The Impact of Nudging on Student Compliance: A Field Experiment in High-Fatigue Classroom Environments.

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

BY

NANDA P NAIR (Reg. No: AMI21ECO020)

Under the Guidance and Supervision of

Prof. Dr. SANTHOSH KUMAR P K
DIRECTOR
CENTRE FOR BUDGET STUDIES, CUSAT



DEPARTMENT OF ECONOMICS AND CENTER FOR RESEARCH

ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM

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This is to certify that the dissertation titled **"The Impact of Nudging on Student Compliance: A Field Experiment in High-Fatigue Classroom Environments"**, submitted in partial fulfillment of the requirement for Post Graduation of Integrated M.A Programme in Social Science- Economics to St. Teresa's College, Ernakulam (Autonomous) affiliated to **MAHATMA GANDHI UNIVERSITY, KOTTAYAM,** is a true record completely done by the student under supervision and guidance.

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I hereby declare that the dissertation titled **"The Impact of Nudging on Student Compliance: A Field Experiment in High-Fatigue Classroom Environments"** submitted by me for partial fulfillment of the requirement for postgraduation of the Integrated M.A programme in Social Science- Economics in original work.

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CHAPTER- I

INTRODUCTION

1.INTRODUCTION

1.1 Background of the study

Current behavioural economics and psychology have shifted their focus toward how people actually direct choices in the real world, rather than in theory. Traditional economic theories often depend on on the idea of Homo Economicus, the perfectly rational person who always calculates every pro and con to make the best possible decision. However, real-life evidence shows that we hardly act this way. Our choices are constantly influenced by mental exhaustion, our current mood, the environment, and the ticking of the clock. This leads to an "intention-behaviour gap", where we truly mean to do something good or useful but fail to actually follow through. A perfect example of this happens in classrooms: students might genuinely want to help by giving feedback, but by the end of a long session, the absolute physical and mental drain makes them walk away instead.

One of the most influential behavioural responses to this gap is the concept of nudges. A nudge refers to any part of choice architecture that possibly changes behaviour without limiting options or significantly changing economic incentives. Unlike traditional controlling or administrative interventions, nudges do not depend on on compulsion or enforcement. Instead, they subtly reshape the decision environment so that certain actions become more relevant or easier to perform. Because nudges operate through psychological mechanisms such as heuristics, affect and attention, they are particularly effective in low-element of danger, voluntary contexts such as classroom settings, where compliance cannot be forced but must be encouraged.

Among the wide range of nudges discussed in behavioural literature, emotional framing and time-based urgency have emerged as relevant mechanisms for overcoming administrative friction. Emotional nudges influence behaviour by tempting to affective responses such as empathy, social connection, or a sense of helpfulness. By initiating the affect heuristic, these nudges can attach a positive emotional tag to ta task, effectively reducing its perceived burden. Time-based nudges, in contrast, operate by reforming the temporal aspects of choice, introducing urgency, deadlines, or scarcity to counter procrastination and delay

While both forms of nudging have been shown to influence behaviour, their relative effectiveness may vary depending on relative conditions, particularly in “Hot State” environments characterized by fatigue and cognitive depletion such as students at the conclusion of a session characterized by fatigue and cognitive depletion. This study try to identify whether an appeal to social empathy or the introduction of a strict temporal window is more effective at avoiding this initial resistance, transforming a neutral administrative request into a motivated behavioural response.

1.2 Decision-Making in High-Fatigue Contexts

In real-world settings, critical decisions are rarely made under ideal conditions of calm consideration; instead, they are often conveyed in states of physical exhaustion, mental distraction, or severe time pressure. Behavioural research shows that in these ‘hot’ states, the human brain undergoes a shift in processing, trusting more heavily on instinctive, automatic “System 1” responses rather than reflective, goal-oriented “System 2” reasoning. Under the weight of high cognitive load, even tasks that an individual recognizes as objectively useful or worthwhile are frequently postponed, avoided, or executed with the absolute minimum effort required, a phenomenon known as “satisficing”.

Academic and administrative environments are full with these high-fatigue decision points. Students, for example, are typically prompted to engage in voluntary tasks, such as feedback submission, immediately following intensive classroom sessions. At this point, cognitive resources are systematically depleted, and the visceral drive to disengage from the academic environment is at its peak. While a student may knowledgeably acknowledge the long-term institutional value of providing feedback, their immediate preference is ruled by the present-bias want to exit the classroom and conserve remaining energy. This makes the post-class environment a uniquely suitable laboratory for studying how specific behavioural interventions can bridge the gap between intent and behaviour under realistic limitations.

When students are under pressure, emotional and time-based nudge act as a psychological shortcuts to avoid mental struggle. Emotional framing, for instance, pulls on the affect heuristic (Slovic & Peters, 2005).By linking a feedback request to a positive emotional spark, like the idea supporting a fellow student, the task stops feeling like a chore. It effectively lowers the mental weight of the work, turning a boring administrative requirement into a small act of social good. Time-based nudges take a completely different route through a

process calling tunneling (Mullainathan & Shafir, 2013).This works by lessening a person's focus down to the immediate present. When you give someone a very tight window to act, they don't have the mental space to procrastinate; they simply react. By testing these two triggers against each other during post-class fatigue, this study aims to see which one holds up better when people are simply too tired to think.

1.3 Empirical Context: Post-Class Feedback as a Behavioural Setting

This study uses a voluntary, offline feedback task to detect behavioural responses in a real-world setting. In higher education, student feedback is important for administrative improvement, yet compliance is typically low when requests are made at the end of a session. This creates a specific "friction point" where a student's desire to leave struggles with their intent to be helpful.

The post-class feedback environment offers several different advantages as an experimental context for investigating behavioural nudges:

- Keen Sensitivity to Friction: Completing the tasks requires a small but noticeable amount of effort. Because the "cost" of staying is low but the "desire to leave" is high. Student behaviour becomes very sensitive to subtle changes in choice architecture. In such states, slight shifts in how a request is framed can determine whether a student engages or walks away.
- Observation of Consistent Action: Unlike laboratory surveys that measure what people claim they would do, this field experiment registers actual physical compliance in real-time. This method removes "hypothetical bias" and offers empirical evidence of how nudges perform when an individual's cognitive energy is truly exhausted.

It is essential to clarify that the core objective of this research is not to assess academic quality of the feedback itself, but to analyse the underlying behavioural mechanism caused by the request. In this study, the feedback task functions as a practical real-world substitute, allowing for the direct observation of how specific changes in choice architecture, such as activating an affective response or applying temporal scarcity can reshape the "path of least resistance" for a participant. By utilizing compliance rates and response quality of the feedback as observable outcomes, the study moves past theoretical assumption to providing a scientifically severe empirical test. The goal is to determine if administrative efficiency can be optimized through psychological management rather than explicit enforcement

1.4 Objectives of the study

1. To examine whether the type of behavioural nudge influences immediate compliance with a voluntary post-class feedback task
2. To assess whether response quality differs across informational, emotional and time-based nudge conditions
3. To evaluate whether perceived task effort varies across nudge conditions in a post-class setting.

1.5 Hypothesis of the study

Based on the objectives, the following hypotheses are formulated:

H1: The type of behavioural nudge significantly influences immediate compliance with a voluntary post-class feedback task.

H2: The type of behavioural nudge significantly influence the quality of responses provided in a voluntary feedback task

H3: The type of behavioural nudge significantly influences perceived task effort in a post-class setting

1.6 Research Gap

Despite expanding the body of literature on behavioural nudes, several gaps persist. First,a larger proportion of existing literature on emotional and time-based nudges is based on online surveys or laboratory experiments, limiting its ability to fully capture behaviour under real-world conditions characterised by fatigue, time-pressure etc. Second, although both emotional and time-based nudges have been shown to influence decision-making, direct empirical comparisons between these mechanisms within the same decision context remain limited. Third, much of the existing literature focuses primarily on whether individuals comply with a request, offering less insight into the mechanisms through which compliance is achieved, particularly with respect to perceived task effort and response quality. Finally evidence from offline classroom environments, where participation is voluntary and minimal controlled environment, remains scarce. This study addresses this gaps by conducting an offline field experiment that compares emotional and time-based nudges in a post-class environment, jointly examining behavioural compliance, response quality and perceived task burden.

1.7 Research questions

The study seeks to address the following research question:

1. Does the type of behavioural nudge influence immediate compliance with a voluntary post-class feedback task?
2. Do emotional and time-based nudges differ in the quality of responses generated?
3. How does perceived task effort vary across different nudge conditions?
4. How does perceived task effort vary across different nudge conditions?

1.8 Statement of the Problem

In most organizational settings, a frustrating gap exists between what people mean to do and what they actually achieve. This "intention-behaviour gap" is determined by situational factors like mental exhaustion and cognitive drain rather than a lack of information. Nowhere is this more visible than in the modern classroom. While student feedback is important, securing it is extremely difficult when students are in a hot state of fatigue after a lecture. In this high-friction moment, the immediate relief of leaving outweighs the mental goal of being helpful. Traditional rational requests fail because they depend on on slow, thoughtful reasoning instead of addressing the students immediate emotional state(Lerner et al., 2014;Solvic et al., 2005).This study addresses the practical challenge of triggering action without compulsion, testing whether emotional hooks or time-based urgency can cut through this mental fog more effectively than standard informational requests

1.9Significance of the study

Beyond its academic contribution, this research holds significant practical value for educational practitioners and behavioural researchers' alike. By moving the study of choice architecture out of controlled laboratory and into the high-friction environment of an actual classroom, this works provides a rare, realistic look at how students make decisions when they are genuinely exhausted.

For administrative staff and educators, the findings offer a low-cost, ethical strategy to overcome the persistent problem of low feedback rates without resorting to compulsion or financial incentives. Additionally, the study deepens our theoretical understanding of the hot-cold empathy gap by proving that in states of physical fatigue, cognitive appeals are often ignored in favour of immediate relief. Methodologically, by recording actual physical compliance rather than hypothetical intentions, this research offers a more accurate reflection

of how psychological shortcuts like “affect” and “scarcity” function as bridges across the intention-behaviour gap.

