Effect Of Imposter Syndrome On Dysfunctional Metacognitive beliefs: Mediating Role Of Rumination

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SUBMITTED BY

JIYA MALHOTRA

(8624020029)

UNDER THE SUPERVISION AND GUIDANCE OF

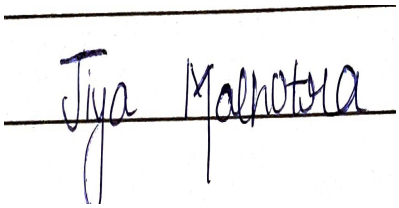
Dr. Ipshita Chowdhury

Thapar School of Liberal Arts & Sciences

Thapar Institute of Engineering and Technology, Patiala

CERTIFICATE

This is to certify that the thesis entitled, "***Effect Of Imposter Syndrome On Dysfunctional Metacognitive beliefs: Mediating Role Of Rumination"*** is being submitted in partial fulfillment of requirements for the award the of the degree of Master of Arts in Psychology, presented in the Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala is a bonafide work carried out under the supervision of Dr. Ipshita Chowdhury, Assistant Professor, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and that no part of this project has been submitted for the award of any other degree.



Jiya Malhotra(8624020029)

This is to certify that the above statement made by the student concerned is correct and true to the best of my knowledge.

(DR. IPSHITA CHOWDHURY)

Assistant Professor, TSLAS

Thapar Institute of Engineering and Technology, Patiala

CANDIDATE'S DECLARATION

I hereby declare that the work presented in this thesis entitled, "***Effect Of Imposter Syndrome On Dysfunctional Metacognitive beliefs: Mediating Role Of Rumination"*** submitted in partial fulfillment of requirements for the award the of the degree of Master of Arts in Psychology, presented in the Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala, is an authentic record of my work carried out under the supervision and guidance of Dr. Ipshita Chowdhury, Assistant Professor, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and refers other researchers' work which are duly listed in the reference section.

The matter embodied in this thesis has not formed the basis for awarding any other degree at this or any other university.

Date- May, 2026

Place- Patiala

Jiya Malhotra

Jiya Malhotra(8624020029)

This is to certify that the above statement made by the student concerned is correct and true to the best of my knowledge

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(Dr. IPSHITA CHOWDHURY)

Assistant Professor, TSLAS

Thapar Institute of Engineering and Technology, Patiala

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Abstract

Imposter syndrome involves persistent self-doubt, fear of being exposed as a fraud, and attributing one's achievements to luck rather than ability. It is a common source of psychological distress among university students, yet the cognitive processes that connect it to broader mental functioning remain poorly understood. This study examined rumination as a mediating variable in the relationship between imposter syndrome and dysfunctional metacognitive beliefs , drawing on Wells and Matthews' S-REF model. It was hypothesized that imposter syndrome would positively predict dysfunctional metacognitive beliefs with rumination partially mediating this relationship. Data were collected from 151 university students (ages 18 to 25) using snowball sampling and an online questionnaire. Three validated measures were used: the Leary Imposter Scale, the Ruminative Response Scale, and the Metacognitions Questionnaire-30. Imposter syndrome was significantly associated with both rumination ($r = 0.55$, $p < 0.001$) and dysfunctional metacognitive beliefs ($r = 0.66$, $p < 0.001$), accounting for 43.4% of the variance in dysfunctional metacognitive beliefs .Rumination partially mediated the relationship, with both direct and indirect effects remaining significant. These findings point to rumination as a key cognitive pathway linking imposter syndrome to dysfunctional metacognitive beliefs,and suggest that interventions such as Metacognitive Therapy may be helpful in university counseling settings. Limitations include a cross-sectional design and self-report measures.

Key Words: *Imposter Syndrome, Metacognitive beliefs , Rumination, University Students, Mediation*

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CHAPTER 1 - INTRODUCTION

Important cognitive habits that impact an individual's identity and performance evaluation can be shaped by how they view their own mental processes and thought patterns. University students may be especially vulnerable to the effects of their own cognitive processes because their academic achievement is often assessed, constantly compared to others under tremendous pressure. Imposter syndrome, metacognition, and rumination are three psychologically significant constructs that individually exert substantial influence on cognitive and emotional functioning, particularly in academic and high-pressure environments (Clance & Imes, 1978; Flavell, 1979; Nolen-Hoeksema, 1991). For high-achieving students, there are three cognitive processes that can predict significant consequences, such as those who believe they are underperforming and undeserving of their academic success despite evidence to the contrary.

1.1 Imposter Syndrome

Imposter Syndrome was first described by Clance and Imes (1978) which refers to the persistent feeling of intellectual fraudulence in which individuals feel like they are undeserving and incompetent despite objective evidence so they develop a fear of being exposed as fraud. The phenomenon was initially observed among high-achieving women in academic settings, though subsequent research has established its prevalence across gender, profession, and culture (Bravata et al., 2020). Individuals who suffer from this syndrome attribute successes to luck or other external factors which leads to cognitive patterns of doubt , overpreparation and anxiety that persists regardless of accomplishments. Despite outward achievement, individuals experiencing imposter feelings live in quiet fear of intellectual exposure, often undermining their own sense of capability and worth . Imposter syndrome is present when an individual feels that they are undeserving of

their success, thus attributing said success to luck. Then, when they fail, they internalize this failure as further proof of their inadequacy. This cycle of self-doubt pervades their life which results in chronic self-doubt, excessive anxiety before evaluations, and a reluctance to claim ownership of projects. Bravata et al. (2020) conducted a study of the prevalence of imposter syndrome among medical students, residents, faculty, and staff in academic medicine and determined the prevalence of imposter syndrome among these individuals. The purpose was to bring about awareness of the relevance of this issue among these individuals who might be unaware that they are suffering from this debilitating phenomenon. A few of the results showed an overall prevalence of imposter syndrome at 55%, with physicians citing lower self-confidence and disappointing contributions as cosmic contributors .A fascinating phenomenon has been observed among high-achieving women in academia. The fact that females on college campuses are often expected to represent the entire female race, and that their mistakes or bad outcomes become indicative of females as a whole. This phenomenon, known as "chilly climate" or "differential standard." is not just limited to academia, but rather is prevalent across gender, profession, and culture (Bravata et al., 2020). The pervasive expectations in academic environments to provide a positive representation for all women, while also needing to navigate the bias of being a woman in academia places a great deal of undue stress on female academics.

1.2 Metacognition

Metacognition can essentially be defined as thinking about thinking. Metacognition is such an important part of human cognition because it is how we learn and understand our own beliefs about how we think and monitor our own thoughts. Psychological literature does not describe a single general metacognitive ability but instead it has been broken down to include many different beliefs and processes (Flavell, 1979). Additionally , metacognition interacts with other thought

