show the facilitator their mobile phone during the workshop.</p> <p>Upon completing the workshop, the participants will emailed a £10 Amazon voucher (see Amazon_voucher.emlptl)</p>	
7. List the location(s) where the research will be conducted, including any other countries.	The survey will take place online. The workshops will take place online or in-person at the department of Computer Science.
8. Clarify which parts of the research will be conducted in-person and which will take place remotely, e.g. online .	The survey will take place entirely online. The workshops will take place online or in-person at the department of Computer Science.
9. If your research involves fieldwork or travel and your department requires a travel risk assessment, will you have completed and returned a risk assessment form beforehand? Please indicate with an 'X'. (This must be approved by your department before you travel. If you are travelling overseas, you are advised to take out University travel	Yes <input type="checkbox"/>
	No <input checked="" type="checkbox"/>
	Not required in this <input checked="" type="checkbox"/>

<p>insurance.) Refer to guidance available from your Department, the Safety Office, the Social Sciences Division, and the Humanities Division, and on travel for University business.</p>	<p>instanc e</p>	
<p>10. In the case of international or collaborative research, explain how you will address any ethical issues specific to the local context. Please provide details of the local review, approval or permission obtained or required. Refer to the BPG 16: Social science research conducted outside the UK. If there will be no local review, explain why not. Please mention any stakeholder or community engagement that has been/ will be undertaken in relation to the research Please also address any physical or psychological risks for Oxford researchers and local fieldworkers in Section G.</p>		
<p>There will be no participant compensation for the survey portion the research. This is appropriate given the short time commitment involved and the highly specific nature of the target population (researchers in higher education).</p> <p>This project is a collaboration with both Dr Slovak and one of the post-doctoral researchers in his group, Dr. A. Jess Williams from King’s College London.</p> <p>For the workshop portion of the study: Participant compensation (maximum of £150 worth of Amazon vouchers, £10 per participant) will be paid for Future Leaders Fellowship Fund awarded to Dr. Petr Slovak, a senior lecturer at King’s College London. This project is a collaboration with both Dr. Slovak’s and one of the post-doctoral researchers in his group, Dr. A. Jess Williams.</p>		
<p>11. Name of departmental/ peer reviewer (if applicable)</p>	<p>NA</p>	
<p>12. External organisation funding the research and grant reference (if applicable)</p>	<p>Future Leaders Fellowship (Petr Slovak) MR/T041897/1 - Medical Research Council</p>	
<p>13. Please refer to the CUREC Best Practice Guidance and list any that have been used to develop your research.</p>	<p>BPG 06: Internet-mediated research BPG 09: Data collection, protection, and management BPG 05: Payments and Incentives in Research BPG 02: Ethnographic and Other Types of Qualitative Research</p>	

SECTION D: Recruitment of research participants

<p>1. Number of participants</p>	<p>For the survey: We aim to collect data from at least 200 participants but will analyse more data if more participants complete the survey</p>
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	For the workshops: We aim to engage 10-15 participants in total.	
2. How was the number of participants decided?	<p>Approximately 200 participants is sufficient gather a sufficient amount of data for this survey given that it is a relatively small subpopulation being surveyed about a specific use-case.</p> <p>For the workshops: Given the extensive amount of data collected from the two previous phases of our study, it will be sufficient to receive feedback from 10-15 participants.</p>	
3. Age range of participants	18 and over	
4. Inclusion criteria	<p>Survey Participant:</p> <ul style="list-style-type: none"> • Is 18 years or older • Identifies as a woman • Uses Twitter to follow other researchers and keep up to date with research • Is a researcher as defined by UKRI. This includes everyone who is a doctoral student or at a more advanced stage of their research career. <p>Workshop Participants</p> <ul style="list-style-type: none"> • Agreed to be contacted in order to participate in the workshops • Meets the inclusion criteria for survey participants 	
5. Exclusion criteria	Does not meet inclusion criteria	
6. Indicate with an 'X' all intended recruitment methods Please submit copies of the recruitment material that will be used, e.g. advertisement text, introductory email text.	Poster advert	<input type="checkbox"/>
	Flyer	<input type="checkbox"/>
	Email circulation	<input checked="" type="checkbox"/>
	Social media (e.g. Twitter, Facebook)	<input checked="" type="checkbox"/>
	Website	<input type="checkbox"/>
	In-person approach	<input type="checkbox"/>
	Snowball sampling	<input type="checkbox"/>
	Recruitment sites (e.g. Mechanical Turk)	<input type="checkbox"/>
	Existing contacts or volunteer database	<input type="checkbox"/>
	Other (please specify):	<input type="checkbox"/>

<p>7. How will potential participants be identified and approached?</p>	<p>For the Survey See recruitment.jpg</p> <p>Recruitment via Twitter:</p> <ul style="list-style-type: none"> • Researchers will Tweet the recruitment post on Twitter and ask other researchers to retweet it. • Researchers will post the recruitment materials on relevant public subreddits (r/academia, r/askacademia, r/UKacademia) that allow for studies and surveys to be posted. <p>For the workshops Participants were identified in the survey and consented to be contacted for a follow-up study.</p>
<p>8. Will informed consent be obtained from the research participants or their parents/ guardians? If not, please explain why not.</p>	<p>Yes</p>
<p>9. For each activity or group of participants, explain how informed consent will be obtained from the participants themselves and/ or their parents/ guardians, if applicable. How will their consent be recorded?</p> <p>Please submit copies of all participant-facing materials for review. E.g.:</p> <ul style="list-style-type: none"> • Recruitment material (e.g. emails, posters) • Information for participants to read (or hear) before they agree to take part (e.g. written information or, if applicable, an outline oral information script). • A document to record informed consent. <p>Further guidance and templates.</p>	<p>For the Survey: Participants will be recruited using recruitment.jpg as described in D7</p> <p>The recruitment message contains a link to a survey on JISC see (TWITTER_survey.pdf). The form includes</p> <ul style="list-style-type: none"> -information sheet -screening questionnaire: If participants are eligible to participate, they will be redirected to: -consent form -Main survey <p>For the workshops: Participants who consented to be contacted for a follow-up study will be contacted by email. The email will contain a link to: contains a link to a form on JISC see (Information and consent.pdf). The form includes</p> <ul style="list-style-type: none"> -information sheet -Basic follow-up questionnaire (digital device use for Twitter engagement) -A link to an online scheduling calendar (Calendly) that participants can use to schedule their workshop

<p>10. Provide details of any payments and incentives and the rationale for providing these. Further guidance in Best Practice Guidance: 05 Payments and incentives in research.</p>	<p>For the survey: NA For the workshop: £10 Amazon voucher per participant. The workshop involves substantial engagement from participants that warrants suitable remuneration for adult participants' time.</p>
<p>11. Describe how participants</p> <ul style="list-style-type: none"> • may withdraw from the study • may withdraw any personal information they have provided from the study <p>State any limits to withdrawal, for example once the data has been anonymised or at some other specified stage prior to publication. Make sure participants are aware of any withdrawal limits.</p>	<p>For participants who only wish to complete the survey: The participants may withdraw from the study at any time by exiting it before it has been completed. Therefore, a survey that has not been completed and submitted it will not be saved.</p> <p>No names or identifying information will be saved and responses are automatically anonymised: Each survey responses will be assigned a random and unique response ID. For this reason, it is not possible to withdraw once the survey once responses have been submitted.</p> <p>For participants who have consented to being contacted for the follow-up study: Participants will be asked to provide their name and an email address. If at any time after they have provided that information and wish to withdraw either their survey responses or withdraw from future study prior to participating in the workshop, by emailing Claudine Tinsman at claudine.tinsman@cs.ox.ac.uk and stating that they wish to withdraw from the study. Should that occur, we will delete the participant's contact information and all personal information provided from our password-protected folder, as well as their survey responses.</p> <p>Limit to withdrawal: Data anonymisation will occur no more than <u>three weeks</u> after participants take part in the survey. After that point, it may not be possible to remove a participant's personal information or data they have provided for the interview, but we will do so on a best effort basis.</p> <p>Workshops</p> <p>Prior to the workshop/during the workshop: The participants may withdraw from the study at any time prior to their interview by emailing Claudine Tinsman at</p>

	<p>claudine.tinsman@cs.ox.ac.uk and stating that they wish to withdraw from the study. Should that occur, we will delete the participant's contact information and all personal information provided from our password-protected folder.</p> <p>After the workshop Limit to withdrawal: Data anonymisation will occur no more than <u>three weeks</u> after participants take part in the workshop. After that point, it may not be possible to remove a participant's personal information or data they have provided for the workshop, but we will do so on a best effort basis. Participants will be reminded of this limitation at the end of their workshop</p>
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SECTION E: Research data

All information provided by participants is considered research data for the purpose of this form. Any research data from which participants can be identified is known as [personal data](#); any personal data which is sensitive is considered [special category data](#). Management of personal data, either directly or via a third party, must comply with the requirements of the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018, as set out in the [University's Guidance on Data Protection and Research](#).

In answering the questions below, please also consider the points raised in the [Data Protection Checklist](#) and [Data Protection Screening Assessment](#) and whether, for higher-risk data processing, a separate [Data Protection Impact Assessment](#) may also be required for the research. Advice on research data management and security is available from [Research Data Oxford](#) and your local IT department. Advice on data protection is available from the [Information Compliance team](#).

For guidance on conducting internet-mediated research, refer to CUREC's [Best Practice Guidance 06: Internet-mediated research](#).

1. What data will be collected? (Indicate with an 'X')

Screening documents	<input checked="" type="checkbox"/>	Task results (e.g. questionnaires, diaries)	<input checked="" type="checkbox"/>
Consent records (e.g., written consent forms, audio-recorded consent, assent forms)	<input checked="" type="checkbox"/>	IP addresses (refer to Best Practice Guidance 09: Data collection, protection and management for guidance)	<input type="checkbox"/>
Contact details for the purpose of this research only	<input type="checkbox"/>	Field notes	<input type="checkbox"/>
Contact details for future use (guidance)	<input checked="" type="checkbox"/>	Photographs	<input type="checkbox"/>

Opt-out forms	<input type="checkbox"/>	Information about the health of the participant (including mental health)	<input type="checkbox"/>
Audio recordings	<input checked="" type="checkbox"/>	Previously collected (secondary) data	<input type="checkbox"/>
Video recordings	<input type="checkbox"/>	Data already in the public domain. Specify the source of the data:	<input type="checkbox"/>
Transcript of audio/ video recordings	<input checked="" type="checkbox"/>	Other, please specify:	<input type="checkbox"/>

2. During the course of the research, where will **each type of** research data be stored?

Consent

Individuals who pass the initial screening will be redirected to an electronic information and consent form on JISC (see TWITTER_survey.pdf).

If they consent to all items on the form, their consent information will be retained along with their survey responses in password-protected folders on the research team’s OneDrive within the University network.

Survey responses for individuals who do not fulfil the study criteria

Potential participants will be directly redirected to a screening message on JISC that ends the survey (See annexe). No data is retained about responses that do not meet the screening criteria.

Survey responses for participants who pass the screening and only wish to participate in the survey:

Survey responses will be transferred as a .csv file to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.

Participants will be asked if they wish to be contacted for participation in a follow-up workshop, for which they will receive compensation for their time. If participants do not wish to be contacted, only their survey responses will be retained (responses will be automatically anonymised on the JISC platform).

Survey responses for participants who wish to be contacted for follow-up workshops:

If participants wish to be contacted, they will be asked to provide their name and email address. Participants will be advised that there may be more eligible candidates than the available number of spaces for the workshops.

If participants consent to be contacted, we will store their contact information in password-protected folders on the research team’s

OneDrive within the University network. That information will be deleted from JISC as soon as it is transferred over to the password-protected folders. For three weeks after the survey response, we will save the unique survey identifier with the participant's name and contact information in a .csv file. If a participant has not withdrawn from the study after three weeks, we will delete the unique survey identifier from the .csv file.

Password-protected folders will only be accessible to the researchers listed by name on this CUREC.

King's College researchers (Petr Slovak and A. Jess Williams) will be given access to the folders via their external institutional email addresses.

- **If a participant is selected for follow-up workshops:** Their contact information will be retained in password-protected folders on the research team's OneDrive within the University network. That information will be deleted from JISC as soon as it is transferred over to the password-protected folders.
- **If a participant has consented to participating in follow-up workshops but is not selected,** their contact information will be deleted from the spreadsheet as soon as the workshops have concluded (we estimate this will occur in late July/early August 2023). We allow for this delay in case a participant drops out of the workshop before it takes place, and a replacement is needed.

Workshop Data:

Remote Workshops: Audio recordings of workshops will be recorded locally on the researchers' departmental password-protected computers directly using Zoom's local recording feature and then uploaded to the password-protected folders on the research team's OneDrive within the University network. Recordings will be deleted from researchers' laptops as soon as they are transferred to password-protected folders on the research team's OneDrive within the University network.

In-Person Workshops: Audio recordings of research participants will be recorded locally using dictaphones. The mp3 files will be transferred to the researchers' departmental password-protected computers directly and uploaded to the password-protected folders on the research team's OneDrive within the University network.

Recordings will be deleted from researchers' laptops as soon as they are transferred to password-protected folders on the research team's OneDrive within the University network.

	<p>Transcription of audio recordings will be performed using Word’s automatic transcription feature on OneDrive and checked manually. These transcriptions will be stored in password-protected folders on the research team’s OneDrive within the University network. Once the transcriptions are complete, the original audio recordings will be deleted. Anonymised transcripts will be manually redacted to remove personally identifying information. Once these are anonymised, they will be moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.</p> <p>King’s College researchers (Petr Slovak and A. Jess Williams) will be given access to the folders via their external institutional email addresses.</p> <p>After redaction, transcripts will no longer be sensitive. From these transcripts, we may select quotes to include in our research publications.</p>														
<p>3. Who will have access to the research data during the project?</p>	<p>Only the researchers listed in Section B will be given access to the contact information. However, our research group will have access to the anonymous survey responses.</p> <p>King’s College researchers (Petr Slovak and A. Jess Williams) will be given access to the folder via their external institutional email addresses.</p> <p>Workshop Data Only the researchers listed in Section B will be given access to any of the audio recordings, pre-redacted transcripts and surveys, consent forms, and contact information. However, after de-identification, transcripts will be made available to other members of our research group.</p> <p>King’s College researchers (Petr Slovak and A. Jess Williams) will be given access to the folder via their external institutional email addresses.</p>														
<p>4. Please complete this section if your research involves the use of secondary (i.e. previously collected) data.</p>	<table border="1"> <thead> <tr> <th>Please indicated with an ‘X’.</th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>Are data access agreements in place for access to and use of this secondary data? (If so, please attach these.)</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Did the individuals agree that their data could be used for this purpose?</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Could anyone (including members of the research team) link the data back to an individual or individuals? If this is a possibility, please explain how the associated ethical issues will be addressed:</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>			Please indicated with an ‘X’.	Yes	No	Are data access agreements in place for access to and use of this secondary data? (If so, please attach these.)	<input type="checkbox"/>	<input type="checkbox"/>	Did the individuals agree that their data could be used for this purpose?	<input type="checkbox"/>	<input type="checkbox"/>	Could anyone (including members of the research team) link the data back to an individual or individuals? If this is a possibility, please explain how the associated ethical issues will be addressed:	<input type="checkbox"/>	<input type="checkbox"/>
Please indicated with an ‘X’.	Yes	No													
Are data access agreements in place for access to and use of this secondary data? (If so, please attach these.)	<input type="checkbox"/>	<input type="checkbox"/>													
Did the individuals agree that their data could be used for this purpose?	<input type="checkbox"/>	<input type="checkbox"/>													
Could anyone (including members of the research team) link the data back to an individual or individuals? If this is a possibility, please explain how the associated ethical issues will be addressed:	<input type="checkbox"/>	<input type="checkbox"/>													

5. How do you intend to share the research data at the end of the project?	Depositing in a specialist data centre or archive	<input type="checkbox"/>	
	Submitting to a journal to support a publication	<input checked="" type="checkbox"/>	
	Depositing in an institutional repository	<input type="checkbox"/>	
	Dissemination via a project or institutional website	<input checked="" type="checkbox"/>	
	No plans to share the data	<input type="checkbox"/>	
	Other (please specify): Share anonymised survey responses on request	<input type="checkbox"/> <input checked="" type="checkbox"/>	
6. How do you intend to report and disseminate the results of the research? (Indicate with an 'X')	Thesis publication	<input checked="" type="checkbox"/>	
	Publication in a peer reviewed journal	<input checked="" type="checkbox"/>	
	Publicly available report	<input type="checkbox"/>	
	Conference presentation	<input checked="" type="checkbox"/>	
	Publication on a website	<input checked="" type="checkbox"/>	
	Pre-registration	<input type="checkbox"/>	
	Report to a research funder	<input type="checkbox"/>	
	Providing participants with a lay summary of the results	<input checked="" type="checkbox"/>	
	Submission for academic assessment	<input type="checkbox"/>	
Other (please specify):	<input type="checkbox"/>		
7. Explain what will happen to the data at the end of the research project. This question must be answered for each type of data, including completed consent forms.			
<p>Contact information for participants who consented to participate in the follow-up workshops (including consent data) will be stored for at least 10 years after publication.</p> <p>Contact information for participants who did <i>not</i> participate in the study but consent to be contacted for other studies will be retained as described in section E.2 for at most three years after publication.</p> <p>Anonymised survey responses will be retained for at least 10 years after publication.</p> <p>Audio recordings for workshops will be deleted as soon as transcripts are finalised.</p> <p>Transcripts from workshops will be downloaded as PDFs and stored in the sensitive folder. After redaction, they will be moved to the non-sensitive folder, along with anonymised transcripts. These will be retained for at least 10 years after publication.</p>			

SECTION F: Protection of research participants and their personal data

<p>1. How identifiable will the participants be from the research outputs? (Indicate with an ‘X’)</p>	<p>Directly identifiable from the information included</p>	<input type="checkbox"/>
	<p>Pseudonymised/ indirectly identifiable</p>	<input type="checkbox"/>
	<p>Not identifiable – data is anonymous</p>	<input checked="" type="checkbox"/>
	<p>Other, please specify:</p>	<input type="checkbox"/>
<p>2. To what extent will the data be de-identified? How identifiable will any individuals be from the research data? Describe any measures you will take towards assuring confidentiality, potential risks to confidentiality.</p>	<p>Consent forms: Will not be de-identified but will be stored in a password-protected folder on group’s One Drive.</p> <p>For the survey</p> <p>Survey responses:</p> <p>If participants have written in any free text responses, they will be carefully analysed for any potentially identifiable information. If necessary, will be replaced (e.g names of people, companies) with generic tokens (e.g. ‘the Oxford University’ will be replaced with ‘a British university’).</p> <p>For participants who do not consent to being contacted for follow-up workshops:</p> <p>Survey data is automatically anonymised on JISC (each completed survey is automatically assigned a unique random identifier) and will be transferred in that state to the The .csv file containing survey responses will be manually redacted to remove the participant’s name and replace it with a unique ID.</p> <p>For participants who wish to be contacted for follow-up workshops: A record of names and corresponding IDs will be maintained in a password-protected folder available only to the researchers named on this CUREC.</p> <p>Once responses are anonymised, they will be moved to the access-controlled group folder on OneDrive within the University network and will be visible to other members of the Oxford research group.</p> <p>For the workshops</p> <p>Audio recordings: Transcription of audio recordings will be performed using Word’s built-in transcription feature on OneDrive. No de-</p>	

	<p>identification will take place at this stage: However, once the workshop has been transcribed, the recording will be deleted.</p> <p>Workshop Transcripts: Once each workshop has been transcribed, words will be replaced (names of people, places and things) with generic tokens (e.g. instead of ‘my friend Jane’ we transcribe ‘my friend X’). The participant’s name will be replaced with a unique ID. A record of names and corresponding IDs will be maintained in a password-protected folder available only to the researchers named on this CUREC.</p> <p>If a participant has not withdrawn from the study three weeks after their workshop, their name will be permanently deleted from the record of names and participant IDs.</p>
<p>3. How will you ensure that third parties (e.g., interpreters and transcribers) are aware of and adhere to the measures described in this form?</p>	<p>No third parties will be used.</p>

SECTION G: Risks and benefits of the research

1. Will the research involve topics that could be considered **sensitive**? If so:
 - a. Please provide more detail or supporting information (such as the interview questions) to show the range of questions;
 - b. Explain what steps will be taken to reduce risk of distress;
 - c. Consider seeking advice from within your Department or from the ethics committee including whether the application might benefit from additional ethics review (e.g., via a CUREC 2 application).

No. However, reflecting on unwanted emotional responses may bring personal mental health issues to the fore. They will be aware of the topics covered in the survey (see Information and consent survey.pdf). **Participants will be informed that they are free to take a break or step away should they need a break during the workshop.**

2. Describe any additional burden or risks to the participants and the steps you will take to address these.
We do not anticipate any ethical, emotional, physical risks to our participants. As indicated above, all research staff have received appropriate ethics training.
3. Describe any physical or psychological risks to the researcher(s) (including local fieldworkers or research assistants) and the steps you will take to address these.
We do not anticipate any ethical, emotional, physical risks to our researchers. As indicated above, all research staff have received appropriate ethics training and will conduct any in-person workshops during business hours at the department of Computer Science
4. Describe any benefits of the research, both to participants and to others.
Participants will not receive any compensation. However, the information they provide will be used to develop social media platform tools that aim to support researcher wellbeing. For the workshops: Participants will receive a £10 Amazon voucher to compensate them for their time.
5. Give details of any other ethical issues or relevant information.
No additional ethical issues are anticipated.

SECTION H: Professional guidelines

Please indicate with an 'X' at least one set of professional guidelines you will follow.

