

**The Limited Attention Budget:
How Framing and Psychological Traits Shape
Attention Allocation**

*Major project submitted to St. Teresa's College (Autonomous), Ernakulam in Partial
Fulfillment of the requirement for the Award of PG of*

INTEGRATED M.A PROGRAMME IN SOCIAL SCIENCES-ECONOMICS

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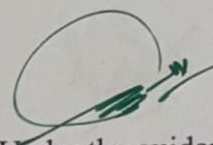
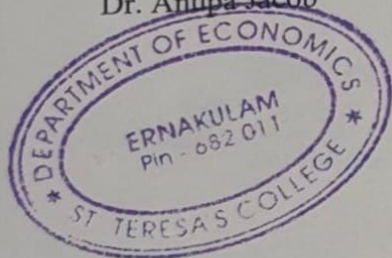
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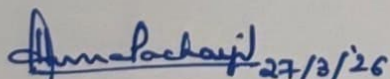


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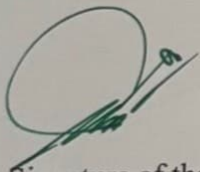
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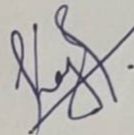
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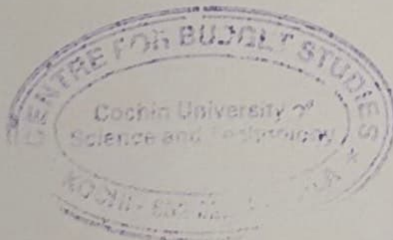
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LIST OF CONTENTS

TITLE	PAGE NO
CHAPTER 1 - INTRODUCTION	1
1.1 Background of the Study	2
1.2 Research Gap	5
1.3 Statement of Research Problem	6
1.4 Research Questions	7
1.5 Objectives of the Study	8
1.6 Hypotheses of the Study	8
1.7 Significance of the Study	8
1.8 Methodology of the Study	9
CHAPTER 2 - REVIEW OF LITERATURE	10
CHAPTER 3 - CONCEPTUAL AND THEORETICAL FRAMEWORK	19
3.1 Conceptual Framework	20
3.2 Theoretical Framework	22
CHAPTER 4 - RESEARCH METHODOLOGY	27
4.1 Introduction	28
4.2 Research Design	28

4.3 Study Population and Sample	29
4.4 The Attention Allocation Task	29
4.5 Selection of Allocation Domains	30
4.6 Measurement of Psychological Traits	31
4.7 Variables	33
4.8 Data Analysis	33
CHAPTER 5 - RESULTS AND INTERPRETATION	34
5.1 Introduction	35
5.2 Participant Profile	35
5.3 Hypothesis 1: Opportunity Cost Framing	36
5.4 Hypothesis 2: Social Returns Framing	37
5.5 Dispositional Traits Under Neutral Framing	39
5.5.1 Social Media / Online Interaction Allocation	39
5.5.2 Academic / Individual Task Allocation	41
5.5.3 Offline Social Interaction Allocation	42
5.5.4 Leisure / Entertainment Allocation	43
5.6 Moderation of Framing Effects by Dispositional Traits	44
5.7 Summary of Results	46

CHAPTER 6 - FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	48
6.1 Introduction	49
6.2 Findings	49
6.2.1 Effect of Opportunity Cost Framing	49
6.2.2 Effect of Social Returns Framing	50
6.2.3 Dispositional Traits and Baseline Allocation	50
6.2.4 Moderation of Framing Effects	50
6.3 Limitations	51
6.4 Implications	51
6.4.1 Theoretical Implications	51
6.4.2 Practical Implications	51
6.5 suggestions for Future Research	52
6.6 Conclusion	52
REFERENCES	54
APPENDIX-I	60
APPENDIX-II	62

LIST OF TABLES

Table No	Particulars	Page No
5.1	Descriptive Statistics of Participant Age	35
5.2	Paired-Samples t-Test Results for Hypothesis 1: Neutral Versus Opportunity Cost Condition	36
5.3	Paired-Samples t-Test Results for Hypothesis 2: Neutral Versus Social Returns Condition	38
5.4	Multiple Regression Predicting Social Media / Online Interaction Allocation Under Neutral Framing	40
5.5	Multiple Regression Predicting Academic / Individual Allocation Under Neutral Framing	41
5.6	Multiple Regression Predicting Offline Social Interaction Allocation Under Neutral Framing	42
5.7	Multiple Regression Predicting Leisure / Entertainment Allocation Under Neutral Framing	43
5.8	Multiple Regression Analyses Predicting Framing Responsiveness Across Conditions and Outcomes	45

LIST OF FIGURES

Figure No	Particulars	Page No
3.1	Conceptual Framework of Attention Allocation Under Structural Scarcity	26

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

1.1 Background of the Study

Attention as a Scarce and Allocable Resource

Human attention has become the binding constraint on decision making especially in modern information rich environments. The notion that attention is a scarce resource with competing uses is not a recent idea. Every act of attention has an opportunity cost. Simon (1971) made this argument half a century ago, stating that an abundance of information creates a poverty of attention. This scarcity makes allocation a decision problem requiring prioritization across competing uses.

Kahneman (1973) gave this a cognitive foundation, stating that mental effort is finite and distributed across tasks with real capacity limits. Heitmayer (2024) has characterised attention as a flow resource which is impossible to store and cannot be deferred. Individuals continuously spend attention whether they are active or merely present. Allocation decisions thus become constant and also largely invisible to the person making them where he cannot decide whether or not to allocate attention. He can only choose how and to what. What this establishes is that attention allocation is a genuine optimization problem.

The digital economy has only intensified this scarcity that earlier theorists could not anticipate. Wu (2016) traced the commercial history of the asymmetry between the abundance of information demanding attention and the limited cognitive capacity available to process it. He showed how capturing human attention evolved from nineteenth-century print advertising into complicated algorithmic content systems that now preside over digital platforms.

What began as basic media industry logic has now become the basic condition of everyday life where individuals navigate environments that are engineered to attract and retain their cognitive engagement. Zuboff (2019) described this as surveillance capitalism, where the extraction of behavioural data from attention engagement has become the primary source of economic value for the largest tech firms in the world. Even at the dawn of the internet era, Goldhaber (1997) had stated that in a world with abundant information, the central competition isn't for data but for attention.

Within this context, where individuals are allocating their limited cognitive resources in an environment that has been organized to capture and retain as much of it as possible, understanding how this allocation is made, and what shifts it, is the motivation for this study.

The Missing Trade-Off

Substantial empirical literature documents the consequences of digital media engagement for wellbeing and cognition but has done so in a manner that obscures its most important structural trait, that is, it involves trade-offs. Studies often address social media use, study time and offline interaction as separate variables without any link between them implementing the mutual exclusivity that scarce attention requires. Hunt et al. (2018) found that social media use of up to thirty minutes per day reduced loneliness and depression. Alcott et al. (2020) found that deactivating Facebook for four weeks improved wellbeing and increased offline activities. Ward et al. (2017) showed that just the presence of a smartphone on a desk, unused and facedown even, reduced cognitive capacity due to the attentional resources consumed by the continuous effort put in to not engage in the device.

While these findings are important to tell us that the way attention is allocated has consequences on how people think and feel, they don't tell us what attentional trade-off happened, because it did not require participants to confront the boundedness of the resource they are distributing. Read, Loewenstein, and Rabin (1999) identified this as a problem in decision-making research where there is a tendency to evaluate choices in isolation, one domain at a time. This is referred to as narrow bracketing as opposed to broad bracketing where choices are evaluated as components of a total collective. The opportunity cost of attentional decision-making is missing in such designs.

That is the methodological gap the present study aims to address. The study's measurement design that enforces broad bracketing by requiring participants to allocate a finite total attention across mutually exclusive domains simultaneously, is theoretically driven by the structural constraints of the allocation problem. This study operationalizes that structure through a fixed-sum task in which 100 units of attention are distributed across four competing domains, highlighting the trade-off nature.

Informational Salience and Framing Effects

If the trade-off nature of attention allocation is invisible to decision-makers, a central question is whether making it informationally visible changes the allocation decisions. The framing of a decision, that is, the informational context in which a decision is presented, has a significant effect on the choice even when the objective structure remains the same (Kahneman, 2011). This is not because people are irrational but because individuals cannot absorb all features of a

decision simultaneously. What information is made salient at the moment of the choice receives more weight.

Thaler and Sunstein (2011) observed that informational nudges result in allocation shifts in savings, energy use and health without changing incentives. Falkinger (2007) applied this at the market level, showing that when individuals make decisions in cognitively clogged conditions, opportunity costs are present but absent from their perceptions until highlighted. Maguire, Persson, and Tinghög (2023) empirically confirmed this effect meta-analytically, across 39 experiments and over 14,000 participants, finding that opportunity cost salience does influence allocation, including time allocation decisions. This study applies this salience to attention allocation testing whether explicitly stating the trade-off nature produces shifts in how a fixed attention budget is distributed across four life domains.

It would be incomplete to discuss attention allocation towards social media only in terms of what is lost. The second framing condition in this study focuses not on costs but on benefits, specifically the perceived social benefits of online interaction. In this study, perceived social benefits are conceptualized to refer to an individual's subjective expectation regarding interpersonal gains such as connectedness, social support and maintained relationships, that may result out of engaging in online social interactions. Ellison, Steinfield, and Lampe (2007) found that social media use is related to measurable gains in social capital. Hampton et al. (2011) found that frequent social media users have larger social networks and greater social and emotional support. Duan et al. (2025) found that social media use has positive effects on subjective wellbeing through bonding social capital. The allocation problem in this study is thus not a choice between something harmful and something beneficial. Rather it is a choice between activities that carry genuine value, all in an environment where each cannot be fully pursued simultaneously.

Individual Differences in Attentional Allocation

Whether framing effects shifts attention allocation is not solely depended on what information is highlighted. It also depends on who receives it. Stable psychological traits that influence how people respond to resource constraints, social cues and impulses determine whether they create shifts in attention allocation especially since it is inherently cognitive in nature. Stable individual differences in psychological traits can also bring forth systematic variations in the baseline allocation patterns as well as the allocation patterns that emerge as a result of the framing effects.

This paper aims to investigate four such individual difference variables. Fear of Missing Out (FOMO), according to Przybylski et al. (2013), represents a general apprehension that other people are experiencing rewarding events from which the individual is currently absent. FOMO, therefore, represents a construct that indicates a predisposition to socially mediated rewards. Research-based evidence indicates that FOMO predicts greater social media usage, diminished attentional control within environments characterized by competing demands, and cognitive interference within a task context (Milyavskaya et al., 2018). From a conceptual perspective, FOMO represents a heightened degree of sensitivity to socially comparative rewards.

Habit strength, according to Verplanken & Orbell (2003), represents the automatic initiation of behaviour within a context characterized by stable contextual cues. Habits represent a behaviour characterized by a low degree of deliberation and a high degree of resistance to informational persuasion. Neal, Wood, & Drolet (2013) indicate that the strength of a habit, as well as the contextual stability of the cues within which the behaviour is initiated, determines the degree to which the behaviour responds to novel inputs of persuasion. In an allocation context, this represents a degree to which some people might evidence stable behaviour.