processes including cognitive and socio-emotional processes which impact behavior and emotions (Wells, 2000). He also used the term cognitive attentional syndrome which refers to the specific way our minds work. This conveys that we focus so much on ourselves and potential dangers and also on our own thoughts which makes worry and rumination the predominant way of responding to emotional disturbance which leads to coping methods like suppressing thoughts , avoiding things and seeking assurance .Hence this style of thinking can cause psychological problems .In practical terms, metacognition is the ability to reflect on one's own thinking, to monitor one's mental activity, to have insights about how the mind functions, and to assess the reliability and controllability of one's own thoughts. It is more than just a measure of intelligence or academic aptitude; rather, it encapsulates an individual's core beliefs regarding the nature of their own mental life. Metacognition has also been studied from Wells and Matthews' (1994) approach which has come to be known as the Self-Regulatory Executive Function model (or S-REF model). From this model, metacognitive beliefs are important distinctions, such that it is not negative thoughts that cause psychological distress but how we think about these thoughts (metacognitions about these thoughts). If someone believes worrying is harmful/uncontrollable and they must constantly check their thoughts to prevent something bad from happening, they get trapped in a cycle of negative self-focused repetitive thinking that maintains distress. There are two types of metacognition classified as positive and negative metacognition . Positive metacognition holds the beliefs of being anxious or worrying is useful and beneficial for the person. For eg – Believing that worrying will help in avoiding mistakes . Negative metacognition involves those thoughts that are dangerous , uncontrallable , catastrophic which leads to an increase in worry and rumination which inturn increases anxiety and distress creating a vicious cycle of thoughts which makes a person feel trapped in their own thoughts . Metacognition has also been studied in the context of academic

settings such as students' involvement in planning , monitoring and evaluating one's own performance. Students who have metacognition skills can regulate effectively and utilize their cognitive resources wisely Metacognitive awareness has been consistently associated with higher academic achievement, adaptive problem-solving, and effective coping strategies. Conversely, deficits in metacognition are linked to maladaptive patterns such as poor self-monitoring, difficulty in regulating emotional responses to failure, and reduced learning efficacy. "Given that imposter syndrome fundamentally distorts an individual's self-assessment of their cognitive abilities, it is theoretically plausible that it may contribute to maladaptive metacognitive beliefs and dysregulated metacognitive processes." (Schraw & Dennison, 1994).

1.3 Rumination

Rumination can be described as repetitive engagement and preoccupation with one's thoughts in response to an unpleasant emotional state or challenging situation, performed automatically and introspectively. (Nolen-Hoeksema, 1991) . This process entails the repeated occurrence of similar thoughts about the adversities , failures and consequences that one faces without progressing towards an effective resolution . In contrast to deliberate thought processes that aim at finding solutions which are solution oriented , rumination is passive , unproductive and repetitive . Nolen - Hoeksema's Response Styles Theory which laid the foundational framework for understanding rumination explains that extensive rumination leads to even worse states and creates negative emotional conditions . People who ruminate when they experience a depressed state of mind take longer to recover . It limits individuals attention allowing them to recall negative memories , hampers their problem solving efforts and stops any motivated behavior . The two different forms of rumination are being classified by Treynor et al. 2003 include brooding and reflection . Brooding is characterized by thinking about a situation in a way comparing oneself

to some yet to be reached standard and the difference between both standards . Reflection , on the other hand, includes actively examining oneself . Brooding is more harmful and destructive than reflection since it is more strongly correlated with depression and negative self appraisals across studies . There are several through which rumination exacerbates negative psychological outcomes . The first mechanism involves narrowed focus of attention as rumination allows cognitive resources to be allocated in a way that they become preoccupied with negative self related thoughts .

1.1 Imposter Syndrome , Dysfunctional Metacognitive Beliefs and Rumination

The interplay between imposter syndrome, rumination, and metacognition represents an underexplored area of psychological inquiry. While each construct has been studied independently, research has rarely examined the mediating mechanism through which imposter syndrome affects higher-order cognitive functioning. Vergauwe et al. (2015) found that individuals high in imposter feelings consistently engage in self-critical and self-evaluative thinking, which closely mirrors the cognitive profile of rumination. Similarly, Wells (2009) demonstrated through the framework of Metacognitive Therapy (MCT) that maladaptive rumination directly undermines an individual's ability to regulate their own cognitive processes. It is proposed that imposter syndrome functions as the antecedent variable that triggers ruminative thinking, which in turn contributes to the development and maintenance of dysfunctional metacognitive beliefs.Understanding this mediation pathway is of both theoretical and clinical significance, as it points toward targeted interventions - particularly metacognitive therapy - that may help individuals break the cycle of self-doubt, overthinking, and dysfunctional metacognitive beliefs that characterize the imposter experience.

CHAPTER 2 : REVIEW OF LITERATURE

2.1 Imposter Syndrome

Imposter syndrome, originally termed the 'imposter phenomenon,' was first conceptualized by Clance and Imes (1978) in a landmark study involving high-achieving women. As women increasingly succeed and transition through all of the diverse stages in higher education, work settings, and field experiences, one psychological construct is steadily on the rise.Clance and Imes studied women experiencing the subjective, personal experience of intellectual fraud. It was suggested that the strong feelings of undeserved achievement through deception ultimately leads to their identification as intellectual frauds instead of their actual experience of moments of chronic self-doubt resulting in anxiety over exposure.

Later studies further refined the concept of imposter syndrome from a feminine concept only. Leary et al (2000) introduced The Leary Imposter Scale and proved that imposter syndrome occurs in the overall gender, professional settings and cultures rather than just in females. It was found that those scoring higher in imposter syndrome had a tendency to estimate their competence in terms of themselves more slowly than others estimated, that the distance between their own estimated competence and others estimated competence was significantly correlated with psychological suffering. Leary et al (2000) further showed that imposter syndrome was positively related with anxiety, negative affect, maladaptive self-evaluation etc .

University students have been cited by numerous researchers as a population most susceptible to imposter syndrome. In a study that investigated imposter syndrome in graduate students, Parkman (2016) concluded that the vast majority of the students studied continued to believe they were a fraud, regardless of their high grade point averages. The university context,

which is focused on competition, performance and evaluation, and social comparison, produces a unique climate in which imposter syndrome can fester and persist.

Parkman (2016) reported that higher education students were not only the most vulnerable to imposter syndrome, but that "The university transition, more than any other milestone, often triggered or intensified feelings of imposter syndrome" due to new pressures and perceived high competency among student peers.

Vergauwe and co-authors also found that imposter syndrome was significantly related to neuroticism , and negatively related to conscientiousness and emotional stability. This suggests that it's not only the situation (i.e., stress in academia) that drives feelings of imposter syndrome but also individual difference variables that are more permanent than situation effects. They further demonstrated that it was related to job performance and wellbeing when participants entered into their professional lives.

2.2 Metacognition

More broadly speaking, thinking about one's own thinking, is broadly termed metacognition. It wasn't systematically conceptualized until Flavell (1979) who defined it as an individual's knowledge and regulation of their own cognitive processes. Flavell (1979) further divided metacognition into metacognitive knowledge and metacognitive monitoring and control. Metacognitive knowledge means what an individual knows about their own thinking, and metacognitive monitoring and control refers to the regulation and evaluation of the stream of ongoing cognitive activity. This was an important and influential development, setting the research paradigm for metacognition for the past decades of research in developmental, educational and clinical psychology. Although metacognition is a broad construct encompassing knowledge and regulation of cognitive processes, the present study is particularly concerned with dysfunctional

metacognitive beliefs as conceptualized by Wells and Matthews' S-REF model. These beliefs include perceptions regarding the uncontrollability, danger, and significance of thoughts, which are assessed using the Metacognitions Questionnaire (MCQ-30).

Another contribution to the conceptualisation of metacognition in psychological health is the S-REF (Self-Regulatory Executive Function) model of Wells and Matthews (1994). The S-REF model argues that an individual forms metacognitive beliefs concerning the nature of their thoughts (i.e. How they will behave), the control of those thoughts (i.e. Are my thoughts controllable) and the value and meaning of those thoughts (i.e. Are my thoughts helpful). The author hypothesises that if an individual forms and holds these beliefs in maladaptive form (e.g. The belief that worry is not controllable, or that particular thoughts have special significance and are dangerous) this will result in enduring psychological disturbance and cognitive difficulties. The metacognitive beliefs together with a prolonged ruminative process forms the cognitive base of a diverse group of psychological conditions.

