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MALADAPTIVE DAYDREAMING AND SOCIAL ANXIETY: PREVALENCE AND THE MEDIATING ROLE OF EMOTIONAL REGULATION

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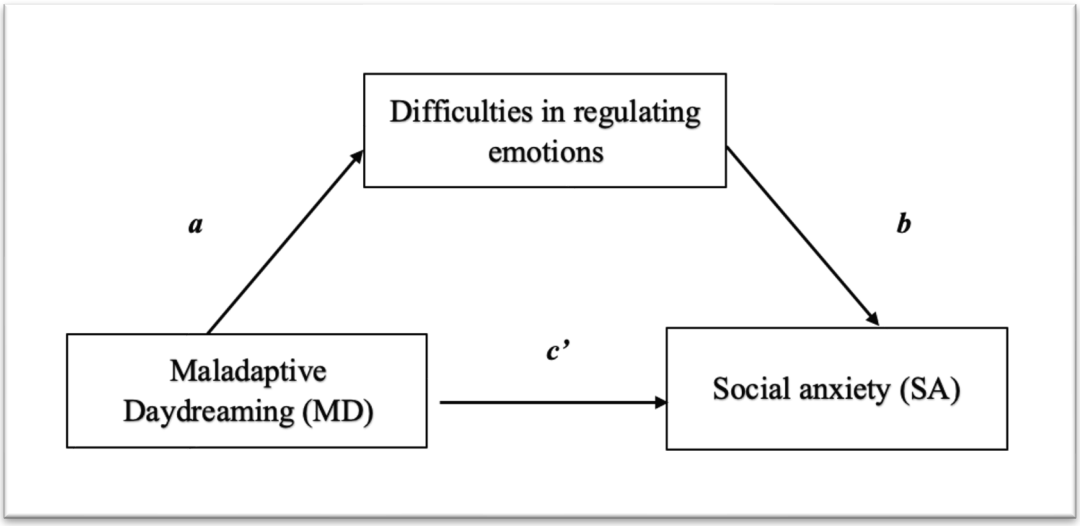

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Cover: Meditation model of the current study

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Declaration of Original Work

I, Riffa Fathima Syed Abuthahir, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*Maladaptive Daydreaming and Social Anxiety: Prevalence and the Mediating Role of Emotional Regulation*", hereby, solemnly declare that this is the original research work done by me under the supervision of Dr. Salma Daiban, in the College of Medicine and Health Sciences at UAEU. This work has not previously formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

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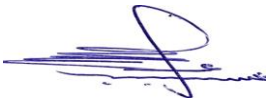
   Signature  Date: 27-11-2023

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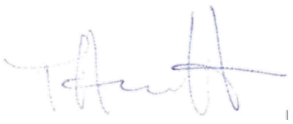
   Signature:  Date: 28-11-2023

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Abstract

Previous studies have generated mixed evidence regarding the magnitude of the prevalence of Maladaptive Daydreaming (MD). In addition, although previous studies have identified an association between Maladaptive Daydreaming (MD) and Social Anxiety (SA), literature is sparse in exploring the underlying factors such as emotional regulation difficulties that might mediate this relationship. The current study attempted to investigate the prevalence of MD and self-perceived levels of Social Anxiety (SA) among undergraduate students in the United Arab Emirates (UAE). It also attempted to explore whether difficulties in regulating emotions mediate the relationship between MD and self-perceived levels SA. A cross-sectional design with a convenience sampling method was utilized to recruit 418 undergraduate students from UAE University. Data was collected using Maladaptive Daydreaming Scale (MDS-16), Difficulties in Emotion Regulation Scale Short Form (DERS-SF), Social Interaction Anxiety (SIAS-6), and Social Phobia Scales (SPS-6). Statistical analyses included descriptive analyses, chi-square test of independence, binary logistic regression, correlation analyses and mediational analyses. The results of the study revealed that 53.8% of the participants exhibited scores indicative of the presence of MD, and 62% of the participants had scores indicative of SA. In addition, as predicted, difficulties in regulating emotions was found to partially mediate the relationship between MD and SA. The findings of the study indicate that a substantial portion of the population might be affected by MD and SA. In addition, it sheds light on the complex factors that underlie the relationship between MD and SA.

Keywords: Maladaptive daydreaming, social anxiety, emotional regulation, prevalence.