Self-control is defined by Tangney et al. (2004) as the ability to control impulses and direct actions towards goal achievement. Baumeister et al. (1998) and Baumeister and Tierney (2011) propose self-regulation as a limited resource, suggesting that individual differences affect decision outcomes based on the interplay between personality and resource availability. Individual differences not only cover motivational priorities but also the ability to act on them when other demands conflict, which affects the translation of framing effects into decisions.

Regret sensitivity captures the extent to which individuals experience regret from outcomes that might have been improved by alternative decisions (Schwartz et al., 2002; Zeelenberg, 1999). It captures an anticipatory assessment of foregone outcomes. Loewenstein (1996) shows that affective states during the decision process affect decisions systematically, which individuals tend not to anticipate. Regret sensitivity might be thought of as an individual's stable orientation towards anticipated regret, which might affect the processing of opportunity costs.

1.2 Research Gap

Four distinct literatures inform this study; attention scarcity, opportunity cost salience, psychological traits and digital social capital, yet they have evolved largely in isolation.

The attention scarcity tradition has established the foundational premise that limited cognitive resources necessitate prioritisation. However, it has rarely operationalised scarcity as a binding structural constraint at the level of measurement, particularly within everyday digital life domains. Scarcity is theorised but not experimentally enforced in allocation tasks that mirror real attentional trade-offs.

The opportunity cost salience literature, by contrast, has demonstrated that making forgone alternatives explicit reliably shifts allocation. Yet this evidence is confined almost entirely to monetary and consumer choice settings, where prices provide external signals and feedback. Whether the same salience mechanism extends to cognitive attention—a resource without price tags, market signals, or transparent feedback about displacement—remains empirically untested.

The social capital literature has documented the relational and reputational returns of digital engagement, demonstrating that online activity can generate meaningful social resources. However, it does not situate these returns within an allocation framework that explicitly accounts for what must be forgone to generate them. The opportunity cost of relational investment in digital domains is typically implicit rather than analytically incorporated.

The psychological trait literature has examined constructs such as FOMO, habit strength, self-control and regret sensitivity primarily as predictors of engagement intensity or behavioural frequency in unconstrained environments. These traits have not been analysed as moderators of framing-induced allocation shifts under conditions of enforced structural scarcity. As a result, we lack an integrated understanding of how dispositional heterogeneity shapes responsiveness to informational cues when trade-offs are unavoidable.

No study has brought these strands together within a single design that simultaneously (i) enforces a structural attention constraint, (ii) manipulates informational salience, and (iii) accounts for dispositional differences in framing responsiveness. This intersection where scarcity, salience, and psychological heterogeneity converge constitutes the core research gap addressed by the present study.

1.3 Statement of the Problem

In the current digital environment, individuals face the task of distributing a limited amount of attention across multiple domains of interest, which include social media, academics, leisure activities, and face-to-face interactions. While the structural scarcity of attention is a defining

feature of digital environments, the majority of existing studies focus on engagement within a single domain without enforcing trade-offs that necessitate explicit interdomain allocations. As a result, there is limited understanding of how attention is allocated when structural scarcity is imposed within the decision structure.

The body of research on informational framing provides further credence to the current knowledge gap by demonstrating the influence of opportunity cost salience on allocation decisions within monetary and consumer domains. However, there is limited knowledge regarding the generalizability of this effect to situations wherein the resource of interest is cognitive attention, which lacks external feedback and price cues.

The majority of studies on social returns cues, which include cues that emphasize the social returns associated with engagement within a domain, have focused on the role of this type of cue within motivational frameworks rather than within an experimental manipulation of salience within a constrained allocation structure.

Psychological constructs such as fear of missing out (FOMO), habit strength, self-control capacity and regret sensitivity have been studied as determinants of engagement within unconstrained structures.

The central problem can thus be stated as follows: How does informational framing influence attention allocation within a constrained structure, and does this effect vary across stable dispositional traits? This study aims to address this problem by developing an experimental structure that includes all three constructs.

1.4 Research Questions

Three research questions guide this study:

RQ1: Does highlighting opportunity cost lead to redistribution of attention across domains by increasing sensitivity to alternatives?

RQ2: Does social returns salience direct a greater share of constrained attention toward social media relative to a neutral baseline?

RQ3: Are stable dispositional traits (Fear of Missing Out, habit strength, self-control and regret sensitivity) systematically associated with the distribution of attention under neutral framing?

RQ4: Do Fear of Missing Out, habit strength, self-control and regret sensitivity moderate the degree of responsiveness to salience cues in a constrained attention allocation task?

1.5 Research Objectives

The objectives of the study are as follows:

Objective 1: To analyse whether the salience of opportunity cost shifts the allocation of attention across competing domains.

Objective 2: To test whether perceived social returns salience directs more attention towards social media domain.

Objective 3: To examine whether dispositional traits such as Fear of Missing Out, habit strength, self-control and regret sensitivity affect neutral allocation and moderate responsiveness to salience cues.

1.6 Hypotheses

Two primary hypotheses are tested in this study:

H1: Opportunity cost salience will produce significant shifts in attention allocation across domains relative to the neutral condition.

H2: Social returns salience will shift attention allocation toward the social media domain relative to the neutral condition.

The moderating role of dispositional traits Fear of Missing Out, habit strength, self-control and regret sensitivity is included in the study as an exploratory element of the analysis. These traits are not included in any pre-specified confirmatory hypotheses. Rather, their relationship with attention allocation is examined as a means of interpreting the framing results. This method is explicitly post-hoc and exploratory and is treated as such throughout the study. The expectation is not that all of these four traits will show significant moderation of framing effects, but rather that exploring their relationship to framing responsiveness will help us understand why the aggregate effect of H1 and H2 takes the particular form it does, particularly in the absence of group-level effects.

1.7 Significance of the Study

Firstly, on a theoretical level, this study extends the established monetary and consumer context of opportunity-cost salience to the area of constrained cognitive attention allocation, where the established framing mechanism has not previously been applied. It operationalizes the premise of attentional scarcity as theoretically defined by Simon (1971) and Kahneman (1973), through

a measurement design that structurally enforces scarcity rather than assuming it as a given. The distinction between the concept of structural opportunity costs, as inherent within the fixed-sum task structure, and the concept of cognitive opportunity-cost salience, as manipulated through the informational structure of the study, is not formally defined within the existing body of research on salience and is thus a novel contribution to the understanding of these constructs within the context of attentional allocation.

Secondly, on a methodological level, this study addresses a gap within the existing body of research on allocation decisions within a fixed-sum context: the independent measurement of domains that are, by the nature of attentional allocation, necessarily mutually constrained. The requirement to allocate a fixed sum of money necessarily ensures that a genuine allocation decision is made.

Finally, on a practical level, if the study is able to demonstrate that constrained attentional allocation is altered by the informational structure of the environment, and if this effect is moderated by dispositional traits, this study suggests a range of implications for the populations for whom such a phenomenon is established.

1.8 Methodology

This study uses a within-subject experimental design with 54 participants. Each participant completed a fixed-sum attention allocation task under three conditions including a neutral baseline, an opportunity cost salience condition and a social returns salience condition. Under each condition, participants were made to distribute 100 units of attention across four mutually exclusive domains which are social media and online interaction, academic tasks, offline social interaction and leisure. Since the total amount of attention is fixed, any increase in allocation to one domain results in a reduction in another thus enforcing opportunity cost. The three conditions are identical, and order was randomized across participants to control for sequencing effects.

Four dispositional traits: Fear of Missing Out, habit strength, self-control and regret sensitivity were measured using validated psychometric scales and treated as stable between-subject variables. Framing effects are tested using paired-sample t-tests by comparing allocation in each salience condition to neutral condition. Trait effects on neutral condition allocation and trait moderation are examined using regression analyses. Given the sample size and with the limitations of this method explicitly acknowledged, results are reported and interpreted as directional and exploratory rather than confirmatory.

CHAPTER 2

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Simon, H. A. (1971) is credited for the conceptualization of attention as a scarce resource, whose seminal contribution argued that an abundance of information creates a scarcity of attention. This creates a need to allocate attention in an efficient manner among the various sources of information that might consume it. Rational behaviour here involves allocating attention across competing demands. He also notes that human beings are like contemporary computers and essentially serial devices who can only attend to only one thing at a time, highlighting bounded cognitive capacity as a constraint. Simon states that attention cost must be measured as incurred by the recipient of information. It is important to know how much the cost of producing and transmitting information as well as the cost of receiving information in terms of scarce attention.

Goldhaber, M. H. (1997) builds on Herbert Simon's theory of attention scarcity by extending it to Net economies. Goldhaber applied Simon's attention scarcity concept to the age of the internet where information is abundant. He shifts from a world where information is scarce to one where attention is the principal commodity that people and organizations compete for. In his framework, the fight isn't over who has access to more data but over who captures users' limited attention spans. This implies that attention is a resource with competing uses; attention given to one input means foregoing an alternative input. He conceptualizes attention as a form of capital or property that accumulates through visibility and recognition, creating a self-reinforcing cycle where those who receive attention are likely to continue attracting additional attention in the future. Users seek and allocate attention because it generates social returns in the form of fame, visibility and reputation. Thus, attention allocation in the digital sphere involves strategic and socially entrenched decisions which are influenced by expected social returns and scarcity, rather than viewed as a distraction, lack of self-control or unproductiveness.

Davenport and Beck (2001) state that in modern environments with abundant information, attention is the scarcest resource as opposed to information, technology or talent. Attention is defined as the focused mental engagement on a particular item or information which is followed by a decision to act. Thus, attention is not just mere passive exposure to information but includes selective concentration, cognitive processes and action-based decision making. Attention is described as a critical determinant of organizational and economic success, where individuals must allocate limited attention effectively across competing demands including

different pieces of information, tasks and interactions. This implies that allocation attention to one input reduces attention available for others.

Falkinger, J. (2007) also builds on Herbert Simon's work on attention as a scarce resource but he treats it as a mental resource that is not a market good. It is non excludable and shared across domains like politics, media, ads, entertainment etc. He extends classic market analysis to the interaction between senders of information and receivers of information. The model shows that under the assumption of information rich economy, receiver attention level reduces as signal exposure increases which creates attention scarcity once information load exceeds a threshold. This suggests that receivers of attention do not make decisions based on isolated preferences but cognitively clogged conditions where opportunity costs are not explicit. Individuals must allocate attention across various uses even in the absence of prices. The framework also introduces free entry; only those senders survive whose net impact is non-negative at equilibrium attention level. This can be paralleled to the individual level case where whether allocating attention to social media yields sufficient enough social returns to justify other forgone alternatives.

Huberman, B. A., Romero, D. M., & Wu, F. (2008) analysed attention allocation and contribution in online crowdsourcing platforms. Longitudinal data from these platforms is used to analyse the relationship between the attention received by the contributors and their subsequent behaviour. The study showed that higher levels of attention, operationalized in the form of views or downloads, correlate with increase in content production and long-term participation. Lower attention levels result in reduced activity and eventual exit. The study also highlights social comparison where contributors evaluate attention received by them, against their peers and their own past activity. This suggests that attention is not just a passive outcome of content but also an important variable that determines future decision-making through perceived payoffs, which are interpreted relative to the popularity of other contributors as well as prior expectations. Thus, attention allocation is an economic choice based on anticipated social returns and not just by hedonic gratification or habit.