In their study on the relationship between metacognition and academic achievement, Spada et al. (2008) discovered that individuals with more maladaptive metacognitive beliefs showed lower self-efficacy, higher anxiety and poor academic achievement. Particularly negative beliefs about the inability to control thoughts and low cognitive confidence were best predictors of poor performance. This study is an illustration of the relevance of metacognition in education and emphasizes dysfunctional metacognitive beliefs as potential obstacles for university students. In fact, Spada et al. (2008) suggest that metacognitive belief modification might be of particular importance in order to enhance both academic performance and student well-being .

2.3 Rumination

Rumination has been described as "an individual's repeated and prolongative contemplation of his symptoms, their causes, and his reactions to their effects" which occur when people are feeling negative in mood or are distressed and which involves dwelling on and reprocessing this distress without constructive coping action (Nole-Hoeksema, 1991).

Nolen-Hoeksema's (1991) response styles theory has provided a basis of theories for rumination arguing that rumination increases and prolongs negative mood, relative to distracting and problem-focused coping, thus playing a role in the onset and maintenance of depression and other psychological distress. There is substantial research that builds upon this foundational theory. A comprehensive review of the rumination literature by Nolen-Hoeksema et al. (2008) found that rumination is a transdiagnostic risk factor for numerous disorders, including depression, anxiety disorders, post-traumatic stress disorder and eating disorders.

As noted in Nolen-Hoeksema et al's (2008) review, in addition to maintaining negative affect, rumination is associated with impaired problem-solving capacity and decreased motivation, as well as being responsible for maintaining concentration and cognitive performance problems. Nolen-Hoeksema et al. (2008) concluded that individuals who have a tendency to experience higher amounts of distress or negative beliefs about oneself and one's capacity to cope with problems tend to have greater tendency to ruminate, and thus student populations would have a great predisposition.

In 2008 study Watkins explored further the functional outcome of rumination and suggested that the crucial difference between adaptive and maladaptive rumination is in its level of construal – i.e. Whether it is abstract and evaluative and focused on "why" the person feels a certain way or concrete and process focused and about "how" the situation is going to be solved. In other words, as shown by Watkins (2008) the more concrete and specific individuals reflect on

why they feel bad, the better they can solve problems and regulate their emotions while the more abstract and evaluative individuals think the more depressed and less able to think.

2.4 Imposter Syndrome and Rumination:

The association between imposter syndrome and rumination has become an increasing focus of interest theoretically and empirically in recent years. In the first studies investigating the cognitive correlates of imposter syndrome, Cowman and Ferrari (2002) discovered that individuals high in imposter syndrome experience significantly higher levels of repetitive self-focused negative thoughts than those low in imposter syndrome. They suggest that the anxiety regarding a perceived hidden lack of skill coupled with a fear of being revealed fosters an optimal environment for rumination, as the individual is compelled to continuously reflect upon their failures, doubts their accomplishments, and worries about being judged negatively by others.

Cokley et al. (2013) studied the construct of imposter syndrome among minority college students and found that imposter syndrome was strongly associated with ruminative thinking, specifically repetitive negative thoughts concerning academic capability and affiliation. According to Cokley et al. (2013), those who experienced high levels of imposter syndrome were more likely to engage in brooding rumination concerning their academic performance and their relative inadequacies in relation to peers. This ruminative thinking was found to partially mediate the association between imposter syndrome and psychological distress. This result supports the current study's proposed theory and adds additional empirical support to the proposed imposter syndrome-rumination link.

Hutchins et al. (2018) examined imposter syndrome in engineering students, and revealed that students who experienced a high level of imposter syndrome, also reported higher levels of

doubt, self disparaging self-talk, and recurring negative cognitions regarding their academic performance, and their position within the engineering discipline. It was observed by Hutchins et al. (2018) that this pattern of rumination seemed particularly amplified in response to negative events such as negative feedback or poor academic results, thereby implying that students who experience imposter syndrome have a heightened level of sensitivity toward negative feedback and a tendency to ruminate in these instances.

2.5 Rumination and dysfunctional metacognitive beliefs

The relationship between rumination and dysfunctional metacognitive beliefs" is central to Wells and Matthews' (1994) S-REF model, which proposes that ruminative processing is both driven by and contributes to dysfunctional metacognitive beliefs. According to the S-REF model, individuals who hold positive beliefs about the usefulness of rumination (e.g., 'ruminating helps me understand my problems') are more likely to engage in sustained ruminative processing, which in turn activates and consolidates negative metacognitive beliefs about the uncontrollability and danger of their thoughts. This creates a self-reinforcing cycle in which metacognitive beliefs drive rumination, and rumination in turn strengthens maladaptive metacognitive beliefs . Papageorgiou and Wells (2003) provided important empirical support for the relationship between rumination and maladaptive metacognitive beliefs within the framework of the Self-Regulatory Executive Function (S-REF) model. Their study demonstrated that both positive and negative metacognitive beliefs about rumination were significantly associated with depressive rumination and psychological distress. Individuals who believed that rumination was useful for understanding or solving problems were more likely to engage in repetitive thinking, whereas those who held negative beliefs regarding the uncontrollability and harmful consequences of rumination experienced greater psychological distress. These findings suggest that maladaptive metacognitive

beliefs not only contribute to the initiation of rumination but are also reinforced through continued ruminative processing, creating a self-perpetuating cycle of negative thinking. Therefore, the study highlights the central role of maladaptive metacognitive beliefs in maintaining rumination and provides a strong theoretical foundation for examining rumination as a mechanism linking imposter syndrome with dysfunctional metacognitive beliefs in the present study.

Papageorgiou and Wells (2003) concluded that metacognitive beliefs play a critical role in both the onset and perpetuation of rumination, and that challenging metacognitive beliefs within a therapeutic context might prove to be a useful intervention tool for alleviating rumination and related distress.

Spada and Wells (2006) also explored the relation between metacognition and rumination in relation to problem drinking. They demonstrated that metacognitive beliefs (negative beliefs concerning uncontrollability of thoughts) positively predicted ruminative thinking, after controlling for measures of mood and general anxiety. Such results suggest that metacognitive beliefs do not function as correlates of rumination, but are direct predictors of ruminative processing; these results were consistent with what is theorised within the S-REF model. The findings of Spada and Wells (2006) are relevant to the present study because they suggest that the relationship between rumination and metacognition is a bidirectional and reciprocal process.

Bernard et al. (2002) researched the impact of imposter syndrome. They found that individuals with high levels of imposter syndrome have many different dysfunctional cognitive styles: self-deprecation, external attributions for success, and intense self-monitoring. These styles have a close relationship with the metacognitive styles that Wells and Cartwright-Hatton (2004) theorised about. This implies a conceptually useful connection between imposter syndrome and metacognitive dysfunctions.

Bernard et al. (2002) observed that post-event processing (that is the rumination associated with re-examining how well one has performed academically or in the workplace following an assessment of one's performance) is closely related to metacognitive monitoring.

The cognitive and affective effects of imposter syndrome in health professionals were investigated by Mak et al. (2019) and the authors found that individuals with high levels of imposter syndrome reported significantly higher levels of cognitive rumination, negative metacognitive beliefs, and low cognitive confidence than those with low levels of imposter syndrome. Mak et al. (2019) argued that imposter syndrome affects not only mood but also is implicated in considerable cognitive dysfunction such as dysfunctional metacognitive beliefs and rumination. Mak et al. (2019) argued that rumination might represent a critical mechanism mediating the relationship between imposter syndrome and other cognitive problems.

