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# Triggered by Design: How Algorithmic Features of Social Media Disrupt Emotions and Academic Outcomes

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ABSTRACT (MAX. 200 WORDS):
This thesis investigates how algorithmically driven features of social media platforms, specifically personalized recommendations, infinite scroll, auto-play and push notifications affect university students' emotional states and academic performance. Drawing on the Stimulus - Organism - Response (SOR) framework, the study explores how these features act as digital stimuli that provoke cognitive and emotional responses, which in turn shape behavioural outcomes. Semi-structured interviews were conducted with seven students from Swedish Universities, and the findings reveal that algorithmic features contribute to various emotional distresses: factors that ultimately impair students' focus, study routines, and well-being. Notably, the research identifies a synergistic effect between infinite scroll and personalized recommendations, where the combination of endless content flow and relevance optimization produces a heightened state of cognitive absorption and time distortion. While previous literature has examined these features individually, this study highlights the compounded impact of their interaction. By offering qualitative insight into user experience and design driven behavioural consequences, the thesis contributes to a more nuanced understanding of algorithmic influence on student life and emphasizes the importance of addressing feature ecosystems in digital well-being interventions.

# Content

# Figures

# Tables

# 1. Introduction

## 1.1 Background

Social media has become deeply ingrained in the daily lives of students, with usage rates at unprecedented levels. Surveys indicate that over 90% of young people use social networking platforms, and many are online almost constantly (Royal Society for Public Health [RSPH], 2017). For example, a recent Pew Research Center report found that 95% of U.S. teens use YouTube and 67% use TikTok, with 35% of teens reporting that they are online 'almost constantly' (Vogels et al., 2022). Such pervasive use means that social media is now a primary context in which students communicate, form identities and spend a significant portion of their day. Importantly, the content presented to users on modern platforms is rarely a raw chronological feed. Instead, it is filtered and curated by complex algorithmically driven features designed by the platform providers. These algorithms determine which posts appear (and in what order) on a user's timeline, which videos are recommended next, and what notifications or trends are highlighted. This is fundamentally shaping the user experience (De et al., 2025).

Algorithmically driven features refer to the personalization and ranking systems employed by platforms like Instagram, TikTok, Facebook and others to maximize user engagement. Rather than impartially showing all content from one's network, social media algorithms prioritize posts predicted to elicit strong responses, often emphasizing sensational, emotionally arousing or personally tailored content (Costello et al., 2023). For example, TikTok's "For You" feed rapidly learns a viewer's preferences and serves up an endless stream of engaging videos, while Facebook's news feed algorithm highlights post likely to generate clicks or comments. On one hand, these innovations create highly personalized and relevant feeds for users. On the other hand, they introduce new concerns about how such curated digital environments affect young users.

Recent interdisciplinary research highlights that these algorithms are engineered to capture and keep attention: "*Social media companies employ algorithms for a variety of reasons, with the primary purpose of keeping users engaged with constant feeds of information for extended periods of time; such engagement results in massive profits for the companies paid by advertisers targeting ads at a certain demographic.*" (Costello et al., 2023). Social media platforms have increasingly been described as "addictive by design", as their engagement-maximizing structures encourage prolonged and repetitive use (De et al., 2025). These algorithmically mediated environments stimulate psychological reward systems, reinforcing patterns of habitual and prolonged use (Montag et al., 2019). Neuroscientific findings suggest that algorithmically curated content can activate the brain's reward systems in ways that promote compulsive engagement, mirroring patterns observed in substance-related behaviours (De et al., 2025). In short, social media algorithms do not simply deliver content: they actively shape users' behaviour and emotional states.

Given this context, a growing body of interdisciplinary research has examined the effects of social media use on young people's emotional well-being and academic development. Studies in psychology and education document that social media platforms can foster both positive and negative outcomes. On the positive side, when used intentionally and with moderation,

social media can facilitate peer support, self-expression, community building and access to academic resources (Chen & Xiao, 2022; Tess, 2013). Educational research further suggests that integrating social media as an open learning tool may enhance student engagement, collaborative learning and academic performance (Ashraf et al., 2021; Manca & Ranieri, 2016). Specifically, platforms' ease of communication and social connectivity have been described as dynamic tools for supporting active learning processes and peer-driven knowledge construction, aligning with social constructivist theories of education (Manca & Ranieri, 2016). From an information systems perspective, students' acceptance of social media for constructive academic purposes - such as sharing class materials or coordinating study groups - has been explained through models like the Technology Acceptance Model, emphasizing perceived usefulness and ease of use as critical adoption factors (Ashraf et al., 2021). Such findings suggest that algorithmic features could, under the right conditions, be leveraged for positive educational outcomes, for instance by surfacing academically relevant content or facilitating mentorship connections. However, these optimistic scenarios typically depend on goal-directed and disciplined use, which does not characterize most students' everyday social media consumption patterns.

On the negative side, a substantial body of research has raised concerns about social media's potential damaging effects on adolescent mental health, especially when use becomes excessive or shaped by persuasive design mechanisms. A recent systematic review found consistent associations between high levels of social media use and increased risks of anxiety, depression, and psychological distress among adolescents (Keles et al., 2020). Importantly, algorithmic curation has been identified as a key factor amplifying the emotional and psychological challenges - that are known as internal challenges as well - associated with social media use. By prioritizing content that elicits strong emotional reactions - such as sensational news or idealized peer portrayals - platforms expose students to a relentless stream of emotionally charged material, thereby heightening stress and anxiety levels (Costello et al., 2023; Baccarella et al., 2018). This exposure is not incidental. Rather, it is structurally reinforced through algorithmic feedback loops designed to maximize user engagement, often resulting in "echo chambers" that isolate users within ideologically one-sided content environments (Montag & Hegelich, 2020). For instance, students who express concerns about body image may be algorithmically served an increasing volume of fitness and beauty-related content, which can worsen poor self-image and disordered eating behaviors (Costello et al., 2023). More broadly, such recommendation systems have been critiqued for enabling compulsive engagement by exploiting psychological triggers, particularly through emotionally stimulating, repetitive and confirmatory content patterns (Baccarella et al., 2018).

These findings underscore that students' emotional well-being is closely shaped by how the algorithms deliver content. One common emotional effect is the fear of missing out (FOMO), which can be intensified by features like stories and push notifications that pressure users to stay constantly connected. FOMO has been linked to compulsive checking of social apps and greater stress and distraction (Przybylski et al., 2013). In short, the emotional impact of social media spans from connection and support to anxiety and mood disruption. These are outcomes that are increasingly mediated by platform design.

Parallel to the emotional effects, researchers have been investigating how social media use influences academic performance and student productivity. This is a critical concern in the education domain: as students devote more hours to social networking, educators and parents worry about the consequences for study habits, attention span, and learning outcomes. A number of studies have found that heavy or unregulated use of social media can detract from

students' academic performance (Salari et al., 2025). The primary mechanism identified is distraction and time displacement: time spent scrolling through Instagram or watching algorithmically curated videos is time not spent on homework, reading or sleep. Empirical research using experience sampling methods has demonstrated a link between social media use and lapses in attention. For example, studies have observed that during periods when students use social media more frequently, they also report more difficulty concentrating on academic tasks (Aalbers et al., 2019). In other words, increased social media usage can be associated with immediate declines in attentional control and focus. This resonates with the concept of "continuous partial attention" where students interrupted by frequent notifications or tempted by endlessly personalized feeds may struggle to sustain deep focus. Even outside of study hours, excessive engagement with social apps can lead to fatigue and reduced cognitive resources, indirectly affecting learning. A longitudinal study by Boer et al. (2020) reported that adolescents who used social media over 3 hours per day had a higher risk of developing attention problems and lower academic adjustment over time, suggesting a cumulative toll on learning capacities.

From an information systems and educational psychology viewpoint, social media's impact on learning is not entirely negative. It often depends on how and when these platforms are used. Moderate use of social media for academic communication - for example, class discussion forums or study groups on messaging apps - can have neutral or even positive effects on performance (Ashraf et al., 2021). However, problematic or "addictive" use of social networking sites tends to show a consistent negative relationship with grades and academic achievement. A recent meta-analysis by Salari et al. (2025) examined studies globally and found a significant negative correlation (approximately $r = -0.17$) between social media addiction and students' academic performance. Although this correlation is modest in size, its consistency across many samples (involving thousands of students) underscores that those who become habitually drawn in by social media at the expense of academic activities tend to have poorer grades. The causes are multifaceted: besides time taken away from studying, social media overuse can erode sleep quality (due to late-night use and mental stimulation), reduce in-class engagement (through distractions), and diminish the ability to concentrate, all of which are detrimental to learning. Algorithmically driven features such as infinite scroll and personalized recommendations have been shown to intensify user distraction and reduce self-regulation (Whelan et al., 2020). Empirical studies indicate that students often check social media even during study sessions, which can undermine focus and academic outcomes (Aalbers et al., 2019). Educators also report that smartphone notifications and social media are major sources of distraction in class, to the point that some schools have moved to ban phones to protect learning time (Rosen, 2017). Furthermore, multitasking with social networking sites - such as alternating between studying and social media feeds - has been shown to increase cognitive load and reduce task efficiency, which negatively affects learning performance (Karpinski et al., 2013). Overall, there is growing evidence that excessive engagement with social media - especially when driven by the platforms' persuasive, algorithm-enhanced design - can undermine students' academic success by impacting their time management, concentration, and even motivation to study.

## 1.2 Research Problem

Despite extensive research on social media's impact on university students, significant gaps remain in understanding how specific algorithmically driven features influence emotional and

academic outcomes. Most existing studies measure social media usage in terms of total screen time or frequency, with little attention to how distinct platform functionalities shape user experience (Keles et al., 2020; Metzler & Garcia, 2024). This limits our understanding regarding cause and effect. In particular, it remains unclear whether the emotional distress and academic struggles frequently reported by students are due to social media use in general or are driven by specific algorithmic mechanisms designed to maximize user engagement. These outcomes are often mediated by internal states - such as anxiety, distraction, or cognitive fatigue - which represent users' emotional and cognitive reactions to external stimuli (Whelan et al., 2020; Montag & Elhai, 2023). Understanding how design triggers these internal states is key to identifying the mechanisms behind social media's academic and psychological impact.

Algorithmically driven features significantly impact students on an emotional level. Platforms often prioritize emotionally charged, attention-grabbing content, which can amplify stress, anxiety, and social pressures (Metzler & Garcia, 2024). Personalized feeds that showcase idealized peer lifestyles contribute to social comparison and FOMO, intensifying emotional distress (Przybylski et al., 2013). Continuous notifications and engagement prompts encourage students to remain constantly connected, increasing risks of depression and anxiety (Keles et al., 2020). In more severe cases, algorithms have been shown to push harmful content such as disordered eating or self-harm videos to vulnerable users, demonstrating the potential severity of design-driven emotional harm (Costello et al., 2023).

Similarly, these features pose academic challenges. Algorithmically driven functionalities encourage prolonged, unintentional usage, often displacing time meant for studying. And they can also further fragment students' attention and promote procrastination. These behavioural patterns are associated with lower academic performance, as confirmed in a study by Salari et al. (2025) showing a small but significant negative correlation between social media addiction and academic achievement among university students. However, this study builds on the observation that existing research often focuses on general usage rather than isolating individual design features which we believe highlight the need for more targeted analysis at the feature level.

Keles et al. (2020) and Salari et al. (2025) have summarized how social media use is associated with negative outcomes in emotional well-being and academic performance, respectively. However, these reviews primarily examine these two domains separately. Few studies explicitly explore how emotional distress like anxiety or low self-esteem might translate into academic struggles, leaving a gap in understanding the integrated effects of algorithmic design on student life.

Although social media has been linked to both educational benefits and psychological risks, existing research offers no clear consensus on when and why these outcomes occur (Ashraf et al., 2021; Keles et al., 2020). With platforms becoming more algorithmically driven, it is increasingly important to examine how individual design features contribute to these effects.

## 1.3 Research Objective and Purpose

The purpose of this thesis is to investigate how specific algorithmically driven features of social media affect university students' emotional and academic experiences. By employing qualitative methods, this study aims to identify the precise mechanisms through which

algorithmic design impacts emotional well-being and academic performance. The ultimate purpose is to advance theoretical understanding of user-algorithm interactions and provide practical insights that educators, students and platform developers can utilize to promote healthier social media use.

## 1.4 Research Questions

Main Research Question (RQ):

How do algorithmically driven features of social media platforms affect university students' academic performance?

Sub-Research Question (Sub-RQ):

How do students experience and cope with the internal states triggered by algorithmic content delivery?

## 1.5 Delimitation

Due to the scope of this study, it is limited in several respects. First, it focuses on university students in Sweden, so the findings may not be generalizable to students in other countries or settings. Second, the research examines only social media platforms with algorithmically driven features (such as short video and image-text platforms), while excluding traditional messaging apps. A third limitations is that due to time and resource constraints, the study relies on one-time, semi-structured interviews rather than longitudinal data, which limits the ability to assess long-term effects.

## 1.6 Chapter Conclusion

The introduction chapter presents the context and relevance of social media platforms and the algorithm-driven features that they have. It highlights the universal integration into the daily life of students and the potential impacts on their emotional well-being and academic performances. Existing research shows both positive and negative consequences of social media use, and it identified gaps in understanding how individual algorithmic features of social media shape emotional and educational experiences. The research problem and objectives for the research have been explained and clarified, giving a foundation for a more detailed study. The next chapter, which is Theoretical Background, will go deeper into the relevant concepts and theories backed by the literature review that is done. It discusses social media algorithms in more detail, explores triggers for emotional reactions and examine the influences on academic performances. The chapter will introduce the frameworks and theories that were considered and chosen for this research as well, followed by an introduction and justification of the preselected emotions, academic disruptions and algorithmic features that are chosen for a structured analysis within the study.

# 2. Theoretical background

This chapter explores what algorithms are and how these are used within social media features, where four of them are explored more in depth. These features can trigger specific emotional reactions, which are mostly negative. The reactions are a cause for a decrease in academic performances and learning outcomes, which are explained in this chapter. Also, the different frameworks and theories regarding this topic are discussed.

## 2.1 Algorithms

In modern technological and social infrastructures, algorithms have become a central phenomenon in aspects of everyday life, decision-making processes, and social facets. A definition of the term *Algorithm* could be: *a structured set of instructions or rules designed to solve problems or perform tasks efficiently, typically executed by a computational system* (Cormen et al., 2022). While algorithms were originally made and used within the field of mathematics and computer science as formal ways of problem solving, algorithms now have evolved and expanded their scope. Algorithmically driven features can be found in search engines, automated decision-making systems and artificial intelligence (AI) technologies (Beer, 2017).

Algorithms are valuable by offering efficiency, accuracy and consistency within decision-making, but it can raise biases, inequalities or unintended societal consequences as well (Noble, 2018). The complexity of the modern algorithms, which are often built with machine learning or neural networks, can raise ethical, political and social questions regarding transparency, accountability and governance (Eubanks, 2019).

Recent discussions have suggested that algorithms must be understood as relational entities, meaning that the algorithms should not be viewed as standalone technical tools, but rather as parts of broader systems (Matzner, 2024). The book also explains that algorithms have become more complex and common, making it important to critically examine how the algorithms are designed and used, and if and how they affect society. This should lead to fair, ethical and positive outcomes.

## 2.2 Social Media Algorithms

Algorithms are playing a central role within modern social media platforms, influencing how its content is presented to users and shaping their overall digital experience on this platform. The core functionality of social media algorithms is analyzing user-generated data - such as likes, comments, search or watch history and shares - to predict and optimize engaging and relevant content (Mandile, 2025). These mechanisms allow for personalized content recommendations, targeted advertising, and experience enhancements (Gillespie et al., 2014).

Among the different features within social media that use algorithms is anyway, personalized recommendations are possibly the most prominent one. The machine learning techniques are used by the biggest platforms like Facebook, Instagram, YouTube and TikTok to analyze user interactions and refine how content is delivered to the user (Covington et al., 2016). The

algorithms can make the experience on the platform personal by prioritizing content that aligns with the users' interests and behaviors to maximize user engagement and retention (Bakshy et al., 2015). This approach makes the experience of the user highly engaging, but it is also raising critical ethical questions regarding user autonomy, transparency and potential biases that are embedded within algorithmic decision-making (Lu, 2024).

Personalized recommendations are not the only algorithmically driven feature of social media platforms. Other features include infinite scrolling, auto-play videos, and push notifications. All these features are engagement-focused and use algorithmic logic to sustain the user's attention and interaction. Infinite scrolling is the feature that continually loads new content while the user is scrolling, what removes any natural stopping indications what could lead to spending more time on the platform than initially planned (Alter, 2018). Auto-play is the feature that automatically starts playing the next video right after the previous one has finished without the user having to interact. This increases the probability of continuous viewing and user retention (Jiang & Anderson, 2018). Push notifications can be algorithmically timed and personalized to remind or attract users to return to the platform. This can influence engagement frequency and duration (Montag et al., 2019).

In this research, the primary focus will be on the just described four algorithmically driven social media features: personalized recommendations, auto-play, infinite scroll, and push notifications. These features are selected based on their influence on user engagement and their prominent presence over different social media platforms. These are not the only algorithmically driven features that exist. Others may also contribute to user engagement, experience and behavior, but for the scope of this study the four key features chosen to allow for structured exploration and research. A widely cited report by the Royal Society for Public Health & the Young Health Movement (2017) found that social media use was correlated with higher rates of anxiety, depression and poor sleep in young people, identifying platforms like Instagram as particularly detrimental to self-esteem. These emotional downsides are closely linked to the social comparison and feedback mechanisms embedded in social media, especially the tendency to encounter idealized images and selectively curated content from others. Experimental and correlational research has shown that frequent exposure to upward social comparison on platforms like Facebook can lower both state and trait self-esteem, contributing to feelings of inadequacy, envy, and anxiety (Vogel et al., 2014).

## 2.3 Emotional Reaction Triggers

Algorithmically driven features are widely used within social media platforms. This has introduced several mechanisms that could trigger emotional reactions for users, that can be both positive and negative. These features are often designed to optimize engagement and the overall online experience, but they can also have psychological effects. These features can lead to emotional responses like anxiety, emotional fatigue, procrastination and information overload by creating environments that encourage continuous consumption of content and ask for constant connectivity (Keles et al., 2020).

Recent studies have highlighted the fact that personalized content can reinforce exposure to emotionally charged content, what will intensify the emotions and stress levels of the users (Beyens et al., 2024). The auto-play and infinite scrolling features can cause loss of time awareness and excessive media consumption by removing stopping cues. This has been linked

with increased levels of emotional exhaustion and psychological distress among young adults (Keles et al., 2020). Because of how interruptive they can be, push notifications can become a disruption in daily activities and raise a sense of urgency. The disruption and demand for attention contribute to anxiety and reduced concentration and attention (Rixen et al., 2023).

The use of algorithmic driven features within social media can result in exposure to emotionally stimulating or polarizing content, which can amplify feelings of anger, fear, or sadness over time. But on the other hand, it is possible that social media use also can evoke positive emotional responses such as happiness, improved social connections and relaxation (Verduyn et al., 2017).

The emotional amplification caused by the algorithms can worsen vulnerabilities to mental health issues, in particular to populations that are already at risk, such as university students. As Nesi (2020) notes, younger people are especially sensitive to peer evaluation and social comparison. These are features that are often intensified by algorithm-driven features.

## 2.4 Influence on Academic Performances and Learning Outcomes

Emotional reactions that are triggered by algorithmically driven features on social media can have different impacts on the user. One specific factor is the influence on students' academic performance and learning outcomes. Emotional conditions like anxiety, information overload, procrastination and emotional fatigue are connected with processes that are critical for academic success, like attention, concentration, time management and motivation (Junco, 2012).

As stated by Meier et al. in 2016, anxiety caused by social media use can weaken students' ability to focus on their academic tasks, what can lead to lower academic engagement and decreased academic achievement. Higher levels of anxiety have been linked to cognitive intrusion where too much brain capacity is needed to process the content and intrusive thoughts regarding this, what leaves little capacity for academic activities. Cognitive overload reduces the efficiency of studying and decreases the ability to take in and apply information (Becker et al., 2013).

Similar to this, continuous exposure to large amounts and different forms of social media content can cause information overload for users. This can overwhelm students' cognitive capabilities, what makes it hard for students to process this. Consequences are difficulties in managing their time and study schedules and giving priority to the tasks that are actually important, such as studying (Islam et al., 2021). This overload of information can result in a fragmented attention span of students and a superficial approach to learning. Consequences of this include a deeper harm of understanding and long-term retention of academic material.

Procrastination can further negatively impact academic outcomes. These outcomes are often facilitated by the design of social media platforms that encourage frequent and prolonged engagement. According to Meier et al. (2016), excessive social media usage correlates with increased procrastination behavior. This reduces the time left available for studying and producing qualitative academic work.

Another consequence of extended social media usage is emotional fatigue. It can weaken the motivation and self-regulation capabilities of students. Both these aspects are essential for

achieving academic success (Frison & Eggermont, 2015). Emotional and cognitive fatigue reduces the ability to engage deeply with study materials and reduces active study participation, what lowers the overall academic performance.