1.10 Research Methodology

This study uses a quantitative; between-groups field experiment to evaluate how different nudges influence voluntary compliance in a high-fatigue environment. The experiment was staged in a natural classroom setting immediately following an intensive session to capture authentic student behaviour during high-friction moment where cognitive resources were depleted. Using primary data collected via offline hand-outs, 54 participants were randomly assigned to one of the three conditions (n = 18 per group): an informational control, an emotional nudge, or time-based urgency nudge. While the feedback form itself was identical across all groups, the framing of the request varied to isolate the effect of the nudge type on the participants’ decision to engage. Participation remained strictly voluntary, with no external incentives or academic penalties, ensuring that compliance was genuine behavioural choice rather than a response to institutional pressure

The study measured three primary variables tp assess the impact of these interventions. Compliance was recorded as a binary outcome based on whether a form was submitted or not. To determine if increased compliance compromised the depth of the feedback, response quality was categorized into four levels-none, low moderate, and high-based on open-ended word counts. Additionally, a five point Likert scale was used to capture the “perceived effort” or subjective burden felt by the students. Statistical analysis was performed using Gretl (Version 2026a), using chi-square test of independence for the categorical compliance and quality data, and a one way ANOVA to compare mean effort scores across all the three groups. All results were evaluated at a 5% significance level

($p < .05$) to ensure the reliability of the observed behavioural shifts

1.11 Limitations of the Study

Every study has its boundaries, and there are a few factors to keep in mind when looking at these results. To begin with, since this experiment was based in one specific school with a relatively small group of students, the findings might not apply perfectly to every university or student demographic. We also focused strictly on how students acted in the moment, capturing an immediate snapshot of behaviour rather than tracking how these nudges might work over a full semester or through repeated use.

There are also limitations in how we measured engagement. We used word counts and specific categories to judge the depth of the feedback, but while these are useful objective metrics, they can't fully capture the nuanced or creative quality of what a student might write. Additionally, our focus was narrow: we looked specifically at post-class feedback forms. While this is a perfect example of a high-friction task, it might not represent how students make decisions in other administrative areas. However, despite these constraints, the study's strength lies in its internal validity. By observing real students in their actual classrooms, we gained a genuine look at how emotional and time-based nudges function when people are truly tired and ready to leave.

1.12 Chapter Outline

The study is organized into five chapters.

Chapter 1 introduces the background of the study, outlines the research objectives, hypothesis, research gap and research methodology adopted.

Chapter 2 offers a broad review of existing literature related to behavioural nudges, affect heuristic, state-dependent decision-making, and cognitive load.

Chapter 3 presents the conceptual and theoretical framework that guide the study.

Chapter 4 contains the empirical analysis and interpretation of results derived from the experimental data.

Finally, chapter 5 summarizes the major findings, discusses theoretical and practical implications and suggestion for future work.

CHAPTER – II

LITERATURE REVIEW

2. LITERATURE REVIEW

Solvic and Peters (2005) studies the twofold process nature of risk perception, differentiating between risk as analysis, which depend on logic and discussion, and risk as feelings, which operates through fast, automatic and intuitive reactions. They argue that individuals direct complex and unclear environments by using the affect heuristic as a mental shortcut where emotional tags (qualities of goodness or badness) are automatically attached to motivations. Once these affective tags are formed, they work as primary information sources that guide following judgments of risk and benefit. The authors highlight that this experiential system is often more efficient than analytical deliberation. Ultimately, the study portrays affect not as a distortion of rationality, but as a fundamental evolved mechanism for simplifying information processing and motivating behavioural responses.

Skagerlund et al. (2020) study explains that the affect heuristic is not just a self-reported feeling, but a strong cognitive process that displays in both thinking and behaviour. Instead of counting only on self-reports, the authors use the behavioural choice data and psychological responses, which lends to significant empirical weight to their findings. Across all these measures, they find consistent pattern: when individuals experience positive affect toward an incentive, they be likely to to perceive higher benefits and lower risk. On the other hand, negative effect causes risk perception to increase while perceived benefits diminish. This consistency across different measures matters because it shows that affect is not simply a post-hoc explanation for a decision. Rather, affect functions as a quick, instinctive shortcut that direct risk-benefit decision before intentional thinking begins, especially in uncertain situations. The paper supports the idea that emotions are not irrational disorders in decision-making but are fundamental mechanisms through which people deal with complex decisions.

Lerner et al. (2014) provide a complete analysis of how distinct emotions are rather than general moods which employ a systematic influence on human decision. Their central framework, the Appraisal Tendency Framework (ATF), suggests that emotions trigger specific cognitive biases that colour following choices. Unlike traditional "valence" models that categorize emotions simply as positive or negative, Lerner's research shows that emotions with the same valence (such as anger and fear) produce opposite effects on risk-taking and decision-making. The study emphasises that these emotional influences are probable and structured, as each emotion is secured to a specific "appraisal" of certainty,

control and agency. This explains that human brain uses affect as a primary information source to calculate the environment before any intentional processing occurs.

Andrade and Cohen (2007) examine the "Horror Movie Paradox "to understand how affective states shape everyday decisions, specifically challenging the traditional "hedonistic assumption" that people only follow pleasure and avoid pain. Rather than treating negative effect as a simple limitation to rational choice, they prove that individuals can experience "counter-hedonic" consumption by intentionally looking for negative emotions like fear or disgust. Their experiments shows how people do not simply tolerate negative feelings for a later reward, but can actually experience "coactivation," where positive and negative emotions occur at the same time. The authors introduce the critical idea of a "protective frame", which allows individuals to maintain a sense of psychological disinterest from a threat. Within this frame, the power of a negative emotion (like fear) can be positively associated with pleasure. In this way, affective reactions become part of an on-going regulatory process through which preferences are formed and adjusted over time. Overall, the study supports the view that affect is continuously rooted in decision making, shaping both immediate choices and long-term patterns of behaviour.

Pfattheicher et al. (2020) examined how emotions influenced behaviour during the COVID-19 pandemic, especially in the context of physical distancing. Using experiments on public-health messages, they show that messages based on empathy were more effective in increasing compliance. Their research shifts the focus from traditional policy mandates to the power of affective empathy (compassion for the vulnerable) as a primary catalyst for behavioural change. Through four large-scale preregistered studies, the authors demonstrated that empathy for those at risk, such as the elderly and the chronically ill was a significantly stronger predictor of compliance than mere factual knowledge or personal risk assessment. The study highlights a critical distinction in behavioural triggers, while 'information only' interventions failed to significantly increase motivation, "Empathy-Inducing" intervention (e.g./ personal narratives of vulnerable individuals) led to a marked spike in willingness to follow guidelines. This suggests that when behaviour requires a personal logic and strict instructions are often insufficient to override self-interest. The authors also demonstrate that these messages work by triggering "other-focused" emotions, shifting the cognitive process from a self-centred cost-benefit analysis to a consideration of the collective impact. Furthermore, this paper provides a vital empirical foundation for the argument that

"emotional nudges" are more effective than "informational nudges" in driving high-effort compliance.

Loewenstein(2005) introduces the hot-cold empathy gap framework to explain why individuals systematically misjudge how emotions affect decisions. Author argues that when individuals are in a "cold" or emotionally neutral state, they tend to underestimate how strongly "hot" states such as pain, hunger, or distress can change preferences and behaviour, both for themselves and for others. The paper uses medical decision-making as a key example, showing that clinicians who are experiencing pain themselves and for others. The paper uses medical decision-making as a key example, showing that clinicians who are not experiencing pain themselves often underestimate patients pain and therefore under-treat it. The gap does not arise because people lack information, but because it is difficult for them to place themselves in an emotional state they are not currently experiencing. When someone is calm or comfortable, they tend to underestimate how strongly pain, discomfort, or distress can shape decisions. As a result, judgements are made as if emotions matter less than they actually do, which leads to repeated mistakes in situations that require empathy, such as medical care. In this way, the paper lays the groundwork for later studies that examine how emotions influence judgment and behaviour, particularly in health-related and interpersonal settings. The paper provides a critical psychological explanation for why "Information-Only" prompts often fail to drive behavioural compliance.

De Ridder et al (2022), introduced the concept of nudgeability to explain the specific conditions under which individuals become susceptible to influence. Their research challenges the traditional academic assumption that budgets are most effective only when they "operate in the dark " or target a non-reflective System 1 state. Opposite to their view that cognitive depletion automatically amplifies a nudge's power, the authors demonstrate that many interventions remain effective even when participants are aware of them or in a deliberative System 2 mind-set. The findings of the study suggest that "inverted U-curve" of susceptibility; nudges are most potent for ambivalent individuals rather than those with ironclad preferences. This provides a critical theoretical bridge, suggesting that emotional or temporal nudges in a classroom setting are not manipulative shortcuts. But rather "choice-assisting" tools that help students align their actions with latent intentions when mental energy is at its lowest point.

Oda et al., (2015), examine the "watching-yes" effect within the messier reality of prosocial lying. While we often think of "eye-catcher" as a simple nudge towards generosity, this study uncovers a deeper psychological tug-of-war. The researchers used a "die under the cup" game to see if people would lie about their scores to boost a donation to charity; essentially lying for a good cause. The result offer fascinating reality check for behavioural designers. In private, people frequently lied to help others. However, as soon as stylized eyes wear "watching", that charitable urge vanished.it turn out the fear of being judged as a "liar" is more powerful than the desire to look like a hero. When our reputation is on the line, the brain stops prioritising kindness and shifts into survival mode, choosing rigid rule-following just to avoid social stigma.

Danziger, Levav, and Avnaim-Pesso (2011) take aim at the myth of legal formalism, the idea that judges act like cold, objective machines when applying the law. Instead, they show that biological requirement, specifically hunger and mental fatigue, indicates high-risks parole rulings. By tracking over 1,100 decisions, the researchers identified a jarring trend: any prisoners' chance of parole peaks at 65% after a judge's meal but crashes toward zero as the workday routines on. This study shows how visceral "hot" states like hunger take-over rational thought, showing that even experts are prone to the cognitive burden and attribution biases that happen in everyday judgement.