Overall,there is considerable theoretical and empirical evidence suggesting relationships among imposter syndrome, rumination, and dysfunctional metacognitive beliefs, but no previous study has directly investigated the mediational effect of rumination on imposter syndrome and " dysfunctional metacognitive beliefs in university students. Therefore, the present study tested a mediational model based on the above evidence in a sample of Indian university students.

CHAPTER 3 : RESEARCH GAP, OBJECTIVES, CONCEPTUAL FRAMEWORK AND HYPOTHESIS

3.1 Research Gap

Although a substantial body of research has examined the psychological correlates of imposter syndrome, including anxiety, depression, and psychological distress, its relationship with dysfunctional metacognitive beliefs remains relatively unexplored. Dysfunctional metacognitive beliefs, as conceptualized within Wells and Matthews S-REF model, play a crucial role in the development and maintenance of repetitive negative thinking patterns such as rumination. Previous research has independently linked imposter syndrome with rumination and rumination with maladaptive metacognitive beliefs. However, no study to date has examined whether rumination serves as a mediating mechanism linking imposter syndrome and dysfunctional metacognitive beliefs among university students.

3.2 Objectives

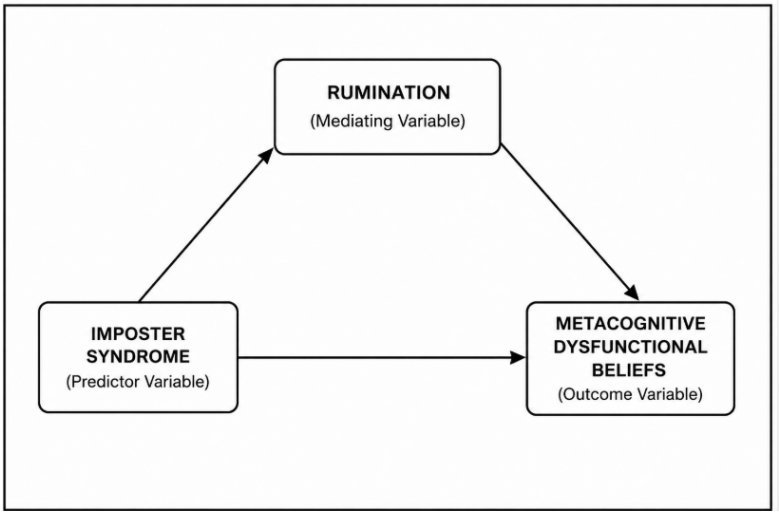
The following objective was formulated for the present study: To examine the mediating role of rumination in the relationship between imposter syndrome and dysfunctional metacognitive beliefs among Indian university students.

3.3 Conceptual Framework

The conceptual framework illustrates the proposed relationships among the study variables. Imposter Syndrome serves as the Predictor Variable, Rumination serves as the Mediating Variable, and Dysfunctional Metacognitive Beliefs serve as the Outcome Variable.

Based on Wells and Matthews' (1994) Self-Regulatory Executive Function (S-REF) model, the framework proposes that individuals experiencing higher levels of imposter syndrome are more likely to engage in ruminative thinking, which in turn contributes to the development and maintenance of dysfunctional metacognitive beliefs. Thus, rumination is expected to partially mediate the relationship between imposter syndrome and dysfunctional metacognitive beliefs

Figure 1: Conceptual Path Model



As illustrated in Figure 1, imposter syndrome is hypothesized to positively predict rumination (Path a), and rumination is hypothesized to positively predict dysfunctional metacognitive beliefs (Path b). Furthermore, imposter syndrome is proposed to exert both a direct effect on dysfunctional metacognitive beliefs (Path c') and an indirect effect through the mediating role of rumination (Indirect Effect = a × b).

3.4 Hypothesis

From the analysis of the current literature, theoretical framework and the purpose of the current study, the following hypotheses were formulated :

H1: There will be a significant positive relationship between imposter syndrome and dysfunctional metacognitive beliefsamong university students.

H2: There will be a significant positive relationship between imposter syndrome and rumination among university students

H3: There will be a significant positive relationship between rumination and dysfunctional metacognitive beliefs among university students.

H4: Rumination will significantly mediate the relationship between imposter syndrome and dysfunctional metacognitive beliefs among university students, such that imposter syndrome will influence dysfunctional metacognitive beliefs both directly and indirectly through rumination.

CHAPTER 4 : METHODOLOGY

4.1 Sample

The present study examines the mediating role of rumination in the relationship between imposter syndrome and dysfunctional metacognitive beliefs among university students. University students were being chosen as a sample for this study since they tend to be more prone to experiencing the feeling of imposter syndrome. In academic settings , students are often subjected

to intense pressure to perform well academically due to high performance demands , competition , self comparison and evaluations. These circumstances generate the feelings of self doubt , being a fraud , inadequacy and inferiority complexes. In this environment , people are faced with occasions in which their competencies are put under scrutiny and judgement. The combination of social comparison , academic expectations creates an environment where imposter syndrome will develop and have a strong cognitive and emotional impact.

4.1.1 Inclusion criteria

Inclusion criteria for participation were university students between the ages of 18 to 25 years , enrolled in undergraduate or postgraduate programmes . No exclusion criteria were applied on the basis of gender , residence type, or field of study, in order to allow for a diverse and representative sample of university sample population.

4.1.2 Sampling Characteristics

The sample size for this study consisted of 151 university students. The age of participants ranged from 18-25 years , with the majority of participants falling within this range , consistent with the defined inclusion criteria . The sample included both undergraduate and postgraduate students from varied academic backgrounds. Data was being collected with the help of snowball sampling through google forms , which were distributed entirely online. Participants were assured anonymity and confidentiality of their responses prior to completing the questionnaire, and participation was entirely voluntary throughout the data collection process.

4.2 Research Design

A cross- sectional design was used in the present study . Imposter Syndrome is the predictor variable, Dysfunctional Metacognitive Beliefs are the outcome variable, and Rumination is the mediating variable.The Self – Regulatory Executive Function model by Wells and Matthews

(1994) which describes that in the absence of a persistent psychological threat activates ruminative processing which leads to dysregulation in metacognitive functioning . One of the persistent threats is the phenomenon of imposter syndrome defined as continued self doubt coupled with a perpetual feeling of being discovered as incompetent (Clance & Imes, 1978). Individuals who experience imposter syndrome are constantly vigilant to their own performance , as they expect and fear negative evaluation. Rumination as a mediator explains how imposter syndrome shifts negative thoughts into metacognitive regulation struggles. This model proposes that imposter syndrome triggers repetitive negative thinking about one's competence, which in turn contributes to the development and maintenance of dysfunctional metacognitive beliefs.

4.3 Tools Used

Three standardized scales were administered through Google forms via an online medium to collect data from university students . The questionnaires were used are as follows :-

4.3.1 Metacognitions Questionaire

Metacognition Questionnaire was developed by Wells and Cartwright Hatton (2004). It is a 30-item scale designed to assess metacognitive beliefs, particularly maladaptive beliefs concerning the uncontrollability, danger, and regulation of thoughts.Metacognition refers to an individual's knowledge, beliefs, and monitoring of their own thinking processes (Flavell, 1979). The scale assesses five domains: positive beliefs about worry, negative beliefs about thoughts concerning uncontrollability and danger, cognitive confidence, beliefs about the need to control thoughts, and cognitive self-consciousness. Respondents rate each item on a 4-point scale ranging from 1 (Do not agree) to 4 (Agree very much).