Franck, G. (2019) provides a sociological and economic view of attention as an immaterial capital embedded in modern mass media and social life. According to him, attention is accrued, circulated and monetised through online visibility, status and advertising. Frank introduces attention capital which is measured through indicators like ratings, views, likes and circulation figures, which generates economic and social advantages upon those who receive them. In this

model, mass media and digital platforms exchange information and entertainment for attention which can be converted into other forms of value, both economic (advertising) and social (status and reputation). Attention is also not valued uniformly; its perceived worth is based on beliefs about the quality and future payoff. By viewing attention as both a scarce resource and one which is socially productive, Franck's study supports studying attention spent on social media as an investment driven by expected social returns rather than mere consumption.

Gabaix (2017) portrays inattention as a central theme in behavioural economics, treating attention as the allocation of scarce cognitive resources. In an environment with multiple potentially relevant variable, he models attention as a parameter that determines how much a variable is considered in decision-making, with zero attention implying dependence on default value and full attention implying consideration of true value. Since decisions involve innumerable variables, a sensible agent will not consider most of them, especially the less important ones. Thus, limited attention arises from bounded cognitive capacities such as limited working memory and selective information processing.

Heitmayer (2024) conceptualizes attention as a biologically limited resource that is continuously disbursed over time and that individuals inevitably use up the raw material attention whether they are actively or passively experiencing their environment. Since attention is scarce, cannot be stored and must always be spent, individuals are compelled to allocate attention, making attention allocation decisions more central and frequent than even monetary decisions. The paper thus characterizes attention as a flow resource which is constantly depleted and replenished, wherein individuals may choose how to direct it but cannot avoid spending it. The overwhelming abundance of information in modern society intensifies this scarcity. Attention therefore has to be selectively distributed, making it a valuable resource.

Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. M. (2009) demonstrate how individuals frequently disregard opportunity costs in decision making unless these costs are made explicitly salient. In this study, the concept of opportunity cost neglect was formalized and tested through a series of experimental studies. Simple framing manipulations such as reframing non-purchase options as "keeping money for other purchases" or expressing price differences as cash leftover, considerably changed choices. The study also shows that individuals differ systematically in their sensitivity to opportunity costs. "Tightwads" who have greater pain of paying are less affected by opportunity costs, suggesting that they already consider forgone alternatives without external cues. Similarly, psychological constraints such

as self-control, habits and fear of missing out, influences how opportunity cost salience influences attention allocation.

Spiller, S. A. (2011) has identified when and why individuals consider opportunity cost. His findings contest the assumption that such consideration is automatically inherent to decision making but depend on psychological triggers such as perceived constraints, ease of accessibility in memory and individual differences in propensity to plan. Spiller thus shows that opportunity consideration is sensitive to salience. Although Spiller's analysis focuses on monetary decision making, his framework easily generalizes to attention, which like money is a limited resource with competing uses. However, unlike money, attention has no explicit pricing methods, making its opportunity costs even more hazy. Spiller's study evidences that opportunity cost considerations increase as individuals increasingly face resource limits which is especially relevant for attention allocation under time scarcity.

Read, D., Loewenstein, G., & Rabin, M. (1999) introduced the concept of choice bracketing to understand how individuals often assess choices either in isolation or as a part of an aggregated set of decisions that are related. Choice bracketing is defined as the "grouping of individual decisions into sets", differentiating between narrow bracketing, in which choices are assessed one at a time and broad bracketing, where choices are evaluated collectively. They argued that the way in which decisions are bracketed or framed has effects of judgment and choice. The study claims that individuals often assess decisions too narrowly resulting in related or repeated economic decisions that appear inconsequential and independent but actually have large aggregate consequences. When individuals make similar choices over time, each choice is perceived as trivial compared to the whole and thus small indulgences are rationalized in isolation. This results in underinvestment in activities that have uncertain but potentially high long-term returns.

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013) provides an examination of fear of missing out (FOMO) as an individual difference that constrains attention, conceptualizing it as a pervasive apprehension that others might be having rewarding experiences from which one is absent, a desire to stay continually connected with what others are doing. This definition explicitly positions FOMO in environments where there is an abundance of social options relative to finite attention and time. The study develops and validates a Fear of Missing Out Scale (FoMOs) which measures concern about missed social opportunities and the urge to monitor others' activities. The study also provides evidence of

FOMO being associated with increased social media use, especially while driving and during lectures, situations that require sustained attention and self-regulation. Such behaviour indicates difficulty in disengaging from socially stimulating platforms, highlighting that FOMO captures attention in contexts where competing demands demand focus. Przybylski, thus provides direct empirical evidence that FoMO poses as a psychological constraint on attention through constant cognitive occupation, reduced emotional well being and failures in attention control in demanding contexts.

Milyavskaya, M., Saffran, M., Hope, N. H., & Koestner, R. (2018) provides empirical evidence that FOMO is a state like experience or a psychological context specific experience, and not a stable personality trait, that occurs during task engagement. The author's conceptualization of FOMO as “feeling that one is missing out on something others are doing” directly maps into how awareness about forgone alternatives affects task engagement or attention allocation. The study shows that higher FOMO is associated with greater distraction and reduced focus thus becoming a cognitive interference in task engagement.

Verplanken, B., & Orbell, S. (2003) define habit as learned behaviour that is an automatic response to specific cues in order to achieve particular goals. This definition highlights that while repetition is a necessary condition for habit formation, it is not sufficient. Habit formation involves the repetition of an action in response to a specific contextual cue that allows behaviour to be developed with minimal deliberation. With this pairing of an action or response with a cue, the authors conceptualize habit as a form of automaticity characterized by lack of awareness, difficulty to control, efficiency and goal directed. Verplanken and Orbell develop the Self-Report Habit Index (SRHI) which includes the elements of history of repetition, automaticity (unintentionality, uncontrollability, lack of awareness and efficiency) and expressing one's identity.

Wood et al. (2014) state that habits are stimulus driven responses that are formed through repetitive behaviour in specific or stable contexts. Habits, once established, are initiated automatically with minimal conscious monitoring, independent of goals. When deliberative capacity is limited, habitual responses dominate and as they strengthen, they become less dependent on outcomes and intentions. The authors state that distraction, stress, low willpower and reasoning ability increase reliance on habitual responses.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004) examine individual differences in self control and highlight its role in psychological adjustment, behavioural regulation,

academic performance and interpersonal relationships. The authors conceptualize self-control as the capacity to override impulses, regulate attention and emotions and align behaviour in order to achieve long-term goals i.e., self-control is treated as the individual's regulatory capacity, rather than a context or domain specific ability. Across two investigations, the authors find that high self-control is associated with better psychological adjustment, lower levels of maladaptive behaviours (such as substance abuse and disordered eating), higher academic success and better interpersonal relationships, establishing it as a psychological resource. Thus, self-control is a constraint on behaviour that influences how individuals manage competing demands and tasks over time.

Baumeister, Bratslavsky, Muraven, & Tice (1998) explore whether an individual's capacity for volition acts as a limited resource. They define self-control as the capacity to overrule one's responses such as restraining impulses, regulating emotions, managing thoughts and directing attention wherein, acts of self-control draws from a common resource that gets depleted after use. After initial exertion of self-control, the capacity for regulation on subsequent tasks temporarily reduced. Thus, the authors find that "self-control operates like a muscle" that becomes fatigued after use.

Sugden, R. (1982) introduced the Regret theory as an alternative to the expected utility model of rational choice under uncertainty. They authors argue that the latter model is incomplete as it evaluates choices solely based on the utilities of their own outcomes without taking into account how individuals compare these outcomes with those of forgone alternatives. The crux of the theory is that individuals experience regret or rejoice, arising from comparison between outcomes of different acts from the same state of the world. Regret arises when the outcome of the chosen act is worse than the outcome of an alternative act and rejoicing arises when the outcome of the chosen act is better than the forgone one.

Zeelenberg (1999) defines regret as "a negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better, had we decided differently." The paper states that although regret is commonly experienced after outcomes are revealed, it is often anticipated during decision making. This anticipated regret arises when decision makers expect post decision feedback. Zeelenberg reviews studies which show that manipulating expected feedback systematically alters decisions in gambles, consumer choice and interpersonal bargaining.

Schwartz et al. (2002) introduced a method of measuring regret proneness which they defined as the tendency to experience regret after making a decision. They introduced the Regret Scale which assesses how often individuals feel regret and think about how differently things could've turned out. The authors find that higher regret scores are linked to greater dissatisfaction, lower happiness, increased contemplation about alternatives and greater tendency to engross in social comparison. The scale shows internal consistency and predictive validity with respect to decision-related stress and life satisfaction.

Ellison, N. B., Steinfield, C., & Lampe, C. (2007) analyse the relationship between use of the social networking site Facebook and the formation and maintenance of social capital among college students. Social capital is defined as the resources accumulated through relationships among individuals and is operationalized in 3 different forms including bridging social capital (which reflects access to weak ties and broader social networks) bonding social capital (which reflects access to close, emotionally supportive relationships) and maintained social capital (which reflects the ability of the respondent to rely on high school acquaintances for information or favours after entering into college). The result of the study shows a statistically significant positive relationship between Facebook use intensity and all three forms of social capital. Thus, Facebook engagement is associated with higher perceived access to socially valuable weak ties, maintenance of close social ties and supports future social connections as well.

Hampton, Goulet, Rainie, and Purcell (2011) examines how the use of social networking sites (SNS) is linked to individuals' social networks, trust and social support, based on nationally representative survey data. They find that SNS users are not more socially isolated than others and are not associated with smaller social networks. They report that frequent users of Facebook have larger discussion networks, are less likely to state having no close discussion partners and have their core confidants on the platform. The study reports that frequent Facebook users are more likely to report higher levels of social trust, emotional support and companionship.

Ellison, Steinfield, and Lampe (2011) studies how certain Facebook communication practices lead to bridging and bonding social capital among undergraduate users. They classify patterns of use into initiating (connecting with strangers), maintaining (interacting with friends) and social information seeking (learning more about people with whom they share some offline

connection). The authors find that specific Facebook interactions, especially those associated with social information seeking, are connected to perceived social capital outcomes.

Duan, Lu, and Lyu (2025) analyses how social media use is related to subjective well-being of international students through the means of online social capital. Based on online social capital theory, the authors differentiate between bridging, bonding and maintaining social capital as resources amassed through social relationships. Survey data from 474 international students found that social media has significant and positive effects on subjective wellbeing and all three forms of social capital. Bridging and bonding social capital significantly predicts subjective wellbeing while mediation analysis showed that only bonding social capital mediates the relationship between social media use and subjective wellbeing.