Nordgren et al (2007) study was built on the idea of the hot-cold empathy gap framework to demonstrate how individuals systematically misjudge their own emotional and visceral reactions across different states. Through series of experiments, the research found that when people are in a neutral or "cold" state, they strongly underestimate how intense their future emotions will be. Conversely, when in a "hot" state such as fear, sexual desire or excitement-individuals struggle to realize how much that state is currently biasing their judgement. This misjudgement is not limited to one situation but appears across different domains, including risk-taking and consumer decisions-making. Individuals often assume they will react calmly or rationally to future challenges; however, once they enter an emotional state, their preferences and behaviour changes far more than anticipated.

Van Boven and Loewenstein (2003) study examines how individuals judge the internal responses of others and show that these judgements are analytically unfair by the judge's own present physical state. Through experiments involving exercised-induced thirst, the authors

found that individuals in a hot state likely that state onto others, predicting that host hikers would be more concerned by thirst than hunger. On the contrary, those in a cold or neutral state misjudged the power of these visceral drives. The study shows that when people take the side of others, they mentally switch places, using their own current feelings as a starting point. Because people fail to adjust for the brief nature of their own emotions or drives, they experience a social empathy gap, leading to inaccurate predictions of how others feel. This systemic misjudgement suggests that when making decisions for others, such as policy or social settings; people in cold state will constantly underestimate the impact of hot visceral experiences.

Lench et al. (2019), contribute to the affective-forecasting works by meta-analytically examining how accurately people calculate their future emotional responses. Their findings disclose a critical shade in human conclusion: while individuals are comparatively expert at predicting the primary intensity of an emotion, they systematically fail to predict its length and regularity. This inconsistency suggests that people have often emotional reactions to carry on long after the natural or situational causes have decreased. The study further identifies a time-based element to this error, noting that overestimation, specifically the impact bias, increases as the predicted event moves further into the future. By separating intensity from length, the authors show that forecasting errors are not a global failure of emotional awareness, but rather a specific cognitive inability to account for the speed of emotional recovery and variation. Additionally, the findings of the study suggest that our cold current state is unable to correctly mimic the declining rate of a future hot state.

Steel et al.(2018) Argues that the human brain is constantly performing a cost-benefit calculation based on Temporal Motivation Theory. According to their research, the perceived utility of a task decreases as the delay increases identifies it as a fundamental failure of human self-regulation. The authors explain that when a deadline is "slippery" meaning non-compulsory the brains impulsiveness takes over. Specifically the study shows that in the absence of a rigid temporal cutoff, the 'procrastination reflex' dominates, leading to a total breakdown in self-regulation.

Lunn and Ni Chosdealbha (2018) emphasize the methodological rationale for the use of experimental pre-testing as a means to move administration form a basis of intuition to one of

scientific evidence. They argue that administrative efforts often fail when they reply on the certainty of leadership judgement rather than observed human behaviour.

Damgaard and Nielsen (2018), study provides a comprehensive review of behavioural interventions in educational related decisions that involve immediate costs but delayed benefits. This discomfort leads to barriers such as limited edition and lack of self-control. The authors argue that because educational decisions often involve immediate costs for future potential benefits, students require gentle pushes to navigate complex choices. Their review emphasizes that nudge effectiveness is contingent on accurately matching the intervention to the specific behavioural barrier, such as limited attention, self-control failure or present bias According to their review nudges are most effective for individuals most affected by the specific barrier being targeted. The authors warn that if a choice architect does not understand the underlying behavioural mechanism, a nudge can backfire if it is perceived as too pressurized.

Zhao and Tomm (2016),studies the psychological consequences of scarcity, arguing that a deficit in resources such as time may trigger attentional focus on the immediate task while simultaneously depleting cognitive capacity. The author identifies a tunnelling effect, where individuals under a deadline enhance their efficiency for the problem at hand but often at the cost of long-term reasoning and broader environmental awareness. This study provides the critical rationale for the Time-based nudges which is highly relevant to the present paper. It suggests that framing the feedback window as a scarce resource will successfully capture student attention and drive immediate compliance, however it also introduces a theoretical framework to analyse potential trade-offs in response quality.

Münscher,Vetter and Scheuerle (2015) ,present a taxonomy of choice architecture, that shifts focus from the "why"(the cognitive psychology) to the "how"(the intervention design).They argue that for practitioners and researchers to be successful, they must have a clear framework for designing nudges. By organizing choice architecture into three distinct groups namely decision information, decision structure and decision assistance, the authors provide a standardized language for describing how environmental changes influence behaviour. They argue that the most important factor is the design of the intervention environment. If the environment is built correctly, behaviour changes predictably.

Lenzner, Kaczmirek, and Lenzner (2010), focus on the hidden cost of survey participation i.e. by establishing a direct correlation between survey design and cognitive burden. Their research elucidates the cognitive processes inside a student's brain when they are asked to process a request after long duration of study, noting that the linguistic complexity of a request significantly dictates participant response time and completion rates. The authors demonstrate that longer response times are a direct indicator of higher cognitive burden. If a question is poorly phrased or burdensome, the brain takes longer to process it, leading to fatigue. They also identifies specific features that increase burden, such as low-frequency words(complex jargon) and vague quantifiers, leading to cognitive resource depletion that often results in satisficing or task abandonment. The study concludes that by reducing linguistic complexity, researchers can significantly decrease the drop-out rate and improve the accuracy of the data collected.

Jachimowicz et al. (2019) provide a statistical proof for why "pre-set" conditions influence human behaviour explaining the effectiveness of defaults within choice architecture. This meta-analysis synthesized 58 studies to determine how and why "Default Effects" influence human choice through the mechanisms of endorsement, endowment and cognitive effort. The researchers found that defaults have a 'medium-to-large' effect size, making them one of the reliable tools in the choice architecture. The paper identifies three psychological reasons why people stick to a pre-selected option :'endorsement' where participants believe the researcher is recommending this path because it is the correct one, second reason is 'endowment' where people feel they already own the status quo and are reluctant to lose it and the final one is 'effort' which posits that choosing a different path requires cognitive and physical energy that people often don't want to spend. Their analysis reveals that defaults are particularly potent in environments, as they work best when the participant is uncertain or in a state of low information.

CHAPTER – III

CONCEPTUAL AND THEORETICAL FRAMEWORK

3. CONCEPTUAL AND THEORETICAL FRAMEWORK

3.1 Introduction

This chapter moves from the general literature review to the specific theoretical backbone of the study. While the previous section examined the broad empirical landscape of behavioural nudges and cognitive load, the focus here is on pulling those various threads together to explain the actual logic behind my experimental design

This research is built on a few core behavioural pillars: the affect heuristic, the hot-cold empathy gap, and choice architecture. These frameworks are essential because they offer a psychological explanation for why a student‘s decision-making shifts so significantly when they are tired or under pressure. Instead of presenting a rigid, formal structure model, this chapter focuses on the underlying mechanisms; clarifying how these established theories predict the relationship between a specific nudge, the likelihood of compliance and the resulting quality of feedback. Finally, this theoretical framework provoes the necessary justification for the hypothesis that I test and analyse in the following chapter

3.2 Conceptual Framework

3.2.1 Intention-Behaviour Gap

The intention-behaviour gap represents a major challenge in behavioural science, characterized by the systematic difference between an individual’s considered plans or goals and their actual physical follow-through(Loewenstein, 2005;Nordgren, 2007).While traditional economic models assume that individuals act to fulfil constant, long-term preferences, empirical evidence suggests that human decision-making is greatly transformed by affective and visceral states(Loewenstein, 2005).This gap is not just a failure of information or memory but its rooted in the “hot-cold empathy gap”, a cognitive bias where individuals in one affective state fail to correctly predict or how a different state will impact their behaviour(Loewenstein, 2005).Loewenstein(Lowenstein, 2005) finds that when people are in a cold state of emotional neutrality, they fail to fully predict how hot states, such as fatigue, desire, or pain, will affect their own future preferences and behaviour.

This phenomenon shows as a cold-to-hot empathy gap, which leads to various decision-making errors, such as delaying self-control efforts(Lowenstein, 2005).Because individuals in cold states underestimate the motivational force of future visceral drives, they often fail to take actions to avoid situations that will bring such states(Loewenstein, 2005).For example, studies on thirst have shown that individuals who are not thirsty(in a cold state) fail to appreciate the dislike of thirst compared to those who have just finished working out(hot state)(Loewenstein, 2005).Nordgren(Nordgren, 2007) further explains that this underestimation happens because of a controlled memory for visceral experience. While a person can recall the environments of a past drive, they cannot freely bring out the feeling of the visceral state itself when they are no longer in it. This results in a limit bias, where individuals overestimate their capacity for self-control and steadily underutilize safety measures against temptation or fatigue (Nordgren, 2007)

In an academic setting, this gap is uniquely visible when students are asked for voluntary feedback at the conclusion of a session .Although a student might genuinely believe that providing feedback is useful for their future curriculum, the immediate hot state of post-class fatigue creates a major barrier(Loewenstein, 2005).At this moment, the visceral drive to not participate and conserve remaining mental energy often outweighs the long-term drive to be helpful(Loewenstein, 2005).This resistance is compounded by the cognitive burden related with the task (Lenzner et al, 2009).Lenzner et al (Lenzner et al, 2009) highlight that answering survey questions requires a great deal of cognitive effort for little to no seeming reward. When cognitive resources are depleted, individuals are likely to to satisfying behaviour where they choose the least effortful option rather than the best one to minimize mental strain. Psycholinguistic features such as complex arrangement or working memory overload can significantly increase this burden, leading to higher drop-out rates and lower data quality (Lenzner et al, 2009).