Scoring : Higher scores indicate greater levels of dysfunctional metacognitive beliefs.

Reliability and Validity – The MCQ -30 has demonstrated good internal consistency with Cronbach ‘s alpha values ranging from 0.72 to 0.93 across subscales(Wells & Cartwright-Hatton, 2004). The scale has established convergent and discriminant validity across clinical populations.

4.3.2 Ruminative Response Scale (RRS)

The Ruminative Response Scale was developed by Nolen – Hoeksoma and Morrow (1991). It is a 10 item scale which measures the tendency to engage in ruminative thinking in response to distressed mood. Rumination involves repetitively focusing on symptoms of distress and their possible causes and consequences without taking action to address them (Nolen-Hoeksema, 1991). This style of thinking is considered to be maladaptive and has negative outcomes . Respondents rate each item on a 4 point scale ranging from 1 (almost never) to 4 (almost always).

Scoring - Continuous scoring is maintained . Higher scores indicate higher levels of ruminative thinking.

Reliability and Validity : The RRS demonstrated strong internal consistency with Cronbach’s alpha values above 0.85. The scale has established validity as a measure of ruminative response style across populations .

4.3.3 Leary Imposter Scale

The Leary Imposter Scale was developed by Leary et al (2000). It is a 7 item scale which measures imposter phenomenon i.e the fear of being exposed as a fraud . Despite evidence of achievement , individuals high in imposter syndrome attribute success to external factors such as

luck rather than their own abilities . They have this feeling of not being competent as others perceive them to be ,therefore setting unrealistic perfectionist goals . Respondents rate each item on a 5-point scale ranging from 1 (not at all true of me) to 5 (very true of me).

Scoring- Continuous scoring is maintained.Individuals who score higher indicate higher levels of imposter syndrome .

Reliability and Validity - The scale has adequate internal consistency and construct validity in previous research conducted across different populations .

4.4 Procedure

Informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any point without consequence. Demographic details were obtained regarding age, gender, and education level. All three scales were administered together through a single Google Form, which was distributed online through personal contacts and snowball sampling, wherein participants shared the form further within their own networks.

Instructions for the Metacognitions Questionnaire were as follows: 'Below are a number of beliefs that people have about their thoughts. Read each statement and indicate how much you generally agree with it by circling the appropriate number.'

Instructions for the Ruminative Response Scale were as follows: 'People think and do many different things when they feel sad or depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed.

Instructions for the Leary Imposter Scale were as follows: 'Please rate the degree to which each of the following statements is true of you personally.' Participants were assured of the

anonymity and confidentiality of their responses. The average time taken to complete the questionnaire was approximately 15 to 20 minutes. In case of any confusion, the participants were free to get in touch to get any kind of clarification. All responses were recorded and scored according to the respective scoring guidelines of each instrument. Higher scores on the MCQ-30 indicated greater levels of dysfunctional metacognitive beliefs.

CHAPTER 5 : RESULTS

The present chapter reports the findings of the statistical analyses conducted to examine the effect of imposter syndrome on metacognition, with rumination as a mediating variable. Data

were collected from 151 participants. Results are organized into four sections: descriptive statistics, correlation analysis, regression analysis, and mediation analysis.

5.1 Descriptive Statistics

Table 1 presents the descriptive statistics for all three study variables across the total sample of 151 participants .

Table 1: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	SD
Imposter Syndrome	151	7	34	18.00	7.51
Rumination (RRS)	151	12	40	25.98	6.14
Dysfunctional Metacognitive Beliefs (MCQ-30)	151	38	113	72.33	18.72

Note. RRS = Ruminative Response Scale; MCQ = Metacognition Questionnaire

As indicated in Table 1 , imposter syndrome scores ranged from 7 to 34 34 (M = 18.00, SD = 7.51),, suggesting moderate levels of imposter feelings. Rumination scores ranged from 12 to 40 (M = 25.98, SD = 6.14), and dysfunctional metacognitive belief scores ranged from 38 to 113 (M = 72.33, SD = 18.72), reflecting considerable variability among participants .

5.2 Correlation Analysis

Pearson's correlation coefficients were computed to examine the bivariate relationshipsamong the three study variables . Table 2 presents correlation matrix among study variables.

Table 2

Pearson Correlation Matrix Among Study Variables

Variable	1	2	3	M	SD
1. Imposter Syndrome	-			18.00	7.51
2. Rumination (RRS)	.548**	.	-	25.98	6.14
3. Dysfunctional Metacognitive Beliefs (MCQ-30)	.659**	.771**		72.33	18.72

*Note. ** p < .001 (two-tailed).*

As shown in Table 2, "Imposter syndrome was significantly and positively correlated with dysfunctional metacognitive ($r = .659$, $p < .001$) and with rumination ($r = .548$, $p < .001$). Rumination and dysfunctional metacognitive beliefs showed the strongest correlation ($r = .771$, $p < .001$). These significant associations among all variables satisfy the preliminary conditions for mediation testing.

5.3 Regression Analysis

Three separate OLS regression models were computed to test Baron and Kenny's (1986) four-step mediation approach.

Model 1 — Path c (Total Effect): Imposter Syndrome→ Metacognition. Imposter syndrome was regressed on metacognition to establish the total effect.

Table 3

Regression of Dysfunctional Metacognitive Beliefs on Imposter Syndrome (*Path c — Total Effect)*

Predictor	B	SE	p	R
Constant	39.79	2.73	< .001	
Imposter Syndrome	1.642	0.154	< .001	43

Note. Dependent variable: Metacognition (MCQ)

Imposter syndrome significantly predicted dysfunctional metacognitive beliefs (B = 1.642, SE = 0.154, p < .001), accounting for 43.4% of variance (R^2 = .434). Step 1 of mediation criteria is confirmed

Model 2 - Path a: Imposter Syndrome ⇢ Rumination. Imposter syndrome was regressed on rumination to establish Path a.

Table 4

Regression of Rumination on Imposter Syndrome (Path a)

Predictor	B	SE	p-value	R^2
Constant	17.92	1.00	< .001	
Imposter Syndrome	0.448	0.056	< .001	.301

Rumination significantly predicted dysfunctional metacognitive beliefs (B = 0.448, SE = 0.056, p < .001), explaining 30.1% of variance (R^2 = .301). Step 2 of mediation criteria is confirmed.

Model 3 -Regression of Dysfunctional Metacognitive Beliefs on Imposter Syndrome and Rumination (Path b & c')

Table 5

Regression of Metacognition on Imposter Syndrome and Rumination (Path b & c')

Predictor	B	SE	t	p	R^2
Constant	10.74	3.82	2.81	< .001	
Imposter Syndrome (c')	0.840	0.140	6.007	< .001	
Rumination — Path b	1.789	0.171	10.453	< .001	.674

Note. Dependent variable: Dysfunctional Metacognitive Beliefs

Rumination significantly predicted dysfunctional metacognitive beliefs (B = 1.789, p < .001), confirming Step 3. The direct effect of imposter syndrome on dysfunctional metacognitive beliefs remained significant (B = 0.840, p < .001) but was reduced from the total effect (B = 1.642), indicating partial mediation. Both predictors together explained 67.4% of the variance in dysfunctional metacognitive beliefs (R^2 = .674).

5.4 Mediation Analysis

Table 6 presents the complete mediation summary, and Figure 2 illustrates the path model with standardized coefficients for all paths.