Liu and Yang (2025) study how social capital affects users' intention to share knowledge in social networks. They state that social capital is differentiated into bridging social capital and bonding social capital and that both positively impact user's continuous knowledge sharing intentions. The authors find that bridging social capital has a stronger influence on structural embeddedness while bonding social capital has a stronger effect on relational embeddedness, both of which are mediators. Metacognitive experience and perceived group fit are identified as moderators which increases the effects of the said mediators on continuous knowledge sharing intention.

CHAPTER 3

**CONCEPTUAL AND THEORETICAL
FRAMEWORK**

3.1 CONCEPTUAL FRAMEWORK

Attention

Attention is conceptualized as a limited cognitive resource. Simon (1971) stated that in environments in which information is abundant, attention becomes a scarce resource as individuals cannot process all available information. Kahneman (1973) defined attention as mental effort that can be allocated across competing tasks but cannot go beyond available cognitive capacities. Thus, attention is established as finite and allocable.

In this study, attention is defined as the allocation of limited or scarce cognitive resource across competing, mutually exclusive tasks. Attention is operationalized through a fixed sum allocation task in which participants allocate 100 units of attention across four domains such as social media/online interaction, academic tasks, offline social interactions and leisure activities. Fixed sum structure ensures that increase in one domain, reduces allocation in others. This reflects prioritization of tasks under structural constraints.

Structural scarcity

Scarcity refers to a situation in which available resources are limited relative to competing uses. (Buchanan, 1969). Prioritization among competing tasks becomes necessary when resources are finite and alternatives are mutually exclusive, leading to allocation decisions under binding constraints. In this study, scarcity is structurally imposed through allocation of a fixed sum of attention units across competing tasks. Since total allocation cannot exceed the prescribed number of units, it is ensured that resource constraint is constant across participants and conditions.

Structural Opportunity Cost

Opportunity cost is defined as the value of the next best alternative forgone when a decision is made (Buchanan, 1969). Within this study, opportunity cost is conceptualized structurally. Since attention units are fixed, allocating additional units to one activity, reduces units available for other activities. Trade-offs are objectively present and explicit awareness, computation or subjective evaluation of opportunity cost is not measured.

Framing condition

Tversky and Kahneman (1981) defined framing effects as the systematic changes in decisions that occur due to variations in informational emphasis of the same decision problems. In this

study, framing does not change the structural scarcity. It only changes the information presented prior to allocation. Three conditions are implemented: a normal condition without additional information, a perceived returns salience condition stating likely social connectedness and an opportunity cost salience condition emphasizing mutual exclusivity of domains. Each participant is subject to all three framing conditions. Scenarios are rotated across each allocation task to prevent scenario-specific confounding.

Social capital and Perceived Social returns

Social capital refers to resources rooted in social relationships and network structures (Bourdieu, 1986; Coleman, 1988; Putnam, 2000). Bourdieu (1986) defined social capital as the actual or potential resources linked to durable networks of relationships. Coleman (1988) stressed on structural elements such as obligations, expectations and information channels that leads to action. Putnam (2000) conceptualized social capital as networks, norms and trust that enables coordination. In all definitions, social capital is viewed as a structural resource.

This study does not measure the characteristics of structural networks but instead examines perceived social returns which is the individual's subjective expectation that allocation attention to online interactions will lead to social benefits such as connectedness and meaningful relationships. Perceived social returns are conceptually rooted in social capital theory. It evaluates anticipated social benefits rather than direct measurement of social capital.

Psychological Traits

The study also includes stable dispositional traits that are measured at the individual level. These traits are conceptualized as relatively stable individual differences that could systematically be associated with patterns of attention allocation. They are operationalized through established psychometric scales. They are included in the analytical model as between-subject variables.

Fear of Missing Out (FOMO), as conceptualized by Przybylski et al. (2013), is “a pervasive apprehension that others might be having rewarding experiences from which one is absent,” accompanied by a desire to stay constantly connected with others' activities.

Habit strength, conceptualized by Verplanken and Orbell (2003), is learned sequences of acts that become automatic responses to specific cues and serve the function of attaining specific goals. This involves less conscious deliberation.

Self-control, as defined by Tangney, Baumeister, and Boone (2004), is the ability to override or change internal responses. It is meant to stop unwanted behavioural tendencies in order to achieve goals of a longer-term nature.

Regret sensitivity, as discussed by Schwartz et al. (2002), is a dispositional tendency to experience dissatisfaction with forgone alternatives through comparison.

These factors represent enduring psychological traits that could explain systematic differences between individuals in allocation behaviour in situations of structural scarcity.

Assumptions:

The conceptual framework is grounded in the following assumptions:

1. Attention is a limited cognitive resource that is allocated to competing activities.
2. Allocation domains are mutually exclusive in the task structure. Allocation to one domain results in reduced allocation to other domains.
3. Structural scarcity is constant across all framing conditions.
4. Opportunity cost is structurally embedded in the allocation constraint and not directly measured as a cognitive process.
5. Framing conditions differ in informational emphasis but not in structural constraints.
6. Psychological traits are relatively stable individual differences.
7. Perceived relational returns are subjective expectations of relational returns and do not assess structural social capital.

3.2 THEORETICAL FRAMEWORK

Scarcity and the Necessity of Allocation

Allocation becomes essential when resources are limited compared to competing uses (Buchanan, 1969). Under such circumstances, prioritization is inevitable. Allocating more to one alternative use results in allocating less to another. Simon (1971) extended this concept to modern information abundant environments, contending that it is attention rather than information that becomes the scarce resource.

Scarcity therefore results in structural trade-offs. When binding constraints are present, opportunity costs arise from choosing a specific alternative and excluding the others. This happens irrespective of whether individuals actually compute it. In such environments,

allocation highlights prioritization under binding limits rather than expressing unconstrained preferences. This study's framework treats allocation of attention as a behaviour occurring within this structurally constrained environment. Trade-offs are viewed as arising from the fixed-sum structure of the allocation task.

Bounded Rationality

While the decision environment is characterized by structural scarcity, decision-making in itself in that environment is shaped by bounded rationality (Simon, 1957). Individuals face cognitive and informational limitations. They cannot evaluate all possible alternatives in detail along with their opportunity costs. According to Simon (1957), they often rely on selective attention, heuristics and simple evaluation methods.

Under bounded rationality, cognitive limitations result in selective weighting; some aspects receive greater attention than others. Prioritization under limitations highlights both structural trade-offs and how these trade-offs are mentally perceived by the individual (Simon, 1976). Thus, differences in allocation behaviour are potentially not only due to differences in constraints but also due to differences in how individuals view different attributes of the decision.

Information Salience and Weighting Attributes

Framing effects and attribute salience shows that accentuating certain aspects of a decision can alter choices even when the underlying condition remains the same (Tversky, A., & Kahneman, D., 1981). When certain attributes are made more prominent, the subjective weight given to it increases relative to less salient attributes. (Kahneman, D., 2003). Such changes are a result of selective cognitive importance given within limited attention systems rather than one requiring deliberate recalculation.

Limited attention models propose that individuals allocate attention unevenly across attributes, especially when facing constraints (Sims, 2003; Gabaix, 2014). Emphasis on certain information can help increase focus on particular dimensions such as anticipated benefits or opportunity costs, without changing the underlying constraints (Frederick et al., 2009). Emphasizing anticipated social benefits may increase the salience of positive outcomes related to social interactions (Bordalo et al., 2013; Bordalo et al., 2022), while emphasizing mutual exclusivity of tasks may increase opportunity cost salience (Frederick et al., 2009; Legrenzi et al., 1993). Under bounded rationality, such changes in informational emphasis are theoretically

expected to influence decisions (Sims, 2003; Gabaix, 2014). Hence, allocation under scarcity is influenced not only by constraints but also by the salience of specific attributes (Mullainathan & Shafir, 2013; Shah et al., 2012).

Dispositional Construct

Allocation shows underlying motivational and psychological tendencies even in the absence of informational prominence (Lockwood et al., 2025; Humphreys & Revelle, 1984). Individuals differ systematically in how they prioritize competing choices under constraints (Borghans et al., 2008).

Trait theories suggest consistency in behavioural tendencies across situations (Allport, 1937; McCrae & Costa, 1997). Stable dispositional characteristics further help understand allocation patterns (McCrae & Costa, 1999). Rather than assuming homogeneous responses to scarcity, this study recognizes that individuals bring varying behavioural propensities to constrained environments (Mullainathan & Shafir, 2013; Shah et al., 2012; Lockwood et al., 2025).

Self-Control

Self-control refers to the ability to control impulses and align actions with longer-term goals (Tangney et al., 2004; Metcalfe & Mischel, 1999). Intertemporal choice research states that individuals differ in the extent to which they discount delayed rewards (Frederick et al., 2002; Schneider et al., 2021). Allocation decisions often involve conflicts between activities that offer immediate gratification and those with delayed returns (Mischel et al., 1989; McClure et al., 2004). Therefore, self-control is theoretically and empirically related to different prioritizations (Baumeister et al., 1998; Moffitt et al., 2011).

Habit

Habits are defined as learned sequences of acts that are automatic responses to specific cues (Verplanken & Orbell, 2003). Habits develop through repeated enactment and require lower conscious deliberation (Wood & Neal, 2007; Verplanken & Orbell, 2003). Hence, they are less sensitive to changes in contexts and informational framing and may anchor prioritization (Wood & Rünger, 2016; Neal et al., 2011). Habit strength introduces behavioural inertia and reduces responsiveness to attribute salience (Wood & Neal, 2007; Verplanken & Wood, 2006).