These findings have shown that emotional reactions triggered by social media, and specifically from algorithmically driven features, do not only cause mental health concerns, but also interfere with academic performance and success. Understanding these emotions caused by social media is critical for educators, policymakers and also students themselves to design strategies to mitigate negative outcomes of social media use.

## 2.5 Frameworks and Theories used

This section reviews the key theoretical frameworks guiding the examination of algorithmically driven social media use and student outcomes. It outlines each framework's core ideas and relevance to the study, compares their applicability, and establishes the rationale for the primary framework choice. The goal is to build a robust theoretical foundation by leveraging well-established models from information systems (IS), psychology, and education literature. The five frameworks discussed were chosen for their relevance, prominence in past research, and complementary perspectives on technology use. Each addresses a distinct facet of the problem domain.

### *2.5.1 Stimulus-Organism-Response (SOR)*

The SOR model was originally conceptualized by Mehrabian and Russell (1974) and posits a three-part chain to explain how environmental stimuli evoke internal affective states that lead to behavioral responses: environmental Stimuli (S) influence an individual's internal Organism (O) state, which in turn drives Responses (R) in behavior or attitude (Mehrabian & Russell, 1974). Originally rooted in environmental psychology, the SOR model has been extensively applied in marketing (Jacoby, 2002) and information systems (Whelan et al., 2020) to explain how environmental features elicit internal states that influence user behavior.

The SOR framework's structure is straightforward, yet flexible. In the context of digital environments, Zhai et al. (2020) empirically demonstrated how such internal states - like anxiety or perceived intrusion - can mediate the relationship between technological stimuli and students' collaborative behavior in online learning. Drawing on this structure, our study applies the SOR model to examine how algorithmic features (stimuli) influence students' emotional states (organism), which then affect academic outcomes (response). SOR offers strong explanatory power across settings, and prior studies have used it to link online environmental cues to user behaviors such as information sharing and academic performance (Whelan et al., 2020). A commonly noted limitation of SOR is its abstractness: it does not specify variables, requiring researchers to operationalize appropriate stimuli, organismic states, and behavioral responses for each context (Jacoby, 2002; Zhai et al., 2020). In this study, SOR will be used as the primary guiding framework due to its suitability for encapsulating the interplay of platform features, student emotions, and outcomes.

### 2.5.2 Technostress

Technostress refers to the psychological strain arising from individuals' difficulties in adapting to information and communication technologies (ICTs), typically triggered by "technostress creators" such as information overload, usability complexity, constant connectivity and frequent system changes (Tarafdar et al., 2007). As students engage with algorithm-driven social media, they may encounter several categories of technostress creators, such as techno-overload caused by endless scrolling and notifications, techno-uncertainty arising from ever-changing platform algorithms and privacy settings, and techno-invasion resulting from social media intruding on personal or academic boundaries. According to technostress theory, such chronic stressors may lead to psychological strain - including anxiety and fatigue - which subsequently weaken academic performance or productivity (Ayyagari et al., 2011).

Empirical studies have linked technostress with negative outcomes in educational settings - for instance, higher technostress among university students correlates with poorer academic performance and well-being (Upadhyaya & Vrinda, 2021). Technostress refers to the strain and negative well-being outcomes associated with the use of information and communication technologies (Tarafdar et al., 2007). Students engaging with algorithmic social media may face multiple technostress creators, such as techno-overload (from endless scrolling and notifications), techno-uncertainty (due to changing algorithms), and techno-invasion (as platforms blur boundaries between academic and personal time). These stressors have been empirically linked to fatigue, anxiety and reduced performance (Ayyagari et al., 2011; Upadhyaya & Vrinda, 2021). Technostress theory is praised for its structural clarity in categorizing distinct stressors and mapping their effects on users' psychological states and productivity (Tarafdar et al., 2019). However, it primarily explains negative consequences such as burnout and strain and offers limited insight into compulsive technology use or continued engagement despite distress.

### 2.5.3 Expectation-Confirmation Model (ECM)

The Expectation-Confirmation Model (ECM), originally proposed by Bhattacherjee (2001), is a well-established framework for explaining users continued use of information systems. Rooted in consumer satisfaction theory, ECM suggests that users form expectations before using a system and evaluate whether these expectations are confirmed after actual use. This confirmation then influences user satisfaction, which, along with perceived usefulness, determines their intention to continue using the system. Thong et al. (2006) extended this model by incorporating users' post-adoption beliefs, such as perceived ease of use and enjoyment, enhancing the ability of ECM to explain continued use of entertainment-oriented IT contexts. Their empirical results showed that these additional beliefs significantly influenced both user satisfaction and continued usage intention. In the context of algorithmic social media use, ECM can help explain why students continue using platforms even when faced with negative effects. If personalized feeds and recommendations align with their initial expectations (e.g., engaging, socially fulfilling), satisfaction may increase, encouraging continued use even at the cost of distraction. However, ECM's limitation lies in its focus on satisfaction and continuance. It does not fully explain habitual or addictive use, nor does it account for harmful emotional consequences like anxiety or fatigue that may also influence academic outcomes. Therefore, while ECM is valuable in capturing user engagement dynamics, its explanatory scope in this study is complementary. It provides insight into how expectation-confirmation and perceived

usefulness may sustain usage, but lacks the emotional mediation focus that frameworks like SOR provide.

### *2.5.4 Unified Theory of Acceptance and Use of Technology (UTAUT)*

UTAUT is an integrated model that combines elements from eight prominent technology adoption theories (including TAM, Theory of Planned Behavior, Innovation Diffusion Theory, etc.) to explain user intention to use and actual usage of technology (Venkatesh et al., 2003). UTAUT identifies four key determinants of usage intention: Performance Expectancy (belief that the technology will help achieve gains in job or task performance, similar to usefulness), Effort Expectancy (perceived ease of use), Social Influence (the degree to which important, influential or leading others encourage use) and Facilitating Conditions (the presence of organizational or technical infrastructure to support use). Additionally, UTAUT considers moderators like age, gender and experience that can affect the strength of these relationships (Venkatesh et al., 2003).

In the case of this research where students and social media are being studied, UTAUT would suggest that a student's intention to engage with an algorithmic feature depends on whether they expect it to improve their outcomes (e.g., better learning or efficiency), how easy it is to use, what their friends and peers think about it, and whether they have the means and skills to use it (Venkatesh et al., 2003). UTAUT's structure is more complex than TAM's but offers a more holistic view, incorporating social and facilitating factors that are relevant in a university environment (e.g., peer influence on social media app adoption). The model has demonstrated high explanatory power in various contexts, often accounting for a substantial portion of variance in usage intentions (Williams et al., 2015). It is a well-recognized framework and has been applied to understand social media usage behavior among young people (Dwivedi et al., 2019). One advantage is its inclusion of potential motivational factors and external constraints, but like TAM it still largely focuses on the decision to use technology rather than unintended consequences. UTAUT originally does not explicitly include emotions or negative outcomes - though it has been extended (UTAUT2 adds hedonic motivation, habit, etc.). Its practical limitations include complexity (many constructs to measure) and less focus on post-adoption dynamics (aside from capturing actual use). While UTAUT offers useful insight into why students adopt certain features (e.g., perceived usefulness or peer influence), it focuses on usage intention rather than post-adoption effects. Our study instead investigates how design features shape internal states that then impact academic outcomes. As UTAUT lacks constructs for emotional or cognitive mediation, it is less suited for explaining these mechanisms. Therefore, we draw more heavily on SOR and technostress models to explore design-driven behavioral consequences.

### *2.5.5 Attention Restoration Theory (ART)*

Attention Restoration Theory (ART), developed by Kaplan (1995), explains how prolonged use of directed attention - effortful, focused attention used for tasks like studying - can lead to mental fatigue. When this attentional system is overused through constant task-switching or information overload, people may experience reduced concentration, stress, or irritability. ART distinguishes this effortful attention from involuntary attention, which is effortlessly captured by engaging stimuli. Natural environments, especially those offering "soft

fascination" (e.g., rustling leaves or flowing water), are seen as ideal for restoring attentional capacity, as they allow the directed attention system to rest and recover.

Although Attention Restoration Theory (ART) originated in environmental psychology with a primary focus on nature exposure (Kaplan, 1995), its principles are increasingly relevant in digital settings. For example, students in our study often described experiencing fatigue after prolonged exposure to algorithmically personalized social media feeds. These features continuously capture attention and encourage multitasking, leaving little opportunity for mental recovery. From an ART perspective, such persistent stimulation depletes directed attention and necessitates restorative experiences, not only through nature but also via digital breaks or low-stimulation activities. Recent studies have begun to apply ART to digital environments, highlighting how mindful disengagement or controlled digital exposure may help restore cognitive capacity (Liu et al., 2024). Empirical findings also suggest that heavy media multitasking is linked to reduced attentional control and increased psychological strain, reinforcing the need for attention restoration strategies in media-saturated contexts (Becker et al., 2013).

ART's explanatory structure focuses less on causal sequences and more on attentional conditions and restorative outcomes. It sheds light on how states of cognitive fatigue arise and how recovery can be supported, but it lacks the dynamic mediation pathways emphasized in models like SOR. In this study, ART helps illustrate why prolonged algorithmic engagement might exhaust students' attention and how restoration could improve academic focus, but it falls short in explaining through what mechanisms such effects unfold. Moreover, ART was not originally devised for digital environments. Applying it to algorithmic social media use requires interpretative extensions, such as identifying what constitutes a "restorative" digital break or low-stimulation content. Unlike models that engage with system-level design or psychological mediation (e.g., SOR or technostress), ART remains more descriptive than predictive in this context. Still, it adds value by highlighting the cognitive toll of overstimulation and reinforcing the need to consider attentional health when assessing platform impact on learning.

### *2.5.6 Comparative Evaluation of Frameworks*

This table shows the different frameworks explained in this chapter in a comparative way. For each framework, noted is how clear the structure is, how it fits with the topics of our research (Algorithmic Features and Emotional Mediation), how strong the explanatory power is of the framework and what key limitations are.

| Framework | Structure Clarity | Fit with Algorithmic Features | Emphasis on Emotional Mediation | Explanatory Power | Key Limitations |
|---|---|---|---|---|---|
| SOR | Clear and flexible three-stage structure. | High – models feature → emotion → outcome chain well. | High – explicitly includes emotional states. | Strong – adaptable to various user outcomes. | Abstract – requires careful definition of constructs. |
| Technostress | Well-defined stressor-strain-outcome model. | High – aligns with overload and interruption features. | Medium – focuses on stress and fatigue. | Strong – explains negative tech impacts well. | Primarily captures negative responses, not engagement |
| ECM | Simple expectation-confirmation loop. | Moderate – relevant to continued usage behavior. | Low – satisfaction treated broadly. | Moderate – strong for post-adoption decisions. | Does not capture involuntary or habitual use. |
| UTAUT | Comprehensive but complex. | Moderate – includes social and effort factors. | Low – emotion not explicitly modeled. | High – integrates multiple adoption determinants. | Focuses on usage intent; needs extension for emotional impact. |
| ART | Clear conceptual structure. | Moderate – conceptually fits attention depletion. | Medium – addresses cognitive fatigue. | Moderate – useful for understanding attention effects. | Not a tech model; less applicable to feature-level analysis. |

**Table 1. Comparative table of different frameworks**

### *2.5.7 Justification for Selecting SOR as Primary Framework*

Among the five frameworks reviewed, the Stimulus-Organism-Response (SOR) model is the most appropriate theoretical foundation for this study. SOR clearly maps the relationship between algorithmic features of social media (Stimuli), students' emotional and cognitive states (Organism), and academic or behavioral outcomes (Response) (Mehrabian & Russell, 1974). Unlike UTAUT, which focuses on adoption of intent, SOR accommodates unintended effects of technology use, such as distraction, stress, or fatigue. It also integrates well with constructs from Technostress and ART, capturing both emotional strain and cognitive depletion within a flexible process model.

SOR's strength lies in its ability to explain broad outcomes, offering a balanced lens to interpret algorithmic influence. It is particularly useful in exploratory studies like this one, where

multiple interacting variables are at play. Recent studies applying SOR related models to digital overload contexts (e.g., Whelan et al., 2020) further confirm its relevance. Generally, SOR provides the clearest and most adaptable structure to examine how students internalize algorithmic experiences and how these shape their academic engagement in this study. *Figure 1.* shows a visualization of the SOR model and how algorithmic features are linked to academic outcomes via emotional states.

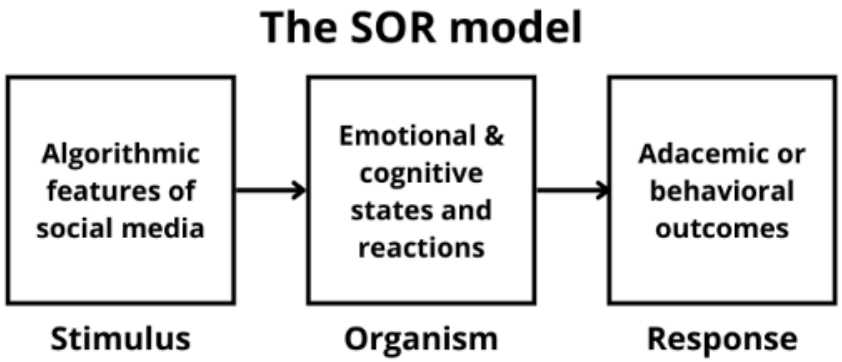


**Figure 1. Visualization of the SOR model used in the thesis. *Author's own work***

### *2.5.8 Research Propositions*

Proposition 1 (P1): Algorithmic social media features influence students' internal states.

Proposition 2 (P2): These internal states directly affect students' academic performance and well-being.

Proposition 3 (P3): Internal states mediate the relationship between algorithmic features and academic outcomes.

These propositions establish the core causal chain for the study, guided by the SOR model.

## 2.6 Preselected Emotions, Academic Disruptions and Algorithmic Features

To ensure a structured process of the study, a number of preselected emotional reactions, academic disruptions, and algorithmic features were preselected. This chapter explains and justifies the selection of specific elements examined in the study. The elements were identified through a comprehensive literature review.

### *2.6.1 Emotional Reactions*

Before starting the data collections phase, five emotional reactions were preselected. These emotions are Anxiety, Information Overload, Distraction, Procrastination, and Emotional Fatigue. An explanation follows for each emotion why these are chosen as preselected emotional reactions:

Higher levels of Anxiety among students have been correlated with heavy engagement with social media and smartphones. Symptoms regarding this include feelings of worry, stress, or nervousness. An example case was a survey of over 500 college students conducted by Lepp et al. (2014). They found out that high-frequency cell phone users are reporting significantly more feelings of anxiety than others that use their phones less. This makes anxiety a critical emotional reaction to research further, as it can affect mental health and academic focus.

Information Overload is the state of being overwhelmed by the amount of information encountered. As explained by Islam et al. (2021), this reaction can occur when the amount of content exceeds cognitive limits, what can lead to feelings of overload and. Empirical evidence has linked information overload to increased stress and emotional fatigue among users (Islam et al., 2021; Montag et al., 2019). Given that students often consume academic and non-academic information online at the same time, information overload is a related reaction that can impair their study capabilities.

Distraction is the diversion of attention away from intended tasks due to interruptions, in this case academic tasks and digital interruptions related to social media. It is a well-documented consequence of social media use, especially in learning contexts. International survey data showed that about two-thirds of participating students reported being distracted by digital devices (OECD, 2023). These distractions have a strong correlation with lower academic performances according to the survey. Because keeping attention is vital for learning, distraction is a key element to highlight in the research.

The intentional delay of tasks in favor of more gratifying activities: Procrastination. Students may turn to social media as a form of postponing schoolwork, and a study by Nadarajan et al. (2023) found that social media addiction was positively correlated to academic procrastination. Demonstrated by Meier et al. (2016), social media can lure students into delaying important tasks like academic work. By examining this phenomenon, the research addresses a concrete behavioral consequence of digital distraction that is noted frequently in literature.

Finally, there is Emotional Fatigue, which is a state of mental exhaustion and numbness caused by prolonged stress or overstimulation. Information overload from social platforms can directly increase users' emotional exhaustion (Sheng et al., 2023). It is a crucial reaction to include in the research, as it captures the cumulative toll of other factors and is linked to weakened well-being and motivation.

### *2.6.2 Academic Disruptions*

Emotional reactions can cause academic disruptions. Through literature review, seven specific academic outcomes were identified to research further in this study: Attention and Focus, Study Efficiency and Time Management, Motivation and Willingness to Learn, Depth of Understanding, Completion and Quality of Academic Work, Academic self-efficacy, and Exam Readiness.

Attention and Focus related to the ability to concentrate on academic tasks without losing focus. Multiple studies showed that when students attempt to study or attend class with digital devices accessible, their attention to the lesson suffers from lower grades (Graben et al., 2022; Junco, 2012). Higher self-reported distraction by digital devices correlates with lower test

scores (OECD, 2023). This kind of disruption was chosen as a key academic variable as it is possible to directly link social media distractions to observable academic difficulties.

How effectively students manage their study time and workload is connected to the academic disruption of Study Efficiency and Time Management. Social media can disrupt time management by displacing the time available for studying or fragmenting it into inefficient multitasking. Junco (2012) has documented that greater time spent on social media is associated with less time devoted to studying, leading to lower grades. By examining study efficiency, we acknowledge a practical academic consequence of tech overuse: lost time and rushed schoolwork.

Motivation and Willingness to Learn is the drive, interest and willingness to engage with learning activities of the students. Literature suggests that when students are facing challenging or 'bored' considered tasks, they might turn to social media as a way to escape their tasks (Hassell & Sukalich, 2016). While motivation is a complex psychological trait, the study focused on it because lower academic motivation is often a consequence of social media overuse.

The Depth of Understanding can be explained as the level of comprehension and learning achieved in academic work. A recent study by Haverkamp et al. (2024) found that using social media simultaneously while reading significantly disrupted processing and understanding of the study material. Students were less able to understand and remember the content when they were multitasking with social media. The finding suggests that not only recalling study material, but also deeper knowledge is impaired with digital distractions. The concept of depth of understanding was therefore selected to capture qualitative learning outcomes.

Completion and Quality of Academic Work is the extent to which students finish their assignments on time and produce work to standards. It is observed by Ravizza et al. (2014) that students who used social media for non-academic purposes during lectures had poorer exam performances, implying that distracted students learn less and are more likely to produce lower-quality work on their exams. By including the completion & quality of work in the research, the presence of digital distractions can be connected to academic results like grades, project quality and meeting deadlines.

Academic Self-Efficacy contains the confidence of students in their own ability to successfully perform academic tasks like studying for an exam or writing a paper. A survey under college students showed that higher social media use was associated with lower academic self-efficacy (Hassell & Sukalich, 2016). The paper explained that students that spend a lot of time on social media have less time to focus on their study tasks, which leads to weaker academic performances and in the end caused reduced confidence in their own academic abilities. Academic Self-Efficacy is an important aspect in academic motivation and persistence and understanding if and how tech overuse undermines self-efficacy is vital.

The degree to which a student is prepared for an exam in terms of both knowledge and psychological readiness is captured within the Exam Readiness. In a study by Ravizza et al. (2014), it was shown that students who checked social media in class had a lower score on subsequent exams than those who did not. Excessive smartphone use has been linked to lower grades overall, what indicates consistent issues in exam performance and assessments (Lepp et al., 2014). By examining exam readiness, the study can detect whether the disruptions indeed translate into academic deficits.

### *2.6.3 Algorithmic Features*

Infinite scroll is a feature that provides endless feed for the user to scroll in on the platform. It hooks the users into prolonged and sometimes regretful usage of social media, as explained by Rixen et al. (2023). The paper also highlights how the design of this feature makes a habit out of social media overuse, showing that design features can weaken the attention and encourage procrastination because the users are struggling to stop scrolling. It is a key feature in the study as it directly links several emotional reactions.

The automatic playing of the next piece of content - for example a video or episode - without the interaction of a user is called auto-play. Platforms use this feature to reduce friction and keep the user watching. According to Schaffner et al. (2025), auto-play can lead to binge-watching content, loss of sleep and displacement, or procrastination of other activities like studying. This makes it a relevant feature for this research.

Personalized recommendations algorithms select and show content to the user based on their interests and online behavior. Recommendations can keep the user engaged for a longer time, and a negative effect is that it contributes to distraction and extended procrastination on the social media platform (Covington et al., 2016). It increases the engagement but can contribute to stress or affect the depth of understanding, what makes it an influential feature to be studied (Wang et al., 2024).

Push notifications are alerts sent by apps to the user's device to get their attention or let the user know that someone or something is trying to reach the user. In literature, it is often cited as a highly disruptive feature that can distract or break concentration (Graben et al., 2022). By examining this feature, it can be directly connected to the interruptions that lead to distraction and procrastination.