Research specialism/ methodology	Association and guidance	
Anthropology	Association of Social Anthropologists of the UK	<input type="checkbox"/>
Computer Science	ACM Code of Ethics and Professional Conduct	<input checked="" type="checkbox"/>
Criminology	British Society of Criminology Statement of Ethics	<input type="checkbox"/>
Education	British Educational Research Association Ethical Guidelines for Educational Research	<input type="checkbox"/>
Geography	American Association of Geographers Statement on Professional Ethics	<input type="checkbox"/>
History	Oral History Society of the UK Ethical Guidelines	<input type="checkbox"/>
Internet-mediated research	Association of Internet Researchers Ethical Guidelines British Psychological Society: Ethics Guidelines for internet-mediated research Association for Computing Machinery Code of Ethics and Professional Conduct	<input checked="" type="checkbox"/>

Management	Academy of Management Code of Ethics	<input type="checkbox"/>
Political Science	American Political Science Association (APSA) Guide to Professional Ethics in Political Science	<input type="checkbox"/>
Politics	Political Studies Association. Guidelines for Good Professional Conduct	<input type="checkbox"/>
Psychology	British Psychological Society Code of Ethics and Conduct	<input type="checkbox"/>
Social research	Social Research Association: Ethical Guidelines	<input type="checkbox"/>
Socio-legal studies	Socio-Legal Studies Association: Statement of Principles of Ethical Research Practice	<input type="checkbox"/>
Sociology	The British Sociological Association: Statement of Ethical Practice	<input type="checkbox"/>
Visual research	ESRC National Centre for Research Methods Review Paper: Visual Ethics: Ethical Issues in Visual Research	<input type="checkbox"/>
Other professional guidelines	List any other guidelines used here.	<input type="checkbox"/>

SECTION I: Endorsements and signatures

Please ensure this form is endorsed by the [Principal Investigator](#) (or student's supervisor), the Head of Department (or nominee) and, if student research, by the student themselves. **The SSH IDREC Secretariat accepts either option below. If you have a [DREC](#), check which signature option it prefers.**

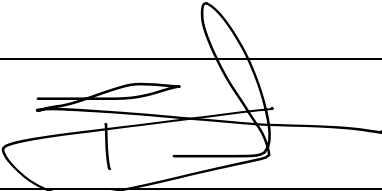
- **Option 1: direct email endorsements**
Each of the signatories should submit an email from a University of Oxford email address, indicating their acceptance of the responsibilities listed below.
- **Option 2: signatures**
Please scan the signed form and email it to us as a PDF. Pasted images of signatures cannot be accepted.

Endorsement by the Principal Investigator/ student supervisor and student, if applicable

I/ we the researchers understand my/ our responsibilities as Principal Investigator (and student, if applicable) as outlined in the guidance on the CUREC website. I/ we declare that the answers above accurately describe the research as presently designed, and that the ethics committee will be informed of any changes to the project which affect the answers to this form.

I/ we will inform the relevant IDREC if the Principal Investigator changes.

Name of Principal Investigator	Prof. Max Van Kleek
Principal Investigator's signature	Direct Endorsement by Email
Date	
Name of student (if applicable)	Claudine Tinsman

Student's signature	
Date	09/06/2023
Name of student (if applicable)	Dr. Petr Slovak
Signature	Direct endorsement by email
Date	
Name of student (if applicable)	Dr. A. Jess Williams
Signature	Direct endorsement by email
Date	
Name of student (if applicable)	Hayoun Noh
Signature	Direct endorsement by email
Date	Direct endorsement by email

Departmental endorsement – from the Head of Department or nominee
 (Another senior member of the department may sign where the head of department is the Principal Investigator, or where the Head of Department has appointed a nominee.
 Example nominees include Deputy Head of Department, Director of Research, or Director of Graduate/ Undergraduate Studies.)

On the basis of the information available to me, I confirm that:

- I am aware of the research proposed and have read this application;
- To the best of my knowledge, the proposed design and scientific methodology do not raise ethical concerns;
- I support this research in principle, subject to ethical and other necessary reviews.

Signature	Instead of a signature, endorsement may be provided by an email confirming the points above.
Name	
Role	
Date	

D.2 Academic Twitter Survey Data

D.3 Survey Data

Academic Twitter Survey

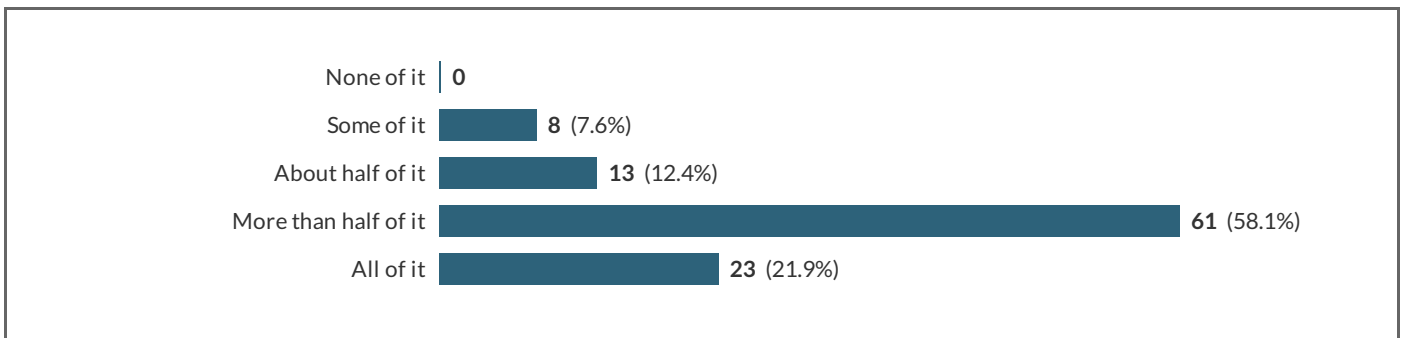
Showing 105 of 105 responses

With **4 responses excluded**

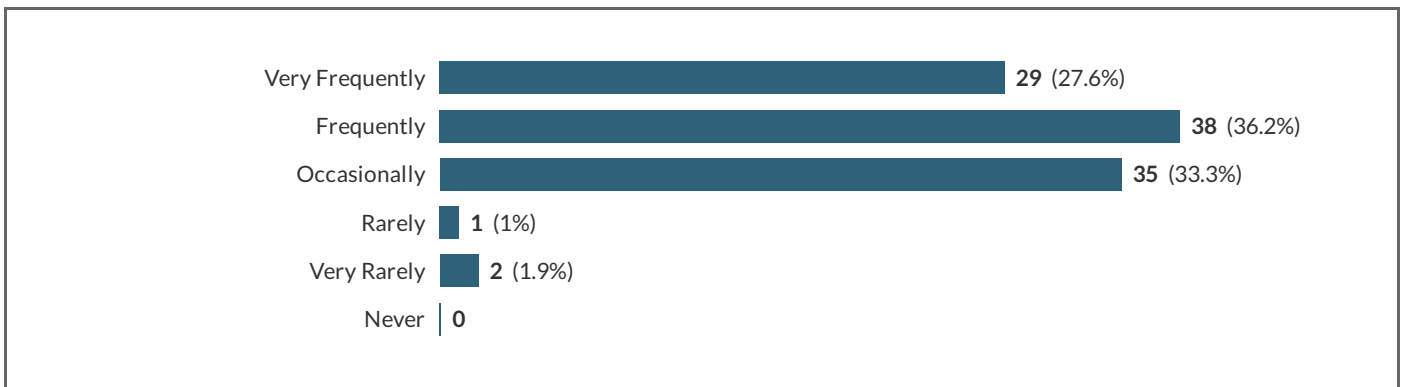
Hiding **11** questions and **9** other sub-questions

Response rate: 105%

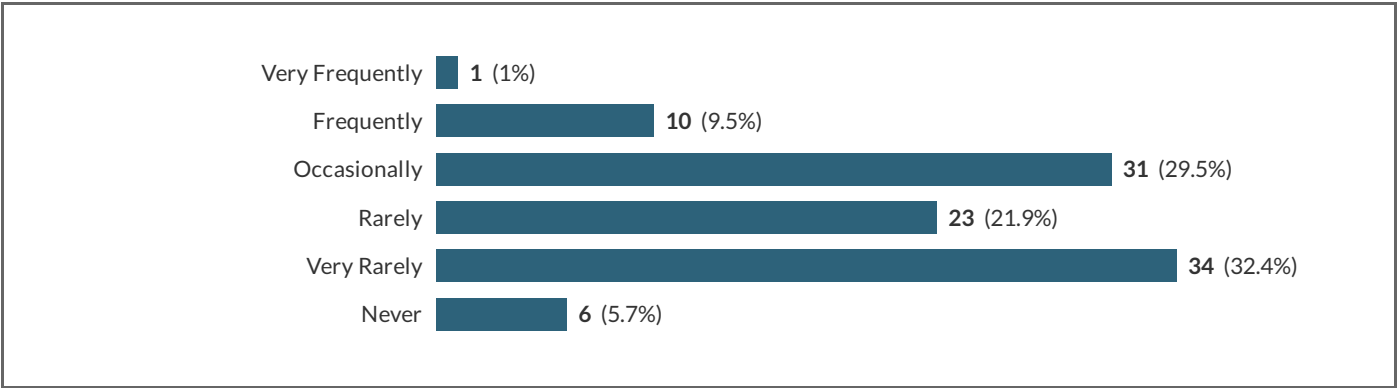
12 How much of your Twitter use is Academic Twitter



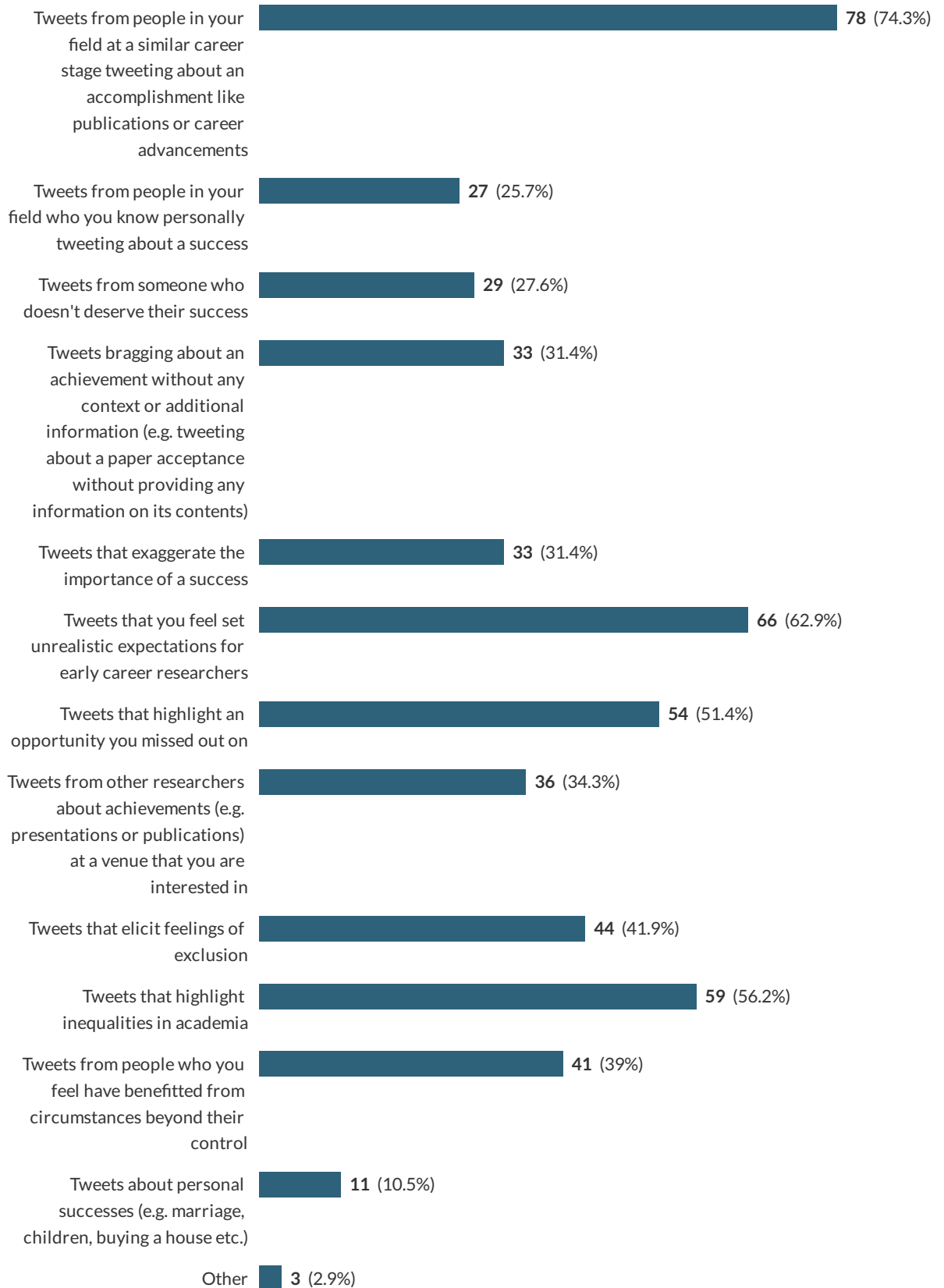
13 How frequently do you scroll through content on Academic Twitter?



14 How often do you post on Academic Twitter?

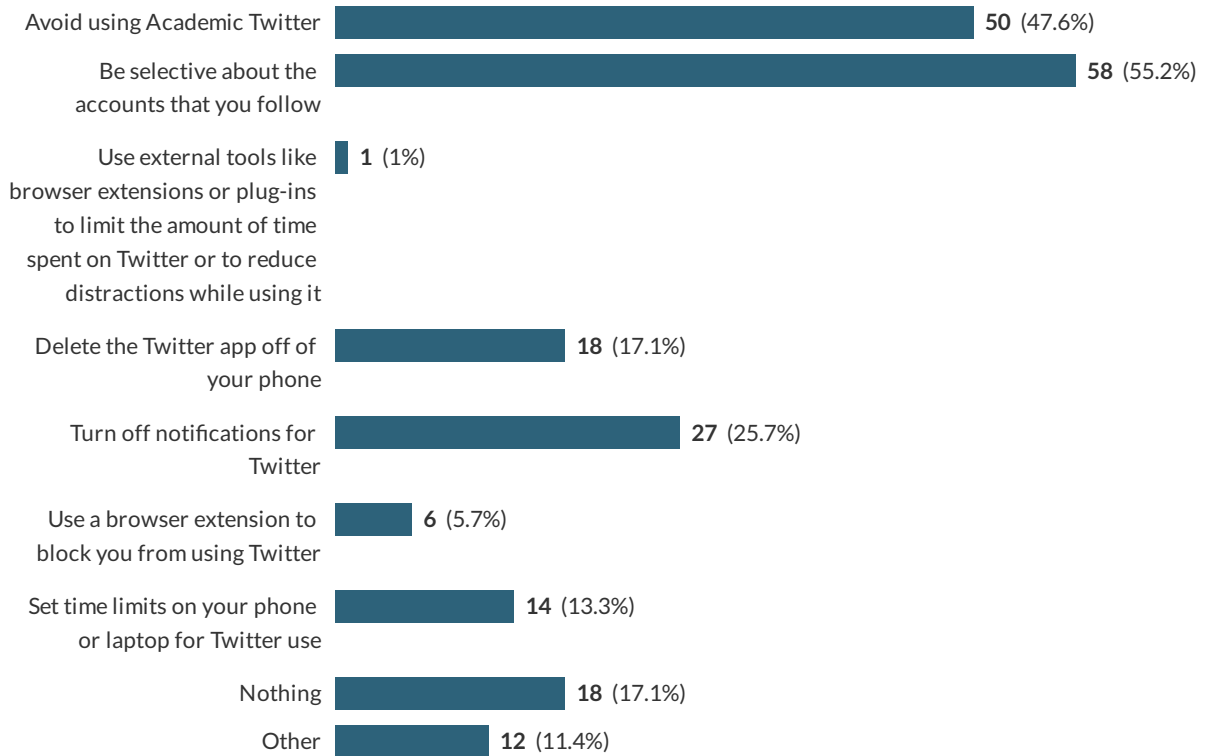


15 What kinds of celebratory tweets from other researchers make you feel bad by comparison?



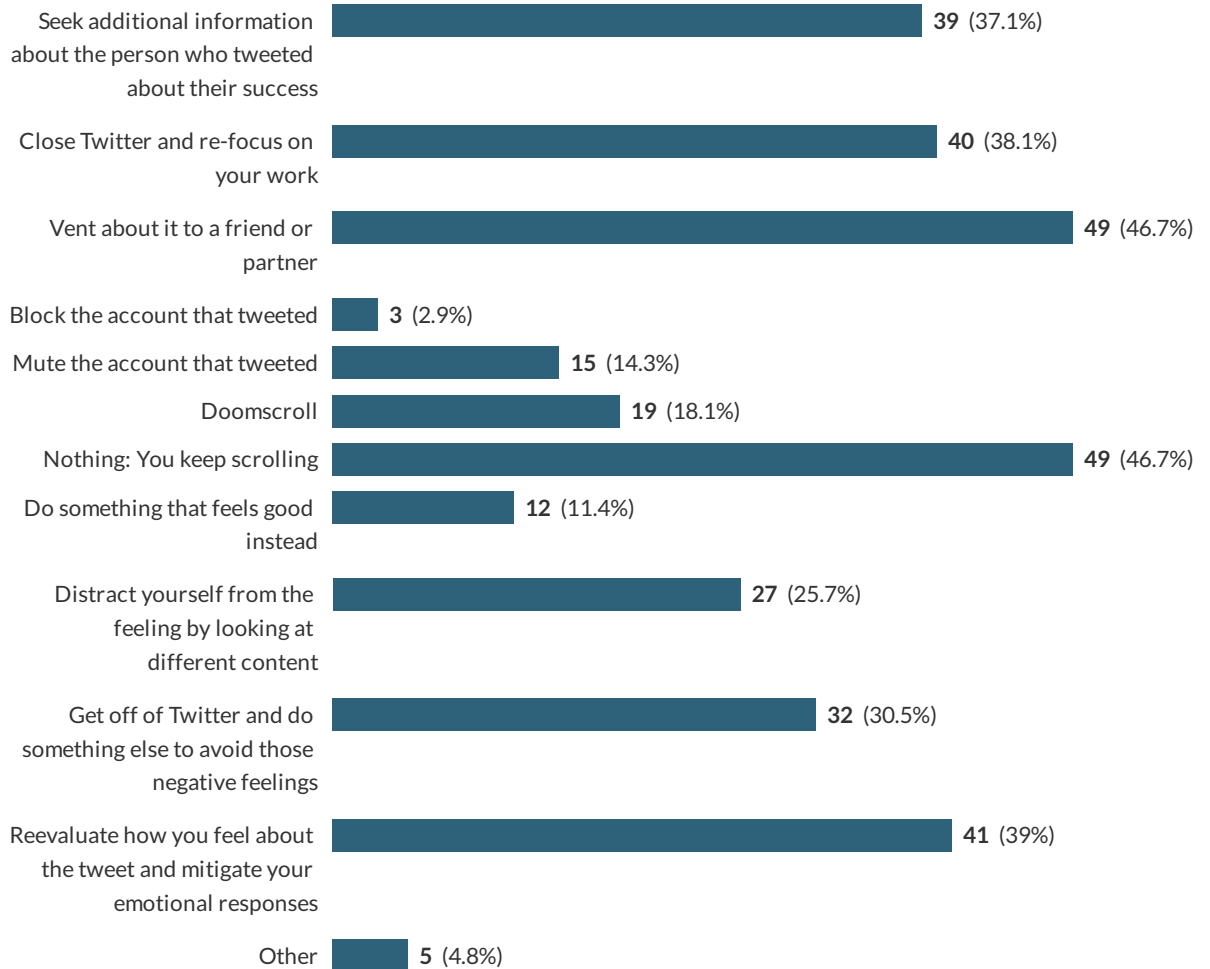
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

16 What do you do, if anything, in order to reduce the likelihood that you'll experience negative emotional responses to tweets about achievements in the future?



Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

17 When you encounter celebratory academic tweets that make you feel bad in comparison, what do you tend to do to deal with unwanted emotions? You can select as many options from the list below as you'd like or free-write your answer.

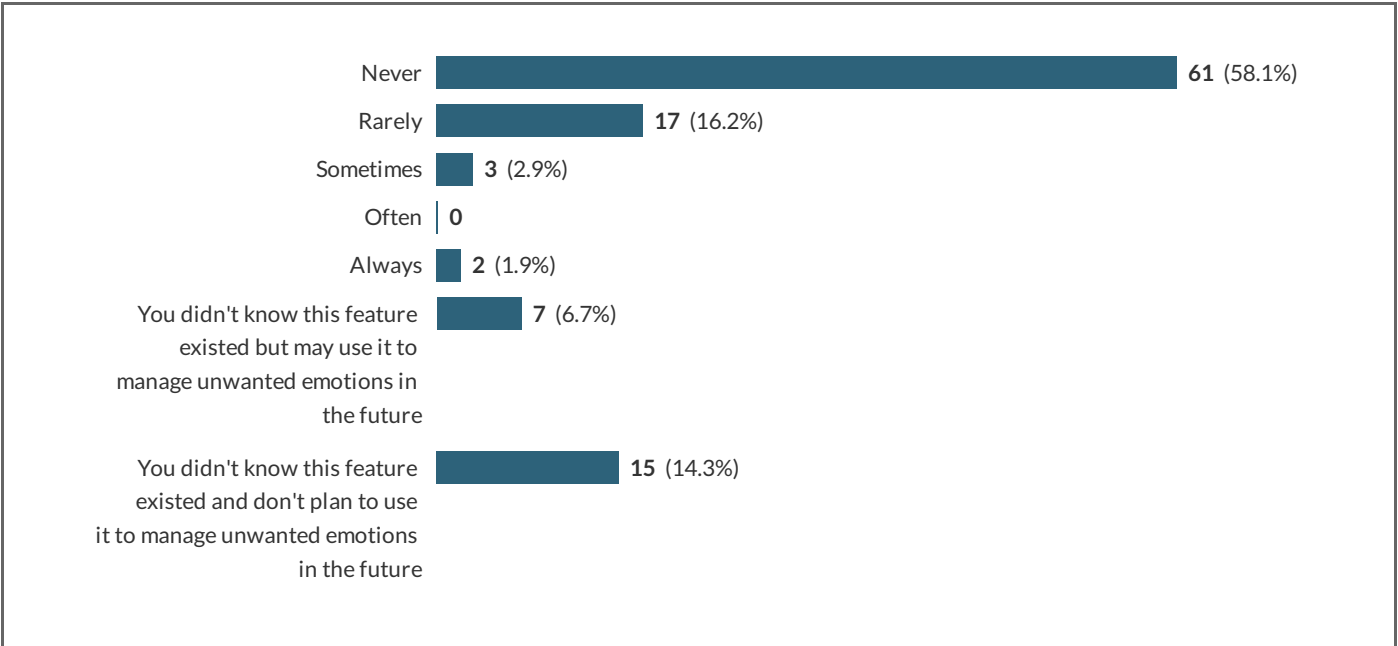


Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

18 Content Curation Features

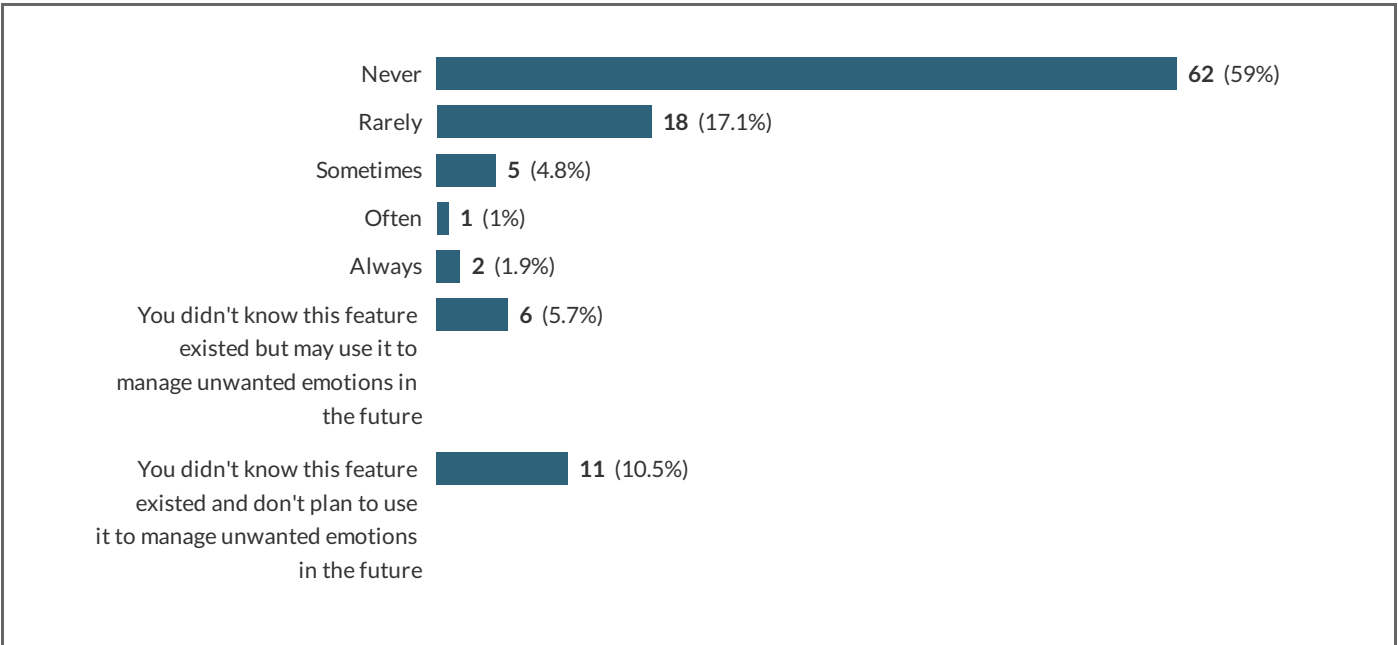
18.1 Mute tweets containing a particular hashtag: Tweets containing that hashtag no longer appear on your timeline