Title and Abstract (in Arabic)

أحلام اليقظة المفرطة والقلق الأجتماعي :الأنتشار والدور الوسيط للتنظيم العاطفي

الملخص

أسفرت الدراسات السابقة عن وجود ادلة متضاربة فيما يتعلق بحجم انتشار أحلام اليقظة المفرطة. كما أشارت الدراسات السابقة إلى وجود علاقة بين أحلام اليقظة المفرطة والقلق الاجتماعي، إلا انه هناك دراسات قليلة متعلقة باستكشاف العوامل الأساسية التي قد تتوسط هده العلاقة مثل صعوبات التنظيم العاطفي. هدفت الدراسة الحالية إلى معرفة مدى انتشار أحلام اليقظة المفرطة والقلق الاجتماعي بين طلاب المرحلة الجامعية في دولة الإمارات العربية المتحدة. كما هدفت الى استكشاف ما إذا كانت الصعوبات في تنظيم العواطف تتوسط العلاقة بين أحلام اليقظة المفرطة والقلق الاجتماعي. وقد تم استخدام التصميم المقطعي الوصفي لإجراء هذه الدراسة. وتم اختيار عينة ملائمة تتكون من 418 طالبًا جامعيًا من جامعة الإمارات العربية المتحدة. وتم جمع البيانات باستخدام مقياس أحلام اليقظة غير المتكيف، والنموذج القصير لمقياس الصعوبات في تنظيم العاطفة، وقلق التفاعل الاجتماعي، ومقاييس الرهاب الاجتماعي. وشمل التحليل الإحصائي للدراسة على التحليل الوصفي، اختبار مربع كأي للاستقلال، الانحدار اللوجستي الثنائي، معامل الارتباط، وتحليل الوساطة. وكشفت نتائج الدراسة أن 53.8% من المشاركين أظهروا درجات تدل على وجود أحلام اليقظة المفرطة، وأن 62% من المشاركين لديهم درجات تدل على القلق الاجتماعي. وكما كان متوقعًا، فان صعوبات التنظيم العاطفي تتوسط جزئيًا العلاقة بين أحلام اليقظة المفرطة والقلق الاجتماعي. وتشير نتائج الدراسة إلى أن جزءًا كبيرًا من الناس قد يتأثرون بأحلام اليقظة المفرطة والقلق الاجتماعي. كما انها تسلط الضوء على العوامل المعقدة التي تكمن وراء العلاقة بين أحلام اليقظة المفرطة والقلق الاجتماعي.

مفاهيم البحث الرئيسية: أحلام اليقظة المفرطة، القلق الاجتماعي، التنظيم العاطفي، الانتشار.

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Dedication

To my beloved family and friends

Table of Contents

List of Tables

List of Figures

List of Abbreviations

ADHD	Attention Deficit Hyperactive Disorder
CBT	Cognitive Behavioural Therapy
CSA	Childhood Sexual Abuse
DEPTMD	Differential Emotional Processing Theory of Maladaptive Daydreaming
DERS - SF	Difficulties in Emotional Regulation Scale Short Form
DSM - 5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
EPT	Emotional Processing Theory
ER	Emotional Regulation
GPA	Grade Point Average
MD	Maladaptive Daydreaming
MDS - 16	Maladaptive Daydreaming Scale
NPD	Narcissist Personality Disorder
SA	Social Anxiety
SAD	Social Anxiety Disorder
SCIMD	The Structural Clinical Interview for Maladaptive Daydreaming
SIAS - 6 and SPS - 6	Scales of Social Interaction Anxiety and Social Phobia Scale
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factor

Chapter 1: Introduction

1.1 Overview

1.1.1 Maladaptive Daydreaming

The concept of Maladaptive Daydreaming (MD) was first introduced by Somer (2002), who defined Maladaptive Daydreaming (MD) as an "extensive fantasy activity that replaces human interaction and/or interferes with academic, interpersonal, or vocational functioning." Though MD is a condition not recognized by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), it is considered a syndrome with a clear clinical definition (Schimmenti et al., 2019). Individuals with MD often indulge in intense daydreaming that involves highly intricate and vivid scenarios for a significant period of time. Individuals with MD might have a continual need to fantasize and lose themselves in a self-directed fantasy world (Pietkiewicz et al., 2018). In addition, due to its obsessive and addictive nature, MD causes further issues by wasting one's time and blurring the difference between reality and idealized fantasy (Soffer-Dudek & Somer, 2018). The recent spurt of research in MD have led to the development of the Maladaptive Daydreaming Scale (MDS-16). It is a standardized and valid self-reported assessment tool for measuring the severity of MD symptoms developed by Schupak and Rosenthal (2009).

One study indicated that MDers engage in MD for 56% of their waking hours (Bigelsen et al., 2016), unlike non-MDers, who spend only 16% of their waking time daydreaming (Bigelsen et al., 2016). There is a general consensus in the literature that MD can be compulsive and may be used as a form of escape from anxiety-providing situations (Ross et al., 2020). As a result of its compulsive nature, MDers find their daydreams hard to control, which subsequently impairs their quality of life (Bigelsen et al., 2016).