## 2.7 Chapter Conclusion

The theoretical background explores the foundational concepts and theories that serve as a base for this research, and this is based on the literature review that is done. The nature and functionality of algorithms are clarified, and in particular how algorithmically driven social media features shape the experience of users on social media platforms. The chapter introduced the four preselected key algorithmic features: personalized recommendations, infinite scroll, auto-play, and push notifications. It explains how these features potentially trigger specific emotional reactions like anxiety, information overload, distraction, procrastination, and emotional fatigue. In the discussion it is highlighted how the emotional reactions can negatively impact academic outcomes, including attention, study efficiency, motivation, depth of understanding, completion and quality of academic work, academic self-efficacy and exam readiness. Also, a number of theoretical frameworks were examined and compared, what ultimately led to the justification of the selection of the Stimulus-Organism-Response (SOR) model as the primary theoretical lens for this study. The following chapter is Methodology, where the research approach and practical methods that are applied in this research are described. It presents the research philosophy - which is interpretivism -, explains the qualitative research approach adopted and outlines the data collection methods: semi-structured interviews. This is followed by details on the process of data analysis, an explanation on the ethical considerations taken into account, and how the scientific quality of the study is ensured.

# 3. Methodology

The following chapter describes the complete research methodology of the study. Not only is the approach of the research handled, but also how the data obtained during this research is being collected and analyzed is explained. To support the claims on why certain methodologies were used, the research philosophy of this study is discussed first. To make sure that all respondents and everyone else involved in this research are treated with respect, the ethical considerations of this study are explained. After this, the scientific quality is qualified with a reflection on the validity, reliability and generalizability of this study.

## 3.1 Research Philosophy

The research problem of this study can be approached in different ways. One way to support the chosen research approach is by looking at the philosophical foundation of the formed research problem and approach. For this research, we aimed to understand how algorithmically driven features on social media platforms trigger emotional reactions that can influence academic performance of university students in Sweden. This paper is based on qualitative research conducted through interviews. The study has been done through the philosophy of interpretivism (Creswell & Creswell, 2023).

Interpretivism in philosophy is an approach within research to focus on understanding how individuals understand and give meaning to their own experiences within their social context (Bryman, 2016; Schwartz-Shea & Yanov, 2012). The philosophy emphasizes subjective experiences and individual perspectives instead of objective measurements and generalization to aim for capturing the in-depth complexities of human behavior, emotions, and interactions. According to Creswell & Creswell (2023), interpretivism is particularly suitable as a research philosophy when the research aims to explore complex human experiences and emotions, allowing researchers to obtain detailed insights into how people can make sense of their reality and surroundings.

Regarding this research where is studied how algorithmically driven social media features trigger emotional reactions among university students and how these reactions affect their academic performance, interpretivism is a fitting philosophy. Given the qualitative nature of the study, where semi-structured interviews are used to explore personal perceptions and emotional experiences of students, interpretivism enables an in-depth understanding of the participants' experiences with social media. Following the approach of interpretivism, it allowed this study to examine how students individually interpret the effects of algorithmic features in social media on their emotional and academic lives, recognizing that each student's reaction to algorithmic influence is shaped by personal context and subjective experiences (Bryman, 2016; Creswell & Creswell, 2023).

## 3.2 Research Approach

The aim of this research is to explore how university students in Sweden emotionally respond to algorithmically driven features on social media that can affect their study performances.

The most appropriate strategy to capture the depth and nuance of lived experiences regarding this aim is by conducting qualitative research (Creswell & Creswell, 2023; Seidman, 2013).

The research process of this qualitative study began with a comprehensive preparation and planning phase to ensure a solid foundation for the study. This includes conducting a deeper literature review to refine the research focus and address gaps identified in prior studies, with a particular emphasis on university students (Webster & Watson, 2002). Interview questions are developed based on these insights, tailored to explore participants' perspectives (Bryman, 2016). Possible interviewees were identified and asked to participate in the studies after being informed about the goal and purpose of the study. After agreeing to participate and before conducting the interview, a signed consent form was obtained from the participant to ensure ethical practices (Bryman, 2016).

The literature review was conducted following the guidelines proposed by Webster & Watson (2002), who proposed a structured approach. Instead of focusing the literature review on individual studies, they emphasize focusing on key themes instead. The first step of the literature review was to have a clear view of the purpose and motivation of the study. By knowing why this review is important and after defining key concepts, the process of literature review started smoothly. During the review, a concept matrix was used to map the reviewed papers and their themes. This helped identify any overlaps, gaps, and other areas for theoretical development. The review was organized around the key themes, concepts, and theories related to the research topic. The full concept matrix can be found in Appendix 2. Within the concept matrix, abbreviations are used for the themes to categorize the different papers. These themes are: Social Media and Emotional Well-being (SMEW), Social Media and Academic Performance (SMAP), Algorithms and Technological Impact (ATI), Behavioral and Psychological Theories (BPS), Theoretical Frameworks (TF) and Social Media Use in Educational Contexts (SMEC). These themes were based on the different topics in the study (emotional well-being, academic performances and social media algorithms), theories and frameworks that were possible useful for the study and general papers regarding social media and education. The literature was found through online article databases like Lund University's LUBsearch and Google Scholar to explore the different concepts and topics. To control the quality and usefulness of the literature to our study, we made sure that the literature was peer-reviewed, published, has a high citation count, if the paper was published by a reputable journal or publisher, how relevant the paper is to our study, and what theories and methodologies were used.

As advocated by Webster & Watson (2002), the literature review was not only conducted within the field of Information Systems, but all relevant disciplines were covered to find useful literature. These other disciplines include fields such as psychology, education, sociology, and communication. In the concept matrix used for the review, a set of elements were determined for each paper. These elements, apart from the reference itself, were:

- Short summary, to describe in short what the topic of the paper is and how this relates to the research.
- Theory framework, to explain what theoretical model was used for the research and showing where it fits in a broader academic theory.
- Methodology, for indicating which designs and methods were used to collect and analyze data. This included whether the study is qualitative or quantitative and what tools were used.
- Main findings, in order to understand what the key results and conclusions are from this study. This will identify what is already known and what the study contributes to the field.

- Key variables or Concepts, to see the major factors or constructs in the study. Related to our research, these can be emotional reactions, algorithmic features, or academic motivation.
- Research Gap and Limitation, for understanding what the areas are that are acknowledged by the study as limitations, or if there are unanswered questions or topics suggested for future research.

Data collection involved gathering qualitative insights through semi-structured interviews with students that are currently active studying in Sweden (Adams, 2015). Proper documentation and secure data storage will be employed to maintain integrity and confidentiality. To get detailed and in-depth perspectives and insights to use for the study, it is important to explore personal perceptions and experiences. A suitable approach to gather this data is by conducting qualitative research through personal interviews. This approach will help to understand the local perspectives of Sweden regarding social media and education (Creswell & Poth, 2023). Unlike quantitative research that can show correlations between social media usage, emotional responses and academic performances, qualitative research can contribute to finding an explanation why students are behaving the way that they do (Ginika, 2024).

The main source of data for this qualitative research originates from interviews with participants. After the transcription of the interviews, the collected data was rigorously examined to uncover key themes and patterns. After the analysis of the data, it was possible to present the findings of the research, that was followed by a discussion regarding the findings. The outcomes of this research gave a rich, contextual understanding of the emotional and cognitive effects that algorithmic mechanisms like personalized recommendations, infinite scroll, autoplay and push notifications have on students' motivation, focus and learning behaviors. The aim of this study is to generate insights that can be used to inform future research, policy, and platform design considerations.

## 3.3 Data Collection methods

The data collection phase of this study was conducted systematically to ensure that rich, reliable, and diverse information is gathered from all participants. This phase is dedicated to data collection and will involve a multi-step process consisting of individual interviews and careful documentation. The data collection process started with conducting semi-structured interviews with participants (Kallio et al., 2016). Criteria for participants to conduct an interview includes being an active university student within Sweden, at least 18 years of age, and an active or previously active user on one or more social media platforms. A total of 7 participants were interviewed during the data collection phase. The interview guide and transcriptions of the interviews can be found in the appendix.

The interviews were designed to strike a balance between consistency and flexibility, allowing the research team to probe specific areas of interest while enabling participants to express their feelings freely (Adams, 2015). The questions were developed based on the Stimulus-Organism-Response (SOR) model (Mehrabian & Russell, 1974), which has been effectively applied before to behavioral and digital media research by Zhai et al. (2020). The three elements of the SOR model were used as the three phenomena of the research. This means that the Stimulus is the specific algorithmically driven feature of social media, and how this is used and what the participant is with this feature. The Organism of the model is connected to the

emotional distress that can be felt from the social media usage regarding the algorithmically driven features. The Response in SOR was used to explore the influence of emotional distress on academic performances, and possible countermeasures and the effectiveness of those. The questions of the interview guide were shaped by the three components of SOR. For the Stimulus component, questions were developed regarding the participants' use and interaction with the specific feature. The questions aimed to obtain concrete descriptions of the feature in use, grounded in the participants' personal experience. The participants can be asked to describe their typical experience with the feature on social media, or what a specific feature does while using a social media platform. To explore the Organism stage, questions were asked regarding emotional or cognitive reactions caused by that specific feature. The questions were intentionally open-ended to allow for a wide range of emotional experiences to be discovered but were also based on the preselected emotional responses identified through the literature review. Questions were aimed to understand if a specific feature would make the participant feel anxious or overwhelmed, or if the participant noticed any mental fatigue or frustration linked to a specific feature. The Response component for aiming questions to understand the academic impact. The questions were designed to connect the emotional reactions to academic behaviors, in line with the SOR framework's emphasis on stimulus-triggered outcomes. Questions were aimed to understand if using the feature affects the ability to focus on studies, or if a certain way of using the feature or having an emotional trigger led to delays in completing study tasks. To explore self-regulation strategies or coping mechanisms to battle the impact of the algorithm features, questions regarding how participants manage or cope with the specific features.

Before conducting the interviews and collecting data, several emotional reactions were preselected to help structure the development of the interview questions. Because of the open nature of the semi-structured interview, this did not mean that the interview was aimed towards these preselected emotional reactions, but it was still open to capture other emotional reactions or experiences that participants might share (Elo & Kyngäs, 2008). This approach ensured that while having a clear interview structure based on relevant theory found during the literature review process it still allowed space for unexpected or unforeseen themes to emerge. The preselected emotional reactions include Anxiety, Information Overload, Distraction, Procrastination and Emotional Fatigue. The balance between structure and flexibility supported both comparability across interviews and the strength of qualitative insight, together with the open nature of the study (Gill et al., 2008).

Similar to preselected emotional reactions, the structure of the interview was also based on four preselected algorithmically driven features of social media. The four features are Infinite scroll, Personalized Recommendations, Auto-play, and Push Notifications. These features are explained in chapter 2.2. The semi-structured interview largely consists of four cycles that are based on the different features just mentioned. The cycles have similar questions but differ depending on the specific features. The interview starts with a warm-up and questions regarding general social media usage and ends with a round-up and ending questions to look back on the interview and capture any last-moment unexpected topics or discoveries.

Throughout the data collection phase, precise documentation was a priority. Audio recordings of interviews were made as well as notes on paper. All data was securely stored with access limited to the research team members. Measures were taken to anonymize the data, ensuring that participants' identities remain protected. By combining individual interviews and documentation practices, the data collection phase ensured that a wide range of voices is captured

comprehensively and ethically. This approach provided the foundation for analysis, enabling the study to generate meaningful and actionable findings.

## 3.4 Data Analysis

The data analysis phase of this study is designed to ensure that the qualitative data collected from interviews is processed systematically to derive meaningful insights. This phase will follow a structured, multi-step approach to ensure rigor, reliability, and relevance of findings.

The first step of the data analysis was the transcription of the interviews. To ensure accurate and efficient transcription of the interview recordings, OpenAI Whisper was used (Radford et al., 2022). This speech-to-text tool can transcribe natural language with high accuracy. The tool was used through a self-made Python script running Whisper locally, meaning that the audio recordings were never uploaded to any other platform or server, so the transcription complied with ethical guidelines and data protection standards. This method safeguarded any sensitive participant information while still offering high quality and accurate transcriptions. The transcript was subsequently reviewed and manually corrected to ensure fidelity to the participants' answers, explanations, and experiences.

With the interviews fully transcribed, the actual data analysis could start. This began with marking the useful data within the interview. This included data regarding social media use, emotional reactions to this, impact on academic performance, and coping strategies for this. After this, coding of the interviews was done using NVivo for systemically analysis (Woods et al., 2016). The transcribed and anonymized interviews were imported into the tool to conduct the coding process. Within NVivo there were five categories of codes created: Academic performance, Algorithmic features, Coping strategies, Emotional reactions, and social media usage. NVivo's functionality allowed for efficient organization of data into codes, the relationships between themes, and comparison across the participants.

For the coding process, a hybrid strategy was applied, meaning that both deductive and inductive coding was done (Fereday & Muir-Cochrane, 2006). Deductive coding was based on the key elements from the SOR model. This included predefined categories such as the algorithmic stimuli (e.g., infinite scroll, auto-play, personalized recommendations and push notifications), emotional reactions (e.g., anxiety, procrastination, emotional fatigue and information overload) and behavioral outcomes (e.g., motivation loss, distraction and academic disengagement). Inductive code allowed for the emergence of new themes that were not previously anticipated in the study. This could include personal coping strategies, platform-specific behaviors, and specific emotional responses unique to certain contexts or usage.

The categories from the deductive coding mentioned above were the themes used to group all the codes from the interviews. These were recurring patterns across participants and were used to capture the essence of what was expressed across multiple interviews and were iteratively refined to ensure internal coherence and distinction from one another. The structured environment of NVivo supported the process of linking segments of text to themes, enabling cross-case comparisons.

The transcriptions of all the interviews can be found in Appendix 5 to 12. The transcriptions have been coded the same way as they were done in NVivo. For the relevant elements in the

transcriptions, one of the codes has been added to that element. These codes can be AP (Academic Performance), AF (Algorithmic Feature), CP (Coping Strategies), ER (Emotional Reactions) and SMU (Social Media Usage).

Once key themes were identified, preliminary findings were prepared. This involves summarizing the major insights and linking them to the research questions. At this stage, attention was also given to capturing the nuances of different participant perspectives and highlighting any contrasting or complementary viewpoints.

## 3.5 Ethical Considerations

Consent and confidentiality are a big part of the ethical considerations of this research study. To achieve this, written consent forms will be developed and signed by the participants before the interviews are conducted. These forms will contain detailed information about the research purpose, process and rights of the participants (Israel & Hay, 2006; Orb et al., 2001). All data will be anonymized to protect the participants' identities. During the introduction of every interview of this research process, the ethical issues are reassured again. In the case of any recording of the interviews (notes, photos, audio, video), permission is requested beforehand.

No more respondents than necessary will be asked to take part in the research. As shown by Wiles et al. (2008), transparency and reiteration of ethical commitments during the data collections phase are essential. Therefore, it is made clear before each interview that participation in this research is entirely voluntary, and participants are not pressured or manipulated into taking part in it. Participants can withdraw at any time without having to give an explanation, and this will not affect their relationship with the university or the researchers. The participants can also choose to have their responses permanently deleted and/or not used for analysis. These are rights that are emphasized in ethical literature (Israel & Hay, 2006; Kaiser, 2009).

As recommended by Kaiser (2009), data handling is done following ethical protocols. All data will be securely stored, with access limited to the research team. Digital data will be password protected, and hard copies will not be produced. Transcriptions will be made from the interviews and these are anonymous. After completing the transcription of an interview, the recording will be deleted. Transcriptions are made with a locally run tool, so no recordings are uploaded to a third-party program or server to ensure data privacy.

All data will be deleted a year after the report is published, and no more questions and information will be asked than necessary (Orb et al., 2001). Before the research is published, it is shared with the participants to confirm their input in the study. When the research is finished, the paper will be shared with all participants. Contact information of the researchers and supervisor is shared with the participants for them to ask further questions. These measures are ethical considerations that aim to ensure that the entire research process is ethical, inclusive and respectful of all participants' rights and well-being, in line with recognized research ethics principles.

## 3.6 Scientific Quality

This research was built on a comprehensive foundation of preparation and planning, including an in-depth literature review and a clearly structured methodological approach (Creswell & Creswell, 2023). The literature review was done to explore the topic and related frameworks, and interview questions were based on this together with the Stimulus-Organism-Response model (Mehrabian & Russell, 1974). The semi-structured interviews allowed participants to express personal experiences and opinions while enabling comparisons across cases. During and after these interviews, the collected data was documented and secured properly to maintain integrity and confidentiality. The research measures of this study have controlled any bias that could have affected the results of the study. All participants of this study have been selected through purposive sampling (Palinkas et al., 2015). To ensure comfort and full comprehension during the interviews, these were conducted in the English or Chinese language depending on the preference of the interviewee. Interview questions were prepared carefully and developed during the preparatory phase after thorough literature review, planning, and preparation.

Because to the focus on a specific area and population - which is university students in the country of Sweden - together with emphasis on algorithmic social media features, the research will fill a knowledge gap in the current literature. It provided new insights by connecting and finding a relationship between the three phenomena of social media usage, emotional responses and educational influence. Ethical aspects ensure that participants in this study are respected and adhered to ethical guidelines. Consent, confidentiality, and data protection are maintained during the whole process of the study.

Following the criteria proposed by Lincoln & Guba (1985), this study ensured credibility, transferability, dependability, and confirmability. Credibility was ensured through accurate transcriptions, systematic coding in NVivo, and the use of direct participant quotes to support findings (Bazeley & Jackson, 2013). Additionally, participants were given the opportunity to review and confirm their input, strengthening the trustworthiness of the interpretations. The transferability of the study was supported by collecting rich, contextual data. The diverse participant backgrounds, for example from study discipline, nationality and digital habits, increased the relevance of findings to other higher education contexts (Tracy, 2010). Dependability was ensured by following a systematic and transparent structure throughout the whole research process. This was done by transcribing all interviews using OpenAI's Whisper via a locally run script. This improved the traceability of decisions made during the analysis. Confirmability was achieved by grounding interpretations of the data itself. Coding was deductive as it was informed by existing theory, but also inductive because it allowed new themes to emerge. *Figure 2.* shows a visualized overview of the research process in six steps.

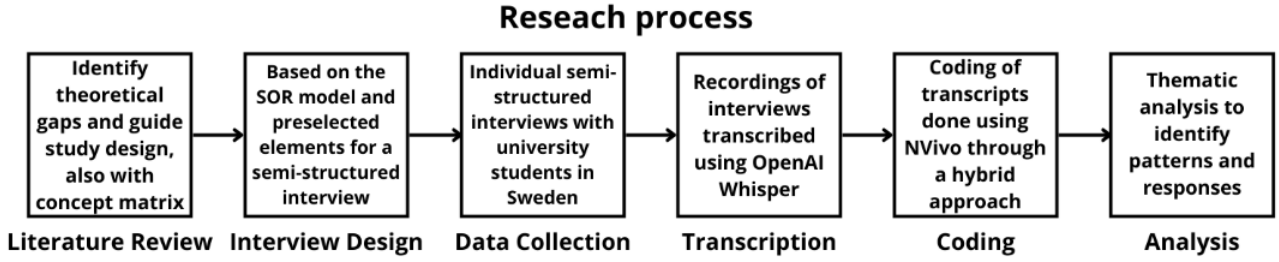


**Figure 2. Visualized research process.** ***Author's own work***

## 3.7 Chapter Conclusion

The chapter of Methodology gives details into the research philosophy, approach, data collection methods, data analysis techniques, ethical considerations and measures to ensure scientific quality. The research uses an interpretivist philosophy to deeply explore students' subjective experiences regarding algorithmically driven social media use. Semi-structured interviews were employed as qualitative methods and were carefully planned and executed to gather in-depth data, which were then analyzed using systematic coding and thematic analysis assisted by NVivo. Ethical integrity was consistently maintained through clear consent processes, data anonymizations, and secure storage practices, ensuring participant confidentiality and comfort throughout the study. Scientific quality was secured through rigorous preparation, comprehensive literature reviews, transparent analytical processes, and methodological coherence. In the next chapter, the findings are presented from the outcomes of the qualitative analysis. The findings could be structured into four sections: the Attention Trap to explore how algorithmic features capture and hold students' focus, Emotional Turbulence that describes the emotional impacts triggered by continuous algorithmic engagement, Academic Disruption on how these emotional responses directly influence students' academic behaviors and outcomes, and Coping in Vain, discussing the strategies students use to manage these challenges and their effectiveness.

# 4. Findings

This chapter presents the findings from six semi-structured interviews with seven participants, focusing on how algorithm-driven social media features negatively affect students' emotions and academic life. Through thematic analysis using NVivo, four major themes emerged: Algorithmic Traps, Emotional Turbulence, Academic Disruption, and Coping in Vain. These themes are deeply interconnected. In essence, certain design features of social media (the "traps") hook students into excessive use, leading to turbulent emotional states (anxiety, guilt, fatigue, etc.), which in turn disrupt academic focus and performance. Students have developed coping strategies to manage these issues, but these efforts often fall short due to the power of algorithms and the pervasiveness of social media in their lives. The following sections detail each theme, using direct quotations from participants to illustrate the grounded reality of their experiences. Quotations are referenced to clarify from which participant and interview the quote originates from. For example, a reference of (R2, L34) means that the quote originates from respondent 2 and the quote can be found on line 34 of the transcription of the specific interview. A brief conclusion will then synthesize how these elements interlink to influence student well-being and studies.

## 4.1 The Attention Trap

Participants identified some platform features that prolonged their use of social media. The most frequently cited were infinite scroll feeds and personalized recommendations, which often worked together to drive compulsive use. Push notifications also emerged as key triggers for returning to apps, while auto-play was largely dismissed or actively avoided by participants.