18.1.a Mute tweets containing a particular hashtag: Tweets containing that hashtag no longer appear on your timeline - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



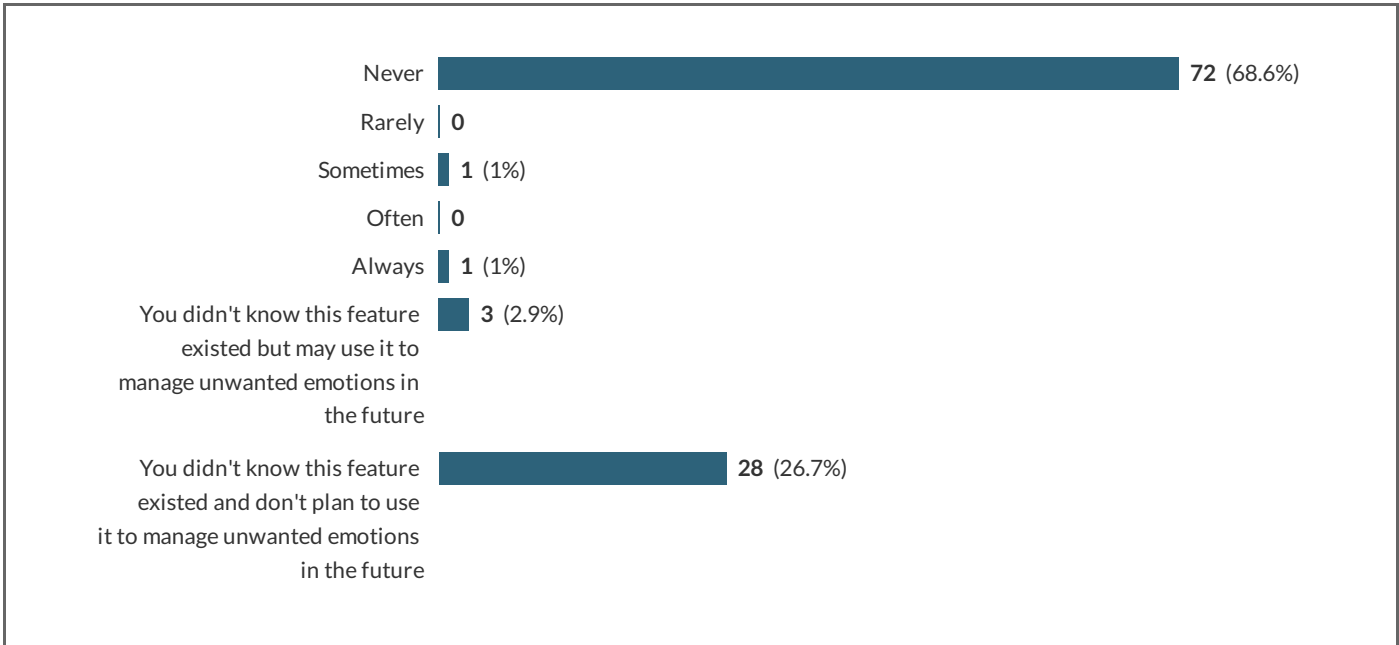
18.2 Mute tweets containing a particular word or phrase: Tweets containing the word/phrase no longer appear on your timeline

18.2.a Mute tweets containing a particular word or phrase: Tweets containing the word/phrase no longer appear on your timeline - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



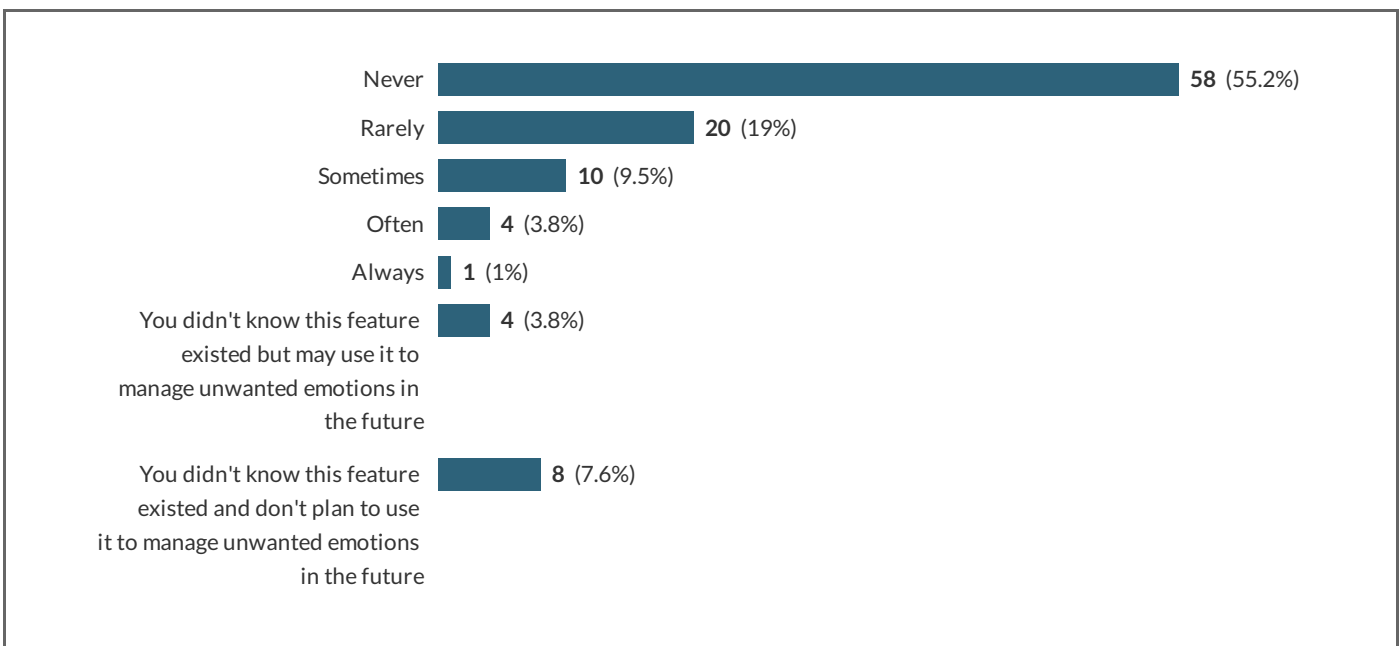
18.3 Mute tweets containing a particular emoji: Tweets containing the emoji no longer appear on your timeline

18.3.a Mute tweets containing a particular emoji: Tweets containing the emoji no longer appear on your timeline - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



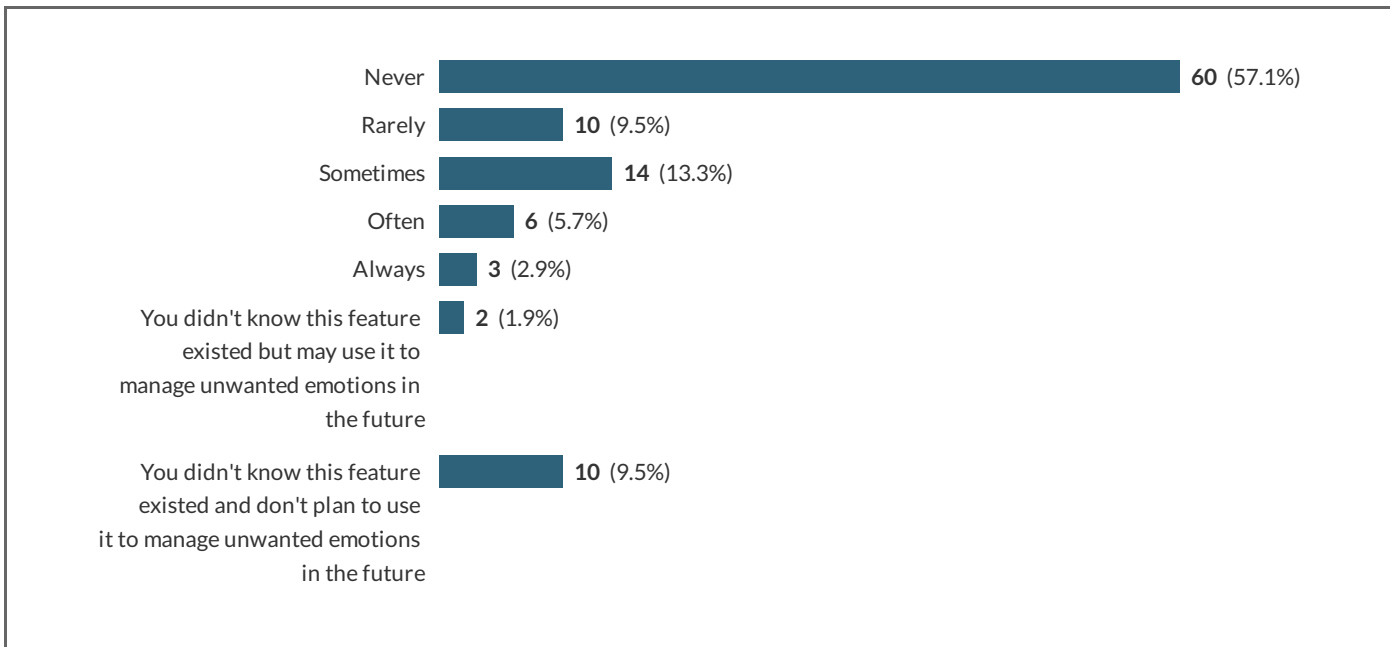
18.4 Mute tweets containing a specific username: Tweets containing the username no longer appear on your timeline

18.4.a Mute tweets containing a specific username: Tweets containing the username no longer appear on your timeline - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



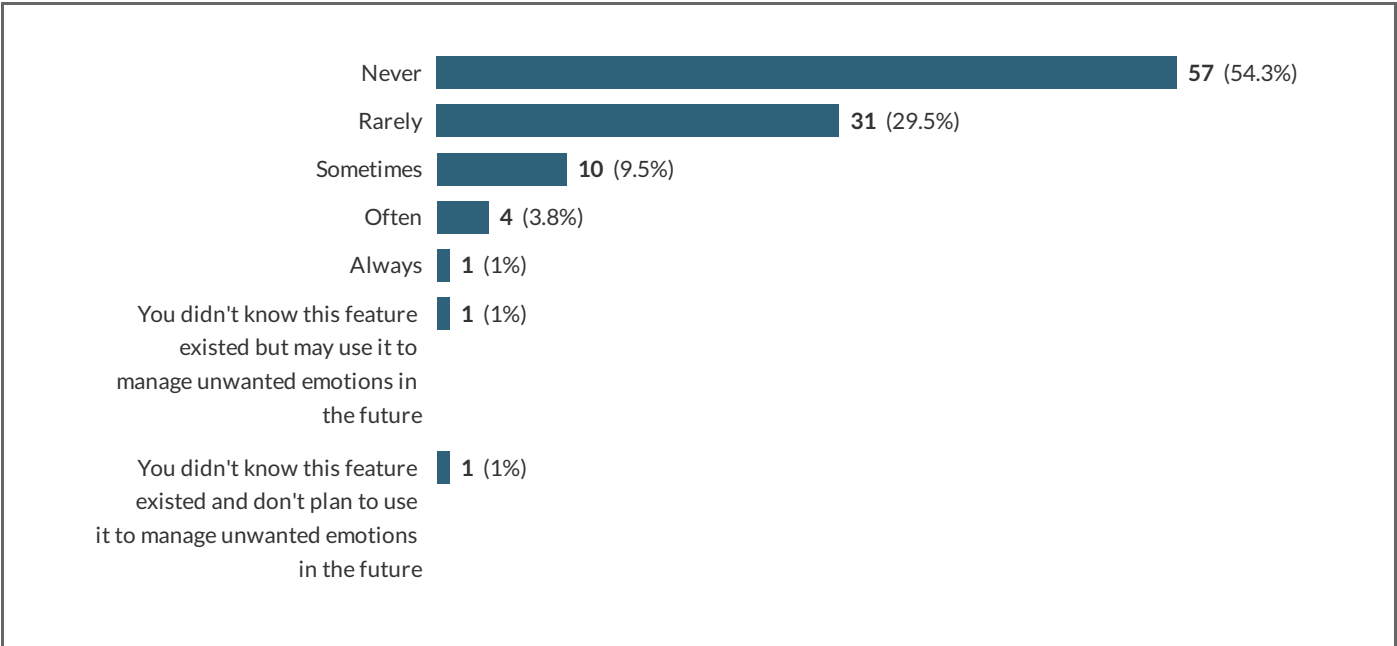
18.5 Selectively set and mute notifications for specific accounts

18.5.a Selectively set and mute notifications for specific accounts - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



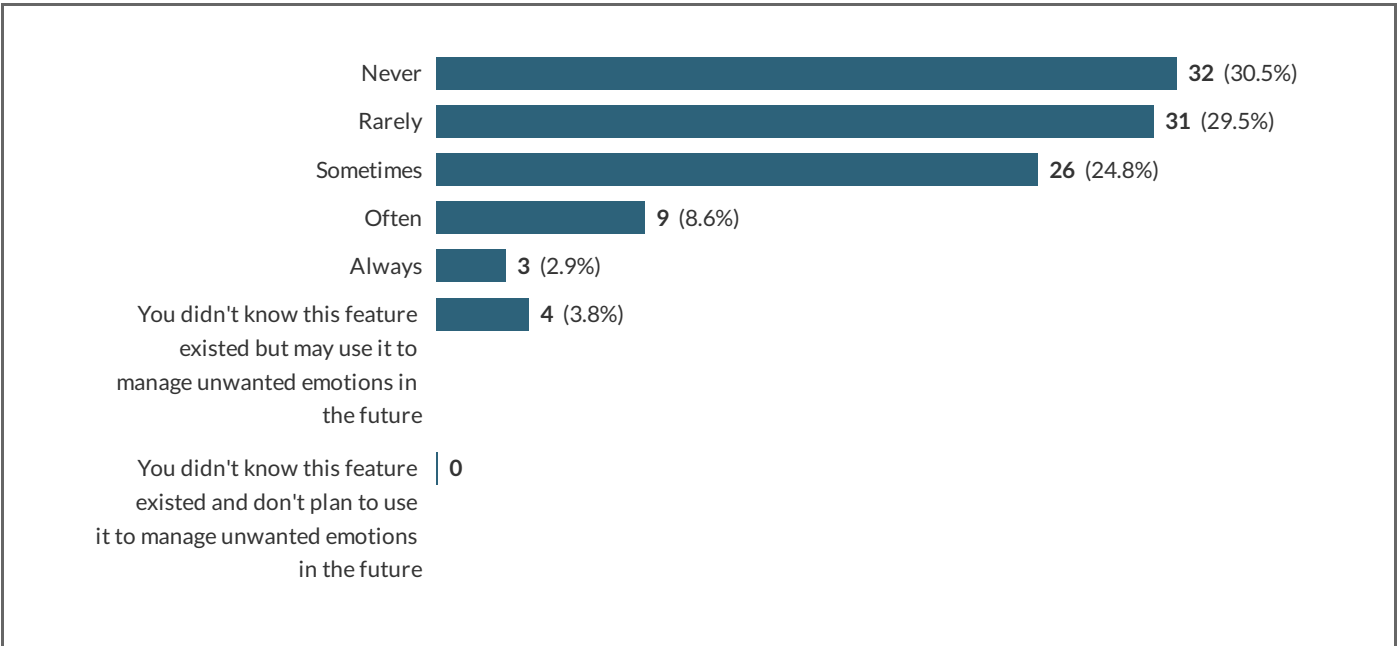
18.6 Block: When you block an account, you no longer receive notifications from them. The blocked account is not notified that you've blocked it, but the account holder will see that you have blocked them if they visit your profile.

18.6.a Block: When you block an account, you no longer receive notifications from them. The blocked account is not notified that you've blocked it, but the account holder will see that you have blocked them if they visit your profile. - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



18.7 Unfollow: When you unfollow an account, you'll no longer see their Tweets in your home timeline. You can still view them on an as-needed basis by visiting the profile. The account holder won't be notified that you've unfollowed them, but you'll disappear from their list of followers.

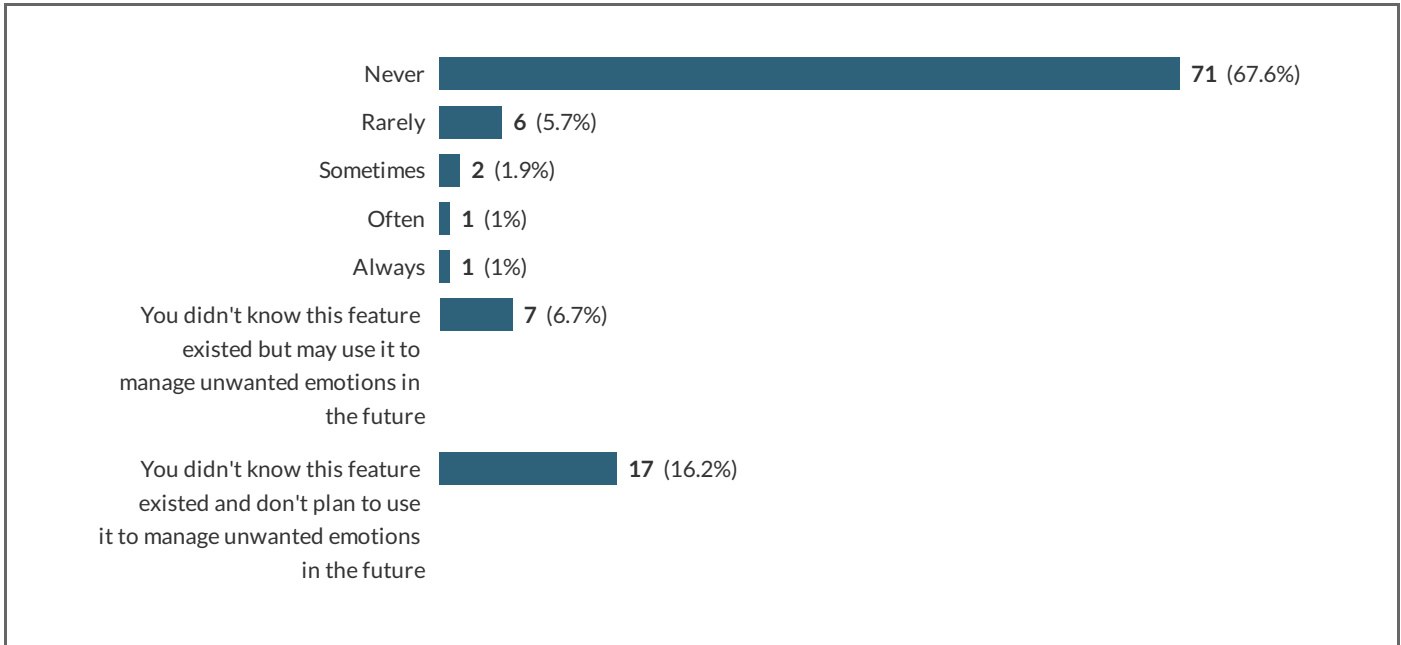
18.7.a Unfollow: When you unfollow an account, you'll no longer see their Tweets in your home timeline. You can still view them on an as-needed basis by visiting the profile. The account holder won't be notified that you've unfollowed them, but you'll disappear from their list of followers. - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



18.8 Lists: You can choose to join lists created by others on Twitter, or you can choose to create lists of

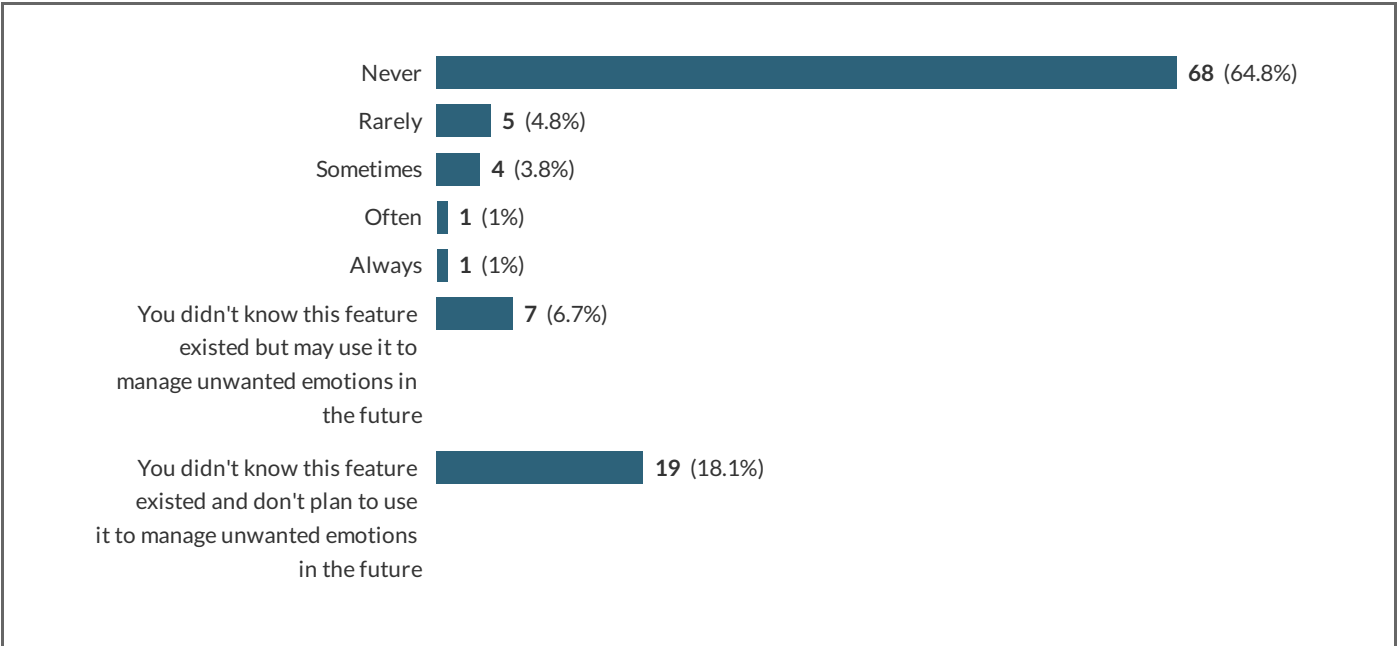
other accounts by group, topic or interest. Viewing a list timeline will show you a stream of Tweets from only the accounts on that list.