Fear of Missing Out

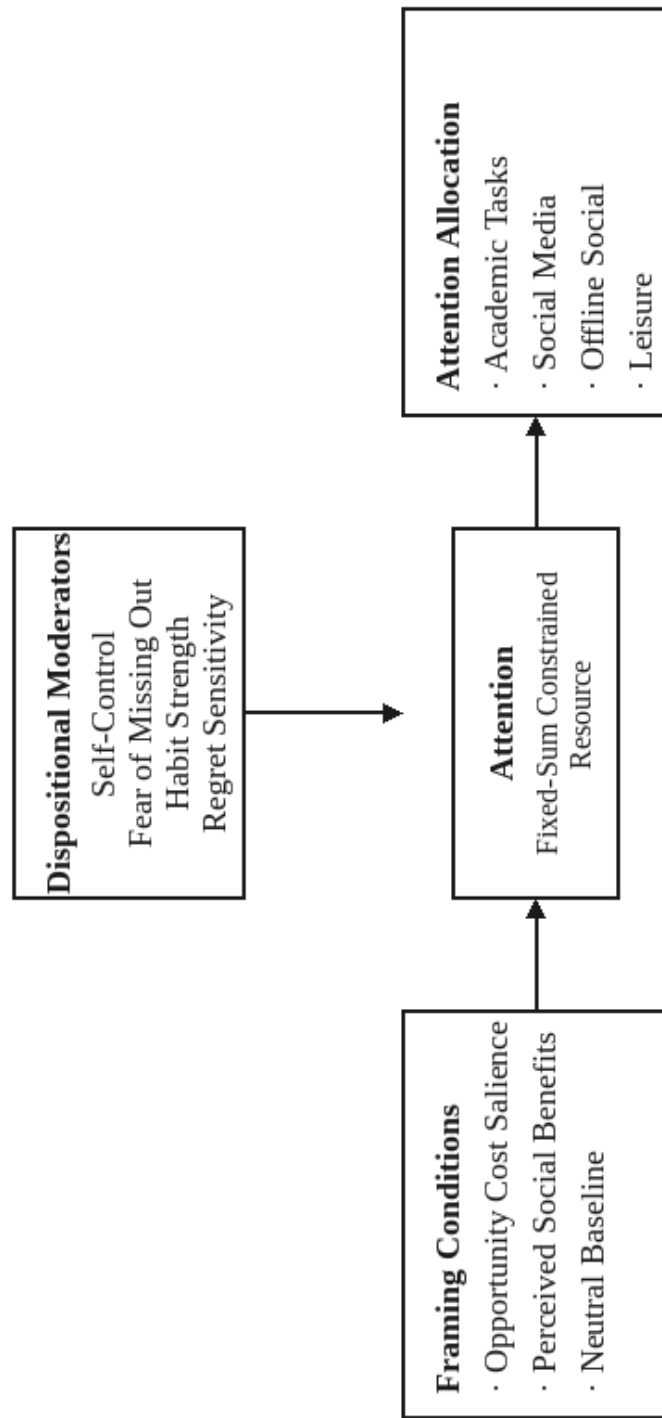
Fear of Missing Out is the pervasive apprehension that others might be having better experiences from which one is absent (Przybylski et al., 2013). Empirical findings link higher FoMO with increased social media use (Przybylski et al., 2013; Alt, 2015), and under structural constraints this increases the importance given to social interactions (Przybylski et al., 2013; Deci & Ryan, 2000). Thus, FoMO is theoretically linked to higher allocation to socially interactive activities (Przybylski et al., 2013).

Regret

Regret arises due to counterfactual comparison between chosen and forgone alternatives (Zeelenberg, 1999; Bell, 1982; Loomes & Sugden, 1982). Individuals differ in the extent to which they feel regret following a decision (Schwartz et al., 2002; Zeelenberg & Pieters, 2007). Since regret involves attention given to unchosen alternatives, higher regret sensitivity is theoretically linked to greater awareness of opportunity costs in constrained situations (Zeelenberg & Pieters, 2007; Bell, 1982). Regret sensitivity is thus a moderator of allocation rather than a primary determinant (Zeelenberg & Pieters, 2008; Roesse et al., 2007).

This framework thus combines structural scarcity, bounded rationality, framing effects and dispositional traits and social benefits. It does not assume optimization or explicitly compute opportunity cost. Rather it models allocation as an act ensuing under binding constraints, limited cognition and stable dispositional traits.

Figure 1. Conceptual Framework of Attention Allocation Under Structural Scarcity



Note. The fixed-sum constraint (100 units across four mutually exclusive domains) is held constant across all framing conditions; framing alters informational emphasis, not the structural boundary. Dispositional moderators are between-subject variables examined in relation to baseline allocation and sensitivity to framing. Opportunity cost is structurally embedded and not subjectively measured. Perceived social benefits reflect anticipated social returns, not structural social capital outcomes.

CHAPTER 4

RESEARCH METHODOLOGY

4. RESEARCH METHODOLOGY

4.1 Introduction

This chapter identifies the research design, sampling methodology, measurement tools and analysis procedures used in the research, as well as the underlying rationale for their use. The research aims to explore the effects of informational framing on attention allocation in the presence of structural scarcity and whether psychological characteristics predict systematic variations in attention allocation. The research design is founded on the idea that attention is a finite cognitive resource that individuals need to allocate to different demands (Kahneman, 1973; Simon, 1971).

4.2 Research Design

The study used a survey embedded within-subject experimental design. Participants completed a survey measuring psychological traits and also participated in an attention allocation task. The design of a within-subjects experiment was utilized wherein subjects were asked to perform an allocation of attention task under three different informational framing conditions: neutral framing, social returns salience framing, and opportunity cost salience framing. The use of an experimental design was imperative as it is a causal study examining the effect of framing on allocation of attention, and only experiments allow for such causal inference (Shadish et al., 2002). The within-subjects design was chosen as opposed to a between-subjects design because allocation behaviour is known to differ significantly between individuals. By having each subject serve as their own control, it reduces inter-individual variation. It also allows for more precise estimates and efficient use of subjects (Maxwell et al., 2017; Kahneman, 1973).

Three conditions were utilized rather than two to facilitate an investigation of two theoretically distinct mechanisms that would be confounded if only one framing manipulation were employed (Shadish et al., 2002). The neutral condition provides a baseline where there is no additional informational emphasis. The opportunity cost condition makes salient the trade-off inherent in allocation, reminding participants that investing cognitive attention in one activity reduces its availability for other activities, thus activating opportunity costs, which are typically ignored unless made explicitly salient (Buchanan, 1969; Frederick et al., 2009). The social returns condition makes salient the relational rewards of digital engagement. Although the framing manipulation varies the informational emphasis prior to each allocation decision, the

structural constraint of allocating 100 units across four domains remains invariant across all conditions (Tversky & Kahneman, 1981).

Each of these framing conditions was incorporated into a different everyday scenario: a regular weeknight evening, a free weekend afternoon, and an exam week evening. These scenarios were counterbalanced across participants such that none of the scenarios was consistently linked with a given framing condition (Maxwell et al., 2017; Keppel & Wickens, 2004). This counterbalancing reduces the likelihood that scenario-specific factors (e.g., increased academic pressure during exam week) will affect allocation in a given framing condition (Maxwell et al., 2017).

4.3 Study Population and Sample

The study used a convenience sampling method with 54 university students. The sampling method is appropriate in this study as it is an exploratory study where the aim is to establish whether the manipulation has the expected effect or not. In this case, the aim is to establish the effect of the trade-offs in attention allocation to digital social participation, face-to-face social interaction and other activities. Digital social participation is an important aspect in the life of university students, as it is the primary tool for maintaining both bonding and bridging social capital (Ellison, Steinfield, & Lampe, 2007; Hampton et al., 2011). University students face daily trade-offs in attention allocation to their studies and social interaction, including face-to-face interaction (Simon, 1971; Kahneman, 1973). The number of participants is adequate for the study, as the comparison is within the participants, thus the variability due to individual differences is minimized.

4.4 The Attention Allocation Task

The central instrument used was a fixed-sum attention allocation task in which participants distributed exactly 100 units of attention across four mutually exclusive domains of activity. The fixed-sum task was used instead of rating-based or ranking-based tasks because it uniquely captures the concept of attention scarcity as a structural constraint (Louviere & Islam, 2008; Dawes, 2008). In rating-based tasks, participants can give high ratings to all domains at once, avoiding trade-offs altogether and thus failing to capture the relevant concept of scarcity (Krosnick & Fabrigar, 1997). In ranking-based tasks, participants can order domains in priority order, but they do not capture the degree to which domains differ in allocated attention (Krosnick & Fabrigar, 1997). The fixed-sum task design forces participants to trade off attention across competing domains. In economic theory, this design captures the concept that

allocating a scarce resource to an activity means forgoing alternative uses of that resource (Buchanan, 1969; Kahneman, 1973; Simon, 1971). The fixed-sum task design with exactly 100 units of attention to be allocated to the four domains of activity is well established in behavioural research as the appropriate task for capturing participants' prioritization decisions (Read et al., 1999; Louviere & Islam, 2008). One hundred units were used because the total corresponds directly to percentages, making the trade-off structure intuitive for participants and producing proportional data suited to regression analysis (Louviere & Islam, 2008).

4.5 Selection of Allocation Domains

Four domains have been incorporated into the allocation task. The reason behind selecting the number four was that it sufficiently encompasses the main competing demands on the students' attention, while at the same time not fragmenting the allocations into small, noisy increments, which might confuse the framing effects within a single domain (Sweller, 2020). Each domain represents a unique, non-redundant category of attentional demand in the students' everyday life.

Social Media / Online Social Interaction including engagement with Instagram, WhatsApp, Twitter/X and Snapchat including messaging, feed scrolling and posting of online content, was included as it represents one of the most contested and dominant forms of students' allocation of attention within information environments (Amez & Baert, 2020). Students are using social media not only for entertainment purposes but also as primary means of bonding and bridging social capital. This is the personal relationships and social connections that provide social support, information access and community belongingness (Ellison, Steinfield & Lampe, 2007; Hampton et al., 2011). This domain is also directly central to the study's research question.

Academic / Individual Tasks including studying, assignments, examination preparation and individual skill development was included as the primary instrumental domain and the natural long-term competitor to social media in the allocation of student attention (Amez & Baert, 2020). Allocation to academic work reflects goal-directed, future-oriented prioritisation of attention.

Offline Social Interaction or face-to-face interaction with friends, family and groups, was conceptualized as a separate domain from Online Social Engagement in order to clearly distinguish non-digital relational investment from its digital analogue. Offline social interaction generates forms of social capital and community embedding that are qualitatively different from those facilitated by digital media (Putnam, 2000). Without this distinction,

changes in allocation to or away from social activities cannot be separately analysed by medium, and it is not possible to determine whether framing effects are due to substitution between social media or to reallocation of attentional priorities per se.

4.6 Measurement of Psychological Traits

Four psychological traits were also measured simultaneously with the experimental allocation task: Fear of Missing Out (FOMO), habit strength, self-control and regret sensitivity. These traits were selected because, while the experiment provides a direct measure of the average framing effect across participants, individual differences in responses to the same informational context are substantial (Borghans et al., 2008). All traits were assessed using validated psychometric scales featuring five-point Likert rating scales as response formats. Each composite score is calculated as the average of responses after reverse-scoring items as needed.

Fear of Missing Out (FoMO)

FoMO was chosen because it directly evaluates the motivational underpinning of social media use. This is same motivational underpinning targeted by the social returns framing condition. By emphasizing the relational benefits of online engagement, the social returns condition appeals to the need to belong and the fear of social exclusion, which underlies FoMO (Deci & Ryan, 2000). Empirically supported relationships have demonstrated that greater FoMO is associated with greater social media use and greater difficulty disengaging from digitally stimulating social environments (Milyavskaya et al., 2018; Przybylski et al., 2013). This directly justifies the prediction that FoMO should predict greater allocation of time to social media. Without including FoMO as a trait variable, the current individual difference hypothesis cannot be tested. FoMO was assessed via the 10-item FoMO Scale, which was developed and validated by Przybylski et al. (2013).

Habit Strength

Habit strength was identified as the process by which the automatic, context-driven nature of any behaviour could reduce the effectiveness of the influence that informational framing might otherwise have on allocation decisions. Individuals with strong social media habits, engagement with the platform could be driven automatically by situational cues such as sitting down in the evenings or reaching for the device. This results in avoiding the normal cognitive process by which informational framing might otherwise influence allocation decisions (Wood

& Neal, 2007; Wood et al., 2014). Habit strength was operationalized using the 12-item Self-Report Habit Index (SRHI), which was designed by Verplanken and Orbell (2003).