Table 6 Mediation Analysis Summary: Imposter Syndrome → Rumination → Dysfunctional Metacognitive Beliefs

Table 6

Mediation Analysis Summary: Imposter Syndrome → Rumination → Dysfunctional Metacognitive Beliefs

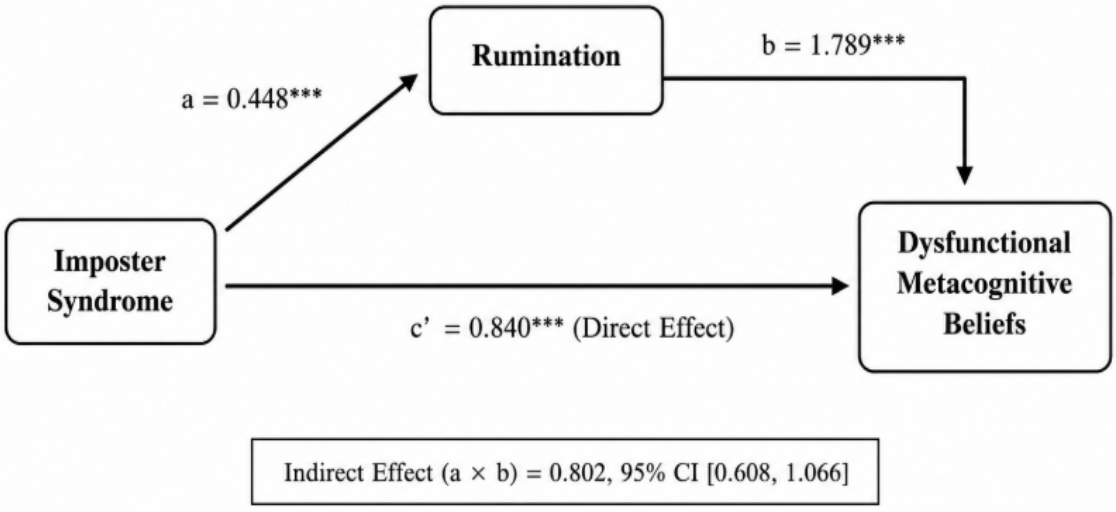
Path	B	SE	p-value	95% CI	Sig.
Path a: Imposter → Rumination	0.448	0.056	< .001	[0.337, 0.559]	Yes

Path b: Rumination → Dysfunctional Metacognitive Beliefs	2.353	0.159	< .001	[2.038, 2.667]	Yes
Total Effect (c)	1.642	0.154	< .001	[1.338, 1.945]	Yes
Direct Effect (c')	0.840	0.140	< .001	[0.564, 1.116]	Yes
Indirect Effect (a x b)	0.802	0.116	< .001	[0.608, 1.066]	Yes

Note. Proportion of total effect mediated = 48.83%. Partial Mediation confirmed. Baron & Kenny's (1986) approach used.

The indirect effect of imposter syndrome on dysfunctional metacognitive beliefs through rumination was B = 0.802 (SE = 0.116, 95% CI [0.608, 1.066]), which did not include zero, confirming its significance. The direct effect remained significant (B = 0.840, $p < .001$), confirming partial mediation. Rumination accounts for 48.83% of the total effect of imposter syndrome on dysfunctional metacognitive beliefs.

Figure 2. Mediation Model of Rumination in the Relationship Between Imposter Syndrome and Dysfunctional Metacognitive Beliefs



Partial Mediation: 48.83% of the total effect was mediated by rumination.

Note. *** $p < .001$.

Chapter 6 - DISCUSSION

The study is designed to measure the mediating rumination in the relationship between imposter syndrome and metacognition among university students . In relation to the Self-Regulatory Executive Function (S-REF) model by Wells and Matthews' (1994) and Clance and Imes' (1978) original conceptualization of the imposter phenomenon . The hypothesis stated that impostor syndrome would positively predict metacognition , and this relationship would be partially mediated by rumination . The findings of the study are listed below in relation to existing literature and conceptual framework.

6.1 Imposter syndrome and Dysfunctional Metacognitive Beliefs

The study hypothesized that there would be a positive relationship between imposter syndrome and dysfunctional metacognitive beliefs. The results revealed a significant positive correlation between imposter syndrome and metacognition ($r = 0.66$, $p < 0.001$). Regression analysis also depicted that imposter syndrome significantly predicted metacognition, accounting for 43.4% of the variance in dysfunctional metacognitive beliefs .($R^2 = 0.434$). The findings revealed that university students who experience higher levels of imposter syndrome also tend to exhibit greater levels of maladaptive metacognitive beliefs and dysregulated metacognitive monitoring.

The results were consistent with the S – REF model (Matthews, 1994) which described that maladaptive beliefs , negative thinking were activated by psychological threat which activated maladaptive cognitive patterns of thinking . Imposter syndrome is characterized with fears of self doubt , believing in success due to external factors such as timing or luck . These individuals are always in a state to control their thinking , monitoring their performance and evaluate their performance which dysregulates metacognitive functioning .The findings of the present study

therefore extend the theoretical understanding of imposter syndrome by demonstrating its significant cognitive consequences, specifically in terms of metacognitive beliefs and regulation.

6.2 Impostor syndrome and Rumination

The present study hypothesized that imposter syndrome will predict rumination among college students . Rumination positively correlates with metacognition (0.77, $p < 0.001$). Rumination enhances the impact of thoughts and feelings on the appraisal of the self (Wells & Matthews, 1994). The path regression coefficient is 1.79. Therefore, it can be concluded that the data are consistent with the S-REF model (Wells & Matthews, 1994) and suggestive of its predictive ability (r). According to the model, in the top part of it, S-REF constitutes a higher level of cognitive processing, which helps to better understand the individual's primary level of mental processing. This particular model has been adopted in the realm of clinical psychology, especially in the fields of social, clinical, cognitive, and applied psychology. It is based on the assumption that healthy and dysfunctional thought processing is maintained through metacognition. Thus all dysfunctional thinking may well sustain different symptoms and clinical behavior (Wells & Matthews, 1994).

According to the S-REF model, ruminative processing is a central mechanism through which metacognitive dysfunction is activated and maintained. When individuals engage in prolonged rumination, they are forced into a mode of heightened self-monitoring and evaluation of their own thinking processes, which directly corresponds to metacognitive activity. Over time, this sustained ruminative processing leads to the development of maladaptive metacognitive beliefs, including negative beliefs about the uncontrollability of thoughts, reduced cognitive confidence, and heightened cognitive self-consciousness (Wells & Cartwright-Hatton, 2004). The

strong positive relationship between rumination and metacognition observed in the present study provides robust empirical support for these theoretical propositions.