18.8.a Lists: You can choose to join lists created by others on Twitter, or you can choose to create lists of other accounts by group, topic or interest. Viewing a list timeline will show you a stream of Tweets from only the accounts on that list. - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?

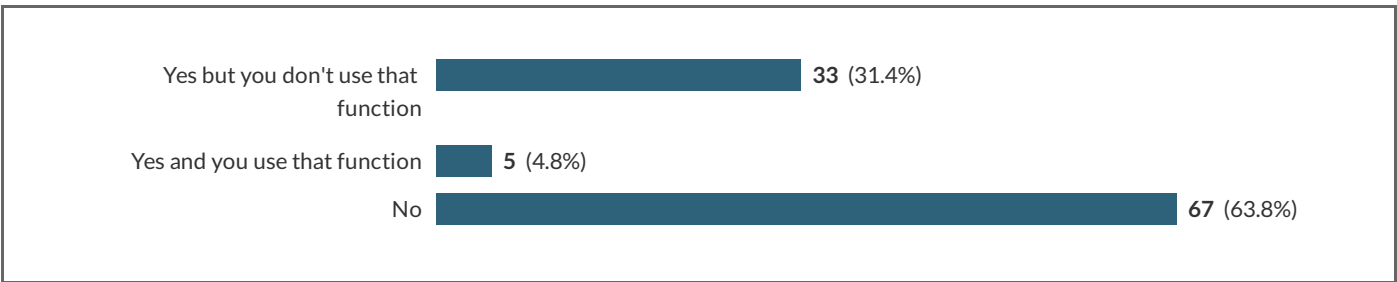


18.9 Topics: The Topics you follow are used to personalise the Tweets, events, and ads that you see and show up publicly on your profile

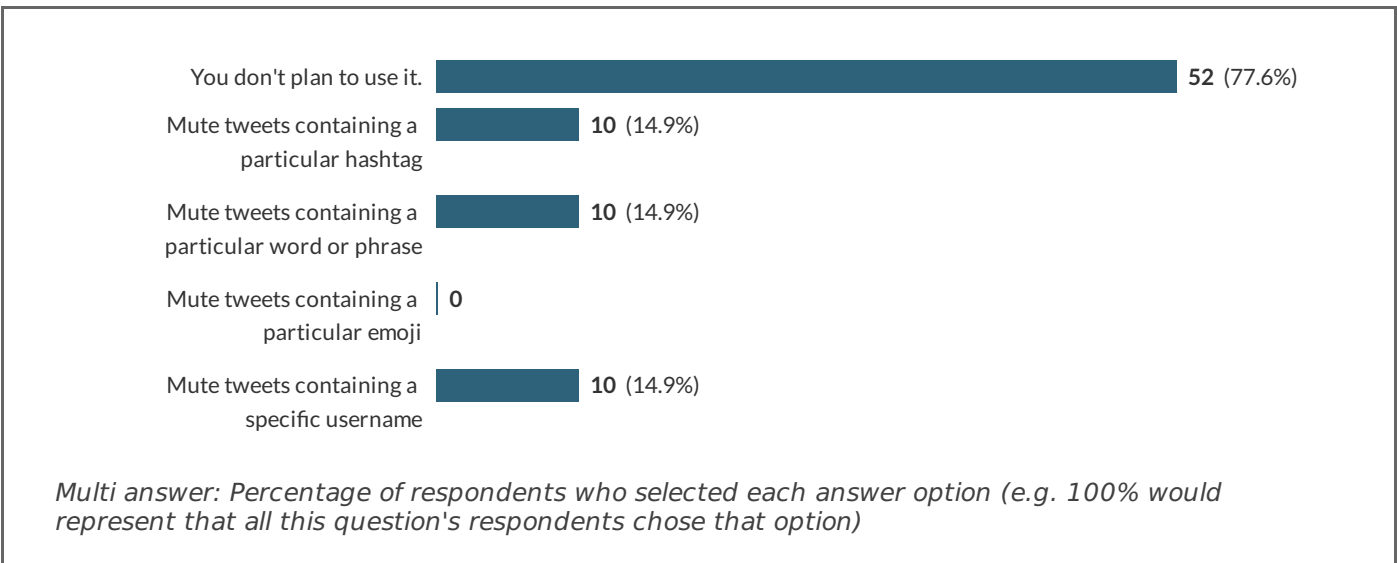
18.9.a Topics: The Topics you follow are used to personalise the Tweets, events, and ads that you see and show up publicly on your profile - How often do you use the following curation features to manage negative emotional responses to celebratory tweets?



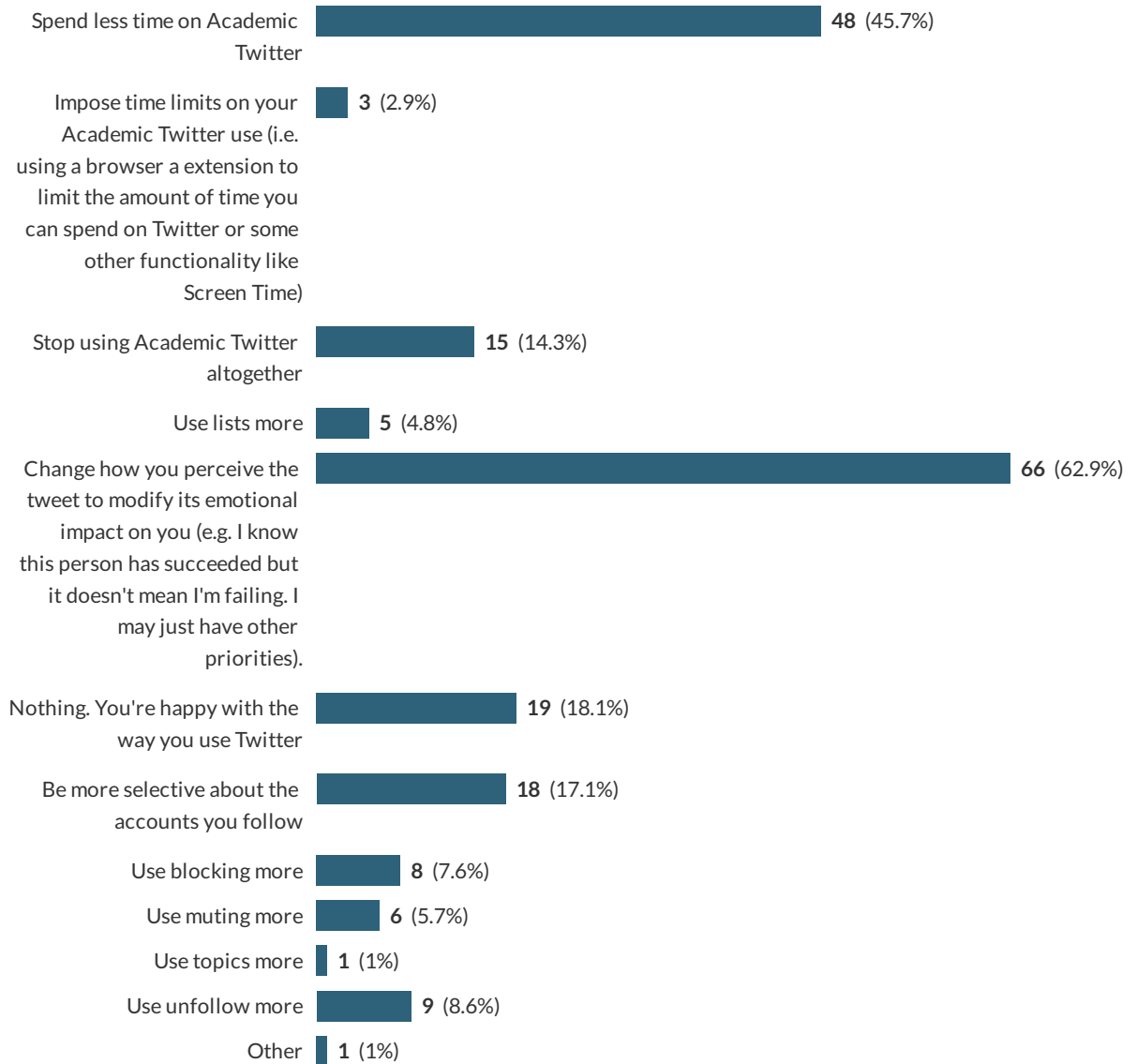
19 Did you know that you can choose how long words, phrases, hashtags, or emojis are muted (24h, 7 days, 14 days, 30 days)?



19.a Now that you are aware of it, how would you use it? Please check all that apply.

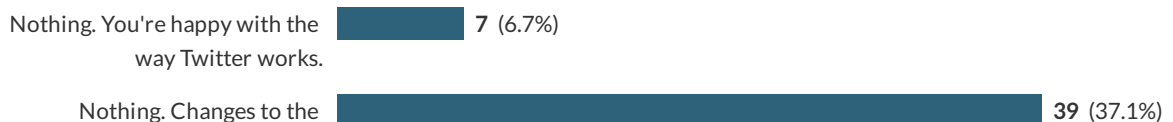


20 Is there anything that you would like to be able to do when you encounter celebratory tweets that make you feel bad but don't currently? Please select all that apply.



Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

21 What changes, if any, to Twitter as a platform would help you manage the way you feel about Academic Twitter? Don't worry if you think this isn't technically feasible; just select the options that describe what you would like to be able to do. Please feel free to write something else if applicable.



platform won't fix your
problems with Academic Twitter

A tool that encourages you to **32 (30.5%)**

re-evaluate how you think
about the celebratory tweet.
For instance, this could be a
tool that helps think about
the broader context of the
tweet (e.g. "This person got a
prestigious fellowship, but I
don't know how many other
positions they were rejected
from before getting this job")
or helps you put your own
accomplishments into
perspective.

The ability to follow **3 (2.9%)**
hashtags.

A tool that encourages users **30 (28.6%)**

to reflect on the content of
their tweet before they
publish it. This could be a
tool that automatically
suggests changes to a tweet
before it is published based
on how it might sound to
readers.

A tool that suggests writing a **41 (39%)**

tweet in a manner that is
useful to an academic
audience, for instance by
including additional
information that is useful to
a research audience such as
links to papers, or the
inclusion of a research
thread.

A tool that helps you re-frame **28 (26.7%)**

someone else's celebratory
tweet as a source of
motivation to achieve your
goals.

A tool to help you find **33 (31.4%)**

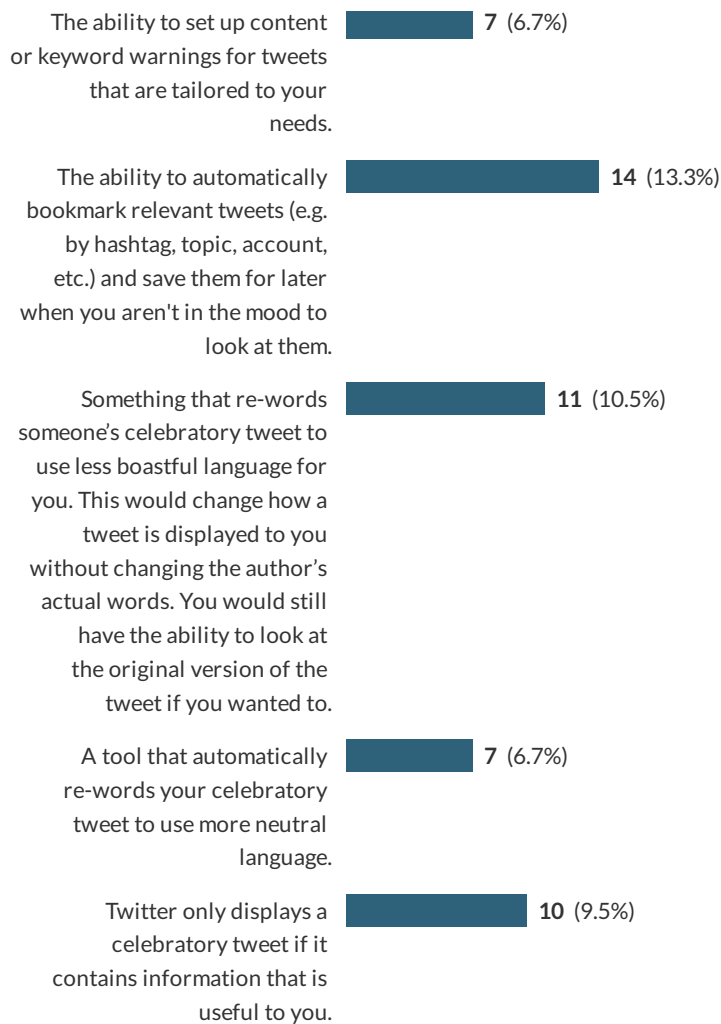
researchers you want to
connect with more easily.

The ability to write tweets **9 (8.6%)**

longer than 280 characters

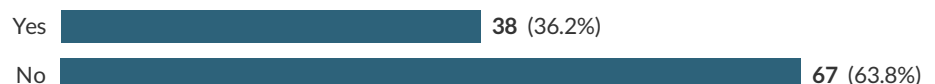
The ability to block someone **15 (14.3%)**

without them knowing



Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

22 Thank you for completing your survey. We plan to conduct a follow-up study based on your responses. The follow-up study will involve showing you a few prototypes of what re-designed Twitter could look like and soliciting your feedback on what you like/don't like about them. The study shouldn't take more than 30 minutes and can be conducted remotely or in-person depending on your preference. You will receive an Amazon voucher as compensation for your time. Would you like to participate in the follow-up study?



D.4 Participatory Design Mock-Ups

D.4.1 Prototype: Tone-Checking Tool

Tone Checking Tool Prototype: Encourages users to 1) rethink the tone of their tweet before posting and 2) include relevant information



ER reasoning: Extrinsic

D.4.2 Prototype: Cognitive Reappraisal

A tool that encourages you to re-evaluate how you think about the celebratory tweet. For instance, this could be a tool that helps think about the broader context of the tweet (e.g. "This person got a prestigious fellowship, but I don't know how many other positions they were rejected from before getting this job") or helps you put your own accomplishments into perspective

1714 B Justin Kove, PhD

Closed on my house and received an offer for a prestigious fellowship. I'm excited to start a new chapter in my life. I'd like to thank my amazing collaborators @TheUniversityofTampa and @TheUniversityofTampa for all of their support.

Digital Self-Care

Someone else's success does not mean yours is less. It's not about how many people you know, but how many people you know who are successful. It's not about how many people you know, but how many people you know who are successful. It's not about how many people you know, but how many people you know who are successful.

Turn your personalized message on

Goal Reminders

1. Work on your research

2. Write your grant proposals

3. Have a good day

Turn your goal reminder on

These two are the same tool, just used slightly differently: One functionality is reframing for cognitive reframing (top) The second one adds motivational purposes

1714 B Justin Kove, PhD

Closed on my house and received an offer for a prestigious fellowship. I'm excited to start a new chapter in my life. I'd like to thank my amazing collaborators @TheUniversityofTampa and @TheUniversityofTampa for all of their support.

Digital Self-Care

Someone else's success does not mean yours is less. It's not about how many people you know, but how many people you know who are successful. It's not about how many people you know, but how many people you know who are successful. It's not about how many people you know, but how many people you know who are successful.

Turn your personalized message on

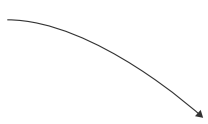
Goal Reminders

1. Work on your research

2. Write your grant proposals

3. Have a good day

Turn your goal reminder on



D.4.3 Prototype: Search Tool

A search tool to find relevant researchers more easily

15:35 **Settings**

Q Search settings

Monetisation
See how you can make money on X and manage your monetisation options.

Blue
Manage your subscription features, including Undo post liking.

Privacy and safety
See what information you see and share on X.

Notifications
Select the kinds of notifications you get about your activities, interests and recommendations.

Accessibility, display and languages
Manage how X content is displayed to you.

Additional resources
See other places for helpful information to learn more about X products and services.

RESEARCH
Set up your research profile so other researchers can find you on Twitter

make it as it is

make it as it is

RESEARCH
Set your work/study location

Enter your location here

Show your location on your profile
If you don't turn this option on, it will not appear on your profile but others searching by location

Area of Research 1
Computer Science
Computational Statistics
Human Centred Computing

Area of Research 2
Psychology

What kinds of researchers do you want to connect with?
Select a career stage type
Post doctoral researchers
People in the private sector

What kind of organisation is this?
Select Organisation Type
Industry
University
Think Tank
Private Sector

What journals and conferences are you interested in?
You can type the name of the journal or the twitter handle
@sum.chi

Where have you published or presented your work?
You can type the name of the journal or venue or the twitter handle
@sum_CSCW

18:27

Q Search

Trending News Sports Entertainment

#GreatestShow
The Greatest Show on Earth (Gay Sports)

Chelsea FC vs Liverpool FC
Premier League - EFL
Sponsored by Sky Sports

Search: Trending
#CHELV
Trending with Chelsea, FIVWA

Videos for you
Check out these popular and trending videos for you

make it as it is

make it as it is

14:55 **Search filters**

Cancel Apply

People
From anyone
People you follow

Location
Anywhere
Near you

Find a RESEARCHER
Area of research
Organisation Type
Organisation Location
Career Stage
Interested in
Has published (or presented at)

15:24 **Your search results**

To: Jane Doe @jdoe_user1
HCI researcher at Big Tech Brixton. All opinions expressed my own

Followed by Pilean Smith @PileanSmith and 2 others

Max Doe @user_maxdough
Cyberpsychology researcher at Smart Feelings Thinktank

Research fields: Computer Science, Career Stage: Senior Researcher, Location: London
published at: @sum.chi
Interested in: @sum_CSCW

ER Reasoning: Cuts down on stress of having to scroll through a bunch of irrelevant stuff and figuring out whether its relevant

D.4.4 Script for Prototype Evaluation

Prototype Evaluation Structure and Script: *Coping with social comparisons on Academic Twitter: An investigation of emotion regulation strategies* (Ethics Reference: CS_C1A_23_024_001)

Participants will be asked to engage in a 20-30-minute (max) workshop with a researcher and verbal on hiifi prototypes. At the start of the workshop, they'll be reminded that they can withdraw from the study at any time and for any reason. First, they will be asked one or two brief questions about their survey responses then will be sent a QR code on Zoom and asked to use that code to access the relevant prototype on their smartphone.

Part 1: (1 minute)

Ask if it is ok to start recording the audio for the workshop.

Participant answer

When you filled out the survey you selected (insert relevant answer options) as changes to Twitter as a platform that would help you manage the way you feel about Academic Twitter. Could you elaborate a bit as to why you chose those options? (2 minutes)

Part 2 (10 minutes)

ANSWER

Great thank you. Now I'm going to share a QR code with you over Zoom. If you open your iPhone camera and point it at the QR code, a link should pop up. Please go ahead and click on it. This is a mock-up of what possible changes to Twitter could look like. Please take a few minutes to swipe through them and think about how you would use the new feature here in the context of your Academic Twitter use. (3 minutes)

Allow two minutes, leave space for questions.

Thank you. Now, could you please provide some feedback on this feature and provide your general thoughts about you might use it?

Follow up questions depending on response:

Could you tell what works for you?

Could you tell me what doesn't work for you?

What would you change?

What would work instead?

Thank you.

If this participant has a second prototype to review, repeat the process for the second prototype. If not, conclude workshop.

Part 3: End of Workshop (Allow 2 minutes)

Thank you so much for participating in this workshop. As a reminder, you can withdraw from this study completely until three weeks from now (insert relevant date). After that point, your interview will be transcribed and anonymized, so the removal of your data will be done on a best-effort basis after that point. Do you have any further questions?

Good. I'm going to send you your Amazon voucher by email right now. Thank you again for your participation.