The present study treats this intention-behaviour gap as a core administrative problem and try to find how nudges can act as a substance for action when willpower is exhausted(Münscher et al, 2015).Nudges are defined as features of choice architecture that certainly change behaviour without forbidding options or significantly changing economic incentives. By altering the “decision environment”, choice architects can bridge gap between intention and behaviour. This can be achieved through techniques such as simplifying decision

information, changing option-related effort, or setting pre-selected no-action defaults that guide the individual toward the desired behaviour while maintaining their freedom of choice. Ultimately, the goal is to design interventions that account for the predictable deviations from normal behaviour caused by fatigue and cognitive load (Münscher et al, 2015).

3.2.2 Hot and Cold States

The way individuals make decisions is not constant across situations but is significantly shaped by their immediate emotional and physiological conditions, a dynamic explained in the framework of the hot-cold empathy gap (Loewenstein, 2005;Nordgren, 2007).Rather than assuming a single, constant preference structure, this framework differentiates between what Loewenstein(2005) describes as cold states, characterised by the comparative emotional objectivity and intentional thinking, and hot states, which are motivated by visceral effects such as hunger, fatigue, discomfort or intensified arousal. Importantly, the difficulty does not lie simply in experiencing these states, but in the systematic misprediction that occurs when individuals try to get ahead how one state will affect behaviour in another(Loewenstein, 2005).When in a cold state, individuals be likely to to project constancy onto their future preferences, underestimating the strength and motivational force of following hot states. This cognitive blind spot becomes particularly relevant in contexts requiring self-regulation, as the predicted commitment to long-term goals may decline considerably once visceral factors become lively (Nordgren, 2007;Appelhans et al., 2015).In this sense, the empathy gap reflects not a lack of information, but a structural limitation in how affective experiences are mentally replicated outside the state in which they occur(Loewenstein, 2005).

This mental disconnect is essentially bidirectional, affecting how we judge both our future selves and our past actions(Loewenstein, 2005;Nordgren, 2007).While the cold-to-hot gap happens us to dismiss the power of future drives, a hot-to-cold gap occurs when we are currently in the middle of a visceral state and ,wrongly believe our temporary feelings represent our permanent goals(Loewenstein, 2005;Nordgren, 2007).In these moments, we often overestimate the stability of our current preferences, leading to an affective mismatch where we make long-term decisions based on a short-lived mood or drive(Loewenstein, 2005;Zhang, 2024).This happens because human possesses a "constrained memory" for visceral senses; we can objectively recall the fact that we are exhausted or hungry, but we cannot truly recreate the physical sensation of that drive while we are in a rested, neutral state(Nordgren, 2007).Because we cannot feel what we are not currently experiencing, we

often over-commit to future tasks, only to chicken out or fail to follow through when the actual visceral states occurs(Loewenstein,2005)

In practice, this lack of insight leads to a prevalent" restrained bias"(Nordgren, 2007).When we are in a cold state, we tend to feel a high level of confidence in our self-control, believing we can handle temptations or heavy workloads far better than we actually can(Nordgren, 2007).This overconfidence means we often under-utilize helpful securities, leaving ourselves exposed to the very impulses we thought we could handle with ease(Nordgren, 2007).A student might decide to schedule a feedback task at the end of a long day while they are feeling motivated in the morning only to find out to find their firmness completely disappears once the physical reality of incidental fatigue sets in after hours of lectures(Haggag et al., 2019; Nordgren, 2007)

The classroom environment highlights this perfectly, as post-class exhaustion act as a hot state of cognitive exhaustion(Haggag et al., 2019).When students reach this point, they are inclined to to attribution bias, where they misinterpret their immediate need for rest as a lack of interest in the curriculum or the feedback process (Haggag et al., 2019;Nordgren, 2007).They may also fall target to projection bias assuming their temporal feeling to being "done" is a sure indicator that the request is not worth their time(Haggag et al., 2019;Loewenstein et al., 2003).At this stage the "should" self; the one that values curriculum development is often silenced by the "want" self, which prioritize immediate relief and the path of least resistance (Haggag et., 2019;Tenbrunsel et., 2007).Because our mental energy is limited, we naturally shift toward "satisficing" in these depleted states, opting for the least effortful response just to save what little cognitive ability remains(Kühn et al., 2013;Lenzner et al., 2009).This explains why simple informational requests often go ignored; the immediate friction of the task outweighs the students depleted willpower(Lenzner et al., 2009).To bridge this gap, behavioural "nudges" are used as tools to change the decision environment (Münscher et al., 2015).By using techniques like timely reminders or simplifying the effort required, choice architecture helps individuals follow through on their primary positive intentions without requiring a massive burst of willpower they no longer possess (Münscher, 2024;Münscher et al., 2015)

3.2.3 Cognitive Load and Friction

Cognitive load refers to the limited amount of mental effort required to process information, solve problems, and make decisions(Lenzner et al., 2009).Because the human capacity for immediate information processing is limited, high cognitive load can fundamentally change how individuals approach a task, often leading to a strategy known as “satisficing”(Lenzner et al., 2009; Münscher et al., 2015).When mental resources are strained, individuals be likely to to abandon the search for an optimal or high-quality solution, instead choosing the least effortful path that meets a minimum starting point of acceptability (Lenzner et al., 2009;Münscher et al., 2015).In the context of this study, this suggests that students under heavy cognitive load are not necessarily unwilling to provide feedback; rather, they lack the immediate mental capacity to engage deeply with the request, leading to lower compliance or superficial responses (Lenzner et al., 2009)

The research of Lenzner et al.(Lenzner et al., 2009) provides a critical psycholinguistic lens on this burden, validating that specific text features act as “cognitive roadblocks” that significantly increase response times and understanding difficulties(Lenzner et al., 2009).Their experiment identifies several factors that impose an unnecessary mental toll on respondents, including the use of low-frequency or unclear words, vague relative terms, and complex arrangement such as left-rooted sentences(Lenzner et al., 2009).Additionally, they found that structures requiring working memory overload; such as hypothetical questions or those involving mental calculations, can intensely slow down processing (Lenzner et al., 2009).For an already fatigued student, these minor linguistic difficulties can be the leaning point that leads to task abandonment(Lenzner et al., 2009)

This mental burden transforms into what behavioural economists call “friction”; the subjective and objective effort required to bridge the gap between an intention and behaviour (Münscher et al., 2015).In this study, friction is not just the physical act of filling out a form;it is the total "marginal effort" required for a student to remain in their seat, process a request, and formulate a response after a long lecture (Münscher et al., 2015).As Münscher et al.(Münscher et al., 2015)note, choice architecture is often about managing these “behavioural blocks” by reducing small barriers, like the distance to a submission box or the complexity of a scale, can function as challenging transaction costs for someone in a state of cognitive depletion(Lenzner et al., 2009;Münscher et al., 2015)

Ultimately the post-class environment creates a situation where willpower is a scarce resource(Nordgren, 2007).When mental resources are strained, individuals experience severe fatigue, which diminishes their sense of control over their own self-regulation(Nordgren, 2007).Research by Nordgren(Nordgren, 2007) highlights that fatigued individuals are more likely to take the easy way out because their belief in their ability to overcome mental strain is significantly lowered(Nordgren, 2007).By framing compliance through the lens of cognitive load and friction, this study accepts that high-fatigue settings increase the impact of every extra second or mental step required(Lenzner et al., 2009;Münscher et al., 2015).Nudges, therefore, serve as an essential tools to either lower this perceived burden through generalization or to provide the necessary motivational spark to ensure action occurs regardless of the sustained level of effort involved (Münscher et al., 2015;Nordgren, 2007).

3.2.4 Behavioural Compliance

In this study, behavioural compliance is treated not as a measure of what a student aims to do, but as a solid, observable action; either the feedback form is submitted or it is not (Münscher et al., 2015;Sunstein, 2015).While many traditional academic assessments rely on self-reported objectives, asking students if they found a session valuable or if they plan to change their habits, this study follows the gold standard of behavioural economics by focusing on actual participation as a binary outcome(Bahety et al.,2021;Münscher et al., 2015).This difference is critical because self-reports are often unfair by social desirability bias, where participants report what they believe is the correct or most acceptable answer rather than their true behaviour(Bahety et al., 2021).By measuring the final click of a submit button, we avoid the complexities of goal and move directly to the point where choice architecture meets real-world action(Münscher et al., 2015;Sunstein, 2015)

The core of nudge theory, as said by Thaler and Sunstein, is that we can predictably change these final actions by making small, thoughtful adjustments to the “choice architecture”; the environment in which a decision is made, without ever needing to reply on commands or economic incentives(Münscher et al., 2015;Sunstein, 2015).In the context of student feedback, this means we do not need to make participation mandatory or offer financial rewards to see a change in compliance(Münscher et al., 2015;Sunstein, 2015).Instead, the focus shifts to ability to make the path to completion as smooth and natural as possible(Sunstein, 2015).Sunstein(Sunstein, 2015)argues that such nudges are ethically defensible because they preserve freedom of choice; they do not block a student from leaving

early or ignoring the request, but they act like a GPS, that guides them towards their potential goal of contributing to the curriculum(Sunstein, 2015)

Behavioural compliance serves as the ultimate test of whether a nudge has successfully bridged the intention-behaviour gap(Münscher et al., 2015;Nordgren, 2007).When students are in a state of post-class exhaustion, characterized by high cognitive load and a hot state of fatigue, their ability to follow through on long-term commitment is at its lowest(Haggag et al., 2019;lenzner et al., 2009).In these moments, any friction in the process can lead to task abandonment(Lenzner et al., 2009;Münscher et al., 2015).By making simple decision structure or providing timely reminders, choice architecture acts as a low-cost intervention that assists the student in making a decision they already value, ensuring that the "should" self-prevails over the immediate "want" for rest(Münscher et al., 2015;Sunstein 2015;Tenbrunsel et al., 2007).Through this lens, a single submitted form is not just a data point; it is evidence of a successfully crossed behavioural bottleneck(Münscher et al., 2015)

3.2.5 Response quality

While behavioural compliance measures whether a student submits a form, response quality address the depth of their engagement-the difference between a student simply checking boxes to finish and a student providing meaningful, reflective feedback(Araneda, 2019;Lenzner et al., 2009).According to the theory of satisficing, when individuals are under significant cognitive load or physical fatigue, they naturally seek the path of least mental resistance(Haggag et., 2019;Tenbrunsel et., 2007).).Rather than optimizing their response, a process that requires carefully understanding the question, saving relevant memories, and mapping those memories onto a scale; fatigues students may settle for an answer that is simply good enough to complete task(Lenzner et al., 2009)In practice, this often manifests as straight-lining (selecting the same rating for every question), skipping open-ended text boxes, or choosing mid-range responses to avoid the effort of making a final judgment (Hamby et al., 2016;Kraemer et al., 2023).