6.4 Mediating Role of Rumination

The main hypothesis proposed that .rumination would partially mediate the relationship between imposter syndrome and dysfunctional metacognitive beliefs. The results supported the hypothesis . The indirect effect of imposter syndrome on metacognitive beleifs through rumination was significant (indirect effect = 0.80, 95% bootstrap CI does not include zero), while the direct effect of imposter syndrome on dysfunctional metacognitive beliefs remained significant after controlling for rumination ($c' = 0.84$, $p < 0.001$). This indicates that a significant portion of rumination mediates the relationship between impostor syndrome and metacognition but that imposter syndrome also directly influences dysfunctional metacognitive beliefs through pathways beyond rumination. These findings also suggest there is not only a direct relationship between imposter syndrome and metacognition but also operated by ruminative thinking . Individuals with high imposter syndrome think about their mistakes. worries all the time. This repetitive self-focused thinking contributes to the development and maintenance of dysfunctional metacognitive beliefs regarding the controllability and significance of thoughts. Scholars have begun to examine the relationship between the persistent feelings of self-doubt and inadequacy, known as imposter syndrome, and metacognitive functioning (the ability to monitor and control their thoughts, strengths, weaknesses, and emotional states). Imposter syndrome can be conceptualized as the frequent ruminative thoughts about self-perceived feelings of incompetence and inferiority that can result in significant dysregulation of metacognitive functioning. Instances of cognitive distortions such as maladaptive self-monitoring and heightened threat appraisal may lead individuals to engage in excessive cognitive and emotional compensatory strategies when facing

challenging situations. Some compensatory strategies may help these individuals feel competent; however, excessive dysregulation of metacognitive functioning in response to metacognitive factors is indicative of imposter syndrome and may have detrimental effects, including anxiety, difficulty concentrating, avoidance behaviors, and excessive rumination. It is necessary for future research to develop a thorough understanding of the links between metacognitive functioning and imposter syndrome .

CHAPTER 7 - CONCLUSION ,LIMITATIONS AND FUTURE SUGGESTIONS

7.1 Conclusion

The present study has been studied to examine the mediating role of rumination in the relationship between imposter syndrome and dysfunctional metacognitive beliefs among university students. In relation with the S – REF model by Clance and Imes' (1978) , the study proposed that individuals who experience high levels of imposter syndrome engage in ruminative thinking which contributes to the development and maintenance of dysfunctional metacognitive beliefs. The study was conducted on a sample of 151 students falling between the age range of 18 to 25 years . The findings of the study are being outlined below .

The first finding was Imposter syndrome demonstrated a strong positive relationship with dysfunctional metacognitive beliefs. Students who scored higher in imposter syndrome reported higher levels of dysfunctional metacognitive beliefs and control. The findings came out to be consistent with S REF model (Wells & Matthews, 1994), which describes that chronic psychological threat such as persistent self doubt and fear of exposure activates maladaptive thinking . The regression analysis further revealed that 43.4% of the variance in metacognitive functioning underscoring the role that impostor syndrome plays a role in shaping the metacognitive experience of university students .

Secondly , imposter syndrome significantly predicted rumination among university students . Individuals with high levels of impostor syndrome engage in a repetitive pattern of maladaptive thinking with fears of self doubt and being exposed as fraudulent . This finding is theoretically consistent with Nolen-Hoeksema's (1991) response styles theory which describes rumination as a maladaptive cognitive response to perceived helplessness and inadequacy . Individuals with imposter syndrome doubt their own competence and attribute success to external

factors such as luck and timing which is emotionally distressing .The significant positive path from imposter syndrome to rumination observed in the present study provides important empirical support for this theoretical link.

The third major finding was Rumination demonstrated a significant and particularly strong positive relationship with dysfunctional metacognitive beliefs.. The correlation between rumination and metacognition was notably high ($r = 0.77$, $p < 0.001$), and the path coefficient from rumination to metacognition was substantial ($b = 1.79$, $p < 0.001$).When individuals engage in consistent rumination , they become focused on monitoring their own cognitive processes which contributes to the strengthening of dysfunctional metacognitive beliefs. Over time the ruminative thinking leads to consolidation of maladaptive metacognitive beliefs and negative thinking .

The fourth and most central finding of the present study was rumination partially mediated the relationship between imposter syndrome and dysfunctional metacognitive beliefs. The indirect effect of imposter syndrome on metacognition through rumination was statistically significant, with the 95% bootstrap confidence interval not including zero, confirming the significance of the mediated pathway. Importantly, the direct effect of imposter syndrome on metacognition also remained statistically significant after controlling for rumination, confirming a partial rather than full mediation model. This pattern of findings indicates that imposter syndrome influences metacognitive functioning both directly and indirectly through ruminative thought patterns.

7.2 Limitations and Future implications

Despite the significant contribution of the current study , several limitations should be acknowledged . The current study used a cross-sectional research design. Thus, relationships between imposter syndrome, rumination and metacognition limits the ability to draw causal conclusions . While mediation model assumes directionality among imposter syndrome,

rumination and metacognition, the direction of causation among the constructs has to be addressed with the cross-sectional design of the study. Future research with longitudinal designs to test how changes over time on imposter syndrome predicts later changes on rumination and metacognition are required. The sample of this study was recruited through snowball sampling (a non-probability technique). Generalizability to the entire university student population is thus limited. Future research with random sampling techniques should be conducted with large and diverse university student samples. Another limitation of the present study is the exclusive reliance on self-report measures. Participants' responses may have been influenced by social desirability, response biases, or inaccurate self-perceptions, which could affect the accuracy of the findings.

The findings should also be interpreted within the cultural context of the study sample. Since experiences of imposter syndrome, rumination, and dysfunctional metacognitive beliefs may vary across cultural settings, the results may not be fully generalizable to individuals from different cultural backgrounds

Therefore future studies should focus on how imposter syndrome, rumination and metacognition are related in other samples. Future research could try to examine other mediating or moderating variables in the link between imposter syndrome and metacognition such as self-compassion, cognitive flexibility and attachment style. Additionally, testing for gender differences in the association between imposter syndrome, rumination and metacognition would also be a promising avenue to investigate, given that imposter syndrome seems to present itself differently according to gender. The study also points to several important directions for future research, including the examination of additional mediating mechanisms, longitudinal designs, and broader and more diverse samples.

Wells and Cartwright-Hatton (2004) created the Metacognitions Questionnaire-30 (MCQ-30), a questionnaire designed to assess the following five dimensions of metacognitive functioning: positive worry beliefs, negative beliefs concerning the uncontrollability and danger of thoughts, metacognitive confidence, beliefs about the necessity of thought control, and cognitive self-consciousness. In a subsequent study using this measure, Wells and Cartwright-Hatton (2004) found that maladaptive metacognitive beliefs were linked to anxiety, emotional distress, and depression in both clinical and non-clinical samples. In other words, the MCQ-30 was shown to be a valid and reliable assessment of metacognitive functioning.

REFERENCES

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182https://doi.org/10.1037/0022-3514.51.6.1173

Bernard, N. S., Dollinger, S. J., & Ramaniah, N. V. (2002). Applying the big five personality factors to the impostor phenomenon. *Journal of Personality Assessment*, *78*(2), 321–333. https://doi.org/10.1207/s15327752jpa7802_07

Bravata, D. M., Watts, S. A., Keefer, A. L., Madhusudhan, D. K., Taylor, K. T., Clark, D. M., Nelson, R. S., Cokley, K. O., & Hagg, H. K. (2019). Prevalence, Predictors, and Treatment of Impostor Syndrome: a Systematic Review. *Journal of General Internal Medicine*, *35*(4), 1252–1275. https://doi.org/10.1007/s11606-019-05364-1

Clance, P. R., & Imes, S. A. (1978). The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention. *Psychotherapy*, *15*(3), 241–247. https://doi.org/10.1037/h0086006

Cokley, K., McClain, S., Enciso, A., & Martinez, M. (2013). An examination of the impact of minority status stress and impostor feelings on the mental health of diverse ethnic minority college students. *Journal of Multicultural Counseling and Development*, *41*(2), 82–95. https://doi.org/10.1002/j.2161-1912.2013.00029.x

Cowman, S. E., & Ferrari, J. R. (2002). “AM I FOR REAL?” PREDICTING IMPOSTOR TENDENCIES FROM SELF-HANDICAPPING AND AFFECTIVE COMPONENTS. *Social Behavior and Personality an International Journal*, *30*(2), 119–125. https://doi.org/10.2224/sbp.2002.30.2.119