Apart from the significant time spent daydreaming, several other factors differentiate MD from normal daydreaming. Normal daydreaming is considered an everyday mental activity of mind wandering or having spontaneous thoughts distinct from the activity at hand (Klinger, 2009). However, in contrast to normal daydreaming,

MD involves complex fantasy content that are more elaborate with fictional plots and characters, on the other hand, the daydreams of non-MDers tend to be more grounded in reality (Bigelsen et al., 2016). In addition, compared to normal daydreamers, MDers report higher rates of attention deficit, obsessive-compulsive, and dissociative symptoms, indicating the highly comorbid nature of MD (Somer et al., 2017). Though the prevalence of MD in the general population is still unknown due to inconsistencies between the studies (e.g. Alenizi et al., 2020; Bashir, 2021; Soffer-Dudek & Theodor-Katz, 2022), several studies have indicated MD to be highly comorbid with other psychiatric disorders. According to one research that analyzed the commodity of MD, 76.9% of people with Attention Deficit Hyperactive Disorder (ADHD), 71.8% of people with anxiety disorder, 56.4% with depression, and 53.9% with obsessive compulsive disorder have symptoms of MD (Somer et al., 2017).

Though difficulties in sustaining attention are common among those with Attention Deficit Hyperactive Disorder (ADHD) and MD, several components of MD differentiate it from ADHD. Individuals with ADHD often experience mind wandering, a tendency to involuntarily shift or deviate attention away from the task at hand or get observed in one's internal thoughts (Seli et al., 2015). According to Theodor-Katz et al. (2022), while MD is a guided and deliberate absorption in daydreaming, on the other hand, mind wandering associated with ADHD is somewhat spontaneous and away from one's conscious awareness. Even though attention difficulties associated with both constructs might contribute to their overlap, each condition is complex and multifactorial.

As research on MD is still in its early stages, the causes and triggers of this phenomenon have yet to be fully understood. Repeated studies have noted experiences of childhood trauma as a potential etiology for the development of MD (Somer et al., 2016a). Several studies have indicated a higher prevalence of MD among patients with a history of childhood trauma than control groups (Abu-Rayya et al., 2019; Somer et al., 2019). In addition, survivors of childhood trauma also tend to experience greater levels of psychological stressors, and MD could be seen as a coping strategy developed in childhood to deal with adverse psychological distress. However, MD might continue to

be used in adulthood to deal with other psychological stressors, such as social isolation and anxiety (Somer et al., 2020).

MDers also possess a higher dissociative propensity level than others (Ross et al., 2020). Studies indicate that individuals who engage in MD may also experience more pronounced dissociative symptoms, indicating that MD shares similarities with the broader concept of dissociation (Ross et al., 2020; Sándor, Bugán, Nagy, Tóth-Merza, et al., 2021). In one study conducted by Ferrante et al. (2020), individuals diagnosed with depersonalization/derealization disorder had a higher prevalence of MD. The authors implied that MD might be used among individuals diagnosed with dissociative disorders such as depersonalization and derealization disorders to cope with difficult emotions. The study suggested that, though MD as a coping strategy might offer temporary relief from distressing emotions, in the longer term, MD contributes to the overall dissociative experience (Sándor, Bugán, Nagy, Tóth-Merza et al., 2021).

Recent studies note that exposure to music and repeated motions can trigger MD (Somer et al., 2016b; Somer et al., 2017). Moreover, the themes of the fantasies provide immediate emotional support to those with MD, which would further maintain their MD habits. Engaging in daydreams that provide a temporary escape from reality seems to reflect an emotional coping mechanism MDers take in order to cope with stress, anxiety, trauma or difficult emotions. Though MD might serve short-term benefits, in the long run, the time-consuming nature of MD can affect various important areas of functioning (Bigelsen & Schupak, 2011; Bigelsen et al., 2016).

Few daydreaming theories and models have accounted for the above observation that daydreaming could provide potential emotional support and enable individuals to cope temporarily with distress. The Emotional Processing Theory (EPT) is a psychological model that attempts to explain how emotional processing is significant to mental health and wellbeing (Alpert et al., 2021). Though this theory may not have been developed with MD in mind, it can shed light on how problems with emotional processing may contribute to MD. The EPT posits that emotional processing takes place when a trauma network is activated and incompatible information is presented to encourage corrective learning of more adaptive associations and behaviors (Alpert et al.,

2021). From the perspective of emotional processing theory, individuals might use imagination and fantasy to practice challenging life events and experience difficult emotions (Haynes, 2022).