The research by Lenzner et al., (Lenzner et al., 2009) highlights that this trade-off between effort and quality is often caused by the cognitive burden imposed by the survey design itself (Lenzner et al., 2009).If a feedback request is linguistically difficult or poorly structured, the mental energy required just to decode the questions leaves very little remaining for the actual task of reflection(Lenzner et al., 2009).This creates a signal-to-noise problem for researchers;

a high compliance rate is of little value if the data itself is artificial or inaccurate due to respondent fatigue(Araneda, 2019; Hamby et al., 2016).Therefore, response quality serves as a vital indicator of whether a nudge has truly helped meaningful engagement or if it has simply pressured a depleted student into a hollow act of compliance (Lenzner et al., 2009)

3.2.6 Perceived Effort

Perceived effort is the subjective feeling of how "hard" a task feels, which can be quite different from the objective time or physical energy required to complete it (Luo et al., 2011;Nordgren, 2007).In the context of this study, measuring perceived effort is essential because it helps us understand how a nudge achieved its result (Münscher et al., 2015).Some nudges work by oiling the wheels; reducing the objective effort through simplification and the removal of mud; while others work by increasing the students motivation to push through the effort even when they feel exhausted(Luo et al., 2022,2023;Münscher et al., 2015).Following the "law of less work", humans have an native tendency to choose options that minimize cognitive and physical strain, however, our perception of that strain is heavily influenced by our immediate internal state (Hagman , 2018;Luo et al., 2022).

This is where the hot-cold empathy gap, as discussed by Nordgren (Nordgren, 2007), becomes a critical explanatory factor. People in a cold state; such as the lectures or researchers designing the feedback process, systematically underestimate how much effort a task will require from student who is in a hot state of post-class exhaustion(Nordgren, 2007).Because the designers are not currently feeling the visceral bite of fatigue, they assume that a "five-minute form" is a small request (Loewenstein, 2005;Nordgren, 2007).To the student, however, those five minutes may feel like an impossible barrier after a three-hour lecture (Haggag et al., 2019;Nordgren, 2007).By capturing self-reported perceived effort, this study can identify the disconnect between the objective task and the students subjective experience, helping to distinguish between nudges that make the task feel easier and those that simply make the student more willing to suffer the trouble (Baumel & Muench, 2021; Hagman, 2018;Nordgren, 2007).

3.3 Theoretical Framework

3.3.1 Affect Heuristic and Emotional Framing

Traditional models of decision-making often assume that we assess every pro and con before acting, but the reality; especially for student at the end of a long lecture is much more natural. According to the affect heuristic described by Solvic and Peters (Solvic et al., 2005),people rarely perform a slow, calculated analysis when faced with a choice; instead, they rely on a weak whisper of emotion to cross their environment. Every task we come across carriers an affective tag, a gut feeling of like or dislike that colours our perception of its value before we even start consciously thinking about it (Solvic et al., 2005).When cognitive resources are low, this heuristic becomes a vital mental shortcut, allowing the brain to avoid complex discussion in favour of quick, efficient judgement (Solvic et al., 2005).For a student in a hot state of fatigue, if the initial emotional tag associated with a high feedback form is negative, they will automatically judge the effort required as high and the potential benefits as low, regardless of the objective facts(Nordgren, 2007; Solvic et al., 2005)

However, emotions are not just positive or negative; they are far more specific in how they guide our actions. Lerner et al.(Lerner et al., 2014) Expanded on this through the Appraisal Tendency Framework(ATF), which suggests that detached emotions such as empathy, pride or frustration act as unique perceptual lenses. Unlike a general mood, a specific emotion triggers a "cognitive bias" that shapes how we evaluate our own activity and the world around us (Lerner et al., 2014).For instance, when a student feels empathy, it doesn't just make them feel "good"; it activates a specific judgment of social responsibility and control, making them more likely to view a request for help as a convenient and meaningful task(Lerner et al., 2014).This framework allows us to predict exact; why how a change in a student's emotional state will alter their later judgement of the cost of providing feedback(Lerner et al., 2014)

In the context of this study, emotional framing is used to intentionally swap the students internal lens (Münscher et al., 2015).By designing nudges that suggest empathy or peer support, we are essentially re-tagging the feedback request (Solvic et al., 2005).Instead of the task carrying an administrative tag, which feels like an extra burden after class; it is reframed as a prosocial act (Lerner et al., 2014).This shift is critical as when a student perceives their feedback as an act of community support rather than more paperwork, the affective spark

changes their internal cost-benefit math(Solvic et al., 2005).The effort of remaining in their seat feels lower because the emotional reward of helping their peers feels higher, effectively bridging the intention-behaviour gap through a simple shift in emotional perception(Lerner et al., 2014;Münscher et al., 2015;Solvic et al., 2005)

3.3.2 Hot-Cold Empathy Gap and State-Dependent Preferences

The hot-cold empathy gap provides a theoretical explanation for why even well-intentioned students often fail to follow through on their academic promises(Loewenstein, 2005).This gap is basically a cognitive blindness that occurs across different visceral states; when we are cold(rested and calm), we systematically struggle to imagine how a hot state(fatigued or stress) will actually feel or dislike our choices (Loewenstein, 2005;Nordgren, 2007).Research by Nordgren (Nordgren, 2007) highlights that this isn't just a misunderstanding of others, but a fundamental error of our own future willpower. A student might genuinely mean to provide feedback when the task is described in the middle of a lecture (a cold state) but they fail to do ahead the absolute visceral bite of exhaustion they will feel the moment class ends (Nordgren, 2007;Sayette et al., 2008).Because they cannot accurately pretend this future state, their cold-state preferences are unreliable predictors of their hot-state behaviour(Loewenstein, 2005;Nordgren, 2007).This explains why informational nudges, which rely on logic and long-term value often fail flat in the post-class environment. The student's immediate, state-dependent preference for rest simply outweighs the mental benefit of participation(Loewenstein, 2005;Nordgren, 2007)

3.3.3 Temporal Motivation Theory and Procrastination

Temporal Motivation theory suggest that the “helpfulness” or attractiveness of a task is not fixed; it is a changing value determined by how close the deadline is (Steel, 2007 ;Steel et al., 2018).According to Steel(Steel et al., 2018), the motivation to complete a task increases excessively as the window of opportunity begins to close. In the context of student feedback, if a request feels open-ended or lacks a clear temporal cutoff, the perceived utility of doing it now is very low compared to the immediate reward of leaving the classroom (Janson et al., 2024;Steel et al., 2018).This creates a emptiness where spontaneity takes over, leading to unavoidable procrastination or total task abandonment(Bok et al., 2024;Steel, 2007).Time-based budgets work by artificially “shrinking” this window; by introducing a sense of urgency or a closing deadline, they disturb the procrastination reflex and force the student to

make an immediate choice while the request is still at the top of their cognitive load (Siaputra, 2010;Steel et al., 2018)

3.3.4 Scarcity, Tunneling and Time Pressure

Our brain gets a mind-set that thinks something is scarce when we believe we do not have enough of it like time (Zhao & Tomm, 2016).This happens because our brain is trying to deal with what it thinks is a resource. According to some researchers Huang and others and also Zhao and Tomm when we think something is scarce our brain starts to focus hard on the most important thing. This is called “tunneling”. Our brains attention gets very narrow. We only think about the thing that needs to be done right now. We forget about everything in the outside(Huang et al., 2023, Zhao & Tomm, 2016).Zhao and Tomm (Zhao and Tomm, 2016) says that this tunnelling is like a twofold sword. Sometimes it is good because it helps us focus and get things done. We feel like we just need to finish what we are doing so we work harder. Use our resources better. This can even help us to do what we are supposed to do. This intense focus uses up a lot of our mental energy leaving little room, for deep thoughts. The students brain is using a lot of bandwidth to focus on the task at hand.(Civai et al., 2024;Zhao & Tomm, 2016)

CHAPTER – IV

ANALYSIS AND INTERPRETATION

4. ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the empirical analysis of the experimental data collected from 54 participants across three nudge conditions; Informational, Emotional, and Time-based. The analysis is structured in line with the research objectives and research questions outlined in Chapter 1.Descriptive statistics are presented first to establish the participant profile, followed by inferential; statistics tests examining compliance behaviour, response quality, and perceived effort. Through this systematic approach, the study evaluates the effectiveness of different "choice-architecture" techniques in bridging the intention-behaviour gap in an academic setting (Münscher et al., 2015)

4.2 Participant Profile

The study utilized a sample of 54 students, which were divided equally across the three experimental conditions (n= 18 per group).This balanced distribution was critical for ensuring that any differences observed in compliance or effort were attributed to the nudge interventions rather than a simple imbalance in group size. The recruitment process focused on a narrow demographic to minimize "noise" in the data-specifically, variations in digital literacy or differing attitudes toward academic feedback that often fluctuate with age and career stage