D.4.5 Codebook for Prototype Evaluation

Academic Twitter Prototype Evaluation Codebook

Theme	Subtheme	Code
Cognitive Reappraisal	Agency of User-Triggering	Fully User-Triggered Appreciated
	Desired	Smart User-Triggering Time Bounding
	Tool Utility for ER	
	Search Engine	
Tone Checker	Apply Search Criteria Beyond Researchers	Additional Parameters Useful in Theory
	Heat Map Function	
	Setup Too Intensive for Some Users Useful for ER	Makes Finding People More Efficient Reduces Time Spent Online
	Desire For More Privacy Options	
Reduce Emotional Impact of AT	Broader Application than Academic Twitter Others Might Find Tool Too Invasive	Automation May Rub Users the Wrong Way Tutorial Instead of Tool
	Suggestion Function Appreciated	Good for Higher Engagement Nudge Over Automation Preference For More Targeted Suggestions
	Would Use for ER	Encourages Mindful Use Information Reduces Social Comparison

References

- [1] Frank Furedi. *Power of reading: from Socrates to Twitter*. London New York: Bloomsbury, 2015. 262 pp.
- [2] Jan Domaradzki. “The Werther Effect, the Papageno Effect or No Effect? A Literature Review”. In: *International Journal of Environmental Research and Public Health* 18.5 (Jan. 2021). Number: 5 Publisher: Multidisciplinary Digital Publishing Institute, p. 2396. URL: <https://www.mdpi.com/1660-4601/18/5/2396> (visited on 12/14/2022).
- [3] Amy Orben. “The Sisyphean Cycle of Technology Panics”. In: *Perspectives on Psychological Science* 15.5 (Sept. 2020), pp. 1143–1157. URL: <https://doi.org/10.1177/1745691620919372> (visited on 05/22/2022).
- [4] Ethan Kross et al. “Social Media and Well-Being: Pitfalls, Progress, and Next Steps”. In: *Trends in Cognitive Sciences* 25.1 (Jan. 2021), pp. 55–66. URL: [https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613\(20\)30251-5](https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(20)30251-5) (visited on 01/13/2022).
- [5] Elizabeth J. Ivie et al. “A meta-analysis of the association between adolescent social media use and depressive symptoms”. In: *Journal of Affective Disorders* 275 (Oct. 2020), pp. 165–174. URL: <https://www.sciencedirect.com/science/article/pii/S0165032720323727> (visited on 05/11/2022).
- [6] Amy Orben. “Teenagers, screens and social media: a narrative review of reviews and key studies”. In: *Social Psychiatry and Psychiatric Epidemiology* 55.4 (Apr. 2020), pp. 407–414. URL: <https://doi.org/10.1007/s00127-019-01825-4> (visited on 05/20/2022).
- [7] Patti Valkenburg et al. “Social Media Use and Adolescents’ Self-Esteem: Heading for a Person-Specific Media Effects Paradigm”. In: *Journal of Communication* 71.1 (Feb. 2021), pp. 56–78. URL: <https://doi.org/10.1093/joc/jqaa039> (visited on 06/08/2022).
- [8] Adrian Meier and Leonard Reinecke. “Computer-Mediated Communication, Social Media, and Mental Health: A Conceptual and Empirical Meta-Review”. In: *Communication Research* 48.8 (Dec. 1, 2021). Publisher: SAGE Publications Inc, pp. 1182–1209. URL: <https://doi.org/10.1177/0093650220958224> (visited on 10/31/2022).
- [9] Patti M Valkenburg, Irene I van Driel, and Ine Beyens. “The associations of active and passive social media use with well-being: A critical scoping review”. In: *New Media & Society* (Dec. 2021), p. 14614448211065425. URL: <https://doi.org/10.1177/14614448211065425> (visited on 01/13/2022).

- [10] Amber van Der Wal, Patti Valkenburg, and Irene I van Driel. *In their own words: how adolescents differ in their social media use and how it affects them*. 2022. URL: https://scholar.google.com/citations?view_op=view_citation&hl=en&user=Kw3jMPsAAAAJ&citation_for_view=Kw3jMPsAAAAJ:Tyk-4Ss8FVUC (visited on 04/06/2024).
- [11] Wally Smith et al. “Digital Emotion Regulation in Everyday Life”. In: *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. CHI '22. New York, NY, USA: Association for Computing Machinery, Apr. 29, 2022, pp. 1–15. URL: <https://dl.acm.org/doi/10.1145/3491102.3517573> (visited on 03/28/2023).
- [12] Greg Wadley et al. “Digital Emotion Regulation”. In: *Current Directions in Psychological Science* 29.4 (Aug. 2020), pp. 412–418. URL: <http://journals.sagepub.com/doi/10.1177/0963721420920592> (visited on 08/29/2022).
- [13] Jessica Gall Myrick. “Emotion regulation, procrastination, and watching cat videos online: Who watches Internet cats, why, and to what effect?” In: *Computers in Human Behavior* 52 (Nov. 1, 2015), pp. 168–176. URL: <https://www.sciencedirect.com/science/article/pii/S0747563215004343> (visited on 12/03/2022).
- [14] Patti M. Valkenburg and Jochen Peter. “The Differential Susceptibility to Media Effects Model”. In: *Journal of Communication* 63.2 (Apr. 1, 2013), pp. 221–243. URL: <https://ezproxy-prd.bodleian.ox.ac.uk:2106/doi/10.1111/jcom.12024> (visited on 01/29/2020).
- [15] Manoel Horta Ribeiro et al. “Deplatforming Norm-Violating Influencers on Social Media Reduces Overall Online Attention Toward Them”. In: *Proc. ACM Hum.-Comput. Interact.* 9.2 (May 2, 2025), CSCW062:1–CSCW062:25. URL: <https://doi.org/10.1145/3710960> (visited on 07/10/2025).
- [16] Nicole B. Ellison and Danah M. Boyd. *Sociality Through Social Network Sites*. Ed. by William H. Dutton. Vol. 1. Oxford University Press, Mar. 12, 2013. URL: <https://academic.oup.com/edited-volume/34364/chapter/328422615> (visited on 10/31/2022).
- [17] Caleb T. Carr and Rebecca A. Hayes. “Social Media: Defining, Developing, and Divining”. In: *Atlantic Journal of Communication* 23.1 (Jan. 2015), pp. 46–65. URL: <http://www.tandfonline.com/doi/abs/10.1080/15456870.2015.972282> (visited on 10/31/2022).
- [18] Lisa Rhee et al. “Social by definition: How users define social platforms and why it matters”. In: *Telematics and Informatics* 59 (June 1, 2021), p. 101538. URL: <https://www.sciencedirect.com/science/article/pii/S0736585320301970> (visited on 10/31/2022).
- [19] Mariek M P Vanden Abeele. “Digital Wellbeing as a Dynamic Construct”. In: *Communication Theory* 31.4 (Nov. 1, 2021), pp. 932–955. URL: <https://doi.org/10.1093/ct/qtaa024> (visited on 10/31/2022).

- [20] James J. Gibson. *The ecological approach to visual perception: classic edition*. Psychology Press classic editions. New York London: Psychology Press, Taylor & Francis Group, 2015. 315 pp.
- [21] Taina Bucher and Anne Helmond. “The Affordances of Social Media Platforms”. In: Jean Burgess, Alice Marwick, and Thomas Poell. *The SAGE Handbook of Social Media*. 1 Oliver’s Yard, 55 City Road London EC1Y 1SP: SAGE Publications Ltd, 2018, pp. 233–253. URL: <https://sk.sagepub.com/reference/the-sage-handbook-of-social-media/i1867.xml> (visited on 09/04/2022).
- [22] Donald A. Norman. *The psychology of everyday things*. New York: Basic Books, 1988. 257 pp.
- [23] Joanna McGrenere and Wayne Ho. “Affordances: Clarifying and Evolving a Concept”. In: *Proceedings of Graphics Interface 2000* Montréal (2000). In collab. with Sidney Fels and Pierre Poulin, 8 pages, 142.86 KB. URL: <http://graphicsinterface.org/proceedings/gi2000/gi2000-24/> (visited on 04/06/2024).
- [24] Joshua McVeigh-Schultz and Nancy K. Baym. “Thinking of You: Vernacular Affordance in the Context of the Microsocial Relationship App, Couple”. In: *Social Media + Society* 1.2 (July 1, 2015), p. 205630511560464. URL: <http://journals.sagepub.com/doi/10.1177/2056305115604649> (visited on 10/29/2022).
- [25] Kate Klonick. “THE NEW GOVERNORS: THE PEOPLE, RULES, AND PROCESSES GOVERNING ONLINE SPEECH”. In: *HARVARD LAW REVIEW* 131.6 (2018), pp. 1598–1670. URL: <https://www.jstor.org/stable/44865879>.
- [26] Tarleton Gillespie. *Custodians of the Internet: platforms, content moderation, and the hidden decisions that shape social media*. New Haven [Connecticut]: Yale University Press, 2018.
- [27] Sarah T. Roberts. *Behind the screen: content moderation in the shadows of social media*. New Haven (Conn.): Yale University press, 2019.
- [28] Shagun Jhaver and Amy X. Zhang. “Do users want platform moderation or individual control? Examining the role of third-person effects and free speech support in shaping moderation preferences”. In: *New Media & Society* (Dec. 19, 2023), p. 14614448231217993. URL: <http://journals.sagepub.com/doi/10.1177/14614448231217993> (visited on 04/11/2024).
- [29] Shagun Jhaver et al. “Personalizing Content Moderation on Social Media: User Perspectives on Moderation Choices, Interface Design, and Labor”. In: *Proceedings of the ACM on Human-Computer Interaction* 7 (CSCW2 Sept. 28, 2023), pp. 1–33. URL: <https://dl.acm.org/doi/10.1145/3610080> (visited on 04/11/2024).
- [30] Ulrik Lyngs et al. “Self-Control in Cyberspace: Applying Dual Systems Theory to a Review of Digital Self-Control Tools”. In: *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. CHI ’19: CHI Conference on Human Factors in Computing Systems. Glasgow Scotland Uk: ACM, May 2, 2019, pp. 1–18. URL: <https://dl.acm.org/doi/10.1145/3290605.3300361> (visited on 07/20/2025).

- [31] Amy X. Zhang, Grant Hugh, and Michael S. Bernstein. “PolicyKit: Building Governance in Online Communities”. In: *Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology*. UIST '20: The 33rd Annual ACM Symposium on User Interface Software and Technology. Virtual Event USA: ACM, Oct. 20, 2020, pp. 365–378. URL: <https://dl.acm.org/doi/10.1145/3379337.3415858> (visited on 07/20/2025).
- [32] Ine Beyens, Eline Frison, and Steven Eggermont. ““I don’t want to miss a thing”: Adolescents’ fear of missing out and its relationship to adolescents’ social needs, Facebook use, and Facebook related stress”. In: *Computers in Human Behavior* 64 (Nov. 2016), pp. 1–8. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563216304198> (visited on 03/02/2020).
- [33] Eline Frison and Steven Eggermont. “Exploring the Relationships Between Different Types of Facebook Use, Perceived Online Social Support, and Adolescents’ Depressed Mood”. In: *Social Science Computer Review* 34.2 (Apr. 2016), pp. 153–171. URL: <http://journals.sagepub.com/doi/10.1177/0894439314567449> (visited on 03/02/2020).
- [34] Edson C. Tandoc, Patrick Ferrucci, and Margaret Duffy. “Facebook use, envy, and depression among college students: Is facebooking depressing?” In: *Computers in Human Behavior* 43 (Feb. 2015), pp. 139–146. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563214005767> (visited on 03/02/2020).
- [35] Emily Weinstein. “Adolescents’ differential responses to social media browsing: Exploring causes and consequences for intervention”. In: *Computers in Human Behavior* 76 (Nov. 2017), pp. 396–405. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563217304600> (visited on 03/02/2020).
- [36] Patti M. Valkenburg and Jessica T Piotrowski. *Plugged In: How Media Attract and Affect Youth*. 1st ed. Yale University Press, Apr. 25, 2017. URL: <http://yale.universitypressscholarship.com/view/10.12987/yale/9780300218879.001.0001/upso-9780300218879> (visited on 04/20/2020).
- [37] Urie Bronfenbrenner. *The ecology of human development: experiments by nature and design*. Cambridge, Mass: Harvard University Press, 1996.
- [38] M. D. Slater. “Entertainment-Education and Elaboration Likelihood: Understanding the Processing of Narrative Persuasion”. In: *Communication Theory* 12.2 (May 2002), pp. 173–191. URL: <http://doi.wiley.com/10.1093/ct/12.2.173> (visited on 07/20/2020).
- [39] Craig A. Anderson and Brad J. Bushman. “Human Aggression”. In: *Annual Review of Psychology* 53.1 (Feb. 2002), pp. 27–51. URL: <http://www.annualreviews.org/doi/10.1146/annurev.psych.53.100901.135231> (visited on 08/30/2020).
- [40] *Context Definition & Meaning - Merriam-Webster*. In: Merriam Webster. URL: <https://www.merriam-webster.com/dictionary/context> (visited on 08/24/2022).

- [41] Stewart M. Coles and Muniba Saleem. “Social Media Expression and User Predispositions: Applying the Differential Susceptibility to Media Effects Model to the Study of Issue Polarization”. In: *Social Media + Society* 7.4 (Oct. 1, 2021). Publisher: SAGE Publications Ltd, p. 20563051211052907. URL: <https://doi.org/10.1177/20563051211052907> (visited on 04/06/2024).
- [42] Ruth Charig et al. “A lack of association between online pornography exposure, sexual functioning, and mental well-being”. In: *Sexual and Relationship Therapy* 35.2 (Apr. 2, 2020). Publisher: Routledge _eprint: <https://doi.org/10.1080/14681994.2020.1727874>, pp. 258–281. URL: <https://doi.org/10.1080/14681994.2020.1727874> (visited on 04/06/2024).
- [43] Nan Zhao and Guangyu Zhou. “Social Media Use and Mental Health during the COVID-19 Pandemic: Moderator Role of Disaster Stressor and Mediator Role of Negative Affect”. In: *Applied Psychology: Health and Well-Being* 12.4 (Dec. 2020), pp. 1019–1038. URL: <https://onlinelibrary.wiley.com/doi/10.1111/aphw.12226> (visited on 08/25/2021).
- [44] Minh Hao Nguyen. “Managing Social Media Use in an “Always-On” Society: Exploring Digital Wellbeing Strategies That People Use to Disconnect”. In: *Mass Communication and Society* 24.6 (Nov. 2, 2021). Publisher: Routledge _eprint: <https://doi.org/10.1080/15205436.2021.1979045>, pp. 795–817. URL: <https://doi.org/10.1080/15205436.2021.1979045> (visited on 10/31/2022).
- [45] Corey L. M Keyes. *Mental well-being: international contributions to the study of positive mental health*. Dordrecht: Springer, 2013.
- [46] Carol D. Ryff. “Happiness is everything, or is it? Explorations on the meaning of psychological well-being.” In: *Journal of Personality and Social Psychology* 57.6 (1989), pp. 1069–1081. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/0022-3514.57.6.1069> (visited on 06/04/2020).
- [47] Richard M. Ryan and Edward L. Deci. “On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being”. In: *Annual Review of Psychology* 52.1 (2001), pp. 141–166. URL: <https://doi.org/10.1146/annurev.psych.52.1.141> (visited on 04/30/2020).
- [48] Ed Diener et al. “The Satisfaction With Life Scale”. In: *Journal of Personality Assessment* 49.1 (Feb. 1985), pp. 71–75. URL: http://www.tandfonline.com/doi/abs/10.1207/s15327752jpa4901_13 (visited on 07/14/2020).
- [49] D. C. Shin and D. M. Johnson. “Avowed happiness as an overall assessment of the quality of life”. In: *Social Indicators Research* 5.1 (1978), pp. 475–492. URL: <http://link.springer.com/10.1007/BF00352944> (visited on 07/14/2020).
- [50] Ed Diener, Shigehiro Oishi, and Richard E. Lucas. “Subjective Well-Being: The Science of Happiness and Life Satisfaction”. In: *The Oxford Handbook of Positive Psychology*. Ed. by Shane J. Lopez and C. R. Snyder. Oxford University Press, July 30, 2009, pp. 187–194. URL: <https://doi.org/10.1093/oxfordhb/9780195187243.013.0017> (visited on 10/12/2022).

- [51] Rachel L. Frost and Debra J. Rickwood. “A systematic review of the mental health outcomes associated with Facebook use”. In: *Computers in Human Behavior* 76 (Nov. 2017), pp. 576–600. URL: <https://www.sciencedirect.com/science/article/pii/S0747563217304685> (visited on 12/19/2021).
- [52] Liu yi Lin et al. “Association Between Social Media Use and Depression Among U.s. Young Adults”. In: *Depression and Anxiety* 33.4 (2016), pp. 323–331. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/da.22466> (visited on 12/27/2021).
- [53] Xiaolei Huang et al. “Exploring Timelines of Confirmed Suicide Incidents Through Social Media”. In: *2017 IEEE International Conference on Healthcare Informatics (ICHI)*. 2017 IEEE International Conference on Healthcare Informatics (ICHI). Park City, UT, USA: IEEE, Aug. 2017, pp. 470–477. URL: <http://ieeexplore.ieee.org/document/8031196/> (visited on 06/30/2022).
- [54] Sarah M. Coyne et al. “Does time spent using social media impact mental health?: An eight year longitudinal study”. In: *Computers in Human Behavior* 104 (Mar. 2020), p. 106160. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563219303723> (visited on 06/24/2025).
- [55] Alessandra Gaia, Emanuela Sala, and Gabriele Cerati. “Social networking sites use and life satisfaction. A quantitative study on older people living in Europe”. In: *European Societies* 23.1 (Jan. 2021), pp. 98–118. URL: <https://doi.org/10.1080/14616696.2020.1762910> (visited on 12/27/2021).
- [56] Shelia R. Cotten, Amy M. Schuster, and Alexander Seifert. “Social media use and well-being among older adults”. In: *Current Opinion in Psychology* (Dec. 2021). URL: <https://www.sciencedirect.com/science/article/pii/S2352250X21002451> (visited on 12/24/2021).
- [57] Kevin B. Wright et al. “Communication Competence, Social Support, and Depression Among College Students: A Model of Facebook and Face-to-Face Support Network Influence”. In: *Journal of Health Communication* 18.1 (Jan. 2013), pp. 41–57. URL: <http://www.tandfonline.com/doi/abs/10.1080/10810730.2012.688250> (visited on 12/28/2021).
- [58] Philippe Verduyn et al. “Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence.” In: *Journal of Experimental Psychology: General* 144.2 (2015), pp. 480–488. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/xge0000057> (visited on 07/13/2020).
- [59] Moira Burke, Cameron Marlow, and Thomas Lento. “Social network activity and social well-being”. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI '10. New York, NY, USA: Association for Computing Machinery, Apr. 2010, pp. 1909–1912. URL: <https://doi.org/10.1145/1753326.1753613> (visited on 01/15/2022).

- [60] Philippe Verduyn et al. “Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review: Do Social Network Sites Enhance or Undermine Subjective Well-Being?” In: *Social Issues and Policy Review* 11.1 (Jan. 2017), pp. 274–302. URL: <https://onlinelibrary.wiley.com/doi/10.1111/sipr.12033> (visited on 08/31/2021).
- [61] Ruoyun Lin and Sonja Utz. “The emotional responses of browsing Facebook: Happiness, envy, and the role of tie strength”. In: *Computers in Human Behavior* 52 (Nov. 2015), pp. 29–38. URL: <https://linkinghub.elsevier.com/retrieve/pii/S074756321500360X> (visited on 03/02/2020).
- [62] Briana M. Trifiro and Jennifer Gerson. “Social Media Usage Patterns: Research Note Regarding the Lack of Universal Validated Measures for Active and Passive Use”. In: *Social Media + Society* 5.2 (Apr. 2019), p. 2056305119848743. URL: <https://doi.org/10.1177/2056305119848743> (visited on 01/13/2022).
- [63] Joseph Bayer et al. “Facebook in context(s): Measuring emotional responses across time and space”. In: *New Media & Society* 20.3 (Mar. 2018), pp. 1047–1067. URL: <https://journals.sagepub.com/doi/10.1177/1461444816681522> (visited on 06/20/2025).
- [64] Yijung K. Kim and Karen L. Fingerman. “Daily social media use, social ties, and emotional well-being in later life”. In: *Journal of social and personal relationships* 39.6 (June 2022), pp. 1794–1813. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10508904/> (visited on 06/20/2025).
- [65] Fabon Dzogang, Stafford Lightman, and Nello Cristianini. “Circadian mood variations in Twitter content”. In: *Brain and Neuroscience Advances* 1 (Jan. 1, 2017), p. 2398212817744501. URL: <https://doi.org/10.1177/2398212817744501> (visited on 05/11/2021).
- [66] Maria Castaldo et al. “The rhythms of the night: increase in online night activity and emotional resilience during the spring 2020 Covid-19 lockdown”. In: *EPJ Data Science* 10.1 (Dec. 2021), p. 7. URL: <https://epjdatascience.springeropen.com/articles/10.1140/epjds/s13688-021-00262-1> (visited on 11/08/2022).
- [67] John Kleinig. “Crime and the Concept of Harm”. In: *American Philosophical Quarterly* 15.1 (1978), pp. 27–36. URL: <https://www.jstor.org/stable/20009692> (visited on 02/26/2020).
- [68] Morgan Klaus Scheuerman et al. “A Framework of Severity for Harmful Content Online”. In: *Proceedings of the ACM on Human-Computer Interaction* 5 (CSCW2 Oct. 2021), pp. 1–33. URL: <https://dl.acm.org/doi/10.1145/3479512> (visited on 12/29/2021).
- [69] Alexandra To et al. ““They Just Don’t Get It”: Towards Social Technologies for Coping with Interpersonal Racism”. In: *Proceedings of the ACM on Human-Computer Interaction* 4 (CSCW1 May 28, 2020), pp. 1–29. URL: <https://dl.acm.org/doi/10.1145/3392828> (visited on 12/06/2022).

- [70] Julia Sasse and Jens Grossklags. “Breaking the Silence: Investigating Which Types of Moderation Reduce Negative Effects of Sexist Social Media Content”. In: *Proc. ACM Hum.-Comput. Interact.* 7 (CSCW2 Oct. 4, 2023), 327:1–327:26. URL: <https://dl.acm.org/doi/10.1145/3610176> (visited on 07/04/2025).
- [71] Marika Tiggemann and Mia Zaccardo. ““Exercise to be fit, not skinny”: The effect of fitspiration imagery on women’s body image”. In: *Body Image* 15 (Sept. 2015), pp. 61–67. URL: <https://linkinghub.elsevier.com/retrieve/pii/S1740144515000893> (visited on 06/03/2022).
- [72] K. E. Park et al. “Is #bodypositivity influential for sexual minority men? An ecological momentary assessment study on the effects of viewing body positivity content on social media”. In: *Body Image* 54 (Sept. 1, 2025), p. 101915. URL: <https://www.sciencedirect.com/science/article/pii/S174014452500066X> (visited on 07/04/2025).
- [73] Kara A. Christensen et al. “Evaluating associations between fitspiration and thinspiration content on Instagram and disordered-eating behaviors using ecological momentary assessment: A registered report”. In: *International Journal of Eating Disorders* 54.7 (2021), pp. 1307–1315. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/eat.23518> (visited on 05/30/2022).
- [74] Michelle Raggatt et al. ““I aspire to look and feel healthy like the posts convey”: engagement with fitness inspiration on social media and perceptions of its influence on health and wellbeing”. In: *BMC Public Health* 18.1 (Aug. 10, 2018), p. 1002. URL: <https://doi.org/10.1186/s12889-018-5930-7> (visited on 06/24/2025).
- [75] Alicia Stevens and Scott Griffiths. “Body Positivity (#BoPo) in everyday life: An ecological momentary assessment study showing potential benefits to individuals’ body image and emotional wellbeing”. In: *Body Image* 35 (Dec. 2020), pp. 181–191.
- [76] Oliver L. Haimson. “Challenging “Getting Better” Social Media Narratives With Intersectional Transgender Lived Experiences”. In: *Social Media + Society* 6.1 (Jan. 1, 2020). Publisher: SAGE Publications Ltd, p. 2056305120905365. URL: <https://doi.org/10.1177/2056305120905365> (visited on 07/01/2025).
- [77] H. Krasnova et al. “Why following friends can hurt you: An exploratory investigation of the effects of envy on social networking sites among college-age users”. In: *Information Systems Research* 26.3 (2015), pp. 585–605.
- [78] Corina Sas and Steve Whittaker. “Design for forgetting: disposing of digital possessions after a breakup”. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI ’13: CHI Conference on Human Factors in Computing Systems. Paris France: ACM, Apr. 27, 2013, pp. 1823–1832. URL: <https://dl.acm.org/doi/10.1145/2470654.2466241> (visited on 07/07/2025).
- [79] Liza Gak, Seyi Olojo, and Niloufar Salehi. “The Distressing Ads That Persist: Uncovering The Harms of Targeted Weight-Loss Ads Among Users with Histories of Disordered Eating”. In: *Proceedings of the ACM on Human-Computer Interaction* 6 (CSCW2 Nov. 7, 2022), pp. 1–23. URL: <https://dl.acm.org/doi/10.1145/3555102> (visited on 04/25/2023).