Self-Control

Self-control was chosen as the relevant regulatory resource because it affects whether people can enact their assigned intentions in the face of conflicting immediate temptation (Metcalf & Mischel, 1999). In the attention allocation regulative context, this translates to the ability to shift attention away from social media and toward more academically productive activities. Higher trait levels of self-control have been linked to better academic outcomes and less impulsive behaviour (Tangney, Baumeister, & Boone, 2004). This suggests that people with more self-control will allocate more attention to academic activities even in the absence of a framing effect because they have more trait-level self-control. This regulative resource is relevant to the opportunity cost condition because awareness of a trade-off requires alertness and enactment requires capacity (Baumeister et al., 1998). This suggests that the framing effect may vary as a function of people's self-regulatory resources. Self-control was assessed with the 13-item Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004). Negatively worded items were reverse coded before computation of composite scores.

Regret Sensitivity

Regret sensitivity is described as the tendency that increases people's awareness of what is being forgone in any given decision (Schwartz et al., 2002; Zeelenberg, 1999). People who are more inclined to regret sensitivity are more likely to exhibit counterfactual thinking and are more likely to consider trade-offs (Zeelenberg & Pieters, 2007). The presence of regret sensitivity allows for the evaluation of whether the opportunity cost condition results in greater allocation shifts among people who are more inclined to consider trade-offs, which is a moderation effect that cannot be directly estimated without measuring this construct (Roese et al., 2007). Regret sensitivity was measured using the 5-item Regret Scale created by Schwartz et al. (2002), in which two items were reverse-scored before computing the scale.

4.7 Variables

Dependent variables include the units of attention allocated to the four domains of Social Media / Online Social Interaction, Academic / Individual Tasks, Offline Social Interaction, and Leisure / Entertainment, under each of the framing conditions. Independent variables include the three informational framing conditions: neutral, social returns, and opportunity cost. Trait

variables, including fear of missing out (FoMO) (Przybylski, 2013), habit strength (Verplanken & Orbell, 2003), self-control (Tangney, Baumeister & Boone, 2004) and regret sensitivity (Schwartz et al., 2002), are used as predictors of baseline allocation under the neutral framing condition and as potential moderators of framing effects on allocation.

4.8 Data Analysis

Data preparation was done with Microsoft Excel, which involved data entry, reverse coding, calculating composite scores, and summary statistics. Inferential and regression analyses were done with Gretl (Gnu Regression, Econometrics and Time-series Library).

For the analysis, paired-sample t-tests were used to compare allocations for the neutral condition and each framing condition. The use of paired-sample tests was appropriate since all participants completed all three conditions. Within-subject tests directly assess framing effects, control for individual baseline differences and have more statistical power than independent-sample tests. The tests were done for each domain and each framing contrast.

The use of multiple regression for the analysis of the data was preferred because the four traits are theoretically linked, for example, people with high self-control also tend to have lower FoMO (Tangney et al., 2004; Przybylski et al., 2013). The four traits have individual and independent effects on allocation and therefore require a multivariate approach. The analysis will be done for each domain separately with the allocations from the neutral condition as the outcome variable. The analysis will be used to examine whether the four traits moderate the framing effect. For this, the difference scores for each participant (allocations to the framing conditions and allocations to the neutral condition) will be used as the outcome variables for supplementary models.

CHAPTER 5

RESULTS AND INTERPRETATION

5.1 Introduction

In four domains: Social Media/Online Social Interaction (SM), Academic/Individual Task (AC), Offline Social Interaction (OFF), and Leisure/Entertainment (L), a series of paired samples t-tests were performed to determine whether the treatment of Social Returns (S) and Opportunity Cost (C) produced outcome values that were significantly different from a Neutral baseline (N). 54 paired observations and 53 degrees of freedom were used for each t-test. The two-tailed significance level was chosen at $\alpha = .05$. Any increase in one domain is accompanied by a commensurate loss in other domains because participants were given a total of 100 units of attention to be distributed across domains.

5.2 Hypothesis 1: Opportunity Cost Framing (Neutral vs. Opportunity Cost Condition)

The first hypothesis postulated that when participants are exposed to Opportunity cost framing, they would exhibit different allocation patterns across the four allocation domains relative to that in the Neutral condition.

Table 1

Paired-Samples t-Test Results for Hypothesis 1: Neutral Versus Opportunity Cost Condition (N = 54)

<i>Variable</i>	<i>M Neutral</i>	<i>M Opportunity Cost</i>	<i>t(53)</i>	<i>p</i>
Social Media / Online Social Interaction	32.00	27.00	2.08	.043*
Academic / Individual Task	22.96	32.63	2.03	.047*
Offline Social Interaction	22.13	19.30	1.26	.212
Leisure / Entertainment	22.91	21.33	0.58	.565

Note. N = 54 paired observations for all comparisons. * $p < .05$.

Interpretation

Two out of the four domains were statistically significant, demonstrating domain-specific reallocation effects under Opportunity Cost framing.

Social media/Online Social Interaction demonstrated a significant reduction with Opportunity Cost framing, $t(53) = 2.08$, $p = .043$. Participants allocated less attention in the Opportunity Cost condition ($M = 27.00$) than in the Neutral condition ($M = 32.00$). This is consistent with Frederick et al. (2009), who found that individuals neglect alternatives while making decisions unless they are made visible through informational framing.

Academic / Individual Task had a significant increase under Opportunity Cost framing, $t(53) = 2.03$, $p = .047$. This was demonstrated by a significantly greater attention allocation under Opportunity Cost framing ($M = 32.63$) compared to Neutral framing ($M = 22.96$), which was found to be the greatest absolute difference between conditions.

The direction of the reallocation is in line with role identity theory (Stryker & Burke, 2000). The theory states that individuals deprioritise activities that do not have any institutional role obligation when resource constraints are made salient. As a result, when opportunity costs are considered, the participant seems to refocus their attention on their role-consistent priorities. This also explains why attention allocated towards Social Media reduced as well.

Offline Social Interaction ($t(53) = 1.26$, $p = .212$) and **Leisure/Entertainment** ($t(53) = 0.58$, $p = .565$) lacked statistically significant results suggesting that the effects of Opportunity Cost were, in fact, limited to domains with higher instrumental consequences for the sample group.

This specificity of domain matches the findings of Spiller (2011), who demonstrated that the taking of opportunity costs is not evoked by reminders of constraints but rather that it is evoked in a selective manner for resources that are perceived as competing. In the sample of university students, the instrumentally active trade-off was one of social media and academic obligations; offline social interaction/leisure was not involved in this trade-off and therefore was not impacted.

Overall, Hypothesis 1 shows that Opportunity Cost effect does in fact cause a systematic redistribution of attention, such that attention to academics is increased and attention to social

media is decreased. This is more consistent with economic models of trade-off awareness and role-consistent prioritization (Frederick et al., 2009; Stryker & Burke, 2000).

5.3 Hypothesis 2: Social Returns Framing (Neutral vs. Social Returns Condition)

The second hypothesis postulated that when participants are exposed to Social Returns framing, they would exhibit different allocation patterns across the four allocation domains, relative to that in the Neutral condition.

Table 2

Paired-Samples t-Test Results for Hypothesis 2: Neutral Versus Social Returns Condition (N = 54)

<i>Variable</i>	<i>M Neutral</i>	<i>M Social Returns</i>	<i>t(53)</i>	<i>p</i>
Social Media / Online Social Interaction	32.00	38.56	-1.98	.053
Academic / Individual Task	22.96	24.35	-0.35	.729
Offline Social Interaction	22.13	18.89	1.99	.051
Leisure / Entertainment	22.91	19.87	1.40	.166

Note. N = 54 paired observations for all comparisons. No comparisons reached statistical significance at $\alpha = .05$. Two comparisons approached significance and are discussed as meaningful trends.

Interpretation

At the conventional $\alpha = .05$ threshold, the Social Returns hypothesis failed to reach statistical significance. The four allocation domains did not achieve statistical significance. Two of the patterns, however, have theoretical relevance and merit interpretation even though they did not reach statistical significance.

Social Media and online social interaction were not statistically significant ($t(53) = -1.98$, $p = .053$). In the expected direction, participants paid greater attention under the Social Returns

condition ($M = 38.56$) than under the Neutral condition ($M = 32.00$), by a margin of 6.56. This directional pattern is underpinned by the social capital theory. Ellison et al. (2007) found that the motivation behind students' social media usage is the anticipated social returns of bridging, bonding and maintained social capital. The nonsignificant finding also supports the principle of informational redundancy by Falkinger (2007), which suggests that framing effects will not be significant when the information provided by the framing is not new to the recipient but can be derived from common sense and experience.

Offline Social Interaction did not achieve statistically significant results ($t(53) = 1.99$, $p = .051$), although allocation was actually less under the Social Returns framing condition ($M = 18.89$) than under the Neutral condition ($M = 22.13$). This is in accordance with the media displacement theory, which suggests that online and offline social interaction compete for a limited motivational reservoir, resulting in substitution effects that are mediated by their salience (Nie, 2001; Putnam, 2000).

Academic/Individual Task did not show a significant effect, $t(53) = -0.35$, $p = .729$, which could be explained by attribute non-applicability (Kahneman, 1973) and construal level theory (Trope & Liberman, 2010). The concreteness and sociality of the framing was probably too low to be applicable to a future-oriented, abstract domain.

Leisure/Entertainment, $t(53) = 1.40$, $p = .166$, did not show a significant effect, which could be explained by a motivational domain mismatch (Deci & Ryan, 2000). The level of social relatedness has little effect on a leisure activity that meets autonomy and competence needs.

In general, there was little evidence for Hypothesis 2. Socially oriented areas seem to be specifically impacted by Social Returns framing. Although directionally consistent, reallocation effects fall short of statistical significance.

5.4 Dispositional Traits and Baseline Allocation Under Neutral Framing

Using neutral condition allocations as the outcome variable, four different multiple regression models were performed to investigate whether stable dispositional qualities are systematically associated to attention allocation in the presence of structural scarcity. Self-control, regret sensitivity, habit strength and FOMO were all input concurrently as predictors. There were 54 participants in all analyses. These analyses investigate whether allocation patterns prior to the

implementation of informational salience adjustments are predicted by stable individual difference characteristics.

5.4.1 Social Media / Online Interaction Allocation (Neutral Condition)

The regression model predicting Social Media allocation under Neutral framing was statistically significant, $F(4, 49) = 3.45$, $p = .015$. The model accounted for 21.98% of the variance in allocation ($R^2 = .220$, Adjusted $R^2 = .156$). FOMO emerged as a significant positive predictor ($B = 7.84$, $SE = 3.09$, $t = 2.54$, $p = .014$), so did habit strength ($B = 6.73$, $SE = 3.02$, $t = 2.23$, $p = .030$). Self-control was on the verge but did not reach significance ($p = .072$) and regret sensitivity was not a significant predictor ($p = .690$).