Table 4.1

Descriptive Statistics of Participant Age

Variable	M	SD	Min	Max
Age	21.9	0.8	20	24

Note. N=54

The data in Table 1 reveals a highly homogenous sample, with a mean age of 21.9 years and a very low standard deviation (SD = 0.8).The narrow age range of 20- 24 years confirms that

participants are almost exclusively within the traditional undergraduate or postgraduate stage of their education. Because participants were drawn from the same academic cohort and completed the feedback task immediately following a classroom session, the study operated within a relatively controlled contextual environment. This homogeneity is a significant strength for the studies internal validity, as it reduces variability from differences in academic stage to campus feedback requests (Lenzner et al., 2009)

While the situational context was held constant across the three conditions, it is important to note that the study did not directly measure participant fatigue. However, based on the hot-cold empathy gap framework, the post-class setting is recognized as a context associated with potential cognitive fatigue, representing a "hot" decision state(Loewenstein, 2005;Nordgren, 2007).By ensuring that all participants were in a similar situational state at the time of the intervention, the study effectively isolates the framing of the nudge whether it was informational, emotional or time-based as the primary experimental manipulation(Münshcher et al., 2015;Solvic et al., 2005).This allows the subsequent analysis to focus clearly on how these different "affective tags" influenced the students willingness to engage with the task(Solvic et al., 2005)

4.3 Hypothesis 1:Analysis of Compliance Behaviour

To test Hypothesis 1(H1), which proposes that nudge type significantly influences compliance behaviour-specifically that time-based and emotional nudges produces higher submission rates than informational nudges; chi square test of independence was conducted. This test evaluated the association between the three nudge conditions and the physical act of handling in the feedback form (Münscher et al., 2015)

Table 4.2

Cross-Tabulation of Group Condition by Behavioural Compliance

Group Condition	Non-compliance(n)	Compliance(C)	Total(N)
Group A(Informational)	8	10	18
Group B(Emotional)	4	14	18
Group C(Time-based)	1	17	18
Total	13	41	54

Note. Pearson $\chi 2$ (2, n = *N* = 54) = 7.50, *p*=. 024

The results of the Pearson chi-square test yielded a statistically significant result:

$\chi^2(2, N = 54) = 7.50, p = .024$. Based on these findings, H1 is supported. This statistical threshold suggests that the variations in submission rates across the three groups was not a result of random chance, but was directly influenced by the experimental manipulation of the nudge framing.

When examining the raw compliance numbers in Table 2, a clear hierarchy of effectiveness emerges. The time-based condition achieved the highest success rate, with 17out of 18 participants (94.4%) submitting their forms. This was followed by the Emotional condition with 14 submissions(77.8%), while the informational control group resulted in only 10 submissions (55.6%).The nearly 40% difference in compliance between the Time-based and Informational groups presents the profound impact that subtle choice architecture can have on student engagement in areal-world setting(Münscher et al., 2015).

The divergence in these results provides strong empirical weight to the theory of scarcity and tunneling (Zhao & Tomm, 2016).By framing the request as a closing window of opportunity, the Time-base nudges likely narrowed the students focus, forcing them to prioritize the immediate task of submission over the competing desire to leave the classroom(Steel et al., 2018;Zhao & Tomm, 2016).Conversely, the informational groups high rate of non-compliance suggests that when students are in a hot state of fatigue, a logical explanation of the feedbacks value is often insufficient to compete with the visceral drive for rest

(Loewenstein, 2005;Nordgren, 2007).The Emotional nudge served as an effective alternative; by attaching a prosocial affective tag to the request, it reframed the task from a bureaucratic chore into a meaningful contribution to the peer community(Lerner et al., 2014;Solvic et al., 2005).This shifts in perception successfully bridged the intention-behaviour gap for several students who otherwise might have succumbed to the procrastination reflex(Münscher et al., 2015;Steel, 2007)

Ultimately, the significant p-value confirms that the "how" of the request is just as important as the "what". In the high-fatigue environment following a lecture, students require more than just information to act; they require a nudge that either reduces the perceived friction of the task or creates a temporary sense of urgency to ensure the "cold-state" intention survives the "hot-state" reality(Loewenstein, 2005;Münscher et al., 2015).

4.4 Hypothesis 2:Analysis of Response Quality

To test Hypothesis 2 (H2), which suggests that nudge type significantly influences the quality of feedback provided, the open-ended responses collected from the participants were coded into four distinct categories. This coding process allowed for the transformation of qualitative feedback into an ordinal scale, facilitating a statistical comparison of cognitive engagement across the three nudge conditions (Mūnscher et al., 2015).The categories were defined as follows

- Category 0: The feedback section was left entirely blank or contained unusable marks
- Category 1: Responses were extremely brief, often consisting of a single word or short phrase (e.g., "Good") without elaboration
- Category 2: Responses provided basic feedback in full sentences, offering a general opinion but lacking specific examples
- Category 3: Responses where detailed and reflective, providing specific suggestions for improvements or clear, constructive critiques.

By utilizing this framework, the study could evaluate whether interventions designed to drive compliance; such as time-based urgency inadvertently increased the cognitive burden on the student, leading to a "speed-accuracy trade off" where quantity increased but quality suffered(Lenzner et al., 2009;Zhao & Tomm, 2016)

Table 4.3

Chi-Square Analysis of Response Category by Group

Group Condition	Cat 0	Cat 1	Cat 2	Cat 3	Total
Group A(Informational)	3	2	2	3	10
Group B(Emotional)	2	2	5	5	14
Group C(Time-based)	3	8	3	3	17
Total	8	12	10	11	41

Note.χ^2 (6, N = 41) = 6.11,p = .411 .Thirteen cases were excluded due to non-compliance.

The chi-square analysis resulted in a non-significant finding:

χ^2(6, N = 41) = 6.11,p = .411

Consequently, H2 is not supported. This indicates that the specific framing of te nudge ddi not statistically shift the participants from one quality category to another in a way that correlates with the intervention type.

Table 4.4

Descriptive Statistics for Response category by Group

Group Condition	n	M	SD
Group A(Informational)	10	1.50	1.27
Group B(Emotional)	14	1.93	1.07
Group C(Time-based)	17	1.35	1.00

Note. N=41. Higher values indicate higher response quality category

Although the results did not reach statistical significance, the descriptive data in Table 6 indicates a slight directional trend. The Emotional group produced the highest descriptive

mean for quality (M = 1.93), whereas the Time-based group showed the lowest (M = 1.35).This lack of significance suggests that while nudges are powerful tools for altering the initial decision to act, they may have a diminishing effect on the subsequent cognitive depth of the task (Münscher et al., 2015).

The finding imply that the hot-cold empathy gap primarily serves as a barrier to task initiation .Once a student has crossed the threshold of compliance and begun the paper-based hand-out, their internal standards for feedback appear to stabilize. Crucially, the urgency created by the Time-based nudge did not lead to a significant degradation of feedback quality, suggesting that "scarcity" of time can drive volume without necessarily resulting in "trash" data (Zhao & Tomm, 2016).

4.5 Hypothesis-3:Perceived Effort Across Conditions

To test Hypothesis (H3), which proposes that the type of nudge significantly influences the subjective burden of the feedback task, a one way ANOVA was conducted. This analysis was crucial for identifying the psychological price students paid for each intervention. While previous sections looked at whether students acted and how well they did, this section measures how "heavy" the task actually felt to them

Table 4.5

One-way Analysis of Variance for Perceived Effort by Group

Sources	SS	df	MS	F	p
Between Groups	12.96	2	6.48	6.12	.005
Within Groups	40.26	38	1.06		
Total	53.22	40			

Note. $F(2,38) = 6.12$, $p = .005$

The ANOVA results revealed a statistically significant difference in perceived effort across the three conditions: $F = 6.12$,$p = .005$.Therefore, H3 is supported. This findings indicates

that the way a request is framed does more than just trigger a behaviour; it fundamentally changes the students internal experience of the work required (Lenzner et al., 2009, Mūnscher et al., 2015)

Table 4.6

Means and Standard Deviation of Perceived Effort by Group

Group Condition	n	M	SD
Group A(Informational)	10	2.30	1.06
Group B(Emotional)	14	1.64	0.84
Group C(Time-based)	17	2.94	1.14

Note. Total N=41

The mean scores in Table 5 provide a clear picture of the psychological trade-offs at play. The Emotional group reported the lowest perceived effort(M= 1.64), while the Time-based group reported the highest (M= 2.94).This gap is significantly because it shows that even though the physical task (filling out a paper hand-out) was identical for everyone, the students minds processed the difficulty differently based on the "nudge" they received.

The low effort reported by the Emotional group suggests that "affective framing" acts as a kind of mental lubricant (Solvic et al., 2005).By reframing the feedback as a way to help others, the nudge attached a positive "affective tag" to the task (Lerner et al., 2014; Solvic et al., 2005).In this hot state of post-class fatigue, a positive emotional connection can make a chore feel more likely a meaningful contribution, which subjectively lowers the barriers to action(Loewenstein, 2005;Nordgren, 2007).Essentially, the students felt less tired by the task because they felt more "good" about doing it.

In contrast, the Time-based group found the task more demanding. This can be explained through scarcity theory (Zhao & Tomm, 2016).When we tell students they only have a few moments left to act, we create a sense of urgency that forces their brain to "tunnel" on that one task(Zhoa & Tomm, 2016).While this is incredibly effective for getting them to comply (as seen in H1), it is "cognitive expensive" (Lenzner et al., 2009).The pressure of the closing window adds a layer of stress that increases the felt burden of the work.

This creates a vital lesson for academic researchers: urgency is the most effective tool for getting people to act, but emotional appeals are the most effective for making the experience pleasant and sustainable. The informational group, sitting in the middle (M = 2.30), confirms that a simple logical request is neither particularly burdensome nor particularly inspiring-it simply lacks the spark needed to help students overcome their fatigue without feeling the weight of the work (Loewenstein, 2005;Solvic et al., 2005)

4.6 Integrative Interpretation

The synthesis of the findings from H1, H2, and H3 provides a complete view of how different nudges work when students are tired after a long class. By looking at these results together, we can see the psychological trade-offs that happen when we try to change behaviour through choice architecture (Münscher et al., 2015).