- [80] Anne Vermeulen, Heidi Vandebosch, and Wannes Heirman. “#Smiling, #venting, or both? Adolescents’ social sharing of emotions on social media”. In: *Computers in Human Behavior* 84 (July 1, 2018), pp. 211–219. URL: <https://www.sciencedirect.com/science/article/pii/S0747563218300803> (visited on 10/22/2023).
- [81] Sonja Utz. “Social Media as Sources of Emotions”. In: *Social Psychology in Action*. Ed. by Kai Sassenberg and Michael L. W. Vliek. Cham: Springer International Publishing, 2019, pp. 205–219. URL: https://link.springer.com/10.1007/978-3-030-13788-5_14 (visited on 10/21/2023).
- [82] Paul R. Kleinginna and Anne M. Kleinginna. “A categorized list of emotion definitions, with suggestions for a consensual definition”. In: *Motivation and Emotion* 5.4 (Dec. 1, 1981), pp. 345–379. URL: <https://doi.org/10.1007/BF00992553> (visited on 10/21/2023).
- [83] Scott Brave and Clifford Nass. “Emotion in Human-Computer Interaction”. In: *Human-Computer Interaction: Fundamentals*. Human factors and ergonomics. Boca Raton: CRC Press, 2009, p. 15.
- [84] James J. Gross. “Emotion Regulation: Current Status and Future Prospects”. In: *Psychological Inquiry* 26.1 (Jan. 2, 2015), pp. 1–26. URL: <http://www.tandfonline.com/doi/abs/10.1080/1047840X.2014.940781> (visited on 08/29/2022).
- [85] James J Gross. *Handbook of emotion regulation*. 2014.
- [86] James J. Gross. “The Emerging Field of Emotion Regulation: An Integrative Review”. In: *Review of General Psychology* 2.3 (Sept. 1, 1998). Publisher: SAGE Publications Inc, pp. 271–299. URL: <https://doi.org/10.1037/1089-2680.2.3.271> (visited on 10/21/2023).
- [87] J. Ames J. Gross. “Antecedent- and response-focused emotion regulation: divergent consequences for experience, expression, and physiology”. In: *Journal of Personality and Social Psychology* (1998), pp. 224–237.
- [88] Petr Slovak et al. “Designing for emotion regulation interventions: an agenda for HCI theory and research”. In: *ACM Transactions on Computer-Human Interaction* (Nov. 5, 2022). Just Accepted. URL: <https://ezproxy-prd.bodleian.ox.ac.uk:2102/10.1145/3569898> (visited on 12/08/2022).
- [89] Richard S. Lazarus and Susan Folkman. *Stress, appraisal, and coping*. New York: Springer Pub. Co, 1984. 445 pp.
- [90] Tibor Bosse. “Chapter 13 - On Computational Models of Emotion Regulation and Their Applications Within HCI”. In: *Emotions and Affect in Human Factors and Human-Computer Interaction*. Ed. by Myounghoon Jeon. San Diego: Academic Press, Jan. 1, 2017, pp. 311–337. URL: <https://www.sciencedirect.com/science/article/pii/B9780128018514000136> (visited on 11/15/2022).
- [91] Richard S. Lazarus. *Stress and emotion: a new synthesis*. New York: Springer Pub. Co., 2006.

- [92] Antonio Díaz-Escudero et al. “Technology: aided authoring tools for ASD coaching support”. In: *Proceedings of the XIX International Conference on Human Computer Interaction*. Interacción '18. New York, NY, USA: Association for Computing Machinery, Sept. 12, 2018, pp. 1–6. URL: <https://dl.acm.org/doi/10.1145/3233824.3233839> (visited on 01/03/2024).
- [93] Charles Fage et al. “An emotion regulation app for school inclusion of children with ASD: Design principles and evaluation”. In: *Computers & Education* 131 (Apr. 1, 2019), pp. 1–21. URL: <https://www.sciencedirect.com/science/article/pii/S0360131518303166> (visited on 01/04/2024).
- [94] Neema Moraveji, Athman Adishesan, and Takehiro Hagiwara. “BreathTray: augmenting respiration self-regulation without cognitive deficit”. In: *CHI '12 Extended Abstracts on Human Factors in Computing Systems*. CHI EA '12. New York, NY, USA: Association for Computing Machinery, May 5, 2012, pp. 2405–2410. URL: <https://dl.acm.org/doi/10.1145/2212776.2223810> (visited on 01/03/2024).
- [95] Yun Huang, Ying Tang, and Yang Wang. “Emotion Map: A Location-based Mobile Social System for Improving Emotion Awareness and Regulation”. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. CSCW '15: Computer Supported Cooperative Work and Social Computing. Vancouver BC Canada: ACM, Feb. 28, 2015, pp. 130–142. URL: <https://dl.acm.org/doi/10.1145/2675133.2675173> (visited on 11/26/2021).
- [96] Pablo Paredes et al. “PopTherapy: Coping with Stress through Pop-Culture”. In: *Proceedings of the 8th International Conference on Pervasive Computing Technologies for Healthcare*. 8th International Conference on Pervasive Computing Technologies for Healthcare. Oldenburg, Germany: ICST, 2014. URL: <http://eudl.eu/doi/10.4108/icst.pervasivehealth.2014.255070> (visited on 01/08/2024).
- [97] Laura Pina et al. “In Situ Cues for ADHD Parenting Strategies Using Mobile Technology”. In: *Proceedings of the 8th International Conference on Pervasive Computing Technologies for Healthcare*. 8th International Conference on Pervasive Computing Technologies for Healthcare. Oldenburg, Germany: ICST, 2014. URL: <http://eudl.eu/doi/10.4108/icst.pervasivehealth.2014.254958> (visited on 08/13/2023).
- [98] Smyth and Heron. “Is providing mobile interventions "just-in-time" helpful? an experimental proof of concept study of just-in-time intervention for stress management”. In: *2016 IEEE Wireless Health (WH)*. 2016 IEEE Wireless Health (WH). Oct. 2016, pp. 1–7. URL: <https://ieeexplore.ieee.org/document/7764561> (visited on 01/08/2024).
- [99] Saskia Bakker, Alissa N. Antle, and Elise van den Hoven. “Embodied metaphors in tangible interaction design”. In: *Personal and Ubiquitous Computing* 16.4 (Apr. 2012), pp. 433–449. URL: <http://link.springer.com/10.1007/s00779-011-0410-4> (visited on 01/20/2022).

- [100] Hanneke Scholten et al. “A Randomized Controlled Trial to Test the Effectiveness of an Immersive 3D Video Game for Anxiety Prevention among Adolescents”. In: *PLOS ONE* 11.1 (Jan. 27, 2016). Publisher: Public Library of Science, e0147763. URL: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147763> (visited on 01/08/2024).
- [101] Pardis Miri et al. “PIV: Placement, Pattern, and Personalization of an Inconspicuous Vibrotactile Breathing Pacer”. In: *ACM Transactions on Computer-Human Interaction* 27.1 (Jan. 22, 2020), 5:1–5:44. URL: <https://dl.acm.org/doi/10.1145/3365107> (visited on 01/04/2024).
- [102] Neema Moraveji et al. “Peripheral paced respiration: influencing user physiology during information work”. In: *Proceedings of the 24th annual ACM symposium on User interface software and technology*. UIST ’11. New York, NY, USA: Association for Computing Machinery, Oct. 16, 2011, pp. 423–428. URL: <https://dl.acm.org/doi/10.1145/2047196.2047250> (visited on 01/07/2024).
- [103] Bin Yu et al. “DeLight: biofeedback through ambient light for stress intervention and relaxation assistance”. In: *Personal and Ubiquitous Computing* 22.4 (Aug. 1, 2018), pp. 787–805.
- [104] Stephanie Balters et al. “Calm Commute: Guided Slow Breathing for Daily Stress Management in Drivers”. In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 4.1 (Mar. 18, 2020), 38:1–38:19. URL: <https://dl.acm.org/doi/10.1145/3380998> (visited on 01/04/2024).
- [105] Pablo E. Paredes et al. “Just Breathe: In-Car Interventions for Guided Slow Breathing”. In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 2.1 (Mar. 26, 2018), pp. 1–23. URL: <https://dl.acm.org/doi/10.1145/3191760> (visited on 01/08/2024).
- [106] Petr Slovák et al. “Mediating Conflicts in Minecraft: Empowering Learning in Online Multiplayer Games”. In: *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI ’17*. ACM Press, 2017, pp. 2696–2707. URL: <http://dl.acm.org/citation.cfm?doid=3025453.3025516> (visited on 01/05/2020).
- [107] *BioPad: Leveraging off-the-Shelf Video Games for Stress Self-Regulation | IEEE Journals & Magazine | IEEE Xplore*. URL: <https://ieeexplore.ieee.org/document/7859289> (visited on 01/08/2024).
- [108] Jean Costa et al. “BoostMeUp: Improving Cognitive Performance in the Moment by Unobtrusively Regulating Emotions with a Smartwatch”. In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 3.2 (June 21, 2019), 40:1–40:23. URL: <https://dl.acm.org/doi/10.1145/3328911> (visited on 01/04/2024).
- [109] Asma Ghandeharioun and Rosalind Picard. “BrightBeat: Effortlessly Influencing Breathing for Cultivating Calmness and Focus”. In: *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. CHI EA ’17. New York, NY, USA: Association for Computing Machinery, May 6, 2017, pp. 1624–1631. URL: <https://dl.acm.org/doi/10.1145/3027063.3053164> (visited on 01/03/2024).

- [110] David Bakker and Nikki Rickard. “Engagement in mobile phone app for self-monitoring of emotional wellbeing predicts changes in mental health: MoodPrism”. In: *Journal of Affective Disorders* 227 (Feb. 1, 2018), pp. 432–442. URL: <https://www.sciencedirect.com/science/article/pii/S0165032717316786> (visited on 01/03/2024).
- [111] Danding Wang et al. “Designing Theory-Driven User-Centric Explainable AI”. In: *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. CHI ’19: CHI Conference on Human Factors in Computing Systems. Glasgow Scotland Uk: ACM, May 2, 2019, pp. 1–15. URL: <https://dl.acm.org/doi/10.1145/3290605.3300831> (visited on 01/08/2024).
- [112] Rong-Hao Liang et al. “BioFidget: Biofeedback for Respiration Training Using an Augmented Fidget Spinner”. In: *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. CHI ’18. New York, NY, USA: Association for Computing Machinery, Apr. 21, 2018, pp. 1–12. URL: <https://dl.acm.org/doi/10.1145/3173574.3174187> (visited on 01/03/2024).
- [113] Icek Ajzen. “The theory of planned behavior”. In: *Organizational Behavior and Human Decision Processes*. Theories of Cognitive Self-Regulation 50.2 (Dec. 1, 1991), pp. 179–211. URL: <https://www.sciencedirect.com/science/article/pii/074959789190020T> (visited on 06/17/2025).
- [114] Christy M.K. Cheung and Matthew K.O. Lee. “A theoretical model of intentional social action in online social networks”. In: *Decision Support Systems* 49.1 (Apr. 2010), pp. 24–30. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0167923609002656> (visited on 06/17/2025).
- [115] Emma L. Pelling and Katherine M. White. “The Theory of Planned Behavior Applied to Young People’s Use of Social Networking Web Sites”. In: *CyberPsychology & Behavior* 12.6 (Dec. 2009), pp. 755–759. URL: <http://www.liebertpub.com/doi/10.1089/cpb.2009.0109> (visited on 06/18/2025).
- [116] Rosland K. Baker and Katherine M. White. “Predicting adolescents’ use of social networking sites from an extended theory of planned behaviour perspective”. In: *Computers in Human Behavior* 26.6 (Nov. 2010), pp. 1591–1597. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563210001780> (visited on 06/18/2025).
- [117] Norsaremah Salleh et al. “Examining Information Disclosure Behavior on Social Network Sites Using Protection Motivation Theory, Trust and Risk”. In: *Journal of Internet Social Networking & Virtual Communities* (July 22, 2013), pp. 1–11. URL: <http://www.ibimapublishing.com/journals/JISNVC/2012/281869/281869.html> (visited on 06/17/2025).

- [118] Yannic Meier et al. “Applying Protection Motivation Theory to Predict Facebook Users’ Withdrawal and Disclosure Intentions”. In: *International Conference on Social Media and Society*. SMSociety’20: International Conference on Social Media and Society. Toronto ON Canada: ACM, July 22, 2020, pp. 21–29. URL: <https://dl.acm.org/doi/10.1145/3400806.3400810> (visited on 06/18/2025).
- [119] Mohammadreza Mousavizadeh and Dan Kim. “A Study of the Effect of Privacy Assurance Mechanisms on Self-disclosure in Social Networking Sites from the View of Protection Motivation Theory”. In: ().
- [120] Fred D. Davis. “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology”. In: *MIS Quarterly* 13.3 (1989). Publisher: Management Information Systems Research Center, University of Minnesota, pp. 319–340. URL: <https://www.jstor.org/stable/249008> (visited on 06/17/2025).
- [121] David Gefen, Elena Karahanna, and Detmar W. Straub. “Trust and TAM in Online Shopping: An Integrated Model”. In: *MIS Quarterly* 27.1 (2003). Publisher: Management Information Systems Research Center, University of Minnesota, pp. 51–90. URL: <https://www.jstor.org/stable/30036519> (visited on 06/17/2025).
- [122] Gilok Choi and Hyewon Chung. “Applying the Technology Acceptance Model to Social Networking Sites (SNS): Impact of Subjective Norm and Social Capital on the Acceptance of SNS”. In: *International Journal of Human-Computer Interaction* 29.10 (Oct. 3, 2013). Publisher: Informa UK Limited, pp. 619–628. URL: <http://www.tandfonline.com/doi/abs/10.1080/10447318.2012.756333> (visited on 07/21/2025).
- [123] Rupak Rauniar et al. “Technology acceptance model (TAM) and social media usage: an empirical study on Facebook”. In: *Journal of Enterprise Information Management* 27.1 (Feb. 4, 2014). Publisher: Emerald Group Publishing Limited, pp. 6–30. URL: <https://www.emerald.com/insight/content/doi/10.1108/jeim-04-2012-0011/full/html> (visited on 06/17/2025).
- [124] John McCarthy and Peter Wright. *Technology as experience*. 1. paperback ed. Cambridge, Mass: MIT Press, 2007. 211 pp.
- [125] Marc Hassenzahl et al. “Designing Moments of Meaning and Pleasure.” In: 7.3 (2013).
- [126] Alexandra H. Bettis et al. “Digital Technologies for Emotion-Regulation Assessment and Intervention: A Conceptual Review”. In: *Clinical Psychological Science* 10.1 (Jan. 2022), pp. 3–26. URL: <http://journals.sagepub.com/doi/10.1177/21677026211011982> (visited on 10/21/2023).
- [127] Margaret L. Kern et al. “Gaining insights from social media language: Methodologies and challenges.” In: *Psychological Methods* 21.4 (Dec. 2016), pp. 507–525. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/met0000091> (visited on 10/25/2023).

- [128] Stevie Chancellor and Munmun De Choudhury. “Methods in predictive techniques for mental health status on social media: a critical review”. In: *npj Digital Medicine* 3.1 (Mar. 24, 2020). Number: 1 Publisher: Nature Publishing Group, pp. 1–11. URL: <https://www.nature.com/articles/s41746-020-0233-7> (visited on 12/03/2022).
- [129] Adrian B. R. Shatte, Delyse M. Hutchinson, and Samantha J. Teague. “Machine learning in mental health: a scoping review of methods and applications”. In: *Psychological Medicine* 49.9 (July 2019), pp. 1426–1448.
- [130] Elizabeth M Seabrook et al. “Predicting Depression From Language-Based Emotion Dynamics: Longitudinal Analysis of Facebook and Twitter Status Updates”. In: *Journal of Medical Internet Research* 20.5 (May 8, 2018), e168. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5964306/> (visited on 10/25/2023).
- [131] Jordan Eschler et al. “Emergent Self-Regulation Practices in Technology and Social Media Use of Individuals Living with Depression”. In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. CHI ’20. New York, NY, USA: Association for Computing Machinery, Apr. 23, 2020, pp. 1–13. URL: <https://dl.acm.org/doi/10.1145/3313831.3376773> (visited on 10/22/2023).
- [132] Ryan M. Kelly et al. ““It’s About Missing Much More Than the People”: How Students use Digital Technologies to Alleviate Homesickness”. In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI ’21. New York, NY, USA: Association for Computing Machinery, May 7, 2021, pp. 1–17. URL: <https://dl.acm.org/doi/10.1145/3411764.3445362> (visited on 10/22/2023).
- [133] Kai Lukoff et al. “What Makes Smartphone Use Meaningful or Meaningless?” In: *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 2.1 (Mar. 26, 2018), pp. 1–26. URL: <https://dl.acm.org/doi/10.1145/3191754> (visited on 12/02/2021).
- [134] Gloria Mark et al. “Focused, Aroused, but so Distractible: Temporal Perspectives on Multitasking and Communications”. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. CSCW ’15. New York, NY, USA: Association for Computing Machinery, Feb. 28, 2015, pp. 903–916. URL: <https://dl.acm.org/doi/10.1145/2675133.2675221> (visited on 10/22/2023).
- [135] Jennifer Golbeck. “Detecting Coping Style from Twitter”. In: *Social Informatics*. Ed. by Emma Spiro and Yong-Yeol Ahn. Lecture Notes in Computer Science. Cham: Springer International Publishing, 2016, pp. 454–467.
- [136] Greg Wadley et al. “Use of music streaming platforms for emotion regulation by international students”. In: *Proceedings of the 31st Australian Conference on Human-Computer-Interaction*. OZCHI’19: 31ST AUSTRALIAN CONFERENCE ON HUMAN-COMPUTER-INTERACTION. Fremantle WA Australia: ACM, Dec. 2, 2019, pp. 337–341. URL: <https://dl.acm.org/doi/10.1145/3369457.3369490> (visited on 10/24/2023).

- [137] Michal Dolev-Cohen and Azy Barak. “Adolescents’ use of Instant Messaging as a means of emotional relief”. In: *Computers in Human Behavior*. Including Special Section Youth, Internet, and Wellbeing 29.1 (Jan. 1, 2013), pp. 58–63. URL: <https://www.sciencedirect.com/science/article/pii/S0747563212002191> (visited on 09/07/2023).
- [138] Katrin Döveling. “Emotion regulation in bereavement: searching for and finding emotional support in social network sites”. In: *New Review of Hypermedia and Multimedia* 21.1 (Apr. 3, 2015). Publisher: Taylor & Francis _eprint: <https://doi.org/10.1080/13614568.2014.983558>, pp. 106–122. URL: <https://doi.org/10.1080/13614568.2014.983558> (visited on 10/25/2023).
- [139] Morgan Klaus Scheuerman, Stacy M. Branham, and Foad Hamidi. “Safe Spaces and Safe Places: Unpacking Technology-Mediated Experiences of Safety and Harm with Transgender People”. In: *Proceedings of the ACM on Human-Computer Interaction* 2 (CSCW Nov. 2018), pp. 1–27. URL: <https://dl.acm.org/doi/10.1145/3274424> (visited on 12/29/2021).
- [140] Nicholas John. “A Classification of Features for Interpersonal Disconnectivity in Digital Media: Block, Unfriend, Unfollow, Mute, Withhold, and Eject”. In: *Media and Communication* 12.0 (Oct. 10, 2024). URL: <https://www.cogitatiopress.com/mediaandcommunication/article/view/8716> (visited on 04/10/2025).
- [141] Jonathan Lazar, Jinjuan Heidi Feng, and Harry Hochheiser. *Research methods in human-computer interaction*. Second edition. Cambridge, MA: Elsevier, Morgan Kaufmann Publishers, 2017. 534 pp.
- [142] Jacob O. Wobbrock and Julie A. Kientz. “Research contributions in human-computer interaction”. In: *Interactions* 23.3 (Apr. 26, 2016), pp. 38–44. URL: <https://dl.acm.org/doi/10.1145/2907069> (visited on 10/20/2023).
- [143] Hendrik Müller, Aaron Sedley, and Elizabeth Ferrall-Nunge. “Survey Research in HCI”. In: *Ways of knowing in HCI*. Ed. by Judith S. Olson and Wendy A. Kellogg. New York, NY Heidelberg Dordrecht London: Springer, 2014.
- [144] Joseph Check and Russell K. Schutt. *Research Methods in Education*. 1 Oliver’s Yard, 55 City Road London EC1Y 1SP: SAGE Publications, Inc., 2012. URL: <https://methods.sagepub.com/book/research-methods-in-education> (visited on 10/31/2023).
- [145] K. Kelley. “Good practice in the conduct and reporting of survey research”. In: *International Journal for Quality in Health Care* 15.3 (May 1, 2003), pp. 261–266. URL: <https://academic.oup.com/intqhc/article-lookup/doi/10.1093/intqhc/mzg031> (visited on 10/31/2023).
- [146] Earl R. Babbie. *Survey research methods*. Belmont, Calif: Wadsworth Pub. Co, 1973. 383 pp.
- [147] John Zimmerman and Jodi Forlizzi. “Research Through Design in HCI”. In: *Ways of Knowing in HCI*. Ed. by Judith S. Olson and Wendy A. Kellogg. New York, NY: Springer New York, 2014, pp. 167–189. URL: http://link.springer.com/10.1007/978-1-4939-0378-8_8 (visited on 10/19/2022).