### *4.1.1 Infinite Scroll Feeds*

All seven students emphasized how difficult it was to stop scrolling once they started. Content felt endless. One student described it as "*doom scrolling*" (R2, L34), explaining:

"*I have such a short attention span that even scrolling makes me bored eventually. And I switch to YouTube or something else because I need to switch between different apps.*" (R3, L40).

Another reflected:

"*I was going to do an hour of YouTube and then study. And then I sat for three hours… usually double or triple the amount of time that I decided to spend.*" (R2, L73).

Without external prompts to stop, students often kept going. As one participant said: "*…it's like Pandora's box. Once you open it, you'll use it endlessly.*" (R7, L198).

### *4.1.2 Personalized Recommendations*

Personalized Recommendations were seen as highly engaging. One student said: "*It's like keeping your foot in – not letting you go.*" (R1, L76). Another reflected on the remarkable feeling of the algorithm:

"*…one thing is more scary, sometimes, for example, when you mention something, or you talk to a friend about something, and then when you watch a video from some platform the next second, it will recommend relevant video to you. It's so scary, it's surveillance on my phone*." (R6, L89).

Others noted how little they search anymore: "*I've almost never searched for content by myself… it's always the ones that show up.*" (R4, L112).

The mix of personalization and infinite scroll created a powerful loop. As one put it:

"*I just kept being pushed by the algorithm, not what I wanted to see on my own initiative. Personalized recommendation and infinite scroll are particularly addictive if combined together.*" (R6, L103).

Notifications were widely described as triggers that interrupted concentration and re-engaged users. Some students turned off notifications entirely: "*I don't have any notifications. Nothing, zero*." (R1, L121). One explained:

"*It's very annoying… I feel like I can't do anything while waiting and hoping that someone might send me something*." (R1, L131).

Another said:

"*When I see a tag like 'Your frequent views' on a notification, it makes me even more tempted to click and see what it is.*" (R6, L154).

Students also found it difficult to ignore notifications from content creators or friends: "*…if you're a fan of someone, you'll naturally want to watch all of their content.*" (R6, L156). One described how easily this leads back to the feed:

"*I might pick up my phone to look up an English word, but the moment I see a notification, my attention shifts to that instead — and I forget to look up the word.*" (R7, L150).

### *4.1.3 Auto-play as Annoyance*

Interestingly, auto-play was seen as an annoyance, not a trap. One student said: "*I have not used auto-play in years"* (R2, L131), added by: "*...I just don't like the feature.*" (R3, L132). Another added: "*...I just stop. I don't want to, I don't want to keep watching one.*" (R1, L69). Some were frustrated: "*When it autoplays, I feel like, 'You have the audacity!'... I choose what I watch.*" (R5, L98). Another said:

"*If I want to replay a part of the current video, it suddenly jumps to the next one, and I have to click to go back and replay it. It's really annoying.*" (R6, L76).

Content served through auto-play was often irrelevant: "*It was not even in the same category*." (R6, L76). Participants largely turned it off or ignored it.

## 4.2 Emotional Turbulence

Spending excessive time on algorithm-driven social media left students riding an emotional roller coaster. Participants reported a range of negative feelings associated with their usage, notably anxiety, distraction (or mental restlessness), guilt and self-blame, and emotional fatigue. There was also occasional mention of FOMO (fear of missing out) on content or social updates. On the other hand, sadness was rarely mentioned as a direct outcome of social media use: none of the students described feeling deeply sad due to these platforms, aside from a short feeling of frustration or disappointment. More commonly, their emotional landscape was marked by stress and disturbance related to wasting time and struggling to control their habits. This section discusses these key emotional reactions and how they relate to the features described above.

### *4.2.1 Anxiety and Stress*

A prevalent emotion among the students was anxiety: specifically, anxiety stemming from academic pressure after losing time on social media. Many participants became anxious when they realized that a "quick break" had turned into an hour or more of scrolling. For example, one student explained the feeling whenever he overshot the time he intended to spend online:

"*And then I inevitably start to feel a bit anxious. I realize I spent way more time than I expected, and I feel like I shouldn't have — it really cuts into the time I could've spent doing other things.*" (R7, L54).

This realization that precious study time was lost often hit hard once they closed the app. Another interviewee shared a similar sentiment: while actively scrolling he might feel fine, but the realizations came later: "*when you feel like 'oh shit, it took too long'*" (R4, L52). The emotional reactions were triggered after realizing how much time was spent. Such anxiety was directly tied to academic concerns: the worry that procrastination via social media had put them behind on coursework or preparation.

Notifications contributed to anxiety as well. One participant described feeling anxious from simply anticipating notifications, which created background anxiety until he finally turned them off entirely. Others mentioned feeling a form of stress when seeing a stream of notifications. For instance, a student noted that when his phone keeps buzzing during study, it "*can stress you a bit*" (R4, L178), even if he tries to ignore it. While he wouldn't call it panic, the constant interruption made him feel uneasy and pressured. That pressure sometimes came

with a physical aspect: interviewees spoke of a racing mind or difficulty relaxing, knowing that there was endless content they could be checking or that others were active online. Not all anxiety was about missing content (as in classic FOMO), more often it was self-directed - anxiety about falling behind in studies or about their own inability to stop scrolling. One Chinese student explicitly identified "焦虑" (anxiety) as his most prominent reaction:

"*I often stop halfway to watch short videos, and as a result, I end up spending more time than planned. When I realize this, my first feeling is anxiety, as I feel like I've wasted time on studying.*" (R7, L92).

This kind of anxiety is clearly linked to academic guilt, which we discuss next, but it stands on its own as a feeling of heightened worry and nervousness that several students experienced after using social media for too long.

### *4.2.2 Guilt and Self-Blame*

Perhaps the most universally shared emotional reaction was guilt. Every participant, in one way or another, mentioned feeling guilty or regretful after a long, unplanned social media session. They often reproached themselves for wasting time that "should have" been spent more productively. One interviewee put it briefly:

"*I feel like I should be doing something more productive… maybe go to the gym or do something more productive in general*." (R4, L48).

In his case, after scrolling too much he would list the activities he neglected (exercise, socializing, studying) and feel bad for having chosen Instagram or YouTube instead. Another student described the guilty aftermath of a three-hour YouTube binge that was meant to be only one hour:

"*I would say yes, I felt almost guilty… not that I'd let myself down majorly, but guilty that I didn't spend the time doing something better. Like, I should have spent this time elsewhere*." (R2, L75).

This captures a milder form of guilt - more like regret or a sense of opportunity cost. For some, the guilt was even more intense, verging on self-blame and shame. One participant spoke very passionately on this topic, noting that as a student who grew up with a strong emphasis on study discipline, he feels extremely guilty when he procrastinates online. In his words:

"*Yes, exactly those kinds of feelings — guilt, frustration, and self-blame. I wanted to get things done, but I ended up wasting time elsewhere, so of course I would blame myself.*" (R6, L138).

He went on to explain that this feeling was deeply ingrained, saying that throughout high school he was taught to value every minute of study:

"*Back in high school, teachers constantly emphasized the importance of studying hard, and that mindset kind of carries into university. So when I spend time watching videos in college, every moment that feels wasted makes me feel deeply guilty and regretful.*" (R6, L138).

This indicates how guilt can be intensified by internalized academic pressure. Importantly, that strong guilt was not an outlier: even those who were more casual described at least some regret. No one felt happy with themselves after procrastinating. Even if they enjoyed the content in the moment, it was common for participants to feel they shouldn't have done it after procrastinating. This guilt often overlapped with anxiety: guilt for the act, and anxiety about its consequences.

### *4.2.3 Distraction and Mental Fatigue*

While distraction is technically more of a cognitive state than an emotion, participants frequently referred to a feeling of mental scatter or restlessness that came from overusing social media. This feeling is part of emotional turbulence because it affects their mood and mental comfort. Several students mentioned that after consuming a lot of rapid content (especially short videos or endless posts), they felt drained or tired. "*Mentally drained, I would say, most of the time* [after a long scrolling session]," (R2, L79), this participant also reported: "*I might be inspired by something, but that's on rare occasions*." (R2, L79). Another participant agreed, simply adding: "*Yeah, tired*." (R3, L80). This "tired" is not just physical fatigue from being awake, but emotional exhaustion. They described it as feeling numb or zoned out. One student noted that in the past he used to scroll as a way to relax or give his mind a break, but now the effect had reversed:

"*It depends how engaged I am. If I'm really engaged, it's quite draining… sometimes you scroll without paying much attention.*" (R4, L50).

And added: "*you can get information overload sometimes*." (R4, L54). In such cases, by the time they stopped, their minds were fatigued from processing so many stimuli. This emotional exhaustion often left them less motivated to do anything else, including study. As one interviewee put it: "*...you become more lazy. So it's harder to get back to restarting.*" (R4, L64). This hints at how emotional and cognitive states merge: feeling drained and lazy is both a mood and a mental state of low stimulation, which directly impacts academic work (a topic for the next section).

Another aspect of distraction was a lingering sense of disrupted attention. Participants said that even when they weren't actively on social media, heavy use could leave their thoughts scattered. For instance, one person described "*a bad feeling of waiting*" (R1, L131) when he used to get frequent notifications: a sort of restless anticipation that made it hard to fully focus on his current task. Others mentioned that during study sessions, the thought of what they had seen or could see online would interrupt. One student reflected that after spending a long time on a feed full of world events and debates (X/Twitter in this case), she felt "*everybody's talking about the same thing*" (R3, L56) and it would occupy her mind even as she tried to move

on, until it just became boring repetition. In sum, emotional turbulence included feeling mentally unsettled. Whether we label it as distraction, restlessness or fatigue, the interviews suggest that intense social media use exhausts the mind and leaves an emotional leftover of weariness or irritability.

### *4.2.4 Frustration and Irritability*

Alongside anxiety and guilt, a number of participants brought up feelings of frustration, irritation or even anger in relation to their social media habits. Interestingly, this frustration took a few forms. Some of it was self-directed: frustration was essentially pointed towards their own behavior. This overlaps with the guilt discussed earlier. But there was also frustration directed at the platform or content. For example, recall that many disliked the auto-play feature. One student said it made him "*feel really annoyed, irritated, even angry. … very frustrated.*" (R6, L168) when unwanted videos started playing, although he noted that anger was short-lived. Another participant grew irritated when the algorithm showed her the same type of content repeatedly:

> "*Some platforms just suggest one topic over and over. You go crazy, like a downward spiral… I just get angry – like stop, I wanted to see something new.*" (R3, L168).

In that case, her anger was at the monotony and feeling of being stuck in a bubble of content.

There was also annoyance at notifications, mentioned by a few. A student said if he was concentrating and a trivial push notification popped up: "*…I can't focus on it at all until I know if it is something important. Usually it's not.*" (R5, L179). If he checked and found it was something meaningless like a random entertainment news alert, it would irritate him further that it interrupted him. In general, this kind of low-grade anger or irritability came up whenever the technology did something that the students themselves didn't intend (like interrupting or showing irrelevant posts). While frustration wasn't the headline emotion for most, it is worth noting as part of the turbulence: these platforms sometimes provoked short-term annoyance that added to the overall emotional strain. Notably, sadness or depression was not commonly reported. None of the students said that using social media made them feel long-term sadness or depression. One or two mentioned feeling down if they saw upsetting news or felt they wasted an entire day, but they framed it more as annoyance or self-disappointment rather than deep sadness. This underscores that the emotional consequences here were more about stress, guilt, and anxiety rather than depressive feelings.

### *4.2.5 Fear of Missing Out (FOMO)*

Although not as prominent as other emotions, a few participants indirectly touched on FOMO or related feelings. One described how certain app features play on social connections. For instance, he didn't want to delete a particular app because it had a social 'streak' feature with his friend that he didn't want to lose. This implies a fear of missing social interactions or letting a friend down if he disconnected, what is essentially FOMO on social bonding. Another

participant admitted that when he had notifications on in the past, he felt a compulsive need to check because:

"*I feel that it's in my mind now knowing that someone sent me something, and then it becomes hard to keep studying because it's all in the back of my head.*" (R1, L142).

And this 'something' could be important or interesting. Even though he knew most notifications were not important or even meaningless, the fear of missing a meaningful message kept him glued until he finally muted everything. Generally, these students were aware that social media can create a sense that if you're not online, you'll miss out on something. One student mentioned that when big news was happening, everyone was talking about it on X/Twitter, and he felt compelled to keep scrolling to stay updated until it actually just became repetitive. In his case it was more a desire to stay current (a mild FOMO on information) rather than on social life specifically. Overall, FOMO was not a strong theme, possibly because these interviewees had already taken steps like turning off notifications or even taking breaks, so they were managing FOMO. They occasionally did feel pulls of wanting to know what friends were doing or what the latest trend was, but more dominant were the emotions of anxiety about their own behavior and guilt over academic neglect.

These emotional states were not just subjective experiences but often translated into academic struggles such as avoidance, difficulty focusing, and diminished motivation.

## 4.3 Academic Disruption

All participants reported that their engagement with algorithmic social media had, at times, interfered with their emotions, and these emotional consequences appeared to directly or indirectly undermine students' ability to concentrate or plan their academic tasks. The nature of this academic disruption ranged from losing study time and procrastination, to difficulty concentrating on coursework, to a decline in the quality of their work or confidence in their academic abilities. Four aspects emerged: procrastination (delaying or avoiding academic tasks), attention loss (inability to focus or stay on task), poor time management (misallocation of time due to social media), and diminished academic self-efficacy (feeling less capable or less confident as a student because of these habits). This section unpacks each aspect with examples from the interviews.

### *4.3.1 Procrastination and Task Avoidance*

A clear finding was that social media provided an easy outlet for procrastination, leading students to start their academic work late or not at all. Many shared stories of intending to study or complete an assignment but getting sidetracked by endless feed. One student laughed as he admitted:

"*Yes. All the time… I was going to say … I'm going to do an hour of YouTube and then study. And then I sit for three hours. So usually, you have double or triple the amount of time that I decided to spend.*" (R2, L73).

Those extra two hours was time he had intended for reading, which then had to be crammed later. Another participant similarly noted that scrolling often overtook his scheduled tasks:

"*For instance, I kept scrolling until it was time to have lunch. In that case the whole morning has passed like this, and I haven't learned anything.*" (R6, L34).

This domino effect of procrastination was commonly described. Once they fell down the rabbit hole, not only was the immediate task delayed, but it could throw off plans for the entire day. One interviewee expressively called social media "*a Pandora's box*" (R7, L198) for procrastination: if he even opened those apps during study time, he would be unable to limit himself. All of them were aware of this risk. A participant in the business program noted he tries not to even multitask with a feed open:

"*I try to avoid it during the breaks. Because it's like a distraction to me. It affects the rest of the day. Like it does not let me really focus on what I have.*" (R1, L20).

He and others sometimes attempted to only check feeds during designated breaks, but even then, the breaks often ran over. The result of these behaviors was the last-minute rush and stress. Although not everyone explicitly said, "I missed a deadline" or "my grades suffered", the implication was that procrastination via social media cut into the time they needed for assignments and exam prep. One student mentioned an instance of nearly missing a homework deadline because he got absorbed in TikTok when he meant to only spend a few minutes relaxing (R7, L68). The pattern was clear: the more time lost to Instagram, X/Twitter, YouTube, etc., the less time available to devote to studying, often leading to hurried, late-night efforts. This directly connects to feelings of guilt and anxiety described earlier. Those emotions typically arose because participants knew they had procrastinated and now had to catch up under pressure.

### *4.3.2 Attention Loss and Concentration Issues*

Even when students did sit down to study, the lingering effects of social media use often disrupted their focus. Several participants described difficulty concentrating after using short video apps. As Respondent 6 put it:

"*My mind just feels really messy… like some abstract music that keeps looping in my head like an earworm*." (R6, L46).

Others spoke about the impact of interruptions. A common scenario was trying to study, getting a notification or remembering something on social media, checking it 'for a second' and then spiraling into a much longer distraction. One interviewee admitted this happened frequently:

"*It's easy for me to check a notification, read it, and then do something else instead of studying and you end up losing an hour, for example*" (R4, L174).

After such an interruption, returning to the academic task was described as "*definitely difficult"* (R4, L174). The same student noted: "*you kind of have to reboot your concentration and thinking*." (R4, L64). Another agreed, saying:

"*It mostly breaks with the focus. It breaks the focus and because I get worked up I can't find my way back to the place where I need to be done.*" (R5, L152).

This illustrates how even a short glance at social media breaks the flow of studying and rebuilding that focus is not trivial. Some participants reported that even without opening the app, their urge to check social media was mentally distracting. For instance, while reading, their thoughts might drift toward wondering whether there was anything new on Instagram, disrupting their focus. This resonates with participants' accounts of lingering distractions. It paints a picture of fragmented attention: an environment where focus is constantly under siege by potential digital distractions. One participant summarized his struggles:

"*Notifications in general definitely impact concentration on studies. ...some people can study very well with distractions. Personally, I can't.*" (R4, L172).

While several students resorted to turning off their phones entirely during study (a coping tactic we will revisit) because if the phone was on, the mere knowledge of available content or messages made it hard to fully focus on academic work.

### *4.3.3 Poor Time Management and Scheduling Problems.*

The interviews also indicated broader time management issues tied to social media overuse. Students found that their daily routines and study schedules frequently derailed. As mentioned, procrastination on a given task can descend into a day's schedule being wrecked, where meals are delayed, sleep is postponed, and other tasks are squeezed or forgotten. One participant confessed the result of days when he falls into a social media hole: "*That messes up my entire schedule for the day.*" (R6. L129). He might spend the night before an exam scrolling out of anxiety or habit, then have to cram in the early morning. Another noted that he often plans not to use social media during his work, but:

"*I might only get through one or two hours before I start thinking, 'Maybe I'll just scroll through some videos for a bit.'. Then I go watch some videos to relax. But once I start, I often lose track of time.*" (R7, L68).

In such cases, his time management failed because the attraction of the feed was stronger than his planned schedule.

One student quantified the impact of removing social media on his schedule: he estimated that before, he spent 3 to 4 hours a day on short videos, and after taking measures to cut down, he spent around 2 to 3 hours, freeing up at least 1 to 2 hours for other things (R6, L146). Some participants implied that their leisure scrolling time ate into time they should have been sleeping or doing assignments, forcing them to stay up later. This hints at potential knock-on effects like fatigue in class or lower performance due to rushed work. While they did not always explicitly state "I got a worse grade because I scrolled instead of studying," one can infer academic consequences. For instance, one participant mentioned an instance of cramming:

"*I remember that during the IT architecture exam, I watched short videos, and as I watched it, I didn't have much time to review for the exam. I kept doing it the night before the exam, and kept doing it, and didn't review for the exam anymore.*" (R6, L72).

He acknowledged that at times he had to work faster or with less focus because of time lost on the phone.

A particularly telling comment came from a student who said "*...the better the content, the less time studying.*" (R4, L153). He explained that when the algorithm showed him very engaging posts or videos, he would spend more time on the app and consequently have less time available for studies. This briefly captures how the quality of recommendations could directly correlate to poor time allocation. In terms of scheduling, another participant noted that social media use often happened in the late evenings when there were no classes, which then stretched longer into the night than intended, sometimes causing her to sacrifice morning study plans. These habits point to difficulty in self-regulating time, which is a skill crucial in university. Several students seemed aware that their time management skills were being undermined by these platforms, and this awareness contributed to feelings of reduced academic self-efficacy.

### *4.3.4 Diminished Academic Self-Efficacy*

Repeated cycles of distraction and procrastination led some students to question their academic effectiveness. While they did not use the term academic self-efficacy explicitly, their reflections conveyed a sense of diminished confidence in their ability to study productively. As one student put it:

> "*I feel like if I could use that time for something else — like working out or studying — I'd definitely be in a better place than I am now.*" (R6, L202).

Another student discussed how constantly needing to stop himself from using social media during study made him question his willpower: "*…you become more lazy. So it's harder to get back to restarting.*" (R4, L64) he said, implying that he viewed himself as having become lazier due to these habits. In his case, he developed a strategy of deleting apps during busy times because he didn't trust himself otherwise. This speaks to a lowered confidence: rather than believing he could control his usage while keeping the apps, he felt the only solution was removal. Similarly, a different interviewee mentioned he was "trying to be in control" by limiting it to 1-2 hours a day: an acknowledgement that without deliberate effort, control would slip. When asked if the emotional distresses (anxiety, information overload, distraction) affected his study performance, he responded with a simple "*Yeah.*" (R4, L56), and after a pause, he added that it usually hit him after using the apps when he realized he had to catch up (R4, L58). The fact that these students had to take special measures - or at least felt they should - suggests they perceived their academic abilities as compromised by social media. They often spoke of themselves in a somewhat negative light: lazy, easily distracted or addicted to the phone. This can erode the confidence needed to tackle challenging academic tasks.

One participant insightfully connected it to a larger picture: he felt that especially students who have been under strict academic environments feel even more guilt and self-criticism when they fail to manage their time (R6, L138). This indicates that those with high expectations of themselves academically might experience a bigger hit to self-efficacy when social media use causes them to underperform relative to their potential. They know they could do better if they weren't wasting time, which leads to frustration with themselves and doubt whether they can break the cycle. However, it's important to note that despite these struggles,

all participants were actively studying at university, so they had not “given up” academically. But they recognized that their academic life was being undermined and that they were not always performing at their best due to their social media habits.