The most important takeaway is how well the Time-based nudge worked to get forms turned in (H1).This confirms that in a "hot" state of fatigue; where students just way to leave-a basic logical request is not enough to bridge the intention-behaviour gap(Loewenstein, 2005;Nordgren, 2007).Students might intend to give feedback, but they often fail to realize how much their physical tiredness will pull them toward the exit. The Time-based nudges solves this by using scarcity to focus their attention. By making the task feel like a closing window of opportunity, it forces the brain to prioritize it immediately, catching the student's attention before they can walk away (Zhao & Tomm, 2016).

However, the results from H3 show the "hidden cost" of this success. While the Time-based nudge got the most forms turned in, it also felt the most difficult for the students, This tells us that creating urgency is a heavy tool; it works by putting pressure on the students mental energy(Lenzner et al., 2009;Zhao & Tomm, 2016).On the other hand, the Emotional nudge acted like a mental lubricant(Solvic et al., 2005).By framing the request as a way to help

others, the nudge attached a positive affective tag tp the task. In this tired stage, a positive emotional connection can make a chore feel more like a meaningful contribution, which makes the work feel lighter (Loewenstein, 2005;Nordgren, 2007).Essentially, students felt less tired because they felt better about what they were doing

The most encouraging “hidden gem” is the result from H2; the fact that there was no significant difference in the quality of the feedback. This proves that the “high-pressure” tactics used in the Time-based group did not leak to junk data. It suggest that the hot-cold empathy gap is mostly a barrier to starting a task, not finishing it (Loewenstein, 2005;Nordgren, 2007).Once the nudge successfully gets a student to pick up a pen, the nudge has done its job. From that point on, the students own standards and desire to be helpful take over, and they provide good feedback regardless of how they were asked (Lerner et al., 2014;Münscher et al., 2015)

Ultimately this research shows that there is no perfect nudge for every situation. If you need the most responses possible, an “urgency” nudge using time is your strongest tool, even if it feels a bit more demanding for the student (Zhao & Tomm, 2016).But if you want to make the experience pleasant while still getting high participation, an “emotional” nudge is the better choice. Both methods are strong enough to boost participation without losing the quality of the information, giving researchers two powerful ways to overcome the distractions of the modern classroom (Münscher et., 2015)

CHAPTER - V

FINDINGS, IMPLICATIONS AND CONCLUSION

5. FINDINGS, IMPLICATIONS AND CONCLUSION

5.1 Overview of the Study

This research examined how different nudge framings-informational, emotional, and time-based-affected student compliance and engagement in a post-class environment. Using an experimental design with a sample of 54 students (N = 54), the study measured behavioural compliance through form submissions and psychological impact through perceived effort and response quality. Data was processed using Gretl, applying Pearson chi-square test for categorical outcomes and one-way ANOVA for effort scales. The goal was to identify low-cost behavioural interventions to bridge the gap between a student's intention to provide feedback and the physical act of doing so.

5.2 Major Findings

The major findings of this study can be summarized as follows:

- Statistical test have validated that the framing of the nudge was the key determinant whether the student was likely to engage in the voluntary request or not ($p = .024$).
- The time-based nudge was the most influential form of nudge for the students, with the highest compliance rate of 94.4%.
- The emotional framing of the nudge ensured the second highest compliance of 77.8%, while the informational control group received the lowest compliance of 55.6%
- The responses did not differ significantly in terms of quality for the three groups ($p = .411$), which validated that the higher the compliance, the better the responses.
- Significant differences were noted in the perceived effort for the students ($p = .005$), where the emotional framing was the most demanding.
- The finding have validated that the most influential nudge for the students was the most demanding.

5.3 Theoretical Implications

This study helps us understand behavioural economics in a real-world classroom setting in the following ways:

- The high success of the time-based nudge supports scarcity-based decision theories, demonstrating that perceived urgency can effectively "tunnel" attention and override the inertia caused by post-class fatigue (Zhao & Tomm, 2016).
- The low effort scores in the emotional group show that the "affect heuristic" is real. When a task feels good to do, the brain perceives it as being physically easier(Lerner et al., 2014; Solvic et al., 2005)
- These results suggest that the hot-cold empathy gap is mostly a gatekeeper. It stops students from starting task because they are tired, but once they pick up the pen, their internal quality standards take over (Loewenstein, 2005; Nordgren, 2007)
- The study proves that choice architecture works just as well in a tired classroom as it does in a lab, showing that small environment tweaks can replace big incentives (Münscher et al., 2015)

5.4 Practical Implications

- Institutions and instructors that necessitate high-volume and instantaneous participation for administrative tasks should consider time-based urgency framing for optimal response rates
- Emotional framing is best suited for long-term strategies where a positive relationship is essential and where "student survey fatigue" is a key consideration
- Urgency based nudging can be leveraged for maximum participation rates among students by researchers in academia without compromising, the quality and integrity of the data being collected (Lenzner et al., 2009; Zhao & Tomm, 2016).
- Behavioural nudging is a free alternative to using incentives or mandatory measures for improving student compliance in voluntary tasks.

5.5 Policy Implications

- Public policy initiatives, such as public health reporting or task compliance, can utilize urgency-based framing to increase short-term response rates in time-sensitive scenarios.
- Civic engagement programs can benefit from emotional and prosocial appeals to lower the perceived subjective effort of community participation (Solvic et al., 2005)

- Behavioural framing provides a non-coercive tool for policymakers to guide citizens toward beneficial choices while preserving their freedom of choice (Münscher et al., 2015)

- **5.6 Suggestions**

- Recreate the study with a wider and more diverse student population to assess if the behavioural patterns are consistent across different academic subjects
- Investigate if the effectiveness of time-based and emotional nudges diminishes over time with repeated exposures
- Evaluate the effectiveness of hybrid nudges that combine urgency and emotional factors to see if the level of compliance can be maximized and effort minimized.
- Evaluate the effectiveness of physical, paper-based nudges against digital nudges in online learning management systems

5.7 Conclusion

The key challenge in academic engagement has been the intention-behaviour gap. The student have the cold intention to provide feedback, but the hot state of physical fatigue after the lecture often prevents them from acting (Loewenstein, 2005; Nordgren, 2007).This study has confirmed that the way a request is framed can successfully bridge the gap affecting choice architecture of the decision (Münscher et al., 2015)

The empirical evidence leads to a clear understanding: Urgency maximizes action, while empathy minimizes friction. The time-based nudge was the most powerful tool for ensuring compliance, even though students found it more demanding. On the other hand, the emotional nudge made the task feel lighter and more rewarding, offering a more constant approach to engagement. Importantly, the quality of the feedback remained even across all groups, proving that we can increase the number of participation without sacrificing the substance of the information (Lenzner et al., 2009; Zhao & Tomm, 2016)

Finally, this research confirms that effective behavioural change does not require expensive temptations or mandatory rules. By understanding the psychological state of the audience and adjusting the framing of the request, we can design interventions that are both effective for the institution and respectful of the participant's experience (Münscher et al., 2015)

REFERENCE

Andrade, E. B., & Cohen, J. B. (2007). On the consumption of negative feelings. Journal of Consumer Research, 34(3), 283–300. https://doi.org/10.1086/519145

Appelhans, B. M., French, S. A., Pagoto, S., & Sherwood, N. E. (2015). Managing temptation in obesity treatment: A neurobehavioral model of intervention strategies. Appetite, 96, 268–279. https://doi.org/10.1016/j.appet.2015.09.035

Bahety, G., Bauhoff, S., Patel, D., & Potter, J. (2021). Texts don't nudge: An adaptive trial to prevent the spread of COVID-19 in India. Journal of Development Economics, 153, Article 102747. https://doi.org/10.1016/j.jdeveco.2021.102747

Barge, S., & Gehlbach, H. (2011). Using the theory of satisficing to evaluate the quality of survey data. Research in Higher Education, 53(2), 182–200. https://doi.org/10.1007/s11162-011-9251-2

Baumel, A., & Muench, F. J. (2021). Effort-optimized intervention model: Framework for building and analyzing digital interventions that require minimal effort for health-related gains. Journal of Medical Internet Research, 23(2), Article e24905. https://doi.org/10.2196/24905

Boven, L. V., & Loewenstein, G. (2003). Social projection of transient visceral states. Personality and Social Psychology Bulletin, 29(9), 1159–1168.

Brown, A., Basson, M., Axelsen, M., Redmond, P., Lawrence, J., & Lawrence, S. (2023). Empirical evidence to support a nudge intervention for increasing online engagement in higher education. Higher Education Research & Development, 42(6), 1335–1350. https://doi.org/10.1080/07294360.2023.2174084

Civai, C., Elbaek, C. T., & Capraro, V. (in press). Why scarcity can both increase and decrease prosocial behaviour: A review and theoretical framework. Journal of Behavioral Decision Making.

Crivelli, D., Acconito, C., & Balconi, M. (2024). Emotional and cognitive “route” in decision-making process: The relationship between executive functions, psychophysiological correlates, decisional styles, and personality. International Journal of Environmental Research and Public Health, 21(3), 255.

Damgaard, M. T., & Nielsen, H. S. (2018). Nudging in education. Economics of Education Review, 64, 313–342. https://doi.org/10.1016/j.econedurev.2018.03.002

Danziger, S., Levav, J., & Avnaim-Pesso, L. (2011). Extraneous factors in judicial decisions. Proceedings of the National Academy of Sciences, 108(17), 6889–6892. https://doi.org/10.1073/pnas.1018033108

de Ridder, D., Kroese, F. M., & van Gestel, L. (2021). Nudgeability: Mapping conditions of susceptibility to nudge influence. Perspectives on Psychological Science, 17(2), 346–359. https://doi.org/10.1177/1745691621990684

Debrah, M., & Timmis, M. A. (2026). Nudging students to success: Investigating the impact of educational nudges on student engagement and outcomes. Journal of Higher Education. Advance online publication.

Haggag, K., Patterson, R. J., Pope, N., & Fehrler, S. (2019). Attribution bias in major decisions: Evidence from the United States Military Academy (Discussion Paper). IZA Institute of Labor Economics.