Table 3

Multiple Regression Predicting Social Media Allocation Under Neutral Framing

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>
Intercept	10.79	17.75	0.61	.546	[-24.87, 46.45]
FOMO	7.84	3.09	2.54	.014*	[1.64, 14.05]
Habit Strength	6.73	3.02	2.23	.030*	[0.66, 12.79]
Self-Control	-5.95	3.24	-1.84	.072	[-12.46, 0.55]
Regret Sensitivity	-1.27	3.16	-0.40	.690	[-7.62, 5.08]

Note. $N = 54$. $R^2 = .220$, Adjusted $R^2 = .156$. $F(4, 49) = 3.45$, $p = .015$. * $p < .05$.

Interpretation

The considerable positive effect of FOMO was consistent with Przybylski et al.'s (2013) theoretical account. Those scoring higher in FOMO were therefore likely to allocate more attentional capacity to social media in the absence of informational cues due to their underlying motivational orientation to social monitoring.

The considerable positive effect of habit strength was consistent with Verplanken and Orbell (2003). Students with stronger social media habits were likely to allocate more attention to

social media at baseline due to the cue-dependent rather than deliberative nature of the behaviour.

The negative trend for self-control ($p = .072$) was nonsignificant. Tangney et al.'s (2004) study found that trait self-control was negatively associated with engaging in immediately gratifying but instrumentally low-value behaviours. This suggests that students with stronger self-control partially countered the effects of social media allocation.

The absence of significance for regret sensitivity is theoretically in line because Schwartz et al. (2002) have shown that regret sensitivity is mediated by a counterfactual comparison of high-consequence outcomes, which is not present in social media behaviour involving low-stakes and instant-gratification-oriented engagement.

5.4.2 Academic / Individual Task Allocation (Neutral Condition)

The regression analysis for Academic Allocation under Neutral framing was found to be statistically significant, $F(4, 49) = 3.04$, $p = .026$. This model accounted for 19.89% of the variance ($R^2 = .199$; Adjusted $R^2 = .134$). Only Regret Sensitivity was found to be a statistically significant predictor ($B = 8.52$, $SE = 3.07$, $t = 2.78$, $p = .008$). FOMO, Habit Strength and Self-Control were not found to be significant predictors.

Table 4

Multiple Regression Predicting Academic Allocation Under Neutral Framing

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>
Intercept	22.18	17.22	1.29	.204	[-12.42, 56.78]
FOMO	-4.45	3.00	-1.48	.144	[-10.46, 1.57]
Habit Strength	-2.56	2.93	-0.87	.387	[-8.44, 3.33]
Self-Control	-2.70	3.14	-0.86	.395	[-9.01, 3.62]
Regret Sensitivity	8.52	3.07	2.78	.008*	[2.36, 14.68]

Note. $N = 54$. $R^2 = .199$, Adjusted $R^2 = .134$. $F(4, 49) = 3.04$, $p = .026$. * $p < .05$.

Interpretation

The strong positive association with Regret Sensitivity can be attributed to the anticipatory role of Regret as proposed by Zeelenberg (1999). Underperformance in academics can be considered a high feedback-high consequence outcome for students, thus making the cost of not studying enough a chronically salient concern for individuals high in this trait, as proposed by Schwartz et al. (2002).

The nonsignificance of FOMO can be attributed to Przybylski et al.'s (2013) conceptualization of FOMO as a socially comparative and digitally related construct, which does not have motivational implications for individuals' academic achievement.

The nonsignificance of habit strength can be attributed to a lack of a repetitive and constant cue-response relationship in academics, which is a prerequisite for automaticity to occur, as proposed by Verplanken & Orbell (2003).

The nonsignificance of self-control can be attributed to a neutral baseline condition without an alternate competing temptation, which has limited scope to detect a distinction between individuals. This is supported by Tangney et al.'s (2004) study that found self-control effects are more detectable when an alternate impulse is present.

5.4.3 Offline Social Interaction Allocation (Neutral Condition)

The results from the regression analysis for the allocation of Offline Social Interaction were statistically significant, $F(4, 49) = 2.87$, $p = .032$. The model explained 19.01% of the variance in the dependent variable ($R^2 = .190$, Adjusted $R^2 = .124$). Habit strength was found to be a significant negative predictor ($B = -4.65$, $SE = 2.19$, $t = -2.12$, $p = .039$), while self-control was a significant positive predictor ($B = 5.86$, $SE = 2.35$, $t = 2.49$, $p = .016$). FOMO and regret sensitivity were not significant.

Table 5*Multiple Regression Predicting Offline Social Interaction Allocation Under Neutral Framing*

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>
Intercept	22.55	12.91	1.75	.087	[-3.38, 48.49]
FOMO	-3.23	2.25	-1.44	.156	[-7.75, 1.28]
Habit Strength	-4.65	2.19	-2.12	.039*	[-9.06, -0.24]
Self-Control	5.86	2.35	2.49	.016*	[1.13, 10.59]
Regret Sensitivity	1.98	2.30	0.86	.394	[-2.64, 6.59]

Note. N = 54. $R^2 = .190$, Adjusted $R^2 = .124$. $F(4, 49) = 2.87$, $p = .032$. * $p < .05$.

Interpretation

Habit strength was found to be a significant negative predictor of offline social interaction allocation, with individuals with stronger habits allocating less attention to face-to-face interaction. This is in accordance with the concept of habit theory (Verplanken & Orbell, 2003; Wood & Neal, 2007). In the online world, habitual use of smartphones or social media may thus influence individuals to allocate less attention to face-to-face interaction.

Self-control was found to be a significant positive predictor of offline social interaction allocation, with individuals with higher self-control allocating more attention to face-to-face interaction. Self-control is defined as the ability to guide actions in the service of socially significant or long-term goals, including the ability to resist impulses that distract or interfere with goal pursuit (Tangney et al., 2004; Baumeister et al., 1998).

Fear of Missing Out (FOMO) did not significantly predict offline social interaction allocation. This is plausibly explained by the fact that the primary motivation for FOMO is to constantly monitor online social environments (Przybylski et al., 2013; Milyavskaya et al., 2018).

Regret sensitivity did not significantly predict offline social interaction allocation. Although regret is defined as the consideration of forgone alternatives, this is not necessarily the case in

the neutral condition where opportunity costs are not explicitly highlighted (Zeelenberg, 1999; Schwartz et al., 2002).

5.4.4 Leisure / Entertainment Allocation (Neutral Condition)

The regression analysis for the prediction of Leisure/Entertainment allocation with Neutral framing was found to be statistically significant, $F(4, 49) = 3.75$, $p = .010$, with 23.45% variance explained ($R^2 = 0.235$, Adjusted $R^2 = 0.172$). Regret sensitivity was found to be a significant negative predictor ($B = -9.23$, $SE = 2.50$, $t = -3.70$, $p < 0.001$). FOMO, habit strength, and self-control were not found to be significant.

Table 6

Multiple Regression Predicting Leisure / Entertainment Allocation Under Neutral Framing

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>
Intercept	44.48	14.02	3.17	.003*	[16.30, 72.66]
FOMO	-0.17	2.44	-0.07	.946	[-5.07, 4.74]
Habit Strength	0.48	2.38	0.20	.841	[-4.31, 5.27]
Self-Control	2.79	2.56	1.09	.281	[-2.35, 7.93]
Regret Sensitivity	-9.23	2.50	-3.70	< .001*	[-14.24, -4.21]

Note. $N = 54$. $R^2 = .235$, Adjusted $R^2 = .172$. $F(4, 49) = 3.75$, $p = .010$. * $p < .05$.

Interpretation

Explanations for the significant negative impact of regret sensitivity are provided in the study by Schwartz et al. (2002). The role hierarchy for students places the domain of leisure at the lowest level of instrumental return. Therefore, it is least likely to be engaged in by individuals with a higher level of regret sensitivity, even in the absence of external cues (Zeelenberg, 1999).

The non-significance of Fear of Missing Out (FOMO) where $p = .946$ is a result of its irrelevance to the domain of leisure, where FOMO is related to social comparisons and relatedness (Przybylski et al., 2013), and leisure fulfills autonomy and competence needs, which are qualitatively different from relatedness (Deci & Ryan, 2000).

Habit strength did not prove significant because, in the domain of leisure, students engage in a range of activities that are loosely cued and do not provide the repeated contextual structure necessary to produce a significant habit effect (Verplanken & Orbell, 2003).

The nonsignificance of self-control is a result of the absence of a clear, identifiable impulse that requires regulatory override, and is in line with Tangney et al.'s (2004) observation that self-control is a trait that is likely to distinguish between individuals in contexts where there are distinct competing impulses.

5.5 Moderation of Framing Effects by Dispositional Traits

In order to test whether dispositional traits moderated the framing effect, difference scores were computed for domains that exhibited significant or near-significant framing effects. Regression analysis was performed in which each difference score was regressed simultaneously on FOMO, habit strength, self-control and regret sensitivity ($N = 54$).

Table 7

Multiple Regression Analyses Predicting Framing Responsiveness Across Conditions and Outcomes

Variable	SM_S – SM_N				OFF_S – OFF_N				SM_C – SM_N				AC_C – AC_N			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	10.7 9	17.7 5	0.61	.546	22.1 8	17.2 2	1.2 9	.204	22.5 5	12.9 1	1.7 5	.087	44.4 8	14.0 2	3.1 7	.003 **
<i>FOMO</i>	7.84	3.09	2.54	.014 *	- 4.45	3	- 1.4 8	.144	- 3.23	2.25	- 1.4 4	.156	- 0.17	2.44	- 0.0 7	.946
<i>Habit Strength</i>	6.73	3.02	2.23	.030 *	- 2.56	2.93	- 0.8 7	.387	- 4.65	2.19	- 2.1 2	.039 *	0.48	2.38	0.2	.841
<i>Self-Control</i>	- 5.95	3.24	- 1.84	.072	-2.7	3.14	- 0.8 6	.395	5.86	2.35	2.4 9	.016 *	2.79	2.56	1.0 9	.281
<i>Regret</i>	- 1.27	3.16	-0.4	.690	8.52	3.07	2.7 8	.008 **	1.98	2.3	0.8 6	.394	- 9.23	2.5	- 3.7	.001 **
R ²	.220	.199	.190	.235												
Adjusted R ²	.156	.134	.124	.172												
F(4, 49)	3.45 *	3.04 *	2.87 *	3.75 **												

Note. B = unstandardized regression coefficient; SE = standard error. SM_S – SM_N = change in Social Media use under Social Returns framing; OFF_S – OFF_N = change in Offline Social Interaction under Social Returns framing; SM_C – SM_N = change in Social Media use under Opportunity Cost framing; AC_C – AC_N = change in Academic allocation under Opportunity Cost framing. Significant p-values are bolded.

* $p < .05$. ** $p < .01$.

Interpretation

Under Social Returns framing, neither model was found to be statistically significant. For Social Media (SM_S - SM_N), $F(4, 49) = 2.13$, $p = .091$, $R^2 = .148$. FOMO ($p = .062$) and Habit Strength ($p = .063$) moved in the negative direction, suggesting that individuals with higher levels of these traits may have exhibited a lower level of response to Social Returns framing. This result is in line with the expectations of the ceiling effects' theory. Przybylski et al.'s (2013) as well as Verplanken and Orbell's (2003) studies showed that individuals reporting high levels of FOMO, as well as those showing strong habitual involvement, report spending large amounts of time on Social Media to begin with, thus limiting the scope of framing effects.