## 4.4 Coping in Vain

Faced with the emotional and academic impacts of social media, students developed several strategies to reduce their usage or limit their impact. These included muting notifications, uninstalling or logging out of apps, physically removing phones from easy access, using self-imposed time rules, and even mentally reframing their consumption. While some strategies brought short-term relief, participants generally described them as only partially effective, often due to the persistent pull of algorithmic content and the entanglement of academic and digital life.

### *4.4.1 Turning Off Notifications and Distractions*

Disabling push notifications was the most common first step. One student noted when turning off notifications, it "…s*aved more than half of my time doing that.*" (R1, L123) and another used "Do Not Disturb" mode to stop notification:

"*When I encounter this situation for the first time, I just turn on the ‘Do Not Disturb’ mode on my phone.*" (R7, L168).

However, students often still check their apps out of habit or boredom. One explained:

“*It's just pure muscle memory pressing the thing like I don't even think about it and then boom, there I am on Instagram scrolling.*” (R5, L191)

While others struggled with the necessity of keeping some alerts (e.g., email, messaging) active for academic or social purposes, leading to unintentional re-engagement with platforms.

### *4.4.2 Uninstalling Apps or Taking Breaks*

Several participants tried deleting apps temporarily during exam seasons or busy academic periods. One shared:

"*My strategy is to delete them during busy times and then re-download them when I know I can*." (R4, L68).

Another said: "*Sometimes, I delete TikTok for like a month, to focus on other things.*" (R3, L49). A student from China used app deletion ahead of exams but was reluctant to delete a specific app because of a social streak feature:

"*After keeping it going for 200 or 300 days, you really don’t want to stop. You want to send them a little message every day to keep it going, and you just don’t want to lose that connection.*" (R6, L142).

He described the impact as “有点效果” (“It’s somewhat effective”). Effective in reducing usage but not eliminating the habit, since he often shifted to alternative platforms like Bilibili or YouTube. Others used screen-time limiters or timers. One participant said:

"*Or if there is a timer that I set myself, I will usually turn it off immediately and continue to watch another video.*" (R6, L64).

App limits were easy to override, and detox attempts often resulted in short-term success followed by relapses. One noted a recurring cycle: after a break, usage would resume heavily, almost as compensation for missed time.

### *4.4.3 Environmental and Cognitive Tactics*

Some participants physically distanced themselves from their phones while studying: "*…if I'm really busy, I switch off my phone or I leave it in another room.*" (R4, L172) one shared. Some preferred studying in libraries where phone use felt more socially discouraged. Others used browser extensions to block websites during work sessions, though these measures had limitations: apps on mobile remained untouched, and extensions could be deactivated. One participant used a more reflective approach, saying:

“*…a strategy that I use at least is that for the content I watch, I try to kind of analyze it, and I tell myself it's awful.*” (R2, L43).

This mindful interruption helped him regain control. However, not all participants could sustain this mental discipline. Many admitted that once they were caught in the content loop, critical distance was hard to maintain.

### *4.4.4 Limitations and Relapse*

Despite students’ efforts, most coping strategies provided only temporary relief. One student summarized: "*It’s somewhat effective — I’d say it reduced my usage a bit.*" (R6, L146). Design features like infinite scroll and personalized recommendations couldn’t be turned off. As one said: "*It's hard to delete or there is no way to disable them*." (R1, L35). Even academic responsibilities often required device use, making full disconnection impractical. One participant explained:

"*So you have to get on your phone or something in order to check what you're supposed to do with studies…*" (R5, L216).

Participants often described their efforts as a continuous struggle. One described:

"*When it's very stressful, when there are deadlines, when there are exams, and I feel like I can't do it, I can't keep on doing it. That's where I found myself scrolling. It's not a decision I make. That's where my subconscious mind goes.*" (R1, L109).

He also reflected on the situation after deleting specific apps:

"*Then it's up to me where I turn them off, then it becomes my control. It becomes my decision when I open the apps. When I want to scroll, it becomes my decision.*" (R1, L125).

These efforts, while imperfect, reveal a student population that is both self-aware and actively attempting to resist platform design, how difficult that may be. Their experiences point to a broader challenge: managing digital life in an academic context where the lines between study tools and distractions are increasingly blurred.

## 4.4 Chapter conclusion

In summary, the algorithmic traps of infinite scrolling feeds, tailored recommendations, and well-timed notifications create a habit-forming environment that easily draws students in for longer than intended, whereas features like auto-play, initially assumed to be influential, turned out to be largely rejected by users.

This constant connectivity leads to emotional turbulence, with students commonly feeling anxious, guilty, and mentally drained as they deal with the conflict between immediate online enjoyment and their longer-term academic responsibilities. These turbulent emotions are both a consequence of the overuse and a contributing factor to further academic disruption, as anxiety and fatigue make it even harder to concentrate on studies, setting up a vicious cycle of procrastination, lost time and reduced academic confidence.

Students have not been oblivious to these challenges. They have engaged in various coping efforts, from muting notifications to outright deleting apps, in attempts to reclaim their time and focus. However, these efforts often only partially succeed, as the attraction of infinite content - and the practical entanglement of social media with daily life - continually pulls them back.

Crucially, these four themes are deeply connected. A participant's story might begin with an algorithmic design (e.g., an endless TikTok feed) that triggers an emotional response (e.g., a sense of guilt after an hour lost), which then manifests as an academic consequence (e.g., scrambling to finish an assignment, feeling less capable), prompting a coping reaction (e.g., uninstalling TikTok) that might later be undermined by another feature. The student experiences are grounded in this reality of push-and-pull between their own goals and the platforms' pulls. Despite the negative outcomes, it's worth noting that students often spoke with insight and even humor about their predicament, showing resilience and adaptability. They are learning to navigate a digitally dominated college life, even as the algorithms evolve to capture their attention.

The next chapter will discuss the key findings of the study that were presented by interpreting them through the SOR framework. The three research propositions are revisited, and key insights are introduced. Findings are connected to existing theories and the main contributions of this study are discussed, and finally the research questions are revisited.

# 5. Discussion

This discussion builds on the findings by interpreting them through the Stimulus - Organism - Response (SOR) framework. It begins by revisiting the three research propositions (P1-P3), showing how specific algorithmic features trigger emotional and cognitive states that affect students' academic performance and well-being. An interesting insight that emerged is the strong combined effect of infinite scroll and personalization, which appears to make these platforms especially difficult to disengage from. After validating the propositions, we connect the findings to existing theories. The discussion then outlines the main contributions of this study in both theoretical and practical ways before returning to the research questions.

## 5.1 Validation of Propositions

### *5.1.1 P1: Algorithmic Features Influence Internal States*

Our findings strongly support P1, demonstrating that key algorithmic design elements function as powerful stimuli shaping students' internal emotional and cognitive states. Specifically, features such as infinite scroll, personalized recommendations and push notifications were repeatedly cited as triggers for reactions ranging from distraction and information overload to anxiety and distorted time perception. In line with the view that social media platforms are often "addictive by design" (Costello et al., 2023), these engineered features consistently evoke heightened psychological responses in our participants.

Participants frequently reported losing track of time while endlessly scrolling which is a state similar to the "binge-scrolling" behavior described in recent literature, where the absence of stopping cues promotes prolonged, dissociative consumption (Park & Jung, 2024). This design acts as a particularly potent stimulus in SOR terms, bringing out deep cognitive immersion alongside mixed emotions such as guilt or regret once students realized how much time had passed (Montag & Elhai, 2023).

Personalized content feeds likewise intensified students' emotional engagement. The highly tailored posts often sparked excitement and curiosity yet simultaneously contributed to cognitive overload that made it hard for students to pull away. Empirical evidence supports this trade-off: personalization tends to boost attention retention and information load, thereby heightening emotional stimulation (Baccarella et al., 2018; Montag & Elhai, 2023). From a SOR perspective, such algorithmic precision magnifies the intensity of the organism's state, increasing emotional stimulation and sustained mental activation.

Push notifications, though shorter in interaction, also provoked immediate emotional reactions. Participants described spikes of anxiety or fear of missing out (FOMO) when an alert popped up, even if they tried to ignore it. This aligns with experimental findings that the mere presence of notifications can disrupt attention and induce anticipatory stress (Montag & Elhai, 2023; Stothart et al., 2015). Auto-play, although a more passive feature, similarly undermined students' self-regulation by seamlessly queuing up for the next video. This automatic continuity created momentum that subtly reduced users' agency to stop watching. For instance, a diary study by Chaudhary et al. (2022) found that users often kept watching videos not out of

deliberate choice but because the platform kept playing content by default, frequently leading to later feelings of regret and lost control. Our participants likewise noted that auto-play, while seemingly minor and often already managed through coping strategies, eroded their conscious decision-making and prolonged their viewing sessions.

In sum, these design elements each operated as external stimuli within the SOR model, consistently evoking internal states such as deep absorption, distraction, anxiety, cognitive overload, and emotional fatigue. This outcome aligns with prior work showing that continuous, highly tailored, attention-capturing interface features can provoke significant psychological reactions in users (Cao & Sun, 2018; Whelan et al., 2020). By confirming that such design-driven interactions are far from emotionally neutral, our results substantiate P1's premise that algorithmic features actively shape students' inner states.

### *5.1.2 P2: Internal States Affect Academic Performance and Well-Being*

Our evidence strongly supports P2 by showing that the emotional and cognitive disruptions induced by social media use translated into concrete impacts on students' academic performance and well-being. Participants frequently reported that after being unsettled or distracted by an algorithm-driven browsing session, they struggled to concentrate on coursework. This was often resulting in procrastination, lower productivity or missed assignments. This pattern echoes prior findings that excessive social networking for non-academic purposes increases academic distraction and impairs performance (Feng et al., 2019). Students also described mental fatigue from information overload that undermined their study efficiency. Feeling overwhelmed by endless personalized content or by constant notifications, they found it hard to manage their time and cognitive resources. This aligns with research showing that social media overload erodes students' self-regulation and academic performance (Whelan et al., 2020). Similarly, our participants' accounts of being cognitively drained and unable to focus after social media immersion mirror observations that multitasking on social platforms diminishes academic productivity and well-being (Brooks, 2015).

Beyond immediate study issues, the emotional turbulence spilled over into students' broader well-being. Many interviewees noted feelings of stress, guilt or sleep deprivation attributable to late-night scrolling or to distressing social comparisons triggered by curated content. These narratives echo findings that nighttime social media use can disrupt sleep and indirectly contribute to student burnout and lower academic achievement (Evers et al., 2020). In our study, participants explicitly linked the anxiety and mood disruptions prompted by algorithmic engagement to subsequent declines in class participation, study consistency and daily functioning. While a few did mention occasional positive emotions from social media, those were vastly outweighed by negative effects like heightened anxiety or FOMO.

Crucially, many students traced their emotional states to concrete academic consequences, such as missed assignments, poorer exam performance or lower overall grades. These accounts resonate with large-scale studies showing that students who devote excessive time to social networking tend to have worse academic outcomes (Kirschner & Karpinski, 2010; Salari et al., 2025). Indeed, they reflect broader evidence that problematic, emotionally draining social media use can impair cognitive functioning and task performance (Dhir et al., 2018; Moqbel & Kock, 2018). Thus, our findings confirm P2: the internal states triggered by algorithmic features directly undermined students' academic success and psychological well-

being. This outcome underscores the SOR framework's relevance by illustrating how technology-induced affective states translate into real-world performance shortages.

### *5.1.3 P3: Internal States Mediate the Link Between Features and Outcomes*

Our data also supports P3 by demonstrating that the effects of social media design features on academic performance and well-being are indirect, channeled through the intervening emotional and cognitive states of the user. In other words, features like infinite scroll, push notifications, and personalized feeds did not impact outcomes independently: they influenced students by triggering internal states such as distraction, anxiety or mental fatigue, which in turn led to academic impairments. This finding exemplifies the classic Stimulus - Organism - Response sequence (Mehrabian & Russell, 1974), where an environmental trigger (stimulus) alters the internal condition (organism), thereby shaping the eventual behavior or outcome (response).

We found that participants' inability to absorb study material was not caused by the social media feed, but by the fragmented, distracted mindset that scrolling had induced beforehand. This self-observation clearly illustrates the SOR chain in action: the platform stimulus produced an internal state (distraction) that then hampered her academic engagement. Likewise, Whelan et al. (2020) found that emotional overload mediates the relationship between digital environments and academic behavior, a pattern our participants confirmed repeatedly. Participants' reflections often underscored the distinction between direct and mediated effects. One interviewee, for instance, observed a marked improvement in his academic focus after disabling notifications. He attributed his earlier study problems not to the notifications themselves, but to the anxiety and distraction those alerts had generated (R2, L244). This anecdote supports the idea that modifying the organismic state (in this case, reducing anxiety by removing the trigger) can break the link between a platform feature and its negative outcome.

Moreover, we observed that the features provoking the strongest internal reactions - infinite scroll and highly personalized feeds - also led to the most significant academic consequences. In contrast, features like auto-play and basic notifications, especially auto-play, have only minor effects unless they trigger a substantial cognitive or emotional response. This pattern reinforces the mediation model: the magnitude of the outcome depended largely on the degree of internal disruption produced. Prior research similarly suggests that social media's impact on performance depends more on intervening emotional and attentional states than on usage quantity alone (Moqbel & Kock, 2018). Even though our evidence is qualitative, the interview narratives consistently followed this mediation logic. Participants not only described a simple one-step cause-and-effect from a feature to an outcome, but also their explanations also took the form "Feature X made me feel Y, which led to Z". This recurring causal framing across different students lends strong support to P3's validity.

In short, our findings confirm that the academic effects of social media use are not an automatic consequence of mere exposure to certain features, rather, those effects are shaped by how the features affect users internally. This outcome underscores the SOR model's central proposition that organism-level experiences serve as critical mediators in technology-user interactions. *Table 2.* gives an overview of the propositions and findings.

| Proposition | Summary of Finding | Supporting Evidence |
|---|---|---|
| P1 | Algorithmic features trigger emotional and cognitive reactions such as distraction, anxiety, and information overload. | Participants reported time loss, emotional overload, anxiety and FOMO from features like auto-play and notifications (Montag & Elhai, 2023; Costello et al., 2023). |
| P2 | Internal states caused by social media use negatively affect students' academic performance and well-being. | Participants linked emotional exhaustion to procrastination and poor academic results. This is supported by research on fatigue, distraction, and multitasking effects (Whelan et al., 2020; Brooks, 2015). |
| P3 | Internal states mediate the relationship between algorithmic features and academic outcomes. The effects occur through emotional and cognitive disruptions. | Students described how platform-induced emotions disrupted academic focus, aligning with the SOR model and previous mediation studies (Whelan et al., 2020; Moqbel & Kock, 2018). |

**Table 2. Overview of the Validation of Propositions**

## 5.2 Synergistic Effects as an Interesting Finding

A particularly interesting finding of this study is the synergistic effect we observed between two algorithmic features: infinite scroll and personalized recommendations. Each of these design elements individually has been associated with immersive, attention-capturing user experiences (Montag & Elhai, 2023). Our qualitative evidence suggests that when deployed together, these features create an engagement effect greater than the sum of their parts. Indeed, this combined influence emerged consistently in students' descriptions of their most prolonged and uncontrollable social media episodes.

Infinite scroll, by design, removes natural stopping points and allows users to consume content continuously (Chaudhary et al., 2022; Montag & Elhai, 2023). When this bottomless feed is paired with algorithmic personalization - which ensures that each following post or video aligns closely with the user's interests - the experience becomes both boundless in form and highly optimized in content relevance. According to our participants, this combination yielded a state of sustained cognitive absorption that made it extremely difficult to disengage without deliberate effort. Students described falling into these personalized infinite "loops" almost unintentionally and feeling unable to break out until external factors (like sheer exhaustion or urgent obligations) finally got them to stop.

This interactive effect has been mentioned by users but rarely examined formally in prior research. We argue that it represents a distinct theoretical construct - an engagement synergy - that warrants recognition in literature. While it has been speculated that infinite scroll and personalization rank among the most powerful drivers of user engagement (Montag & Elhai,

2023), there has been little empirical investigation of how these features work together. Our participants' statements offer qualitative confirmation of such a compounded effect and reveal a layered dynamic: the sheer quantity of content and its personalized relevance reinforce one another, rendering the overall experience not only prolonged but also intensely absorbing on an emotional level. In terms of the SOR paradigm, this synergy exemplifies a heightened stimulus impact. Infinite scroll and personalization function as stimuli. When combined, they significantly amplify the organism's state: producing deep fascination, distorted time perception, and heightened emotional engagement. In turn, those intensified states led to pronounced behavioral responses such as academic procrastination and diminished well-being. Many students recalled losing hours to these personalized, never-ending feeds, followed by guilt, mental fatigue and lower academic performance directly attributable to the prolonged state of absorption that this feature combination induced.

Notably, this synergistic mechanism may help explain why certain platforms are especially effective at capturing user attention to an excessive degree. Services that prominently combine infinite scroll with personalization - for example, TikTok's "For You" page or Instagram's algorithmic Reels - caused some of the most intense and extended engagement reports from our participants. For instance, As Costello et al. (2023) highlight, TikTok's "For You" feed exemplifies how algorithmic personalization can foster deeply immersive and compulsive usage patterns. Fittingly, several students recounted losing track of time on TikTok in exactly this manner. In contrast, the interviewees rarely reported significant time loss on platforms that lacked one of these two elements. A personalized but finite content stream, or an infinite scroll feed with only generic content, did not induce the same level of immersion. The "black hole" effect materialized only when content was both essentially bottomless and highly tailored, presented in a frictionless, continuous flow.

From a theoretical standpoint, recognizing this synergy adds a new dimension to the literature on persuasive and addictive design. Individual features like auto-play or push notifications have previously been studied as simple "nudges" that momentarily capture attention (Chaudhary et al., 2022; Stothart et al., 2015). In contrast, the infinite scroll plus personalization pairing appears to fundamentally restructure the user's engagement, creating a continuous state of attentional capture and psychological investment rather than just brief interruptions. Our findings indicate a hierarchy of influence among features: push notifications can effectively grab attention or spark short-lived FOMO, but many students learned to mute or ignore these alerts during study time, and auto-play on its own also had a relatively weak effect. These simpler features functioned more like triggers or "hooks," whereas the infinite scroll-personalization combination acted as an immersive engine that sustained user attention. This contrast highlights that not all algorithmic design elements are equally potent and - more importantly - that their interactions can greatly amplify their impact. Prior research tends to examine such features in isolation, but our results show that certain feature combinations can multiply psychological effects, especially when they simultaneously remove friction and maximize personal relevance. This insight suggests that both future studies and practical interventions should address feature ecosystems as a whole rather than targeting single UI elements in isolation.

From a practical perspective, our discovery yields clear recommendations: efforts to curb harmful over-engagement should focus on disrupting this particular synergy. For instance, designers, or users themselves, might introduce artificial stopping cues into an infinite scroll or dial back the degree of personalization in order to break the seamless cycle. Our participants often lacked the awareness or ability to interrupt the loop on their own, especially when both

features operated unchecked. The adverse outcomes they reported (lost time, guilt, stress) stemmed not from one feature alone, but from the reinforcing effect of the two features working together.

In conclusion, the synergistic effect between infinite scroll and personalized recommendations stands out as a key contribution of this thesis. It formalizes an experience widely felt by users but rarely studied in combination, and it introduces a named mechanism through which algorithmic design can profoundly shape user cognition and behavior. By situating this insight within the SOR framework, the study not only advances theoretical understanding but also heightens practical awareness of how digital platform designs influence student life, and potentially the wider population of users.

## 5.3 Theoretical Integration and Implications

Our findings integrate closely with the Stimulus-Organism-Response (SOR) framework and extend key strands of research in digital media, educational psychology, and human-computer interaction. Framing our data through SOR clarified how algorithmic features act as stimuli, which shape internal emotional and cognitive organism states, ultimately influencing academic and well-being-related responses. This sequence mirrors existing models (Mehrabian & Russell, 1974; Whelan et al., 2020), reinforcing the model's applicability in algorithmically mediated digital environments. Whereas prior studies examined SOR in online shopping or social overload contexts, our study applies it directly to design features like infinite scroll and personalized recommendations, offering new specificity to what constitutes the "stimulus" in such models.

Our study also contributes to literature on the "dark side" of social media. Prior research has addressed technostress, addiction, distraction and information overload as negative outcomes of social media overuse (Brooks, 2015). We reinforce these findings but go further by identifying the design features that give rise to these internal experiences. For example, students' descriptions of stress, distraction or FOMO often emerged from specific platform features like push notifications or personalized feeds, not from general use. This meets a recognized need for greater granularity in understanding how platforms cause stress (Maier et al., 2015) and it also aligns with persuasive technology theories such as Fogg's Behavior Model, which posits that user behavior results from the convergence of motivation, ability and well-timed triggers (Fogg, 2009). Our participants' difficulty disengaging from personalized infinite scroll illustrates how such triggers, that are designed to appear at the right moment, are embedded in modern interfaces and can drive compulsive engagement.