Dunn, H., Morrison, A. P., & Bentall, R. P. (2006). The relationship between patient suitability, therapeutic alliance, homework compliance and outcome in cognitive therapy for psychosis. *Clinical Psychology & Psychotherapy*, *13*(3), 145–152. https://doi.org/10.1002/cpp.481

Flavell, J. H. (1979a). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, *34*(10), 906–911. https://doi.org/10.1037/0003-066x.34.10.906

Flavell, J. H. (1979b). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, *34*(10), 906–911. https://doi.org/10.1037/0003-066x.34.10.906

Hutchins, H. M., Penney, L. M., & Sublett, L. W. (2017a). What imposters risk at work: Exploring imposter phenomenon, stress coping, and job outcomes. *Human Resource Development Quarterly*, *29*(1), 31–48. https://doi.org/10.1002/hrdq.21304

Hutchins, H. M., Penney, L. M., & Sublett, L. W. (2017b). What imposters risk at work: Exploring imposter phenomenon, stress coping, and job outcomes. *Human Resource Development Quarterly*, *29*(1), 31–48. https://doi.org/10.1002/hrdq.21304

Leary, M. R., Patton, K. M., Orlando, A. E., & Funk, W. W. (2000a). The impostor phenomenon: Self-Perceptions, reflected appraisals, and interpersonal strategies. *Journal of Personality*, *68*(4), 725–756. https://doi.org/10.1111/1467-6494.00114

Leary, M. R., Patton, K. M., Orlando, A. E., & Funk, W. W. (2000b). The impostor phenomenon: Self-Perceptions, reflected appraisals, and interpersonal strategies. *Journal of Personality*, *68*(4), 725–756. https://doi.org/10.1111/1467-6494.00114

Mak, K. K. L., Kleitman, S., & Abbott, M. J. (2019a). Impostor Phenomenon Measurement Scales: A Systematic review. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.00671

Mak, K. K. L., Kleitman, S., & Abbott, M. J. (2019b). Impostor Phenomenon Measurement Scales: A Systematic review. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.00671

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*(4), 569–582. https://doi.org/10.1037/0021-843x.100.4.569

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400–424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Papageorgiou, C., & Wells, A. (2003). An empirical test of a clinical metacognitive model of rumination and depression. *Cognitive Therapy and Research*, *27*(3), 261–273. https://doi.org/10.1023/a:1023962332399

Parkman, A. (2016). The imposter phenomenon in higher education: Incidence and impact. Journal of Higher Education Theory and Practice, 16(1), 51–60.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460–475. https://doi.org/10.1006/ceps.1994.1033

Spada, M. M., Nikcevic, A. V., Moneta, G. B., & Ireson, J. (2006). Metacognition as a mediator of the effect of test anxiety on a surface approach to studying. *Educational Psychology*, *26*(5), 615–624. https://doi.org/10.1080/01443410500390673

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, *27*(3), 247–259. https://doi.org/10.1023/a:1023910315561

Vergauwe, J., Wille, B., Feys, M., De Fruyt, F., & Anseel, F. (2014). Fear of Being Exposed: The Trait-Relatedness of the Impostor Phenomenon and its Relevance in the Work Context. *Journal of Business and Psychology*, *30*(3), 565–581. https://doi.org/10.1007/s10869-014-9382-5

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*(2), 163–206. https://doi.org/10.1037/0033-2909.134.2.163

Wells, A., & Cartwright-Hatton, S. (2003). A short form of the metacognitions questionnaire: properties of the MCQ-30. *Behaviour Research and Therapy*, *42*(4), 385–396. https://doi.org/10.1016/s0005-7967(03)00147-5

Wells, A., & Matthews, G. (1994). *Attention and emotion: A clinical perspective.* Lawrence Erlbaum Associates, Inc.

APPENDIX A

INFORMED CONSENT

Participation in this research is voluntary, and the participant may withdraw consent at any point in the study without any consequences and without the need to give any explanation for the same. All the details and responses provided by the participants in this study will be kept anonymous and confidential and will be solely used for research purposes.

o I agree to participate in this study.

DEMOGRAPHIC DETAILS

Name (optional): _____

Age: _____

Gender: _____

Education: _____

Residence: _____

Appendix B

Leary Imposter Scale (LIS)

Instructions: Please rate the degree to which each of the following statements is true of you personally, using the scale below.

1 = Not at all true of me 2 = Slightly true of me 3 = Moderately true of me 4 = Mostly true of me 5 = Very true of me

1. I am often afraid that others will discover how much knowledge or ability I really lack.
2. When I have succeeded at something and received recognition for my accomplishments, I sometimes doubt that I can keep repeating that success.
3. I sometimes think I obtained my present position or academic standing because I happened to be in the right place at the right time or knew the right people.
4. I am often afraid that I may fail at a new assignment or undertaking, even though I generally do well at what I attempt.
5. When I have succeeded at something, I sometimes doubt that I really deserve the credit.
6. I sometimes feel that my success has been due to some fluke or that I have fooled anyone who thinks I am competent.
7. I can give the impression that I am more competent than I really am.

Appendix C

Ruminative Response Scale (RRS)

Instructions: People think and do many different things when they feel sad or depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed.

1 = Almost Never 2 = Sometimes 3 = Often 4 = Almost Always

1. Think about how alone you feel.

2. Think, 'I won't be able to do my job if I don't snap out of this.'

3. Think about your feelings of fatigue and achiness.

4. Think about how hard it is to concentrate.

5. Think 'What am I doing to deserve this?'

6. Think about how passive and unmotivated you feel.

7. Analyze your personality to try to understand why you are depressed.

8. Go someplace alone to think about your feelings.

9. Think about how angry you are with yourself.

10. Think about all your shortcomings, failings, faults, and mistakes.

Appendix D

Metacognitions Questionnaire – 30 (MCQ-30)

Instructions: Below are a number of beliefs that people have about their thoughts. Read each statement and indicate how much you generally agree with it by circling the appropriate number.

1 = Do not agree, 2 = Agree slightly, 3 = Agree moderately, 4 = Agree very much

1. Worrying helps me to avoid problems in the future.

2. My worrying is dangerous for me.

3. I think a lot about my thoughts.

4. I could make myself sick with worrying.

5. I am aware of the way my mind works when I am thinking through a problem.

6. If I did not control a worrying thought and then it happened, it would be my fault.

7. I need to worry in order to remain organised.

8. I have little confidence in my memory for words and names.

9. My worrying thoughts persist no matter how I try to stop them.

10. Worrying helps me to get things sorted out in my mind.

11. I cannot ignore my worrying thoughts.

12. I monitor my thoughts.

13. I should be in control of my thoughts all of the time.

14. My memory can mislead me at times.

15. My worrying could make me go mad.

16. I am constantly aware of my thinking.

17. I have a poor memory.

18. I pay close attention to the way my mind works.

19. Worrying helps me cope.

20. Not being able to control my thoughts is a sign of weakness.

21. When I start worrying, I cannot stop.

22. I will be punished for not controlling certain thoughts.

23. Worrying helps me to solve problems.

24. I have little confidence in my memory for places.

25. It is bad to think certain thoughts.

26. I do not trust my memory.

27. If I could not control my thoughts, I would not be able to function.

28. I need to keep worrying as it could be important.

29. I cannot ignore my worrying thoughts.

30. I have little confidence in my memory for actions.