The nonsignificant finding could also be attributed to the limited statistical power available to detect moderation effects, which require much larger sample sizes than those required to detect main effects (Lakens, 2021).

For Offline Social Interaction (OFF_S - OFF_N), the model was not significant at all, $F(4, 49) = 0.33$, $p = .854$, $R^2 = .026$. None of the traits approached significance. This result is consistent with the view that the substitutive effect is structural rather than dispositional in nature, in that, given that offline social displacement under the social returns framing is a function of functional equivalence between online and offline engagement (Nie, 2001; Putnam, 2000), it should be uniform across subjects regardless of trait level.

Under the Opportunity Cost framing condition, both models remained non-significant. For Social Media (SM_C - SM_N), $F(4, 49) = 1.57$, $p = .197$, $R^2 = .114$. For Academic allocation (AC_C - AC_N), $F(4, 49) = 0.41$, $p = .799$, $R^2 = .033$. In addition, no trait was able to predict responsiveness in either of these models. This absence of moderation across subjects is consistent with the findings of Frederick, et al. (2009) and Spiller (2011) who showed that opportunity cost salience, when externally and explicitly framed, overrides individual differences by providing trade-off reasoning that individual traits would normally render heterogeneous, thereby generating a framing effect that is homogeneous across subjects.

Overall, dispositional traits have been found to have a systematic influence on baseline allocation, but no influence on distinguishing between individuals in response to the framing manipulations. Framing effects seem to operate equally for the sample. This dissociation has theoretical implications, as traits are seen to impact initial position prior to any informational context, while a sufficiently clear informational manipulation has levelling effects on between-person heterogeneity in response. This is seen as supportive of Simon's (1957) proposition that decision-relevant information can substitute for deliberative capacity that traits can otherwise contribute unevenly.

5.6 Summary of Results

The paired t-tests showed domain-specific effects instead of overall effects across the two framing conditions. For the Social Returns framing, there were two near-significant trends: allocation to Social Media increased ($p = .053$), and allocation to Offline Social Interaction decreased ($p = .051$). For the Opportunity Cost framing, there were two significant effects:

allocation to Social Media decreased ($p = .043$), and allocation to Academic increased ($p = .047$).

The baseline conditions analysis under the Neutral framing produced significant findings in all four domains ($p = .010$ to $.032$). In all cases, dispositional factors explained 19 to 23 percent of variance. In the Social Media allocation domain, Fear of Missing Out (FOMO) and habit strength were both positive predictors. In the Academic allocation domain, regret sensitivity was positive. In the Leisure/Entertainment allocation domain, regret sensitivity was negative. In the Offline Social Interaction allocation domain, self-control was positive, while habit strength was negative.

No significant results were found in the moderation analyses. For difference score models in both framing conditions, relatively low levels of explained variance were found (R^2 ranged from $.026$ to $.148$); none of the traits predicted responsiveness to framing. Though dispositional traits seemed to play a role in allocation in Baseline conditions, they did not predict responsiveness to framing. The uniformity of the effects of framing was observed.

CHAPTER 6

**FINDINGS, CONCLUSIONS AND
RECOMMENDATIONS**

6.1 Introduction

This study examines the extent to which the framing of information influences the allocation of scarce attention under conditions of structural scarcity and whether individual dispositional traits moderate the baseline allocation and framing effect. The study used a within-subjects experimental design with a sample of 54 university students who allocated 100 units of attention among four mutually exclusive domains: social media and online interaction, academic and individual tasks, offline social interaction and leisure and entertainment. The participants were subjected to three conditions: a neutral baseline, social returns salience and opportunity cost salience. Four dispositional factors were measured with the use of validated psychometric scales: fear of missing out, habit strength, self-control and regret sensitivity. The study combines four theories: attention scarcity (Simon, 1971; Kahneman, 1973), opportunity cost salience (Frederick et al., 2009; Spiller, 2011), digital social capital (Ellison et al., 2007; Hampton et al., 2011) and dispositional psychology (Przybylski et al., 2013; Tangney et al., 2004). The novelty of the study lies in the integration of these theories into a fixed-sum allocation model that structurally imposes scarcity.

6.2 Findings

6.2.1 Effect of Opportunity Cost Framing

Hypothesis 1 received partial support. Opportunity Cost framing produced two statistically significant domain-specific shifts. Social Media/Online Interaction allocation decreased significantly from a neutral mean of 32.00 to 27.00 ($t(53) = 2.08$, $p = .043$), while Academic/Individual Task allocation increased significantly from 22.96 to 32.63 ($t(53) = 2.03$, $p = .047$). This is consistent with Frederick et al. (2009) and Spiller (2011), who established that individuals neglect opportunity costs unless made explicitly visible. The reallocation toward academics is interpretable within the student context: when trade-offs were highlighted, participants redirected attention toward their most instrumentally consequential domain. Offline Social Interaction and Leisure showed no significant change, showing that the effect was domain-selective rather than generalized.

6.2.2 Effect of Social Returns Framing

Hypothesis 2 was not supported at $\alpha = .05$. However, two near-significant trends emerged. Social Media allocation increased from 32.00 to 38.56 ($t(53) = -1.98$, $p = .053$), and Offline Social Interaction decreased from 22.13 to 18.89 ($t(53) = 1.99$, $p = .051$). These directional patterns suggest a substitution effect: highlighting digital social benefits appeared to draw attention away from face-to-face interaction toward online engagement. While not statistically conclusive, the theoretical coherence of these trends is consistent with the digital social capital literature (Ellison et al., 2007; Hampton et al., 2011) and warrants investigation in larger samples.

6.2.3 Dispositional Traits and Baseline Allocation

Regression models were statistically significant across all four domains under Neutral framing ($p = .010$ to $.032$), explaining 19–23% of variance. FOMO and habit strength were significant positive predictors of Social Media allocation ($B = 7.84$, $p = .014$; $B = 6.73$, $p = .030$), consistent with Przybylski et al. (2013) and Verplanken and Orbell (2003). Regret sensitivity positively predicted Academic allocation ($B = 8.52$, $p = .008$) and negatively predicted Leisure allocation ($B = -9.23$, $p < .001$), suggesting it functions as an anticipatory orientation toward high-return activities. For Offline Social Interaction, self-control was a positive predictor ($B = 5.86$, $p = .016$) and habit strength a negative predictor ($B = -4.65$, $p = .039$), indicating that deliberate regulatory capacity supports face-to-face engagement while digital behavioral automaticity works against it.

6.2.4 Moderation of Framing Effects

No moderation models reached statistical significance. Explained variance across difference-score models was low ($R^2 = .026$ to $.148$), and no trait reliably predicted responsiveness to either framing condition. Framing effects appeared to operate uniformly across participants. Suggestive trends; FOMO and habit strength approaching significance for reduced responsiveness to Social Returns framing, remain directional and exploratory given the sample size.

6.3 Limitations

- 1) The sample size was 54 participants, which constrains statistical power, especially in detecting small effect sizes and moderation effects; however, the within-subjects design partially alleviates this constraint.
- 2) The use of convenience sampling in a university sample has limited external validity due to the possibility that students may have attentional concerns that are substantially different from other groups.
- 3) The series of paired sample t-tests over four allocation domains and two framing conditions increases the probability of Type I errors; in the absence of any corrective strategy, the results should be viewed with caution.
- 4) The fixed sum attention allocation task conceptually represents structural scarcity but may not be representative of attention allocation decision processes in the real world.
- 5) The four attention domains are broad in scope but may not exhaustively represent all the attention allocation possibilities experienced by students in the real world due to the major activities in which students are engaged.

5.3 Implications

5.3.1 Theoretical Implications

This study extends the opportunity cost salience mechanism, previously confined to monetary and consumer domains (Frederick et al., 2009; Spiller, 2011), to cognitive attention — a resource without price signals or external feedback. It operationalizes Simon's (1971) concept of attentional scarcity as a structural experimental constraint rather than a theoretical assumption and demonstrates that independently manipulating the informational salience of that constraint produces measurable allocation shifts. The fixed-sum design also operationalizes broad bracketing (Read et al., 1999), showing that trade-off visibility matters in ways that unconstrained single-domain designs cannot capture. The systematic relationship between dispositional traits and baseline allocation further invites theoretical development of attentional economics models that incorporate psychological heterogeneity.

5.3.2 Practical Implications

For educational settings, the significant increase in academic allocation under Opportunity Cost framing suggests that reframing academic engagement in terms of what is foregone rather than what is to be gained may be an effective informational nudge for students navigating digital environments. For digital wellbeing practitioners and platform designers, the contrasting effects of the two framing conditions illustrate how salience can be used both to support and to undermine intentional attention management. Platforms that surface displacement costs may support user autonomy, while those that foreground social rewards without trade-off visibility may inadvertently suppress offline engagement. At the individual level, trait-informed approaches to intervention design may be more effective than uniform messaging, particularly for individuals high in FOMO or habitual digital engagement.

5.4 Suggestions for Future Research

Some avenues for future research can be derived from the limitations of this study. One is that a larger and more heterogeneous sample is required for a study on this topic, especially for moderation analyses. A larger sample size, one that is derived from an a priori power analysis based on the effects found here, will greatly increase reliability.

Another avenue is to establish convergent validity between fixed sum and real-life behaviour by using ecological momentary assessment, experience sampling, or objective screen time data.

Yet another avenue is to manipulate both framing conditions together or sequentially and see if additive or interactive effects occur. Pre-registered confirmatory moderation tests, which are clearly separated from exploratory tests, will greatly increase the validity of trait by framing interactions.

Finally, adding more categories to the domain structure, such as physical exercise, family life or professional development, will greatly increase the generalizability of these results to a broader attentional ecology.

5.5 Conclusion

How is framing a decision environment with limited options likely to guide our allocation of attention, especially when there is no price, no market and no automatic signals on what is sacrificed in the process? This research fills the answer by extending the notion of opportunity cost salience, traditionally linked to the realm of money and consumer decisions, into the realm of cognitive attention. The results demonstrate that when the trade-offs are specified, people move their attention from social media to academic tasks. The movement is not random. It follows a role-consistent pattern in which the specification of the limit encourages the ordering of priorities. The framing of the social returns showed the movement in the anticipated direction, albeit not statistically significant, suggesting a movement from online to offline social engagements that should be examined in a larger sample.

At the outset, stable factors of FOMO, strength of habit, regret sensitivity and self-control accounted for between 19 and 23 percent of the variance in attention allocation across the four domains. However, none of these factors affected how people framed their attention. And here again, the distinction is important. Traits appear to provide a foundation or a starting point, whereas an informational cue can move all people in a similar direction, regardless of their trait profile.

The results have important implications beyond the specific domain of students that was used in this study. In digital environments where social rewards are prominently featured and attention costs are deemphasized, the discrepancy between featured costs and actual costs is not merely a function of design but is in fact the mechanism for capturing attention under scarcity. The current study provides a blueprint for a practically important question and a starting point for a more scientifically grounded understanding of attention allocation under conditions of scarcity.

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