Our findings also engage directly with long-standing debates about social media's impact on academic performance. While some studies report negative associations between usage and grades (Kirschner & Karpinski, 2010; Salari et al., 2025), others argue that academic outcomes depend on the type and purpose of use (Ashraf et al., 2021; Manca & Ranieri, 2016). By emphasizing the role of emotional and cognitive states as mediators, our study offers a process-based explanation that helps adjust these inconsistencies. This perspective aligns with Moqbel and Kock (2018), who suggested that distraction and emotional exhaustion mediate social media's academic effects. We build on this by demonstrating that such internal disruptions are often induced not merely by content or usage patterns, but by specific interface-level

design choices. In doing so, we extend the literature by foregrounding design-driven pathways to academic disengagement.

Furthermore, our findings intersect with theories of flow and digital absorption. Platforms that employ both infinite scroll and personalization appear to induce flow-like states - characterized by time distortion and deep attention - but in non-productive contexts (Csikszentmihalyi, 1990). This aligns with critiques of social media as deploying mechanisms similar to variable ratio reinforcement found in gambling, which sustain user engagement through unpredictability and reward (Montag et al., 2019). Participants' prolonged engagement in algorithmically curated feeds illustrates how flow, typically seen as beneficial, can become counterproductive in academic contexts when it hinders focus and self-control.

These insights also inform literature on digital well-being and coping. While P3 confirms that internal states mediate design-outcome links, our findings suggest that user coping strategies are often insufficient. Although students employed tactics such as muting notifications or using screen-time limits, these measures frequently broke down, especially under stress or boredom. Coping was inconsistent and easily overridden by persuasive design, particularly when features like infinite scroll and personalization acted in tandem. This challenges assumptions in prior coping research that emphasize the effectiveness of individual self-regulation (Beaudry & Pinsonneault, 2005) and underscores the need to address structural design factors. Interventions may be more effective when targeting the stimulus itself - through design friction, transparency or stopping cues - rather than relying solely on users' self-control.

Finally, our results contribute to a more nuanced understanding of when and how social media use becomes damaging in educational settings. Rather than advocating broad restrictions, we highlight that design-driven usage - especially unbounded exposure to personalized, infinite content - is particularly harmful to students' focus, time management and well-being. This adds a critical design-centered perspective to existing discussions and suggests that platform structure, not just user behavior, plays a determining role in academic outcomes.

In sum, our study bridges technical and psychological frameworks, advancing the debate from whether social media harms students to explaining how and why it does through specific algorithmic mechanisms and their psychological consequences.

## 5.4 Research Contributions

This study offers multiple contributions to the fields of information systems, education, and media psychology by integrating theoretical insight, empirical evidence, and practical relevance.

### *5.4.1 Theoretical Contributions*

We advance theory by applying the Stimulus-Organism-Response (SOR) model to the context of social media platform design and student outcomes. While prior studies often treated "social media use" as a broad behavior, our work decomposes it into specific algorithmic features - infinite scroll, personalized feeds, push notifications, and auto-play - and demonstrates how each operates as a stimulus affecting internal cognitive and emotional states. By empirically

validating this process and confirming mediation, we provide a refined SOR framework tailored to digital interaction contexts.

Our most novel theoretical contribution is identifying the synergistic interaction between infinite scroll and personalization. Rather than functioning additively, these features create an emergent effect - what we term an engagement synergy - that significantly intensifies user absorption. This suggests that theoretical models of technology use, habit formation or digital addiction should account not just for isolated features, but for feature combinations and their compound impacts. We also reinforce the importance of internal states in mediating technology effects, offering detailed qualitative support for causal pathways that prior models have often assumed but not deeply explored.

### *5.4.2 Empirical Contributions*

Empirically, this study fills a gap by offering qualitative insight into how university students experience algorithmically driven social media. Existing research has largely relied on surveys and correlations, and our interview-based approach captures lived experiences and emotional dynamics that complement and contextualize those findings.

We contribute detailed accounts of how design features affect academic behavior and mental states, such as how personalized infinite feeds derail study sessions or how push notifications fragment attention. The documentation of the infinite scroll plus personalization combination as a driver of prolonged engagement is particularly interesting. Additionally, we contribute comparative insight by showing that features like auto-play and push notifications tend to have weaker, more short-term effects, helping clarify the relative influence of different design elements.

### *5.4.3 Practical Contributions*

Practically, this research offers guidance for students, educators, and designers. For students, it highlights which features are most likely to cause distraction and stress, particularly endless personalized feeds, and is thereby supporting self-awareness and prioritization of coping strategies. Knowing that notifications and auto-play are easier to manage, students can allocate attention toward more impactful self-regulation efforts.

Educators and university counselors can draw from our findings to support digital well-being initiatives. Workshops that teach students how to modify their feeds, insert breaks into infinite scroll, or resist algorithmic triggers can be designed with these insights in mind. The recognition that emotional responses such as anxiety or distraction drive much of the harm suggests that interventions need to address emotion management, not just time use.

For platform designers and policymakers, we offer evidence that specific interface configurations - not just abstract use - can produce psychological and academic harm. Our results support calls for ethical design, such as inserting stopping cues, allowing greater control over recommendation algorithms, or avoiding high-risk combinations like infinite scroll and hyper-optimized personalization. While we do not test interventions directly, we lay groundwork for policy or UX reforms by identifying where the problems originate from.

### *5.4.4 Methodological Contributions*

We demonstrate the value of analyzing reactions to individual platform features, rather than platforms as a whole. By asking feature-specific questions, we reveal distinctions in user experience and impact that would be lost in broader measures. This methodological strategy can be extended to other domains, such as workplace apps or learning platforms, where the effects of specific features are likewise underexplored.

### *5.4.5 Contribution to Student Awareness and Self-Regulation*

Although not always highlighted in research impact assessments, our study also contributed to students' own digital awareness. Through the interview process, participants reported increased recognition of their media habits and underlying mechanisms. By naming internal responses and linking them to design causes, we help students reframe their experience, understanding that this kind of distraction is often externally engineered rather than a personal failing.

In sum, this research contributes to a theoretically refined model of algorithmic media effects, empirical depth on feature-level impact, practical recommendations for education and design, and a methodological approach suited to complex digital behaviors. It brings clarity to the emotional and academic consequences of platform design, advancing scholarly understanding and offering actionable insights for those concerned with digital well-being.

## 5.5 Revisiting the Research Questions

This study aimed to answer two central research questions regarding how algorithmic features of social media platforms affect university students' academic performance and how students experience and cope with associated emotional and cognitive states.

Addressing the main research question, our findings clearly indicate that algorithmically driven features, particularly infinite scroll and personalized recommendations, negatively affect academic performance by capturing and extending students' attention, leading to significant time displacement from academic tasks. This prolonged engagement often results in reduced study hours, fragmented concentration, and ultimately poorer academic outcomes such as rushed assignments or weakened exam preparation. Additionally, frequent push notifications also wear down academic focus by repeatedly interrupting students' attention, while the cognitive overload from continuous personalized content impairs their ability to effectively process academic material afterward. Emotionally, these platform features often trigger anxiety, guilt, procrastination, distraction, information overload and emotional fatigue, worsening difficulties in academic engagement and overall well-being. Thus, our research demonstrates that algorithmic designs optimized for user engagement hinder students' academic productivity by creating internal states unconducive to effective learning.

Regarding the sub-research question, students frequently reported experiencing emotional challenges. To cope with these issues, students employed various strategies with differing levels of success. Commonly reported coping mechanisms include setting explicit usage boundaries, utilizing productivity tools, and practicing mindfulness to increase self-awareness of their emotional states and impulses. Students also relied on environmental support, such as

studying in phone-free spaces or involving peers to hold themselves accountable. Nevertheless, coping effectiveness was often inconsistent due to the highly engaging nature of algorithmically driven content, indicating that individual self-regulation strategies alone may be insufficient.

## 5.6 Chapter Conclusion

The discussion of the research has validated the three propositions that were introduced earlier in this paper. It is discussed if the findings of the research support the statements made in the propositions. The interesting finding of the synergic effect between two algorithmic features is proposed as well. This is followed by what the research contributions are of this study, spread over five fields: theoretical, empirical, practical and methodological contributions, together with contributions regarding student awareness and self-regulation. This chapter is followed by a conclusion and future research. The conclusion brings together the insights gained throughout this study and presents a concise summary of the most significant findings. It recaps on how algorithmically driven social media features influence students' emotional states and academic performances, highlighting the role of features like infinite scroll, auto-play, personalized recommendations and push notifications in shaping user behavior. It reflects the study's contribution to both theory and practice. Lastly, the future research aims to offer direction for future or ongoing research into how social media design, emotional well-being and academic performance influence one another.

# 6. Conclusion

## 6.1 Important Findings

The features covered in this study acted as external stimuli that elicited a range of internal reactions. Infinite scrolling was associated with deep absorption and time distortion; personalized feeds induced cognitive overload and emotional investment; and push notifications frequently triggered distraction, urgency, or FOMO-related anxiety. In contrast, autoplay was often viewed as less influential, with many students ignoring it or overriding it altogether. In line with the SOR framework, these algorithmic stimuli generated internal states such as mental fatigue, attentional fragmentation, and self-regulatory strain, which contributed to academic disruption.

Academic impact: The emotional and cognitive disruptions translated into concrete academic problems. After using an algorithm-driven feed, many students struggled to concentrate on their schoolwork. They often procrastinate, study less effectively, or miss deadlines. The information overload and fatigue from personalized content impaired their ability to process academic material afterward. Several students explicitly linked these states to outcomes like lower grades, missed assignments, or reduced exam preparation. These patterns echo prior findings, confirming that the internal states we observed help explain how social media has a negative impact on study performance.

Synergistic amplification: An interesting novel finding is the synergistic effect between certain features. When infinite scroll and personalized recommendations were combined, they created an "engagement synergy" that intensified user involvement beyond what each individual feature produced. Students described periods where personalized content kept them engaged in the endless scroll, resulting in an even deeper, more compulsive immersion. This synergy often induced a flow-like state: time distortion and intense focus that, paradoxically, occurred in a distracting context. In practice, the combined effect of these features made it much harder to disengage, amplifying distraction and emotional overload beyond what either feature caused alone.

Coping challenges: Although students reported using various coping strategies, these strategies frequently proved inconsistent. This design driven engagement often overrode personal resolutions, especially under stress or boredom. In many cases, the algorithmic content continued to capture students' attention despite their efforts. This suggests that self-regulation alone may be insufficient when design features actively work against it.

## 6.2 Answering Research Questions

**How do algorithmically driven features of social media platforms affect university students' academic performance?**
Our study finds that algorithmically driven social media features impair students' academic performance. Specifically, endless-scroll feeds and personalized recommendation algorithms capture and prolong students' attention, displacing time from studying. This prolonged engagement reduces study hours and fragments concentration, often leading to rushed or

incomplete assignments and weaker exam preparation. Push notifications repeatedly interrupt focus, and the continuous, tailored content stream creates cognitive overload. Emotionally, these design features lead to distraction, anxiety, frustration, procrastination, and mental fatigue, which further weaken effective learning. In sum, engagement-optimized algorithms - while boosting user clicks and engagement - hinder students' academic productivity by creating internal states that are harmful to studying.

**How do students experience and cope with the internal states triggered by algorithmic content delivery?**
Students reported experiencing a range of negative emotional and cognitive states triggered by algorithmic content. To cope with these reactions, students employed strategies such as enforcing strict usage boundaries, muting or filtering notifications, using productivity tools or timers, and studying in phone-free environments. However, participants noted that these coping measures often had limited success against the strong pull of personalized feeds. In other words, while students do attempt self-regulation, the highly engaging nature of algorithmic design frequently overwhelms these efforts, making it difficult to consistently manage emotional disruption.

## 6.3 Contributions

Our findings contribute to broader understandings of social media's "dark side." Prior research has documented the "dark side" of social media, and we reinforce those conclusions but add a finer-grained perspective: our study identifies the specific features driving those effects. For instance, students often link stress or FOMO directly to push notifications or tailored feeds, rather than to general time spent online. This confirms the need to examine social media's harms in more specific and detailed ways. Moreover, by viewing the data through a process lens, we adjust past findings on social media and academics: rather than debating usage amount, we show that the nature of the algorithmic stimuli and their emotional toll are the crucial factors of academic impact.

From a practical standpoint, our findings offer clear and actionable guidance for multiple stakeholders. For students, the identification of particularly attention-grabbing features - especially the combination of infinite scroll and personalized recommendations - can help them prioritize which platform functions to regulate first. Turning off notifications or taking timed breaks may be more achievable than trying to resist highly tailored feeds. For educators and counselors, the results offer a foundation for designing digital well-being programs. These might include workshops that teach students how to break infinite scroll loops, recognize emotional triggers like anxiety or FOMO, and manage notification settings more effectively. For platform designers and policymakers, our evidence underscores the academic consequences of specific interface features. Rather than focusing solely on general social media use, attention should shift toward minimizing high-risk combinations of features. Ethical design measures such as including clear stopping points in content feeds, allowing users to control or limit recommendation algorithms, and reducing passive triggers, could mitigate harm. In sum, our findings support more holistic interventions that address the structure of digital environments, not just user behavior, to protect academic focus and student well-being.

## 6.4 Future Research

Future work can build on these findings in several ways. Broader studies with more diverse samples (different countries, age groups, or educational levels) would test the generality of our results. Mixed-methods approaches could combine qualitative insights with quantitative data to strengthen causal claims. Experimental or longitudinal research might evaluate specific interventions (like app-blockers, time limits, or new feed designs) to see if they reduce distraction and emotional strain. Additionally, exploring other algorithms and investigating how students might harness algorithmic features for productive purposes would further illuminate the interplay between social media design and learning. These directions would extend our model and help develop more robust strategies for healthy media use in educational settings.

# Appendix 1: AI contribution statement

AI-based tools that were using during the research process were OpenAI ChatGPT (version 4o and 4.5) and OpenAI Whisper. ChatGPT was used for brainstorming during the initial stage of idea development of our study. The tool was also used in general to polish the written text and improve language, as well as assisting in translating to fasten the process. Specific sections that are affected by polishing text with AI can't be given, as it was used throughout all chapters in the thesis. All final decisions and academic interpretations were made by the authors. Whisper was used for transcribing the audio recordings of the interviews done during the data collections phase. Using a tool like Whisper saved time, but the transcriptions were all manually checked for any mistakes made by the tool.

# Appendix 2: Concept matrix

Themes/categories:

Social Media and Emotional Well-being (SMEW)

Social Media and Academic Performance (SMAP)

Algorithms and Technological Impact (ATI)

Behavioral and Psychological Theories (BPS)

Theoretical Frameworks (TF)

Social Media Use in Educational Contexts (SMEC)

| Theme | Short summary and connection with research | Reference | Theory framework | Methodology | Main findings | Key variables or concepts | Research gap & limitation |
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| ATI | The book explores algorithms as a tool that can be used in different contexts. It also covers theoretical insights into the socio-cultural implications from algorithms. | Matzner, T. (2024). Algorithms. Technology, Culture, Politics, Routledge, Taylor & Francis Group | Relational theory of algorithms | Theoretical and philosophical approach. Conceptual and critical analysis instead of empirical data collection. | Algorithms are not neutral. They can preserve biases and inequalities through relational mechanisms. Dangers can come with essentializing algorithms, and ethical and political aspects should be grasped. | Algorithms as relational entities.<br><br>Conditions, code and data.<br><br>Bias, discrimination and exclusion. | It is largely theoretical and conceptual, with limited empirical validation or case studies. |
| SMAP,<br><br>BPS | The paper examines the relationship between different types of Facebook usage and academic performance of | Junco, R. (2012). Too Much Face and Not Enough Books: The Relationship between Multiple Indices of Facebook Use | Time-Displacement Theory and Self-regulation Theory | Quantitative survey regarding Facebook usage behavior, academic performance and demographic controls.<br><br>Statistical analysis with | Time spent on Facebook is negatively associated with GPA.<br><br>Activities like gaming had a stronger negative impact compared to others | Facebook activity (time, frequency, types of engagement).<br><br>Academic performance. | Focus is mainly on Facebook, so possibly not fully representative of all the social media platforms of today.<br><br>Measures are self-reported, so might introduce biases. |

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| | college students. | and Academic Performance, *Computers in Human Behavior*, vol. 28, no. 1, pp.187–198 | | regression models to assess the relationship between Facebook usage and GPA. | like checking statuses.<br><br>Having an account or the number of FB friends were not related to GPA. | Demographic values (age, gender, ethnicity) | Study is based on U.S. college students so it may not be representative globally. |
| SMEW | This paper investigated the link between social media use and mental health outcomes among adolescents, specifically depression, anxiety and psychological distress | Keles, B., McCrae, N. & Grealish, A. (2020). A Systematic Review: The Influence of Social Media on Depression, Anxiety and Psychological Distress in Adolescents, International Journal of Adolescence and Youth, vol. 25, no. 1, pp.79–93 | Psychological distress theory.<br><br>Social comparison theory. | Systematic review of empirical studies regarding social media use and emotional health outcomes among adolescents, published between 2011 and 2018. Each study was evaluated for methodological quality using standard review practices. | Higher social media usage is correlated with increased symptoms of depression, anxiety and psychological distress.<br><br>Key risks are negative social comparison, cyberbullying and excessive time online.<br><br>Positive aspects exist but are weaker than negative ones. | Social media usage measured by time spent, emotional connection and behavioral patterns, mental health outcomes (depression, anxiety, psychological distress), risk factors, protective factors (social support) | Most studies were cross-sectional, limiting causal claims.<br><br>Little studies differentiated between types of scrolling.<br><br>Not enough looked at long-term effects.<br><br>There is a variation of measurement tools across studies.<br><br>No standard metrics for social media use and psychological distress. Limited global diversity and overrepresentation of Western countries. |

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| ATI | The paper gives an overview of the working of YouTube's video recommendation system, focusing on the adoption and effectiveness of deep neural networks. The candidate generation model narrows down millions of videos to a few hundred using user embedding based on past watch and search behavior. The ranking model then scores these candidates based on personalized | Covington, P., Adams, J. & Sargin, E. (2016). Deep Neural Networks for YouTube Recommendations, in *Proceedings of the 10th ACM Conference on Recommender Systems*, New York, NY, USA, 7 September 2016, New York, NY, USA: Association for Computing Machinery, pp.191–198 | Deep learning for the recommendation system.<br><br>Embedding techniques for sparse features. | Deep learning architecture for candidate generation and ranking.<br><br>Implicit feedback (views, not ratings or likes).<br><br>Multiclass classification using candidate sampling and softmax approximation.<br><br>A/B testing to evaluate real-world effectiveness beyond offline precision. | Using deep-learning with user-centric behavioral signs can enhance the relevance, scalability and engagement effectiveness of YouTube's recommendation engine. | Candidate generation & ranking.<br><br>Implicit feedback.<br><br>Neural network architecture.<br><br>User engagement metrics<br><br>Feature engineering. | Whole focus was on one platform (YouTube).<br><br>Focus is more on engineering and scalability, not on user impact or ethical implications.<br><br>No exploration of how algorithmic recommendations affect psychological or social outcomes. |

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| | signals to maximize watch time. | | | | | | |
| SMEW,<br><br>SMAP | This study explores the relationship between media multitasking and mental health symptoms. This is the use of multiple forms of media (such as browsing social media while studying). The study supports the idea that digital behaviors can impair users' emotional states which may affect their academic performance. Pairs with the | Becker, M. W., Alzahabi, R. & Hopwood, C. J. (2013). Media Multitasking Is Associated with Symptoms of Depression and Social Anxiety, Cyberpsychology, Behavior, and Social Networking, vol. 16, no. 2, pp.132–135 | Cognitive and affective psychological theories.<br><br>Cognitive Load Theory: suggests multitasking can lead to overload.<br><br>Emotion-<br><br>Cognition Interaction: proposes emotional states can disrupt performances. | Quantitative, cross-sectional study.<br><br>Self-report surveys from 318 college students.<br><br>Media Multitasking Index, Beck Depression Inventory-II, Social Interaction Anxiety Scale.<br><br>Correlational analysis and multiple regression. | Media multitasking was correlated with both depression and social anxiety.<br><br>These relations held even after controlling the amount of media usage.<br><br>Finding is that how the media is used plays a role in psychological outcomes, not just how much it is used. | Media multitasking frequency.<br><br>Depression and social anxiety.<br><br>Attention, cognitive interference and emotional regulation. | Self-reported data is subject to bias in how participants assess their own media use and mental health.<br><br>The study explored not why people multitask across different platforms. |