- [148] Jesper Kjeldskov and Connor Graham. “A Review of Mobile HCI Research Methods”. In: *Human-Computer Interaction with Mobile Devices and Services*. Ed. by Luca Chittaro. Lecture Notes in Computer Science. Berlin, Heidelberg: Springer, 2003, pp. 317–335.
- [149] Robert Rosenthal and Ralph L. Rosnow. *Essentials of behavioral research: methods and data analysis*. 3rd ed. OCLC: ocm69645797. Boston: McGraw-Hill, 2008. 842 pp.
- [150] Leo Breiman. “Random Forests”. In: *Machine Learning* 45.1 (2001), pp. 5–32. URL: <http://link.springer.com/10.1023/A:1010933404324> (visited on 08/26/2021).
- [151] Arun D Kulkarni and Barrett Lowe. “Random Forest Algorithm for Land Cover Classification”. In: *International Journal on Recent and Innovation Trends in Computing and Communication* 4.3 (Mar. 18, 2016).
- [152] Jaime Lynn Speiser et al. “A Comparison of Random Forest Variable Selection Methods for Classification Prediction Modeling”. In: *Expert systems with applications* 134 (Nov. 2019). tex.pmcid: PMC7508310, pp. 93–101. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7508310/> (visited on 08/26/2021).
- [153] Mareike Augsburger and Isaac R. Galatzer-Levy. “Utilization of machine learning to test the impact of cognitive processing and emotion recognition on the development of PTSD following trauma exposure”. In: *BMC Psychiatry* 20.1 (July 2020), p. 325. URL: <https://doi.org/10.1186/s12888-020-02728-4> (visited on 09/03/2021).
- [154] Carole E. Siegel et al. “Utilization of machine learning for identifying symptom severity military-related PTSD subtypes and their biological correlates”. In: *Translational Psychiatry* 11.1 (Apr. 2021), pp. 1–12. URL: <https://www.nature.com/articles/s41398-021-01324-8> (visited on 09/03/2021).
- [155] Safwan Wshah, Christian Skalka, and Matthew Price. “Predicting Posttraumatic Stress Disorder Risk: A Machine Learning Approach”. In: *JMIR Mental Health* 6.7 (July 2019), e13946. URL: <https://mental.jmir.org/2019/7/e13946> (visited on 09/03/2021).
- [156] Tracy A. Prout et al. “Identifying Predictors of Psychological Distress During COVID-19: A Machine Learning Approach”. In: *Frontiers in Psychology* 11 (2020), p. 3063. URL: <https://www.frontiersin.org/article/10.3389/fpsyg.2020.586202> (visited on 09/03/2021).
- [157] Virginia Braun and Victoria Clarke. “Using thematic analysis in psychology”. In: *Qualitative Research in Psychology* 3.2 (Jan. 2006), pp. 77–101. URL: <http://www.tandfonline.com/doi/abs/10.1191/1478088706qp0630a> (visited on 08/02/2020).
- [158] Richard E. Boyatzis. *Transforming qualitative information: thematic analysis and code development*. Nachdr. Thousand Oaks, Calif.: Sage, 2010. 184 pp.

- [159] Virginia Braun and Victoria Clarke. “Thematic analysis.” In: *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. APA handbooks in psychology®. Washington, DC, US: American Psychological Association, 2012, pp. 57–71.
- [160] Virginia Braun and Victoria Clarke. “Reflecting on reflexive thematic analysis”. In: *Qualitative Research in Sport, Exercise and Health* 11.4 (Aug. 8, 2019), pp. 589–597. URL: <https://doi.org/10.1080/2159676X.2019.1628806> (visited on 08/24/2023).
- [161] David Byrne. “A worked example of Braun and Clarke’s approach to reflexive thematic analysis”. In: *Quality & Quantity* 56.3 (June 1, 2022), pp. 1391–1412. URL: <https://doi.org/10.1007/s11135-021-01182-y> (visited on 04/26/2023).
- [162] Virginia Braun and Victoria Clarke. *Successful qualitative research: a practical guide for beginners*. Los Angeles: SAGE, 2013. 382 pp.
- [163] Virginia Braun and Victoria Clarke. “What can “thematic analysis” offer health and wellbeing researchers?” In: *International Journal of Qualitative Studies on Health and Well-being* 9.1 (Jan. 2014), p. 26152. URL: <https://www.tandfonline.com/doi/full/10.3402/qhw.v9.26152> (visited on 05/22/2023).
- [164] Virginia Braun and Victoria Clarke. “Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches”. In: *Counselling and Psychotherapy Research* 21.1 (2021), pp. 37–47. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/capr.12360> (visited on 05/17/2023).
- [165] Ezequiel Duque et al. “A systematic literature review on user centered design and participatory design with older people”. In: *Proceedings of the 18th Brazilian Symposium on Human Factors in Computing Systems*. IHC ’19: XVIII Brazilian Symposium on Human Factors in Computing Systems. Vitória Espírito Santo Brazil: ACM, Oct. 22, 2019, pp. 1–11. URL: <https://dl.acm.org/doi/10.1145/3357155.3358471> (visited on 04/18/2024).
- [166] Donald A. Norman and Stephen W. Draper. *User centered system design: new perspectives on human-computer interaction*. Hillsdale (N. J.) London: L. Erlbaum, 1986.
- [167] Yvonne Rogers, Helen Sharp, and Jennifer Preece. *Interaction Design: beyond human-computer interaction*. Indianapolis: John Wiley and Sons, 2023.
- [168] Wendy E. Mackay and Michel Beaudouin-Lafon. “Participatory Design and Prototyping”. In: *Handbook of Human Computer Interaction*. Ed. by Jean Vanderdonckt, Philippe Palanque, and Marco Winckler. Cham: Springer International Publishing, 2023, pp. 1–33. URL: https://link.springer.com/10.1007/978-3-319-27648-9_31-1 (visited on 04/17/2024).

- [169] Hilary Hutchinson et al. “Technology probes: inspiring design for and with families”. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI03: Human Factors in Computing Systems. Ft. Lauderdale Florida USA: ACM, Apr. 5, 2003, pp. 17–24. URL: <https://dl.acm.org/doi/10.1145/642611.642616> (visited on 05/29/2023).
- [170] Shuiyuan Xiao, Dan Luo, and Yang Xiao. “Survivors of COVID-19 are at high risk of posttraumatic stress disorder”. In: *Global Health Research and Policy* 5.1 (Dec. 2020), p. 29. URL: <https://ghrp.biomedcentral.com/articles/10.1186/s41256-020-00155-2> (visited on 12/18/2021).
- [171] *230,000 new PTSD referrals forecast as a result of the pandemic*. URL: <https://www.rcpsych.ac.uk/news-and-features/latest-news/detail/2021/12/03/230-000-new-ptsd-referrals-forecast-as-a-result-of-the-pandemic> (visited on 12/26/2021).
- [172] Dana Rose Garfin. “The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure.” In: *Health Psychology* 39.5 (2020), p. 355. URL: <https://doi.apa.org/fulltext/2020-20168-001.html> (visited on 06/24/2021).
- [173] Betty Pfefferbaum et al. “Media Exposure in Children One Hundred Miles from a Terrorist Bombing”. In: *Annals of Clinical Psychiatry* 15.1 (Mar. 2003), pp. 1–8. URL: <https://doi.org/10.1023/A:1023293824492> (visited on 07/16/2020).
- [174] Louisa Ha and Gi Woong Yun. “Digital Divide in Social Media Prosumption: Proclivity, Production Intensity, and Prosumer Typology among College Students and General Population”. In: *Journal of Communication and Media Research* 6.1 (2014), p. 19.
- [175] Miao Chao et al. “Media use and acute psychological outcomes during COVID-19 outbreak in China”. In: *Journal of Anxiety Disorders* 74 (Aug. 2020), p. 102248. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0887618520300621> (visited on 08/22/2021).
- [176] American Psychiatric Association, ed. *Diagnostic and statistical manual of mental disorders: DSM-5*. 5th ed. Washington, D.C: American Psychiatric Association, 2013.
- [177] Agnes van Minnen et al. “Changes in Comorbid Conditions After Prolonged Exposure for PTSD: a Literature Review”. In: *Current Psychiatry Reports* 17.3 (Mar. 2015), p. 17. URL: <http://link.springer.com/10.1007/s11920-015-0549-1> (visited on 08/21/2020).
- [178] Michelle A. Worthington, Amar Mandavia, and Randall Richardson-Vejlgaard. “Prospective prediction of PTSD diagnosis in a nationally representative sample using machine learning”. In: *BMC Psychiatry* 20.1 (Nov. 2020), p. 532. URL: <https://doi.org/10.1186/s12888-020-02933-1> (visited on 08/30/2021).
- [179] Chris R Brewin, Bernice Andrews, and John D Valentine. “Meta-Analysis of Risk Factors for Posttraumatic Stress Disorder in Trauma-Exposed Adults”. In: *Journal of Consulting and Clinical Psychology* 68.5 (Oct. 2000), pp. 748–766.

- [180] Ronald C. Kessler et al. “Prevalence, Severity, and Comorbidity of 12-Month DSM-IV Disorders in the National Comorbidity Survey Replication”. In: *Archives of General Psychiatry* 62.6 (June 2005), pp. 617–627. URL: <https://ezproxy-prd.bodleian.ox.ac.uk:2699/journals/jamapsychiatry/fullarticle/208671> (visited on 03/16/2020).
- [181] Ihori Kobayashi, Eve M. Sledjeski, and Douglas L. Delahanty. “Gender and Age Interact to Predict the Development of Posttraumatic Stress Disorder Symptoms Following a Motor Vehicle Accident”. In: *Psychological trauma : theory, research, practice and policy* 11.3 (Mar. 2019). tex.pmcid: PMC7006741, pp. 328–336. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7006741/> (visited on 12/28/2021).
- [182] Jitender Sareen. “Posttraumatic Stress Disorder in Adults: Impact, Comorbidity, Risk Factors, and Treatment”. In: *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie* 59.9 (Sept. 2014). tex.pmcid: PMC4168808, pp. 460–467. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4168808/> (visited on 01/05/2022).
- [183] Emily Trepasso-Grullon. “Differences Among Ethnic Groups in Trauma Type and PTSD Symptom Severity”. In: *Graduate Student Journal of Psychology* 14 (2012), p. 11.
- [184] Weinberg, Michael and Sharon Gil. “Trauma as an objective or subjective experience: The association between types of traumatic events, personality traits, subjective experience of the event, and posttraumatic symptoms”. In: *Journal of Loss and Trauma* 21.2 (Mar. 2016), pp. 137–146. URL: <https://doi.org/10.1080/15325024.2015.1011986> (visited on 03/11/2020).
- [185] Xuerong Liu et al. “Public mental health problems during COVID-19 pandemic: a large-scale meta-analysis of the evidence”. In: *Translational Psychiatry* 11.1 (July 2021). tex.copyright: 2021 The Author(s), pp. 1–10. URL: <https://www.nature.com/articles/s41398-021-01501-9> (visited on 09/10/2022).
- [186] Rory C. O’Connor et al. “Mental health and well-being during the COVID-19 pandemic: longitudinal analyses of adults in the UK COVID-19 Mental Health & Wellbeing study”. In: *The British Journal of Psychiatry* 218.6 (June 2021), pp. 326–333. URL: <https://www.cambridge.org/core/journals/the-british-journal-of-psychiatry/article/mental-health-and-wellbeing-during-the-covid19-pandemic-longitudinal-analyses-of-adults-in-the-uk-covid19-mental-health-wellbeing-study/F7321CBF45C749C788256CFE6964B00C> (visited on 12/18/2021).
- [187] Eleftherios Giovanis and Ozgur Ozdamar. “Implications of COVID-19: The Effect of Working From Home on Financial and Mental Well-Being in the UK”. In: *International Journal of Health Policy and Management* (Apr. 2021), p. 1. URL: http://www.ijhpm.com/article_4036.html (visited on 08/30/2021).

- [188] Güler Boyraz, Dominique N. Legros, and Ashley Tigershtrom. “COVID-19 and traumatic stress: The role of perceived vulnerability, COVID-19-related worries, and social isolation”. In: *Journal of Anxiety Disorders* 76 (Dec. 2020). tex.pmcid: PMC7831572, p. 102307. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7831572/> (visited on 01/15/2022).
- [189] Pauline A. Hendriksen et al. “<p>Living Alone or Together During Lockdown: Association with Mood, Immune Fitness and Experiencing COVID-19 Symptoms</p>”. In: *Psychology Research and Behavior Management* 14 (Dec. 2021), pp. 1947–1957. URL: <https://www.dovepress.com/living-alone-or-together-during-lockdown-association-with-mood-immune--peer-reviewed-fulltext-article-PRBM> (visited on 01/15/2022).
- [190] Roxane Cohen Silver et al. “Mental- and Physical-Health Effects of Acute Exposure to Media Images of the September 11, 2001, Attacks and the Iraq War”. In: *Psychological Science* 24.9 (Sept. 2013), pp. 1623–1634. URL: <http://journals.sagepub.com/doi/10.1177/0956797612460406> (visited on 07/15/2020).
- [191] Brian J. Hall et al. “The association between disaster exposure and media use on post-traumatic stress disorder following Typhoon Hato in Macao, China”. In: *European Journal of Psychotraumatology* 10.1 (Dec. 2019), p. 1558709. URL: <https://doi.org/10.1080/20008198.2018.1558709> (visited on 08/10/2020).
- [192] William E. Schlenger et al. “Psychological Reactions to Terrorist Attacks: Findings From the National Study of Americans’ Reactions to September 11”. In: *JAMA : the journal of the American Medical Association* 288.5 (Aug. 2002), p. 581. URL: <http://jama.jamanetwork.com/article.aspx?doi=10.1001/jama.288.5.581> (visited on 07/09/2020).
- [193] Dana Rose Garfin et al. “Aftermath of Terror: A Nationwide Longitudinal Study of Posttraumatic Stress and Worry Across the Decade Following the September 11, 2001 Terrorist Attacks”. In: *Journal of Traumatic Stress* 31.1 (Feb. 2018), pp. 146–156. URL: <https://onlinelibrary.wiley.com/doi/10.1002/jts.22262> (visited on 01/03/2022).
- [194] Betty Pfefferbaum et al. “Disaster Media Coverage and Psychological Outcomes: Descriptive Findings in the Extant Research”. In: *Current Psychiatry Reports* 16.9 (Sept. 2014), p. 464. URL: <http://link.springer.com/10.1007/s11920-014-0464-x> (visited on 06/24/2020).
- [195] Nickolas M. Jones et al. “Media Use and Exposure to Graphic Content in the Week Following the Boston Marathon Bombings”. In: *American Journal of Community Psychology* 58.1 (Sept. 2016), pp. 47–59. URL: <http://doi.wiley.com/10.1002/ajcp.12073> (visited on 07/16/2020).

- [196] Angela Liegey Dougall, Michele C. Hayward, and Andrew Baum. "Media Exposure to Bioterrorism: Stress and the Anthrax Attacks". In: *Psychiatry: Interpersonal and Biological Processes* 68.1 (Mar. 2005), pp. 28–42. URL: <http://guilfordjournals.com/doi/10.1521/psyc.68.1.28.64188> (visited on 07/16/2020).
- [197] Nelson C. Y. Yeung et al. "Media exposure related to the 2008 Sichuan Earthquake predicted probable PTSD among Chinese adolescents in Kunming, China: A longitudinal study." In: *Psychological Trauma: Theory, Research, Practice, and Policy* 10.2 (Mar. 2018), pp. 253–262. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/tra0000121> (visited on 07/18/2020).
- [198] Liliana J. Lengua, Anna C. Long, and Andrew N. Meltzoff. "Pre-attack stress-load, appraisals, and coping in children's responses to the 9/11 terrorist attacks". In: *Journal of child psychology and psychiatry, and allied disciplines* 47.12 (Dec. 2006). tex.pmcid: PMC3640989, pp. 1219–1227. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3640989/> (visited on 07/18/2020).
- [199] Giora Keinan, Avi Sadeh, and Sefi Rosen. "Attitudes and reactions to media coverage of terrorist acts". In: *Journal of Community Psychology* 31.2 (Mar. 2003), pp. 149–165. URL: <http://doi.wiley.com/10.1002/jcop.10040> (visited on 06/30/2020).
- [200] Jennifer Ahern et al. "Television Watching and Mental Health in the General Population of New York City After September 11". In: *Journal of Aggression, Maltreatment & Trauma* 9.1 (Apr. 4, 2004), pp. 109–124. URL: http://www.tandfonline.com/doi/abs/10.1300/J146v09n01_14 (visited on 07/17/2020).
- [201] C.H. Liu et al. "Evidence for elevated psychiatric distress, poor sleep, and quality of life concerns during the COVID-19 pandemic among U.S. young adults with suspected and reported psychiatric diagnoses". In: *Psychiatry Research* 292 (Oct. 2020), p. 113345. URL: <https://linkinghub.elsevier.com/retrieve/pii/S016517812031996X> (visited on 12/28/2021).
- [202] Daniel S. Busso, Katie A. McLaughlin, and Margaret A. Sheridan. "Media exposure and sympathetic nervous system reactivity predict ptsd symptoms after the boston marathon bombings". In: *Depression and Anxiety* 31.7 (July 2014), pp. 551–558. URL: <https://ezproxy-prd.bodleian.ox.ac.uk:2106/doi/full/10.1002/da.22282> (visited on 06/24/2020).
- [203] Holly B. Herberman Mash PhD, Carol S. Fullerton PhD, and Robert J. Ursano MD. "Post-traumatic stress symptoms following sniper attacks: Effects of television viewing and identification with victims". In: *American Journal of Disaster Medicine* 13.1 (Jan. 2018), pp. 29–36. URL: <http://www.wmp11c.org/ojs/index.php/ajdm/article/view/1548> (visited on 08/13/2020).

- [204] Heidi A. Wayment. “It Could Have Been Me: Vicarious Victims and Disaster-Focused Distress”. In: *Personality and Social Psychology Bulletin* 30.4 (Apr. 2004), pp. 515–528. URL: <http://journals.sagepub.com/doi/10.1177/0146167203261892> (visited on 08/13/2020).
- [205] Edward B Blanchard et al. “Studies of the vicarious traumatization of college students by the September 11th attacks: effects of proximity, exposure and connectedness”. In: *Behaviour Research and Therapy* 42.2 (Feb. 2004), pp. 191–205. URL: <http://www.sciencedirect.com/science/article/pii/S0005796703001189> (visited on 08/10/2020).
- [206] Maëlle Robert et al. “Media Exposure and Post-traumatic Stress Symptoms in the Wake of the November 2015 Paris Terrorist Attacks: A Population-Based Study in France”. In: *Frontiers in Psychiatry* 12 (May 2021), p. 509457. URL: <https://www.frontiersin.org/articles/10.3389/fpsy.2021.509457/full> (visited on 01/01/2022).
- [207] Zhenyu Li et al. “Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control”. In: *Brain, Behavior, and Immunity* 88 (Aug. 2020), pp. 916–919. URL: <https://www.sciencedirect.com/science/article/pii/S0889159120303093> (visited on 12/24/2021).
- [208] Prolific. *Representative samples*. URL: <https://researcher-help.prolific.co/hc/en-gb/articles/360019236753-Representative-samples> (visited on 09/15/2022).
- [209] Greta R. Bauer et al. “Transgender-inclusive measures of sex/gender for population surveys: Mixed-methods evaluation and recommendations”. In: *PLOS ONE* 12.5 (May 25, 2017). Ed. by Andrew R. Dalby, e0178043. URL: <https://dx.plos.org/10.1371/journal.pone.0178043> (visited on 09/06/2021).
- [210] UK Government. *Population of England and Wales*. URL: <https://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/national-and-regional-populations/population-of-england-and-wales/latest> (visited on 01/14/2022).
- [211] Office for National Statistics. *Eurostat - An overview of the 3 NUTS and 2 LAU layers in the UK*. URL: <https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat> (visited on 09/15/2022).
- [212] Alexandra Main et al. “Relations of SARS-related stressors and coping to Chinese college students’ psychological adjustment during the 2003 Beijing SARS epidemic.” In: *Journal of Counseling Psychology* 58.3 (), p. 410. URL: <https://psycnet.apa.org/fulltext/2011-09712-001.pdf> (visited on 08/31/2021).
- [213] *National Health Interview Survey*. National Center for Health Statistics, 2020.
- [214] A American Psychiatric Association et al. *Diagnostic and statistical manual of mental disorders*. Vol. 3. American Psychiatric Association Washington, DC, 1980.

- [215] Jennifer Gerson, Anke C. Plagnol, and Philip J. Corr. “Passive and Active Facebook Use Measure (PAUM): Validation and relationship to the Reinforcement Sensitivity Theory”. In: *Personality and Individual Differences* 117 (Oct. 2017), pp. 81–90. URL: <https://linkinghub.elsevier.com/retrieve/pii/S019188691730363X> (visited on 01/16/2022).
- [216] Andy Liaw and Matthew Wiener. “Classification and Regression by randomForest”. In: *R News* 2.3 (2002), pp. 18–22. URL: <https://CRAN.R-project.org/doc/Rnews/>.
- [217] Hong Han, Xiaoling Guo, and Hua Yu. “Variable selection using Mean Decrease Accuracy and Mean Decrease Gini based on Random Forest”. In: *2016 7th IEEE International Conference on Software Engineering and Service Science (ICSESS)*. Aug. 2016, pp. 219–224.
- [218] Jum C. Nunnally. *Psychometric theory*. 2d ed. McGraw-Hill series in psychology. New York: McGraw-Hill, 1978.
- [219] Michelle J. Bovin et al. “Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition (PCL-5) in veterans.” In: *Psychological Assessment* 28.11 (Nov. 2016), pp. 1379–1391. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/pas0000254> (visited on 08/28/2021).
- [220] Frank W. Weathers et al. *PTSD Checklist for DSM-5 (PCL-5) - PTSD: National Center for PTSD*. Type: General Information. URL: <https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp> (visited on 09/10/2021).
- [221] Patti M. Valkenburg and Jochen Peter. “Online Communication Among Adolescents: An Integrated Model of Its Attraction, Opportunities, and Risks”. In: *Journal of Adolescent Health* 48.2 (Feb. 2011), pp. 121–127. URL: <https://linkinghub.elsevier.com/retrieve/pii/S1054139X1000426X> (visited on 04/20/2020).
- [222] Jeffrey S. Ashby et al. “The relationship of COVID-19 traumatic stress, cumulative trauma, and race to posttraumatic stress disorder symptoms”. In: *Journal of Community Psychology* n/a (n/a). URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/jcop.22762> (visited on 12/26/2021).
- [223] Mohan J. Dutta-Bergman. “Complementarity in Consumption of News Types Across Traditional and New Media”. In: *Journal of Broadcasting & Electronic Media* 48.1 (Mar. 2004), pp. 41–60. URL: http://www.tandfonline.com/doi/abs/10.1207/s15506878jobem4801_3 (visited on 01/07/2022).
- [224] Edward Scott. *Birmingham, Sandwell and Solihull: Restrictions on meetings of households*. Oct. 2020. URL: <https://lordslibrary.parliament.uk/birmingham-sandwell-and-solihull-restrictions-on-meetings-of-households/> (visited on 08/27/2021).