Hagman, W., Andersson, D., Västfjäll, D., & Tinghög, G. (2015). Public views on policies involving nudges. Review of Philosophy and Psychology, 6(3), 439–453. https://doi.org/10.1007/s13164-015-0263-2

Hamby, A., Brinberg, D., & Jaccard, J. (2016). A conceptual framework of narrative persuasion. Journal of Consumer Psychology, 26(1), 113–124. https://doi.org/10.1016/j.jcps.2015.04.001

Huang, Y. (2022). Investigation of the application of nudge theory in real world. International Journal of Social Sciences.

Jachimowicz, J. M., Duncan, S., Weber, E. U., & Appelt, K. C. (2019). When and why defaults influence decisions: A meta-analysis of default effects. Behavioural Public Policy, 3(2), 159–186. https://doi.org/10.1017/bpp.2018.43

Kooreman, P., & Prast, H. (2010). What does behavioral economics mean for policy? Challenges to savings and health policies in the Netherlands. De Economist, 158(2), 101–122.

Kotnik, P., Roelands, B., & Bogataj, Š. (2024). Prolonged theoretical classes impact students' perceptions: An observational study. BMC Public Health. Advance online publication.

Kühn, M., Kuhn, P., & Villeval, M. C. (2013). The importance of the cognitive environment for intertemporal choice (Discussion Paper). IZA Institute of Labor Economics.

Lawrence, J., Brown, A., Redmond, P., Lawrence, S., Basson, M., & Axelsen, M. (2021). Does course specific nudging enhance student engagement, experience and success? Higher Education Research & Development. Advance online publication
.

Lenzner, T., Kaczmirek, L., & Lenzner, A. (2009). Cognitive burden of survey questions and response times: A psycholinguistic experiment. International Journal of Public Opinion Research, 22(4), 531–545. https://doi.org/10.1093/ijpor/edp044

Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2014). Emotion and decision making. Annual Review of Psychology, 66, 799–823. https://doi.org/10.1146/annurev-psych-010213-115043

Li, Y., Chen, W., & Zhang, S. (2023). The behavioral effects of nudge: A meta-analysis based on a dual perspective of "Cognitive Pathway" and "Transparency." Advances in Psychological Science, 31(12), 2275–2294.

Loewenstein, G. (2005). Hot-cold empathy gaps and medical decision making. Health Psychology, 24(4, Suppl), S49–S56. https://doi.org/10.1037/0278-6133.24.4.S49

Loewenstein, G., O'Donoghue, T., & Rabin, M. (2003). Projection bias in predicting future utility. The Quarterly Journal of Economics, 118(4), 1209–1248. https://doi.org/10.1162/003355303322552784

Luo, Y., Li, A., Soman, D., & Zhao, J. (2023). A meta-analytic cognitive framework of nudge and sludge. Royal Society Open Science, 10, Article 230053. https://doi.org/10.1098/rsos.230053

Münscher, R., Vetter, M., & Scheuerle, T. (2015). A review and taxonomy of choice architecture techniques. Journal of Behavioral Decision Making, 29(5), 507–524. https://doi.org/10.1002/bdm.1897

Nordgren, L. F. (2007). Thinking about feeling: The nature and significance of the hot/cold empathy gap [Doctoral dissertation, University of Amsterdam].

Nordgren, L. F., Banas, K., & MacDonald, G. (2011). Empathy gaps for social pain: Why people underestimate the pain of social suffering. Journal of Personality and Social Psychology, 100(1), 120–128. https://doi.org/10.1037/a0020938

Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020). The emotional path to action: Empathy promotes physical distancing and wearing of face masks during the COVID-19 pandemic. Psychological Science, 31(11), 1363–1373. https://doi.org/10.1177/0956797620964422

Sayette, M. A., Loewenstein, G., Griffin, K. M., & Black, J. J. (2008). Exploring the cold-to-hot empathy gap in smokers. Psychological Science, 19(9), 926–932. https://doi.org/10.1111/j.1467-9280.2008.02178.x

Siaputra, I. B. (2010). Temporal motivation theory: Best theory (yet) to explain procrastination. ANIMA Indonesian Psychological Journal, 25(3), 206–214.

Skagerlund, K., Forsblad, M., Slovic, P., & Västfjäll, D. (2020). The affect heuristic and risk perception – Stability across elicitation methods and individual cognitive abilities. Frontiers in Psychology, 11, 1–13.

Slovic, P., Peters, E., Finucane, M. L., & MacGregor, D. G. (2005). Affect, risk, and decision making. Health Psychology, 24(4, Suppl), S35–S40. https://doi.org/10.1037/0278-6133.24.4.S35

Steel, P., Svartdal, F., Thundiyil, T., & Brothen, T. (2018). Examining procrastination across multiple goal stages: A longitudinal study of temporal motivation theory. Frontiers in Psychology, 9, Article 327. https://doi.org/10.3389/fpsyg.2018.00327

Sunstein, C. R. (2015). The ethics of nudging. Yale Journal on Regulation, 32, 413–450.

Tenbrunsel, A. E., Diekmann, K. A., Wade-Benzoni, K. A., & Bazerman, M. H. (2007). The ethical mirage: A temporal explanation as to why we aren't as ethical as we think we are (Harvard NOM Working Paper No. 08-012). SSRN.

Zhang, H. (2024). Perspective chapter: Emotion and economic decision making. In Emotion and Economic Decision Making. IntechOpen.

Zhao, J., & Tomm, B. M. (2016). Psychological responses to scarcity. In Oxford Research Encyclopedia of Psychology. Oxford University Press. https://doi.org/10.1093/acrefore/9780190236557.013.41

APPENDIX-I

HANDOUT-GROUP A

CLASSROOM ACTIVITY FEEDBACK FORM

This form collects feedback on the activity conducted in today's session.

Your responses will be used to understand how the activity was experienced.

Participation is completely voluntary.

You may leave at any time.

Participant Details:

Code: _____

Age: _____

Gender:

☐ Male

☐ Female

☐ Other

☐ Prefer not to say

Q1.How engaging did you find today's activity?

☐ Very engaging

☐ Somewhat engaging

☐ Neutral

☐ Somewhat unengaging

☐ Not engaging at all

Q2.How clear were the instructions or rules of the activity?

☐ Very clear

☐ Mostly clear

☐ Neutral

☐ Somewhat unclear

☐ Very unclear

Q3.How interested were you in continuing with this activity if it were longer?

☐ Very interested

☐ Somewhat interested

☐ Neutral

☐ Somewhat uninterested

☐ Not interested at all

Q4.How much of a burden did it feel to complete this form at the end of the session?

☐ No burden at all

☐ A small burden

☐ Neither small nor large

☐ A moderate burden

☐ A significant burden

Q5.Which part of the activity stood out to you the most?

(Please describe briefly)

Q6.What, if anything, could be changed to improve this activity?

Q7. If this activity were repeated in the future, what is one specific suggestion you would give?

Submission

If you choose to complete this feedback, you may drop it in the box near the exit.

You are free to leave at any time.

APPENDIX-II

HANDOUT-GROUP B

CLASSROOM ACTIVITY FEEDBACK FORM

This activity was planned and conducted by a fellow student as part of their research work.

Your feedback would genuinely help them understand how the activity was experienced and how it could be improved.

Participation is completely voluntary, and any feedback you choose to share is appreciated.

You are free to leave at any time.

Participant Details:

Code: _____

Age: _____

Gender:

☐ Male

☐ Female

☐ Other

☐ Prefer not to say

Q1.How engaging did you find today's activity?

☐ Very engaging

☐ Somewhat engaging

☐ Neutral

☐ Somewhat unengaging

☐ Not engaging at all

Q2.How clear were the instructions or rules of the activity?

☐ Very clear

☐ Mostly clear

☐ Neutral

☐ Somewhat unclear

☐ Very unclear

Q3.How interested were you in continuing with this activity if it were longer?

☐ Very interested

☐ Somewhat interested

☐ Neutral

☐ Somewhat uninterested

☐ Not interested at all

Q4.How much of a burden did it feel to complete this form at the end of the session?

☐ No burden at all

☐ A small burden

☐ Neither small nor large

☐ A moderate burden

☐ A significant burden

Q5.Which part of the activity stood out to you the most?

(Please describe briefly)

Q6.What, if anything, could be changed to improve this activity?

Q7. If this activity were repeated in the future, what is one specific suggestion you would give?

Submission

If you choose to complete this feedback, you may drop it in the box near the exit.

You are free to leave at any time.

APPENDIX-III

HANDOUT-GROUP C

CLASSROOM ACTIVITY FEEDBACK FORM

This feedback is being collected only for the next 3 minutes, immediately after the activity, to capture your first impressions.

If you would like to respond, please complete the form now and drop it in the box before you leave.

Participation is completely voluntary.

You may leave at any time.

Participant Details:

Code: _____

Age: _____

Gender:

☐ Male

☐ Female

☐ Other

☐ Prefer not to say

Q1.How engaging did you find today's activity?

☐ Very engaging

☐ Somewhat engaging

☐ Neutral

☐ Somewhat unengaging

☐ Not engaging at all

Q2.How clear were the instructions or rules of the activity?

☐ Very clear

☐ Mostly clear

☐ Neutral

☐ Somewhat unclear

☐ Very unclear

Q3.How interested were you in continuing with this activity if it were longer?

☐ Very interested

☐ Somewhat interested

☐ Neutral

☐ Somewhat uninterested

☐ Not interested at all

Q4.How much of a burden did it feel to complete this form at the end of the session?

☐ No burden at all

☐ A small burden

☐ Neither small nor large

☐ A moderate burden

☐ A significant burden

Q5.Which part of the activity stood out to you the most?

(Please describe briefly)

Q6.What, if anything, could be changed to improve this activity?

Q7. If this activity were repeated in the future, what is one specific suggestion you would give?

Submission

If you choose to complete this feedback, you may drop it in the box near the exit.

You are free to leave at any time.