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| | O in the SOR framework. | | | | | | |
| SMEW | This study investigates how daily stress affects depressed mood for adolescents and if this relationship is moderated by social support seeking behavior on Facebook. It highlights emotional consequences of social media usage and how social media features can shape emotional outcomes. | Frison, E. & Eggermont, S. (2015). The Impact of Daily Stress on Adolescents' Depressed Mood: The Role of Social Support Seeking through Facebook, Computers in Human Behav-ior, vol. 44, pp.315–325 | Stress Process Model to link daily stressors to psychological outcomes.<br><br>Social Support Theory on the role of perceived support in moderating emotional distress. | Longitudinal diary study with daily reports over 5 days.<br><br>Online self-report surveys to measure daily stress, facebook social support seeking and depressed mood measured daily, from 334 participants aged 14-19.<br><br>Analysis through multilevel regression modeling. | Daily stress is associated with a depressed mood.<br><br>Seeking for social support on Facebook does not help against this effect but intensifies it.<br><br>People who sought support on Facebook reported worse emotional outcomes. | Daily stress, Facebook support seeking behavior, depressed mood.<br><br>Social comparison, coping mechanism, emotional fatigue. | Findings are limited to Facebook.<br><br>The study focuses on a five-day window, which can limit the insights for long-term academic or psychological effects. |
| SMEW, | The paper examines how social media | Islam, A. K. M. N., Whelan, E. & | Cognitive Load Theory to explain how | Quantitative study with online surveys | Social media causes a significantly increased information | Social media affordances, Information overload, | As the study is conducted in Bangladesh, applicability to European |

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| BPS | features that make platforms engaging and interactive lead to information overload and fatigue among university students. It also tests if students' confidence in managing multitasking on digital platforms can reduce negative emotional effects. The study provides strong empirical support for the research regarding how algorithmically driven features influence emotional distress and academic engagement. | Brooks, S. (2021). Does Multitasking Computer Self-Efficacy Mitigate the Impact of Social Media Affordances on Overload and Fatigue among Professionals?, Information Technology & People, vol. 34, no. 5, pp.1439–1461 | excessive content and interaction demands impair mental processing. Social Media Affordance Theory to examine how design features promote behaviors that lead to stress.<br><br>Self-Efficacy Theory to implore how individuals' belief about their ability to manage digital environments affect outcomes. | measuring social media affordances (visibility, editability, association, persistence), perceived overload, emotional fatigue, multitasking self-efficacy.<br><br>Analysis through structural equation modeling. | overload and emotional fatigue.<br><br>Students with higher multitasking self-efficacy experience lower levels of overload and fatigue despite high engagement.<br><br>Emotional fatigue mediates the relationship between affordances and negative outcomes. | Emotional fatigue, Multitasking self-efficacy, Well-being. | or Swedish students may vary.<br><br>The study does not analyze affordances by specific platforms or algorithms. |

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| SMEW,<br><br>BPS | The paper examines if social media has a positive or negative effect on users' subjective well-being. It focuses on understanding how emotional distress can emerge from usage patterns shaped by algorithmic features. | Verduyn, P., Résibois, M., Ybarra, O., Jonides, J. & Kross, E. (2017). Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review, Social Issues and Policy Review, vol. 11, no. 1, pp.274–302 | Subjective Well-Being Framework on how life satisfaction, positive affect and negative affect are influence are influenced by social media usage.<br><br>Social comparison theory to explain how exposure to idealized content can undermine well-being. | Narrative literature review. The authors analyzed studies published in peer-reviewed journals related to social media use and subjective well-being.<br><br>They distinguished between types of use (active/passive), frequency, duration and content exposure. | Passive social media use is associated with declines in subjective well-being, particularly via upward social comparison and envy.<br><br>Active use may promote well-being, especially when it fosters connection and communication.<br><br>Usage type matters more than frequency or time spent.<br><br>The impact varies between individuals depending on personality traits, emotional regulation and context of use. | Type of social media use.<br><br>Social comparison, envy and perceived connectedness.<br><br>Subjective well-being (positive/negative affect, life satisfaction) | It is only a review, so not new contributions or data. |
| SMEW | This study investigates how social media use affects self-esteem through | Vogel, E. A., Rose, J. P., Roberts, L. R. & Eckles, K. (2014). Social | Social Comparison Theory to explain how people evaluate themselves | Four separate studies using survey, experimental | More usage of Facebook correlated with lower self-esteem. | Social media usage type (active/passive), social comparison. | The study primarily focused on Facebook, missing out on findings from other platforms. |

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| | social comparison processes. It focuses on emotional reactions triggered by socially curated content. The reactions are directly related to the emotional distresses of this research. | Comparison, Social Media, and Self-Esteem, Psychology of Popular Media Culture, vol. 3, no. 4, pp.206–222 | based on comparison with others.<br><br>Self-Esteem theory to explore how these comparisons affect psychological well-being and emotional states. | and correlational designs.<br><br>Participants were undergraduate students.<br><br>Measured was the social media usage, social comparison orientation, self-esteem and mood.<br><br>Some participants were exposed to profiles with idealized content to test causality. | Passive use leads to more negative emotional outcomes than active use.<br><br>The more people compare themselves to others on social media, the more likely they are to experience negative self-evaluation. | Self-esteem, mood, envy, self-perception, emotional reactivity. | Self-reported measures may involve bias or underreporting. |
| SMEW | Report assessing both positive and negative impacts of social media on young people's mental health, providing foundational | Royal Society for Public Health (2017), *Status of Mind* | No explicit theory; implied use of social comparison and affective impact models. | National survey (UK) of 1,479 young people aged 14–24. | Instagram ranked most negative for mental health; associated with anxiety, depression, FOMO, and poor sleep. | Anxiety, depression, self-esteem, FOMO, overuse, platform effects. | Focuses on general youth population; lacks academic performance linkage or analysis of algorithmic mechanisms. |

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| | context for emotional impacts in student users. | | | | | | |
| SMEW | This survey-based report outlines the prevalence, frequency, and self-assessment of social media use among U.S. teens, showing high rates of "almost constant" use and its perceived impact on time use. Relevant for understanding emotional strain and overuse patterns in students. | Pew Research Center (2022). *Teens, Social Media and Technology 2022.* | None explicitly stated; descriptive and data-driven. | Quantitative survey; n = 1,316 U.S. teens aged 13–17, conducted online via Ipsos KnowledgePanel using stratified sampling and weighting for representativeness. | 95% of teens use YouTube; 67% TikTok; 62% Instagram.<br><br>35% use at least one platform "almost constantly".<br><br>36% feel they spend "too much" time on social media.<br><br>Girls and older teens report more difficulty quitting. | Frequency of use, platform preference, perceived time use, difficulty in disengagement, demographic differences. | No qualitative insight into emotional mechanisms; lacks theory-based interpretation of impact on well-being or academic focus. |

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| | | | | | Heavy users feel more regret and express desire to reduce usage. | | |
| SMEW, ATI | The paper investigates the psychological, legal and economic impacts of algorithm driven content on the health of young people. It is relevant in the way that it connects algorithmically driven social media features with emotional distress among young users. | Costello, N., Sutton, R., Jones, M., Almassian, M., Raffoul, A., et al. (2023). *Algorithms, Addiction, and Adolescent Mental Health: An Interdisciplinary Study to Inform State-Level Policy Action to Protect Youth from the Dangers of Social Media*. *American Journal of Law & Medicine*, | No single defined theory; integrates perspectives from psychology, neuroscience, law, and public health. | Interdisciplinary analysis combining public health review, legal scholarship, and economic modeling. | Algorithmic curation of emotionally charged content can intensify mental health risks; platform business models and legal protections (e.g., Section 230) limit accountability. | Algorithmic exposure, mental health harms, eating disorders, suicidal ideation, content amplification, legal regulation. | Limited transparency into proprietary algorithms; no causal data access for external researchers; calls for independent algorithm auditing. |

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| | | 49(2–3), 135–172. | | | | | |
| SMEW, ATI | Analyzes how psychological and economic mechanisms embedded in social media and freemium games promote prolonged usage, contributing to addictive behaviors. This is directly relevant to our study of algorithm-driven emotional and academic disruption. | Montag, C., Lachmann, B., Herrlich, M., & Zweig, K. (2019). *Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories*. *International Journal of Environmental Research and Public Health*, 16(14), 2612. | Applies theories such as the Zeigarnik effect, endowment effect, flow theory, social comparison theory, and mere-exposure effect to explain app design strategies. | Theoretical and conceptual analysis of app features, not empirical; illustrative examples from commonly used platforms like Facebook, WhatsApp, and Candy Crush. | Identifies six core mechanisms (e.g., endless scrolling, nudging via notifications, social pressure) that are deliberately used to maximize user attention and engagement, potentially contributing to problematic usage and mental strain. | Addictive design, flow, nudging, algorithmic personalization, social rewards, smartphone use disorder (SUD), I-PACE model, behavioral addiction. | Lacks empirical testing of each design feature's impact on user behavior; acknowledges the need for access to real platform data and calls for further experimental work and regulatory exploration. |
| SMEW | A conceptual review of empirical studies | Chen, M., & Xiao, X. (2022). *The* | Vygotsky's mediational theory, Social | Conceptual analysis and literature review; no | Social media contributes to anxiety, stress, and | Affective variables (e.g., anxiety, depression, stress), | Lack of longitudinal and causal studies; limited research on university |

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| | exploring how social media use affects students' affective variables (e.g., anxiety, stress, depression), concluding that negative impacts dominate. Relevant to this thesis due to its focus on emotional consequences among students. | *effect of social media on the development of students' affective variables*. Frontiers in Psychology, 13, 1010766. | Comparison Theory, Interpretation Comparison Model, and Fredrickson's broaden-and-build theory of positive emotions. | empirical data collected. | depression primarily through comparison and unrealistic self-perceptions. Positive effects exist but are outweighed by negative outcomes, especially among adolescent and university students. | social comparison, media overuse, perceived social support, emotional contagion, psychological distress. | students compared to secondary students; cultural/contextual variation largely unexplored. |
| SMEC | The paper proposes a didactic sequence using educational robotics and block programming (Scratch Jr) to foster computational thinking (CT) in elementary students, which | Silva, R., Fonseca, B., Costa, C., & Martins, F. (2021). Fostering Computational Thinking Skills: A Didactic Proposal for Elementary School Grades. | Computational thinking framework by Atmatzidou and Demetriadis (2016), covering abstraction, generalisation, algorithm, modularity, and decomposition. | Theoretical pedagogical proposal with three structured learning scenarios designed for collaborative classroom learning, but no empirical evaluation conducted. | Structured integration of educational robotics can promote CT skills and interdisciplinary competencies, especially when supported by collaborative learning strategies. | Computational thinking, educational robotics, Scratch Jr, collaborative learning, algorithm, decomposition, abstraction. | This is a theoretical proposal not yet tested in real classroom environments; lacks empirical data or evaluation of student outcomes. |

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| | connects with the current research on algorithmic thinking and digital literacy. | *Education Sciences, 11*(518). | | | | | |
| SMEC | This literature review explores the use, benefits, and drawbacks of social media in higher education, aligning with our study by highlighting social media's influence on student engagement and learning contexts. | Tess, P. A. (2013). *The role of social media in higher education classes (real and virtual) – A literature review*. Computers in Human Behavior, 29(A60–A68). | Social constructivism (Vygotsky), situated learning theory (Lave & Wenger), and non-foundational network-centric learning (Eijkman). | Systematic literature review of empirical studies and scholarly arguments related to social media use in higher education. | Social media offers potential for increased engagement and communication but is underutilized educationally and may hinder academic performance if misused. | Social media use, student engagement, Facebook, blogs, Twitter, learning outcomes, course management systems. | Heavy reliance on self-reported data; lack of causal evidence; underexploration of social media's instructional integration and theoretical grounding. |
| SMEC | This large-scale survey investigates Italian university faculty's actual | Manca, S., & Ranieri, M. (2016). *Facebook and the others.* | The study references pedagogical affordances and digital media adoption | Quantitative survey (N=6139), descriptive and inferential statistical analysis, | Use of social media for teaching is relatively low; disciplines, age, and professional rank | Social media adoption, teaching practices, perceived usefulness, pedagogical barriers, disciplinary | The study is geographically limited to Italy; does not deeply explore students' perspectives or the long-term |

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| | use, motivations, and barriers concerning social media in teaching. It is highlighting cautious attitudes and the limited integration of social platforms, which aligns with concerns about social media's academic impact. | *Potentials and obstacles of Social Media for teaching in higher education*. Computers & Education, 95, 216–230. | models, with implicit ties to Technology Acceptance Model and constructivist learning theories. | supported by qualitative content analysis of open responses. | influence adoption; perceived obstacles include student distraction, lack of institutional support, and workload concerns. | differences, faculty demographics. | educational impact of social media integration. |
| SMEW, ATI | This paper outlines the "dark side" of social media, emphasizing risks like addiction, cyberbullying, fake news, and emotional harm. These are concepts highly relevant to | Baccarella, C. V., Wagner, T. F., Kietzmann, J. H., & McCarthy, I. P. (2018). Social media? It's serious! Understanding the dark side of social media. *European Management* | Dark Side Honeycomb Framework (an extension of Kietzmann et al.'s Social Media Honeycomb Model). | Conceptual and theoretical paper; no empirical data collection. | Each of the seven functional blocks of social media (conversations, sharing, presence, relationships, reputation, groups, identity) can contribute to harmful outcomes such as harassment, addiction, privacy | Dark side of social media, honeycomb framework, cyberbullying, addiction, trolling, fake news, identity manipulation. | Lacks empirical testing and generalizability; calls for more empirical studies using novel methodologies to investigate platform-driven harm in various user groups. |

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| | understanding students' emotional responses and academic disruption due to algorithmic features. | *Journal*, 36(4), 431–438. | | | invasion, and misinformation. | | |
| SMEW,<br><br>ATI | The paper argues that the main driver of harmful social media effects (addiction, misinformation, privacy loss) is the underlying data business model, not just individual traits. It is highlighting platform design as a key cause. | Montag, C., & Hegelich, S. (2020). Understanding Detrimental Aspects of Social Media Use: Will the Real Culprits Please Stand Up? *Frontiers in Sociology*, 5, Article 599270. | No formal theory, but critiques "personality-only" frameworks and emphasizes socio-technical systems perspective; draws from uses and gratifications theory. | Opinion/theoretical paper based on literature synthesis; not empirical. | Personal traits only weakly explain problematic social media use; platform features (e.g., likes, infinite scroll, algorithmic feeds) driven by data monetization are the core contributors to harm. | Data business model, social media design, privacy, misinformation, algorithmic amplification, platform addiction. | Lack of empirical testing; calls for independent, cross-platform research on design elements and their behavioral effects using real-world or simulated data. |

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| SMEW,<br><br>BPS | This study conceptualizes and measures Fear of Missing Out (FOMO), exploring its psychological roots and impact on social media use, what is making it directly relevant to emotional triggers and behavioral engagement among youth. | Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). *Motivational, emotional, and behavioral correlates of fear of missing out*. Computers in Human Behavior, 29(4), 1841–1848. | Self-Determination Theory (SDT): focuses on basic psychological needs (autonomy, competence, relatedness) and how their deficit predicts FOMO and media use. | Quantitative: three empirical studies involving scale development, national surveys, and university student samples; used IRT, regression, and mediation analysis. | FOMO is negatively correlated with psychological well-being and need satisfaction, and positively correlated with compulsive social media use, ambivalent emotions, distracted learning, and risky behaviors. | FOMO (measured by FOMOs scale), psychological need satisfaction, general mood, life satisfaction, social media use, distracted behavior, ambivalence. | Cross-sectional design limits causal inference; no exploration of FOMO's temporal variability or personality traits like Big-5. |
| BPS | Explores the dynamic relationships between passive social media use (PSMU) and depression symptoms among students, relevant to emotional impacts of | Aalbers et al. (2019). Social Media and Depression Symptoms A Network Perspective | Network theory of psychopathology | Experience Sampling Method (ESM), 125 students reporting 7 times daily for 14 days | PSMU is contemporaneously linked to fatigue, loneliness, concentration problems, and loss of interest, but does not temporally predict depression symptoms. | Passive social media use, depression symptoms, loneliness, stress, network analysis | Limited to nonclinical student population; causality remains unclear due to weak temporal associations and methodological constraints. |

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| | algorithm-driven platforms in our study. | | | | | | |
| SMAP | This meta-analysis reviewed global evidence linking social media addiction to decreased academic performance among university students, which directly relates to the emotional and academic challenges discussed in our research. | Salari et al. (2025). *The impact of social networking addiction on the academic achievement of university students globally: A meta-analysis*. | No explicit theory used; grounded in empirical correlational literature. | Systematic review and meta-analysis of 16 studies using PRISMA and STROBE criteria. | Found a significant negative correlation (r = -0.172) between social media addiction and academic achievement. | Social media addiction, academic performance, personality traits. | Could not conduct subgroup analysis due to lack of sufficient data in included studies. |
| BPS | This longitudinal study found that problematic social media use (not | Boer, M., Stevens, G. W. J. M., Finkenauer, C., & van den | Behavioral addiction framework based on DSM-5 substance | Three-wave longitudinal survey study among Dutch adolescents (N = 543), | Problematic social media use predicted increases in attention deficits and impulsivity over time, | SMU intensity, SMU problems, ADHD symptoms (attention deficit, impulsivity, | Did not examine real-time behavior or daily fluctuations; only annual intervals; generalizability limited due to |

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| | intensity) predicts increased ADHD symptoms, providing insights into how addictive features may drive emotional and behavioral disturbances, relevant to understanding algorithmic impact on youth mental states. | Eijnden, R. J. J. M. (2020). Attention Deficit Hyperactivity Disorder-Symptoms, Social Media Use Intensity, and Social Media Use Problems in Adolescents: Investigating Directionality. *Child Development*, 91(4), e853–e865. | dependence criteria (applied to SMU problems); also draws on reward sensitivity theory in adolescents with ADHD symptoms. | using random intercept cross-lagged panel modeling (RI-CLPM). | while SMU intensity did not; no reverse effect from ADHD symptoms to SMU. | hyperactivity), longitudinal design, addiction-like behaviors. | overrepresentation of Dutch native and higher-educated adolescents. |
| SMAP,<br><br>BPS | This study examines how multitasking moderates the negative relationship between social networking site (SNS) use and GPA in university students in | Karpinski, A.C., Kirschner, P.A., Ozer, I., Mellott, J.A., & Ochwo, P. (2013). *An exploration of social networking site use,* | Draws on cognitive load theory and the concept of multitasking/task-switching limitations in human cognitive architecture. | Mixed methods; large-scale cross-national survey (N=857) and moderated multiple regression analysis, supplemented with open-ended qualitative responses. | SNS use negatively correlates with GPA, and multitasking exacerbates this effect in US students but not in European students; qualitative data show discrepancies between perceived and actual | SNS use, multitasking, GPA (academic performance), cognitive bottleneck, cultural differences. | Cross-sectional and correlational design limits causal inference; self-reported data may be biased; limited cultural generalizability beyond US and Europe. |

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| | the US and Europe. Highly relevant to research on social media's academic impact. | *multitasking, and academic performance among United States and European university students*. Computers in Human Behavior, 29(3), 1182–1192. | | | multitasking effectiveness. | | |
| SMAP | The article explores how constant smartphone use and digital interruptions lead to distraction, anxiety, and academic stress in students, directly linking algorithmic features and academic performance. | Rosen, L. D. (2017). *The distracted student mind: Enhancing its focus and attention*. Phi Delta Kappan, 99(2), 8–14. | The Distracted Mind theory (Gazzaley & Rosen, 2016), based on cognitive neuroscience | Review and synthesis of experimental and observational studies on student tech behavior and distraction | Frequent phone checks impair focus, increase anxiety, reduce study efficiency, and disrupt sleep; interventions like tech breaks and notification control may help. | Smartphone distraction, study focus, tech anxiety, multitasking, sleep deprivation, FOMO | Mostly U.S.-based studies; lacks experimental validation of proposed strategies; does not isolate social media algorithms specifically. |

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| SMEW, SMAP | Examines how the socio-educational environment (SEE) influences college students' academic performance (AP) via the mediating role of study motivation (SM); relevant to emotional and academic outcomes in your study. | Wang et al. (2024). The effect of social media on the development of students affective variables | Social Learning Theory; Behaviorism; Mediating Model | Quantitative: survey (N=315); Structural Equation Modeling (SEM), CFA, EFA | SM fully mediates the relationship between SEE and AP; teaching quality and peer/family support indirectly shape performance via motivation | Socio-educational environment (family, teacher, roommate); study motivation (self-efficacy, study behavior); academic performance | Focused only on one university in Hebei; AP measured during pandemic; subjective teacher evaluations by students; other potential mediators not tested |
| ATI | This article analyzes how algorithmic mechanisms on digital media interact with social drivers to influence mental health, political polarization, and user behavior, | Metzler, H., & Garcia, D. (2023). *Social Drivers and Algorithmic Mechanisms on Digital Media*. Perspectives on Psychological | Social motivation theory (status and connection motives); complexity science (feedback loops between user behavior and algorithmic adaptation). | Narrative review based on multidisciplinary empirical literature; synthesizes findings from psychology, computer science, and media studies. | Algorithms primarily reinforce existing social dynamics rather than independently causing harm; their design amplifies social comparison, addiction risk, and emotional contagion, especially when | Algorithmic curation, engagement metrics, social comparison, emotional feedback loops, user vulnerability, digital well-being. | Empirical evidence on algorithm-specific effects is limited; disentangling algorithmic impact from broader societal and social media use patterns remains methodologically challenging. |