- [225] Frederick Leong, Yong S. Park, and Zornitsa Kalibatseva. “Disentangling immigrant status in mental health: Psychological protective and risk factors among Latino and Asian American immigrants.” In: *American Journal of Orthopsychiatry* 83.2 (Apr. 2013), pp. 361–371. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1111/ajop.12020> (visited on 01/05/2022).
- [226] Simon Rogers. *The ethnic population of England and Wales broken down by local authority*. May 2011. URL: <http://www.theguardian.com/news/datablog/2011/may/18/ethnic-population-england-wales> (visited on 01/04/2022).
- [227] Carol E. Golin et al. “Post-traumatic Stress Disorder Symptoms and Mental Health over Time among Low-Income Women at Increased Risk of HIV in the U.S”. In: *Journal of health care for the poor and underserved* 27.2 (2016). tex.pmcid: PMC4970215, pp. 891–910. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4970215/> (visited on 09/09/2021).
- [228] Olive Pometsey. *Average UK salary: Ever wondered how you stack up?* Mar. 2021. URL: <https://www.gq-magazine.co.uk/article/average-uk-salary>.
- [229] Bihan Tang et al. “A Meta-Analysis of Risk Factors for Post-Traumatic Stress Disorder (PTSD) in Adults and Children after Earthquakes”. In: *International Journal of Environmental Research and Public Health* 14.12 (Dec. 2017), p. 1537. URL: <http://www.mdpi.com/1660-4601/14/12/1537> (visited on 01/14/2022).
- [230] Ronald C. Kessler et al. “Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication”. In: *Archives of General Psychiatry* 62.6 (June 2005), p. 593. URL: <http://archpsyc.jamanetwork.com/article.aspx?doi=10.1001/archpsyc.62.6.593> (visited on 12/28/2021).
- [231] Josefin Sveen, Kristina Bondjers, and Mimmie Willebrand. “Psychometric properties of the PTSD Checklist for DSM-5: a pilot study”. In: *European Journal of Psychotraumatology* 7 (Apr. 2016). tex.pmcid: PMC4838990, 10.3402/ejpt.v7.30165. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4838990/> (visited on 01/13/2022).
- [232] G. Vallar. “Short-term Memory: Psychological and Neural Aspects”. In: *International Encyclopedia of the Social & Behavioral Sciences*. Ed. by Neil J. Smelser and Paul B. Baltes. Oxford: Pergamon, Jan. 2001, pp. 14049–14055. URL: <https://www.sciencedirect.com/science/article/pii/B0080430767035154> (visited on 01/11/2022).
- [233] Katherine MacRae. “Does it lead if it bleeds? An analysis of Toronto newspapers and their coverage of trauma-related events”. PhD thesis. Concordia University, 2016.

- [234] Oliver L. Haimson et al. “Designing Trans Technology: Defining Challenges and Envisioning Community-Centered Solutions”. In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. CHI '20: CHI Conference on Human Factors in Computing Systems. Honolulu HI USA: ACM, Apr. 21, 2020, pp. 1–13. URL: <https://dl.acm.org/doi/10.1145/3313831.3376669> (visited on 05/18/2023).
- [235] *Sexual Assault / RAINN*. URL: <https://www.rainn.org/articles/sexual-assault> (visited on 04/15/2024).
- [236] Morgan E. PettyJohn, Grace Anderson, and Heather L. McCauley. “Exploring Survivor Experiences on Social Media in the #MeToo Era: Clinical Recommendations for Addressing Impacts on Mental Health and Relationships”. In: *Journal of Interpersonal Violence* (Dec. 3, 2021), p. 08862605211055079. URL: <https://doi.org/10.1177/08862605211055079> (visited on 06/13/2022).
- [237] Markus Streb, Martin A. Conway, and Tanja Michael. “Conditioned responses to trauma reminders: How durable are they over time and does memory integration reduce them?” In: *Journal of Behavior Therapy and Experimental Psychiatry* 57 (Dec. 1, 2017), pp. 88–95. URL: <https://www.sciencedirect.com/science/article/pii/S0005791616300416> (visited on 04/14/2024).
- [238] *Perpetrators of Sexual Violence: Statistics*. RAINN. URL: <https://www.rainn.org/statistics/perpetrators-sexual-violence> (visited on 04/14/2024).
- [239] Carol F Scott et al. “Trauma-Informed Social Media: Towards Solutions for Reducing and Healing Online Harm”. In: *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. CHI '23: CHI Conference on Human Factors in Computing Systems. Hamburg Germany: ACM, Apr. 19, 2023, pp. 1–20. URL: <https://dl.acm.org/doi/10.1145/3544548.3581512> (visited on 04/14/2024).
- [240] Bernard Rimé. “Collective Responses to Collective Traumas: Synchronization and Collective Resilience”. In: *Societies Under Threat: A Pluri-Disciplinary Approach*. Ed. by Denise Jodelet, Jorge Vala, and Ewa Drozda-Senkowska. Frontiers in Sociology and Social Research. Cham: Springer International Publishing, 2020, pp. 201–211. URL: https://doi.org/10.1007/978-3-030-39315-1_16 (visited on 11/14/2022).
- [241] John W. Ayers et al. “Don’t quote me: reverse identification of research participants in social media studies”. In: *npj Digital Medicine* 1.1 (Aug. 2, 2018), pp. 1–2. URL: <https://www.nature.com/articles/s41746-018-0036-2> (visited on 06/29/2022).
- [242] Brianna Dym and Casey Fiesler. “Ethical and privacy considerations for research using online fandom data”. In: *Transformative Works and Cultures* 33 (June 15, 2020). URL: <https://journal.transformativeworks.org/index.php/twc/article/view/1733> (visited on 06/29/2022).

- [243] Robert P Gauthier, Mary Jean Costello, and James R Wallace. ““I Will Not Drink With You Today”: A Topic-Guided Thematic Analysis of Addiction Recovery on Reddit”. In: *CHI Conference on Human Factors in Computing Systems*. CHI '22: CHI Conference on Human Factors in Computing Systems. New Orleans LA USA: ACM, Apr. 27, 2022, pp. 1–17. URL: <https://dl.acm.org/doi/10.1145/3491102.3502076> (visited on 10/05/2022).
- [244] Jason Michael Baumgartner. *Pushshift Reddit API Documentation*. July 2022. URL: <https://github.com/pushshift/api> (visited on 07/05/2022).
- [245] Jason Baumgartner et al. “The Pushshift Reddit Dataset”. In: *Proceedings of the International AAAI Conference on Web and Social Media* 14 (May 26, 2020), pp. 830–839. URL: <https://ojs.aaai.org/index.php/ICWSM/article/view/7347> (visited on 06/30/2022).
- [246] Emily R. Dworkin et al. “PTSD in the Year Following Sexual Assault: A Meta-Analysis of Prospective Studies”. In: *Trauma, Violence, & Abuse* 24.2 (Apr. 1, 2023). Publisher: SAGE Publications, pp. 497–514. URL: <https://doi.org/10.1177/15248380211032213> (visited on 03/10/2024).
- [247] *Most Popular Social Media - Growth Evolution (2004-2022) - YouTube*. URL: <https://www.youtube.com/watch?v=ri0hTYNJ2BY> (visited on 03/27/2023).
- [248] Captain Gizmo. *Most Popular Social Media Platforms 1997 - 2020*. May 18, 2020. URL: https://www.youtube.com/watch?v=ihnUg0_eS8Q (visited on 03/27/2023).
- [249] Amelia Aldao, Susan Nolen-Hoeksema, and Susanne Schweizer. “Emotion-regulation strategies across psychopathology: A meta-analytic review”. In: *Clinical Psychology Review* 30.2 (Mar. 1, 2010), pp. 217–237. URL: <https://www.sciencedirect.com/science/article/pii/S0272735809001597> (visited on 11/27/2022).
- [250] Lori A. Zoellner et al. “Teaching trauma-focused exposure therapy for PTSD: Critical clinical lessons for novice exposure therapists”. In: *Psychological Trauma: Theory, Research, Practice, and Policy* 3.3 (2011). Place: US Publisher: Educational Publishing Foundation, pp. 300–308.
- [251] Khari Johnson. “Facebook Drops Facial Recognition to Tag People in Photos”. In: *Wired* (Feb. 11, 2021). Section: tags. URL: <https://www.wired.com/story/facebook-drops-facial-recognition-tag-people-photos/> (visited on 04/15/2024).
- [252] Benjamin W. Bellet, Payton J. Jones, and Richard J. McNally. “Self-Trigging? An Exploration of Individuals Who Seek Reminders of Trauma”. In: *Clinical Psychological Science* 8.4 (July 1, 2020). Publisher: SAGE Publications Inc, pp. 739–755. URL: <https://doi.org/10.1177/2167702620917459> (visited on 04/12/2024).

- [253] Nazanin Andalibi et al. “Understanding Social Media Disclosures of Sexual Abuse Through the Lenses of Support Seeking and Anonymity”. In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI’16: CHI Conference on Human Factors in Computing Systems. San Jose California USA: ACM, May 7, 2016, pp. 3906–3918. URL: <https://dl.acm.org/doi/10.1145/2858036.2858096> (visited on 03/21/2023).
- [254] Yvette Taylor and Maddie Breeze. “All imposters in the university? Striking (out) claims on academic Twitter”. In: *Women’s Studies International Forum* 81 (July 1, 2020), p. 102367. URL: <https://www.sciencedirect.com/science/article/pii/S0277539519302857> (visited on 09/01/2022).
- [255] Eline Frison and Steven Eggermont. “The impact of daily stress on adolescents’ depressed mood: The role of social support seeking through Facebook”. In: *Computers in Human Behavior* 44 (Mar. 2015), pp. 315–325. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0747563214006888> (visited on 09/07/2023).
- [256] Joanna C. Yau and Stephanie M. Reich. ““It’s Just a Lot of Work”: Adolescents’ Self-Presentation Norms and Practices on Facebook and Instagram”. In: *Journal of Research on Adolescence* 29.1 (Mar. 2019), pp. 196–209. URL: <https://onlinelibrary.wiley.com/doi/10.1111/jora.12376> (visited on 09/08/2023).
- [257] Erin A. Vogel et al. “Social comparison, social media, and self-esteem.” In: *Psychology of Popular Media Culture* 3.4 (Oct. 2014), pp. 206–222. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/ppm0000047> (visited on 11/28/2022).
- [258] Marika Tiggemann and Isabella Anderberg. “Social media is not real: The effect of ‘Instagram vs reality’ images on women’s social comparison and body image”. In: *New Media & Society* 22.12 (Dec. 1, 2020). Publisher: SAGE Publications, pp. 2183–2199. URL: <https://doi.org/10.1177/1461444819888720> (visited on 12/04/2022).
- [259] Fran C. Blumberg, Jaime L. Rice, and Anne Dickmeis. “Social Media as a Venue for Emotion Regulation Among Adolescents”. In: *Emotions, Technology, and Social Media*. Elsevier, 2016, pp. 105–116. URL: <https://linkinghub.elsevier.com/retrieve/pii/B9780128018576000063> (visited on 01/14/2023).
- [260] Leon Festinger. “A Theory of Social Comparison Processes”. In: *Human Relations* 7.2 (May 1, 1954), pp. 117–140. URL: <https://doi.org/10.1177/001872675400700202> (visited on 11/03/2021).
- [261] Pieterneel Dijkstra, Frederick X. Gibbons, and Abraham P. Buunk. “Social comparison theory”. In: *Social psychological foundations of clinical psychology*. New York, NY, US: The Guilford Press, 2010, pp. 195–211.
- [262] Joan C. Chrisler et al. “Suffering by comparison: Twitter users’ reactions to the Victoria’s Secret Fashion Show”. In: *Body Image* 10.4 (Sept. 2013), pp. 648–652. URL: <https://linkinghub.elsevier.com/retrieve/pii/S1740144513000594> (visited on 11/03/2022).

- [263] Penelope Lockwood and Ziva Kunda. “Superstars and me: Predicting the impact of role models on the self.” In: *Journal of Personality and Social Psychology* 73.1 (1997). Publisher: US: American Psychological Association, p. 91. URL: <https://psycnet.apa.org/fulltext/1997-04812-007.pdf> (visited on 07/03/2022).
- [264] Qing-Qi Liu et al. “Upward social comparison on social network sites and depressive symptoms: A moderated mediation model of self-esteem and optimism”. In: *Personality and Individual Differences* 113 (July 15, 2017), pp. 223–228. URL: <https://www.sciencedirect.com/science/article/pii/S0191886917302076> (visited on 11/10/2022).
- [265] Wei Wang et al. “Upward social comparison on mobile social media and depression: The mediating role of envy and the moderating role of marital quality”. In: *Journal of Affective Disorders* 270 (June 1, 2020), pp. 143–149. URL: <https://www.sciencedirect.com/science/article/pii/S0165032719333853> (visited on 11/10/2022).
- [266] Yongzhan Li. “Upward social comparison and depression in social network settings: The roles of envy and self-efficacy”. In: *Internet Research* 29.1 (Feb. 4, 2019), pp. 46–59. URL: <https://www.emerald.com/insight/content/doi/10.1108/IntR-09-2017-0358/full/html> (visited on 11/10/2022).
- [267] Elise Sloan et al. “Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: A systematic review”. In: *Clinical Psychology Review* 57 (Nov. 1, 2017), pp. 141–163. URL: <https://www.sciencedirect.com/science/article/pii/S0272735816303816> (visited on 01/18/2023).
- [268] Samara Klar et al. “Using social media to promote academic research: Identifying the benefits of twitter for sharing academic work”. In: *PLOS ONE* 15.4 (Apr. 6, 2020). Publisher: Public Library of Science, e0229446. URL: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0229446> (visited on 01/10/2023).
- [269] Katy Jordan and Martin Weller. “Academics and Social Networking Sites: Benefits, Problems and Tensions in Professional Engagement with Online Networking”. In: *Journal of Interactive Media in Education* 2018.1 (Jan. 26, 2018). Number: 1 Publisher: Ubiquity Press, p. 1. URL: <http://jime.open.ac.uk/articles/10.5334/jime.448/> (visited on 01/10/2023).
- [270] Abraham P. Buunk and Frederick X. Gibbons. “Social comparison: The end of a theory and the emergence of a field”. In: *Organizational Behavior and Human Decision Processes*. Special Issue on Social Comparison Processes 102.1 (Jan. 1, 2007), pp. 3–21. URL: <https://www.sciencedirect.com/science/article/pii/S074959780600094X> (visited on 01/16/2023).
- [271] *Precarious work in higher education: Insecure contracts and how they have changed over time*. London: University College Union, Oct. 2021, pp. 1–62. URL: <https://www.ucu.org.uk/heprecarity>.

- [272] Jerry Suls and Ladd Wheeler. “Social Comparison”. In: *Handbook of Approach and Avoidance Motivation*. Num Pages: 16. Psychology Press, 2008.
- [273] Jisc. *Online surveys*. 2023. URL: <https://www.onlinesurveys.ac.uk/> (visited on 01/20/2023).
- [274] UK Research Innovation. *Early career researchers*. UK Research Innovation, June 29, 2022. URL: <https://www.ukri.org/what-we-offer/developing-people-and-skills/esrc/early-career-researchers/> (visited on 01/19/2023).
- [275] Twitter. *Using Twitter*. 2023. URL: <https://help.twitter.com/en/using-twitter> (visited on 01/20/2023).
- [276] Sri Kurniawan. “Interaction design: Beyond human?computer interaction by Preece, Sharp and Rogers (2001), ISBN 0471492787”. In: *Universal Access in the Information Society* 3.3 (Oct. 2004), pp. 289–289. URL: <http://link.springer.com/10.1007/s10209-004-0102-1> (visited on 04/02/2024).
- [277] Jay Peters. *Twitter’s edit button is rolling out in the US for paying subscribers*. The Verge. Oct. 6, 2022. URL: <https://www.theverge.com/2022/10/6/23391042/twitter-edit-button-rolling-out-us-paying-blue-subscribers> (visited on 12/03/2022).
- [278] Philippe Verduyn, Nino Gugushvili, and Ethan Kross. “The impact of social network sites on mental health: distinguishing active from passive use”. In: *World Psychiatry* 20.1 (Feb. 2021), pp. 133–134. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7801842/> (visited on 11/29/2023).
- [279] Philippe Verduyn et al. “Social comparison on social networking sites”. In: *Current Opinion in Psychology*. Cyberpsychology 36 (Dec. 1, 2020), pp. 32–37. URL: <https://www.sciencedirect.com/science/article/pii/S2352250X20300464> (visited on 11/29/2023).
- [280] Faye Crosby. “Relative deprivation in organizational settings”. In: *Research in Organizational Behavior* 6 (1984). Place: US Publisher: JAI Press, Inc., pp. 51–93.
- [281] Faye Crosby. “A model of egoistical relative deprivation.” In: *Psychological Review* 83.2 (Mar. 1976), pp. 85–113. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/0033-295X.83.2.85> (visited on 12/01/2023).
- [282] Bruce P. Doré, Jennifer A. Silvers, and Kevin N. Ochsner. “Toward a Personalized Science of Emotion Regulation”. In: *Social and personality psychology compass* 10.4 (Apr. 2016), pp. 171–187. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5939931/> (visited on 12/06/2023).
- [283] Amelia Aldao. “The Future of Emotion Regulation Research: Capturing Context”. In: *Perspectives on Psychological Science* 8.2 (Mar. 2013), pp. 155–172. URL: <https://doi.org/10.1177/1745691612459518> (visited on 02/28/2022).

- [284] Kallee De France, Tom Hollenstein, and Eric A. Walle. “The Development of Cognitive Reappraisal for Regulating Emotions”. In: *The Oxford handbook of emotional development*. Oxford handbooks. Oxford: Oxford university press, 2022.
- [285] Alexandra Kitson, Alissa N. Antle, and Petr Slovak. “Co-Designing a Virtual Reality Intervention for Supporting Cognitive Reappraisal Skills Development with Youth”. In: *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*. IDC ’23: Interaction Design and Children. Chicago IL USA: ACM, June 19, 2023, pp. 14–26. URL: <https://dl.acm.org/doi/10.1145/3585088.3589381> (visited on 12/06/2023).
- [286] Silvana Weber, Tanja Messingschlager, and Jan-Philipp Stein. “This is an Insta-vention! Exploring Cognitive Countermeasures to Reduce Negative Consequences of Social Comparisons on Instagram”. In: *Media Psychology* 25.3 (May 4, 2022). Publisher: Routledge _eprint: <https://doi.org/10.1080/15213269.2021.1968440>, pp. 411–440. URL: <https://doi.org/10.1080/15213269.2021.1968440> (visited on 12/03/2022).
- [287] Yuki Nozaki and Moira Mikolajczak. “Extrinsic emotion regulation.” In: *Emotion* 20.1 (Feb. 2020), pp. 10–15. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/emo0000636> (visited on 12/11/2023).
- [288] Yuki Nozaki and Moira Mikolajczak. “Effectiveness of extrinsic emotion regulation strategies in text-based online communication.” In: *Emotion* 23.6 (Sept. 2023), pp. 1714–1725. URL: <http://doi.apa.org/getdoi.cfm?doi=10.1037/emo0001186> (visited on 12/11/2023).
- [289] Kai Lukoff et al. “How the Design of YouTube Influences User Sense of Agency”. In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. May 6, 2021, pp. 1–17. URL: <http://arxiv.org/abs/2101.11778> (visited on 05/09/2023).
- [290] Aaron Beck and Gary Emery. *Anxiety Disorders And Phobias: A Cognitive Perspective*. In collab. with Ruth Greenberg. Basic Books, 1985. 368 pp.
- [291] David A. Clark. “Cognitive Reappraisal”. In: *Cognitive and Behavioral Practice* 29.3 (Aug. 1, 2022), pp. 564–566. URL: <https://www.sciencedirect.com/science/article/pii/S1077722922000505> (visited on 01/21/2024).
- [292] Teresa M. Leyro, Michael J. Zvolensky, and Amit Bernstein. “Distress Tolerance and Psychopathological Symptoms and Disorders: A Review of the Empirical Literature among Adults”. In: *Psychological bulletin* 136.4 (July 2010), pp. 576–600. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2891552/> (visited on 03/24/2024).
- [293] Emily R. Jeffries et al. “The Role of Distress Tolerance in the Use of Specific Emotion Regulation Strategies”. In: *Behavior Modification* 40.3 (May 1, 2016). Publisher: SAGE Publications Inc, pp. 439–451. URL: <https://doi.org/10.1177/0145445515619596> (visited on 03/24/2024).

- [294] Twitter. *The Twitter Rules*. URL: <https://help.twitter.com/en/rules-and-policies/twitter-rules> (visited on 08/24/2020).
- [295] Tierney P. McMahon and Kristin Naragon-Gainey. “The Moderating Effect of Maladaptive Emotion Regulation Strategies on Reappraisal: A Daily Diary Study”. In: *Cognitive Therapy and Research* 42.5 (Oct. 1, 2018), pp. 552–564. URL: <https://doi.org/10.1007/s10608-018-9913-x> (visited on 03/20/2024).
- [296] Amelia Aldao and Susan Nolen-Hoeksema. “The influence of context on the implementation of adaptive emotion regulation strategies”. In: *Behaviour Research and Therapy* 50.7 (Aug. 1, 2012), pp. 493–501. URL: <https://www.sciencedirect.com/science/article/pii/S0005796712000733> (visited on 03/24/2024).
- [297] Katrin B. Klingsieck. “Procrastination”. In: *European Psychologist* 18.1 (Jan. 2013). Publisher: Hogrefe Publishing, pp. 24–34. URL: <https://econtent.hogrefe.com/doi/10.1027/1016-9040/a000138> (visited on 03/24/2024).
- [298] Jennifer C. Veilleux. “A Theory of Momentary Distress Tolerance: Toward Understanding Contextually Situated Choices to Engage With or Avoid Distress”. In: *Clinical Psychological Science* 11.2 (Mar. 1, 2023). Publisher: SAGE Publications Inc, pp. 357–380. URL: <https://doi.org/10.1177/21677026221118327> (visited on 03/24/2024).
- [299] Frank Pasquale. *The black box society: the secret algorithms that control money and information*. First Harvard University Press paperback edition. Cambridge, Massachusetts London, England: Harvard University Press, 2016. 311 pp.
- [300] Min Kyung Lee et al. “WeBuildAI: Participatory Framework for Algorithmic Governance”. In: *Proceedings of the ACM on Human-Computer Interaction* 3 (CSCW Nov. 7, 2019), pp. 1–35. URL: <https://dl.acm.org/doi/10.1145/3359283> (visited on 05/19/2023).
- [301] Saurav Bhattacharya. “For Me Page: User-Centric Content Curation”. In: *International Journal of Computer Trends and Technology* 72 (Jan. 1, 2024), pp. 19–26.