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| | providing essential insights for understanding the systemic roots of emotional disruption in digital environments. | Science, 19(5), 735–748. | | | optimizing for engagement. | | |
| TF | Proposes a framework linking environmental stimuli with emotional responses and behaviors, forming the basis for the Stimulus-Organism-Response (SOR) model used widely in digital media studies. | Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. Cambridge, MA: MIT Press. | Stimulus-Organism-Response (SOR) Model | Theoretical/conceptual book grounded in psychology and behaviorism | Environmental stimuli (e.g., light, noise, social cues) evoke emotional states (pleasure, arousal, dominance), which predict approach or avoidance behavior. | Environmental cues, emotional response (PAD model), behavioral outcomes | Primarily focused on physical environments; digital media applications are inferred but not directly addressed. |

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| TF | Reframes the classic S–O–R model using a Venn-diagram-like, multi-sector structure that accounts for conscious, subconscious, and behavioral dynamics; offers a rich lens to study how algorithmic stimuli might elicit emotional and academic responses. | Jacoby (2002) | Revised Stimulus–Organism–Response (S–O–R) model with 7 psychological sectors | Conceptual/theoretical paper with visual model redesign | Highlights fluid, overlapping nature of cognitive, emotional, and behavioral processes rather than rigid linear models | Stimuli (external and internal), cognitive awareness (Sector 4), memory (Sector 3), response behavior (Sector 7), subconscious processing (Sector 2) | The framework is not empirically tested; lacks operationalization; original scope limited to consumer psychology, not education or digital platforms |
| TF | The study investigates how privacy concerns on social media lead to knowledge hiding perceptions, which in turn hinder online collaborative learning | Zhai, X., Wang, M., & Ghani, U. (2020). The SOR (stimulus-organism-response) paradigm in online learning: an empirical study of | Stimulus–Organism–Response (SOR) model, privacy concern (stimulus), knowledge hiding perceptions (organism), collaborative | Quantitative survey (N=282, university students in China) using validated scales and structural equation modeling (SEM); moderation and mediation tests applied. | Privacy concerns (abuse and finding) increase knowledge hiding perceptions; these perceptions negatively affect online collaborative learning; perceived supervisory support moderates the impact of privacy | Privacy concern (abuse)<br><br>Privacy concern (finding) | Knowledge hiding in online learning is underexplored; single-dimensional KH construct used; findings limited to Chinese context, so cross-cultural validation needed. |

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|---|---|---|---|---|---|---|---|
| | among university students: a mechanism relevant to how algorithmic social platforms may impair student learning. | students' knowledge hiding perceptions. *Interactive Learning Environments*, 28(5), 586–601. | learning (response). | | concern (abuse) on knowledge hiding. | Knowledge hiding perception<br><br>Online collaborative learning<br><br>Perceived supervisory support | |
| SMAP,<br><br>TF | This study examines how ICT-induced technostress negatively impacts employees' productivity and increases role stress, which aligns with my thesis focus on the psychological effects of digital systems. | Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). *The Impact of Technostress on Role Stress and Productivity*. Journal of Management Information Systems, 24(1), 301–328. | Sociotechnical theory; Role theory | Quantitative survey study (n=233); Structural Equation Modeling (SEM) used for hypothesis testing | Technostress significantly reduces individual productivity and increases role stress through mechanisms like techno-overload and techno-invasion. | Technostress, Role Stress (Role Conflict, Role Overload), Productivity, ICT use, Organizational stressors | Focuses on general workplace ICT use, not specifically on algorithm-driven platforms or students; productivity measured via self-reporting rather than objective metrics. |

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| ATI, TF | This study builds a model explaining how specific ICT characteristics induce technostress among professionals, which is directly relevant to algorithm-induced emotional and academic strain in students. | Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological Antecedents and Implications. *MIS Quarterly*, 35(4), 831–858. | Person–Environment Fit (P-E Fit) Model | Quantitative survey (n = 661), Structural Equation Modeling (SEM) used to test relationships | ICT features like complexity, pace of change, and presenteeism significantly contribute to work overload, role ambiguity, and other stressors, which in turn lead to psychological strain. | Technology characteristics (usefulness, complexity, reliability, pace of change, presenteeism, anonymity), Stressors (e.g., work overload, role ambiguity), Strain | Focuses solely on workplace adults; findings may not fully extend to student experiences or informal ICT usage contexts. |
| SMAP | Investigates how technostress affects students' academic productivity; connects directly to our topic on digital stress in academic contexts. | Upadhyaya & Vrinda (2021). Impact of technostress on academic productivity of university students | Technostress model (Tarafdar et al., 2007); Transactional model of stress (Folkman & Lazarus, 1984) | Quantitative; survey of 672 Indian university students using validated technostress scale | Moderate technostress observed; negative impact on academic productivity confirmed | Technostress, techno-overload, techno-complexity, techno-insecurity, academic productivity | Focused on Indian private university students; lacks cross-cultural comparison and excludes personality or coping traits |
| SMAP, | This conceptual paper | Tarafdar, M., Cooper, C. L., | Transactional Theory of | Conceptual/theoretical paper | Technostress is a dual phenomenon; | Techno-distress, techno-eustress, IS | Lack of empirical validation; limited |

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| TF | redefines technostress as comprising both negative (techno-distress) and positive (techno-eustress) experiences, highly relevant to my study of stress in algorithmic digital environments. | & Stich, J.-F. (2019). The technostress trifecta: techno-eustress, techno-distress and design. *Information Systems Journal*, 29(1), 6–42. | Stress; extended to include IS-specific constructs like techno-eustress and techno-distress. | based on literature review and framework development. | IS can act both as a stressor and as a resource; the authors propose the "technostress trifecta" to guide future IS research. | design, primary/secondary appraisal, coping responses, stress outcomes. | understanding of IS design's positive role in mitigating stress; calls for interdisciplinary studies. |
| TF | This study proposes a post-acceptance model to explain users' intention to continue using information systems, which is highly relevant to understanding persistent social media use among | Bhattacherjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly, 25(3), 351–370.* | Expectation-Confirmation Theory (ECT), integrated with insights from the Technology Acceptance Model (TAM). | Quantitative cross-sectional field survey with 122 online banking users, analyzed via structural equation modeling (SEM). | User satisfaction and perceived usefulness significantly predict continuance intention; confirmation influences both satisfaction and usefulness. | Satisfaction, perceived usefulness, confirmation, continuance intention. | The study uses a cross-sectional design, limiting understanding of changes over time; response rate was low, and only current users were sampled. |

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| | students in your study. | | | | | | |
| TF | This paper expands the ECM model by integrating perceived ease of use and enjoyment to explain continued IT usage, relevant for understanding prolonged engagement with algorithmic platforms like social media. | Thong, J. Y. L., Hong, S. J., & Tam, K. Y. (2006). *The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance*. International Journal of Human-Computer Studies, 64(9), 799–810. | Expectation-Confirmation Model (ECM), extended with constructs from TAM. | Quantitative; Online survey of 811 mobile Internet users; Structural Equation Modeling (LISREL 8.72). | Perceived ease of use and enjoyment significantly affect satisfaction and continuance intention; satisfaction is the strongest predictor of continued IT use. | Perceived Usefulness, Ease of Use, Enjoyment, Satisfaction, Confirmation, Continued Usage Intention. | Cross-sectional data limits causal claims; study context (Hong Kong) may affect generalizability. |
| TF | Proposes UTAUT as a unified model of IT adoption; relevant to understanding | Venkatesh et al. (2003) | Unified Theory of Acceptance and Use of Technology (UTAUT) | Empirical model comparison across 8 models; longitudinal survey | UTAUT outperforms prior models in predicting IT usage intention | Performance expectancy, effort expectancy, social influence, facilitating conditions | Not originally applied to algorithmic social media or emotional well-being contexts. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | student behavior toward social media use. | | | | | | |

# Appendix 3: Consent form

**Consent Form for Participation in Research Study**

**Study Title:**
Algorithmically-Driven Social Media Features, Emotional Distress, and Academic Performance

**Researchers:**

Jasper van der Blom

Lin Yaochen

**Purpose of the Study:**
This study aims to explore how algorithmically-driven features of social media platforms - such as infinite scrolling, personalized recommendations, auto-play videos, and push notifications - trigger emotional distress among university students. Specifically, it investigates emotional reactions such as anxiety, information overload, distraction, procrastination, and emotional fatigue. Additionally, the study seeks to understand how these emotional responses influence students' academic performance and learning outcomes, including their depth of understanding, critical thinking abilities, long-term retention of knowledge, and academic confidence. By gathering detailed qualitative insights, the study aims to contribute valuable knowledge that could inform strategies and recommendations to support students' academic well-being in digital environments.

**Participant Involvement:**

- Participation involves one semi-structured interview lasting approximately 45-60 minutes.
- You will be asked about your experiences with social media usage, emotional responses to algorithmically-driven features, and perceived impacts on academic outcomes.
- With your consent, the interview will be audio-recorded for accuracy in transcription and analysis.

**Voluntary Participation:**
Your participation is completely voluntary. You may withdraw at any point without needing to provide a reason, and this will not affect your relationship with the university or researchers. You can also choose to have your responses permanently deleted and/or not used for analysis.

**Confidentiality:**
The results of the study will only be used and published for research purposes. All collected data will be kept confidential and stored securely. Identifying details will be anonymized in any resulting publications or reports. Audio recordings and transcripts will be securely stored and accessible only to the researchers. When the research has been completed, it is shared with the participants to confirm their input in the study before publication of the paper.

**Risks and Benefits:**
No significant risks are anticipated from participation. However, discussing emotional experiences related to social media may cause minor discomfort. You can skip any questions or withdraw at any time. The benefits include contributing valuable insights that may inform recommendations for improved academic experiences.

**Use of Data:**
Anonymized results may be published in academic reports, theses, or journal articles. Your identity will remain confidential in all presentations of the study results. In the case of any recording of the interview being done, this will only be used to make a transcript of this interview. After having the transcript, the interview recording will be deleted and the transcript is being anonymized. We will not ask for any information that is classified as sensitive information under the General Data Protection Regulation (GDPR).

**Contact Information:**

This research is conducted by students Jasper van der Blom and Lin Yaochen under the supervision of postdoctoral researcher Avijit Chowdhury, at Lund University School of Economics and Management (LUSEM).
For any questions about this study, please contact:

- Jasper van der Blom <ja3521va-s@student.lu.se>
- Lin Yaochen <li8616ya-s@student.lu.se>
- Avijit Chowdhury <avijit.chowdhury@ics.lu.se>

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**Participant Consent:**

I have read the above information, and my questions have been answered satisfactorily. I voluntarily agree to participate in this research study and confirm that I am at least 18 years old. By filling out this consent form, I am giving:

Consent to participate in this study, and

Consent to the audio-recording of the interview.

---

Signature

Name

Date

Signature

Jasper van der Blom

Signature

Lin Yaochen

Date

# Appendix 4: Interview guide

Thank you for participating in this study!

Before we begin, I want to briefly inform you about the study, our research goals, and what to expect during this interview.

Our research focuses on understanding how certain algorithmically driven features of social media - such as infinite scrolling, personalized recommendations, auto-play videos, and push notifications - can trigger emotional responses like anxiety, distraction, information overload, procrastination, and emotional fatigue among university students. Are you familiar with the four technological features just mentioned? (If not, explain) Additionally, we're interested in exploring how these emotional responses might influence your academic performance and your learning experiences.

In our study, we are focusing on social media platforms that emphasize algorithm-driven content consumption rather than traditional messaging apps like WhatsApp or Messenger. Specifically, we are interested in short video platforms (e.g., TikTok, Instagram Reels, YouTube Shorts), video content platforms (e.g., YouTube, Bilibili), image-text based platforms (e.g., Instagram, Facebook), and multi-functional social media platforms (e.g., Reddit, RedNote).

This interview will last about 45-60 minutes. We will discuss your experiences with social media usage, your emotional reactions, and how these emotions may affect your studies. Please remember that your participation is entirely voluntary. You can skip any questions or stop the interview at any time without providing a reason.

All information you provide will remain confidential, and your identity will be anonymized in any research publications or presentations. With your consent, we would like to record this interview to ensure accurate transcription.

Do you have any questions before we begin?

**Getting to Know the Participant**

Age, gender, nationality, native language

……
Study program, department/university, and current year/level

……

**Warm-up & General Social Media Use**

“Could you please tell me which social media platforms you use most frequently?”

……

“On a typical day, how much time do you spend on social media, and during which parts of your day do you usually use it? You may check the screen time of your phone for this.”

……

“What activities do you usually engage in when you use social media? For example, do you mainly read posts, watch videos, or chat with friends?”

……

“What kind of social media user would you describe yourself? A consumer (viewing/watching/reading), contributor (liking/commenting/sharing) or creator (producing content)?”

……

“Can you describe a typical scenario of your social media use? For instance, where do you usually use social media (at home, on the go, in the classroom)?”

……

“How do you feel about your overall social media usage? Do you think it has any impact on your daily routine or studies?”

……

**Cycle 1: Infinite Scroll**

**A. Stimulus**

“Can you tell me about your experience when using platforms with endless scrolling, like TikTok, YouTube Shorts, or Instagram Reels?”

……

“When you're using these kinds of feeds that never really stop, what usually happens? Do you plan to stop after a while, or does it just continue?”

……

“Have you noticed how that type of scrolling affects how much time you spend on the platform?”

……

**Some possible follow-up questions for this part:**

“Do you feel you’re aware of how much time passes while you scroll?”

……

“How does it usually start? Are you intentionally opening the app, or more out of habit?”

……

“Do you often find it hard to stop once you start scrolling?”

……

**B. Organism**

“How do you feel while using infinite scroll? For example, do you ever feel overwhelmed or anxious?

……

“Can you recall a specific instance when an infinite scroll led to a strong emotional reaction (like feeling distracted or experiencing information overload)?

……

“Do you ever feel like your mind gets overloaded or that there's too much going on at once?”

……

“How would you describe the impact of continuous content loading on your mental state?

……

“Have you experienced moments where you meant to just check something quickly, but ended up stuck for a long time? How did that make you feel?”

……

“After spending a long time scrolling, do you feel more energized or more mentally drained?”

……

**Some possible follow-up questions for this part:**

“Do you feel more relaxed, or more tired afterwards?”

……

“Would you describe it as helpful or harmful to your mental state?”

……

“Does this feeling stay with you even after you close the app?”

……

“What do you think causes that feeling? The content? The speed? The amount?”

……

“Is it similar to how you feel after using other apps?”

……

**C.Response**

“Do you feel like the emotions caused by scrolling sessions ever get in the way of your study time or ability to focus on academic work?”

……

“Have you noticed any effects of these emotional responses (such as anxiety or distraction) on your academic performance or study habits?

……

“Can you recall a time when this kind of scrolling made it harder for you to get back to studying or delayed something academic?”

……

“What strategies, if any, have you tried to manage or reduce the negative effects of scrolling on your study habits?

……

How effective were these strategies?

……

“Have you tried anything to manage this, like setting time limits or trying to stop yourself from scrolling? How did that go?”

……

**Some possible follow-up questions for this part:**

“How did it affect your mood or motivation to study?”

……

“What did you do afterwards? Try to get back on track or just give up for that moment?”

……

“What made you try that strategy?”

……

“Have you found anything that actually works for you?”

……

**Cycle 2: Auto-Play**

**A. Stimulus**

1. “Can you describe what usually happens when you’re watching videos on platforms with auto-play, like YouTube or TikTok?”

……

Follow-up：

“Do you usually plan how many videos you’ll watch, or does it often go beyond what you intended?”

……

“What types of content do you tend to keep watching?”

……

2. “How does auto-play affect your viewing habits compared to when you have to manually choose each video?”

……

Follow-up：

“Do you feel more in control when you have to choose, or when videos just keep coming?”

……

“Have you noticed any difference in how long you stay on the app when auto-play is active?”

……

**B. Organism**

1. “How do you usually feel after spending a long time watching auto-played videos?”

……

Follow-up：

“Do you feel refreshed, tired, or maybe a bit zoned out afterwards?”

……

“Does it feel different from choosing videos manually?”

……

2. “Have there been times when you kept watching even though you knew you should be doing something else?”

……

Follow-up：

“What do you think made it hard to stop?”

……

“How did you feel about that afterwards?”

……

“When you're watching auto-play videos one after another, do you ever feel like your mind doesn’t get a break between them?”

……

Follow-up：

“What’s that like for you mentally or emotionally?”

……

“Have you ever wanted to pause but kept going anyway?”

……

C. Response

1.“Do you think the emotional responses caused by watching auto-play videos ever interferes with your study time or academic focus?”

……

Follow-up：

“What kinds of academic tasks do you find most affected by this?”

……

“Does it usually affect your motivation or just the time you have left to study?”

……

2. “Can you think of a time when you struggled to stop watching and it affected your academic work?”

……

Follow-up：

“What did you do then? Did you try to catch up later?”

……

“Was that a one-time thing or has it happened often?”

……

3. “Have you tried any strategies to manage your use of auto-play features? Did they work?”

……

Follow-up：

“What motivated you to try those strategies?”

……

“If it didn’t work well, why do you think it didn’t?”

……

**Cycle 3: Personalized Recommendation**

**A. Stimulus**

1. “Many platforms recommend content based on your past viewing or interactions. How do you feel about that kind of personalized recommendation?”

……

Follow-up：

“Do you usually like the recommended content, or do you sometimes find it repetitive or unexpected?”

……

“Do you feel that the content is tailored to your interests, or do you think it sometimes goes too far?”

……

2 “When you’re scrolling through recommended content, how likely are you to keep watching or clicking compared to content you search for yourself?”

……

Follow-up：

“Do you find it harder to stop watching when content just keeps coming and feels like it's made for you?”

……

“Do you feel more in control or less in control when you're watching recommended content?”

……

**B. Organism**

1“After spending a while watching recommended content, how do you usually feel mentally or emotionally?”

……

Follow-up：

“Do you ever feel like it’s hard to stop because everything is so well matched to your interests?”

……

“Do you feel excited, tired, overwhelmed, or something else?”

……

2. “Have you ever felt like the recommendations pulled you into a ‘rabbit hole’ where you just kept going deeper and deeper?”

……

Follow-up：

“What kind of content usually causes that for you?”

……

“How do you feel afterwards? Energized, guilty, tired?”

……

3.“Do you ever feel like you’re being pushed into one perspective or kept inside a certain type of content?”

…….

Follow-up：

“How does that affect the way you think about things or your overall mindset?”

……

“Does it ever make you feel bored, stuck, or even anxious?”

……

**C. Response**

1. “Have these emotions caused by personalized recommendations ever affected your study time, focus, or motivation to do academic work?”

……

Follow-up：

“Do they make it harder to switch back to studying?”

……

“Or do you feel like you sometimes choose watching over studying even when you didn’t mean to?”

……

2.“Can you recall a time when recommended content distracted you from an academic task?”

……

Follow-up：

“What were you trying to do at the time?”

……

“How did you feel afterwards?”

……

3 “Have you developed any ways to limit the impact of recommended content? For example, avoiding the feed, turning off autoplay, etc.?”

……

Follow-up：

“Which strategies worked best for you, and which didn’t really help?”

……

“Do you think it’s something you can fully control, or is it still a challenge?”

……

**Cycle 4 Push notification**

**A. Stimulus**

1. “Can you tell me what kinds of notifications you usually get from social media apps?”

……

Follow-up：

“Which ones do you usually respond to right away?”

……

“Do you find any notifications more distracting or tempting than others?”

……

2.“When you’re studying or focusing on something important, how do these notifications affect you?”

……

Follow-up：

“Do you usually check them right away, or try to ignore them?”

……

“How easy or difficult is it to return to your task afterwards?”

……

**B. Organism**

1.“How do you usually feel when you get frequent notifications while trying to focus on something else?”

……

Follow-up：

“Does it make you feel irritated, distracted, anxious… or maybe something else?”

……

“Does it affect your mood even if you don’t open the notification?”

……

2.“Have you ever felt mentally drained or stressed after getting too many notifications?”

……

Follow-up：

“What kind of notifications usually lead to that feeling?”

……

“What does your mind or body feel like in those moments?”

……

**C. Response**

1.“Have these emotions caused by notification ever affected your academic performance or the way you manage your study?”

……

Follow-up：

“Can you think of a situation where a notification broke your focus while studying?”

……

“Did it take a long time to regain your concentration?”

……

2. “Do you ever feel like notifications cause you to procrastinate or delay academic tasks?”

……

Follow-up：

“What do you typically do after checking a notification?”

……

“Does one small check ever turn into a long distraction?”

……

3“Have you tried any methods to control or reduce notification distractions? For example, muting them during study time?”

……

Follow-up：

“How well did those strategies work for you?”

……

“Do you find it easy to maintain those boundaries over time?”

……

**Round-up and ending**

**1. Overall reflection**

“Looking back at everything we discussed, how would you describe the overall impact of social media on your emotions and academic life?”

……

2. Strongest influence

“Among all the features we talked about - like infinite scroll, auto-play, or personalized recommendations - which one do you think has the strongest effect on your emotions and your study performance?”

……

3. Missed or unspoken

“Is there anything we didn’t talk about that you think is important regarding social media, emotions and your studies?”

……

4. Personal takeaway or message

“If you were to give a piece of advice to another student about using social media while studying, what would it be?”

……

5. Closing

“Thank you so much for your time and insights. Would it be alright if we reach out to you later if we need any clarification or follow-up?

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