In line with EPT, more recently, the Differential Emotional Processing Theory of Maladaptive Daydreaming (DEPTMD) suggests that engaging in MD is a non-traditional way of accessing emotional processing. The emotional protection pathway of the theory posits that imagination and fantasy can provide emotional safety by satisfying emotional needs which are not present in real life, and hence, allowing for the processing of emotions within a secure confinement (Haynes, 2022).

Though no particular cause of MD has been found, it can be seen as a complex phenomenon caused by a combination of multiple factors. Despite the causes, it is clear that emotional regulation tends to be the purpose of MD in most cases. Moreover, given that The Emotional Processing Theory (EPT) and the Differential Emotional Processing Theory of Maladaptive Daydreaming (DEPTMD) suggest the underlying role of emotional regulation in MD, there might be a higher likelihood that treatment targeting emotional regulation difficulties be helpful in effectively addressing MD.

In line with the above assumption, a case study conducted by Somer (2018) provides some preliminary evidence that cognitive behavioural interventions aimed at cognitive restructuring and mindful meditation can be effective in reducing MD. The treatment involved helping the participant identify and challenge negative thoughts and beliefs, and learning to reframe thoughts in a positive way. In addition, the mindfulness meditation component of the treatment involved paying attention to the present moment without judgement. The results indicated a reduction of over 50% in daydreaming time and an improvement of over 70% on work and social adjustment. Though these findings are promising, more research is needed to confirm the effectiveness of Cognitive Behavioral Therapy (CBT) for MD.

Similarly, a recent randomized control trial with mindfulness-based intervention has proven effective in reducing daydreaming intensity, frequency, and distress compared to the control group (Herscu et al., 2023). The study incorporated a four-week web-based program involving mindfulness meditation and self-monitoring. However,

further research is required in order to make firmer conclusions and the generalizability of these results. Moreover, there are no identified specific treatment protocol for MD, and the research has been limited in testing various treatment approaches to manage the symptoms of MD.

1.1.2 Social Anxiety

Social Anxiety (SA) is a common mental health condition that affects individuals worldwide, often causing significant distress and impairment in their daily lives. SA occurs when individuals expect unfavorable judgments from others or believe that their presence will make others uncomfortable (Koyuncu et al., 2019). Though social anxiety at appropriate levels might be considered adaptive from an evolutionary perspective, individuals might be diagnosed with Social Anxiety Disorder (SAD) when their social anxiety causes significant impairment to their everyday functioning (Jefferies & Ungar, 2020). SAD is a common and highly comorbid mental health condition primarily characterized by persistent fear of being judged negatively by others (Koyuncu et al., 2019). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the primary diagnostic criteria for social anxiety disorder are experiencing intense fear of social situations, fear of negative evaluation lasting for six or more months, along with impairment in one's daily functioning and wellbeing (APA, 2013). The symptoms must not be attributed to the effects of substances or a medical condition and not be better explained by another mental disorder (APA, 2013).

Extensive research points out the combination of genetic, environmental, and psychological factors contributing to the etiology of SA. For instance, substantial evidence suggests that individuals with a family history of SA might have a higher likelihood of developing SA (Elizabeth et al., 2006). Similarly, specific neural pathways and brain structures involved in fear and anxiety responses may play a role in the development of SA. Neuroimaging studies have indicated that individuals with SA are more likely to have bilateral amygdala activation when presented with a social stimulus (Hattingh et al., 2013). These brain regions linked with SA are also responsible for the emotional processing of stimuli (Detweiler et al., 2014).

Apart from biological influences, SA could have several social and environmental factors contributing to its development. For instance, a meta-analysis analyzing 13 cohorts showed that genetic and social factors were able to explain differences in SA symptoms (Scaini et al., 2014). Parenting styles and social environment within the family can contribute to the development of SA. Firstly, parents can predispose their children to develop SA through genetic factors. Secondly, through social behaviors such as overprotection and exposure to critical and judgmental attitudes, parents can also contribute to the development of SA (Scaini et al., 2014).

Besides, several psychological factors also play a significant role in the onset of SA. For instance, studies have noted that individuals with SA share similar cognitive biases and distortions (Yeung & Sharpe, 2019). People who suffer from SA may use safety behaviors (such as avoiding eye contact and practicing conversations) and avoidance techniques (such as avoiding social gatherings) to control their anxiety. Although these actions offer momentary relief, they continue the anxiety cycle by reinforcing the perception that they cannot handle social circumstances (Yeung & Sharpe, 2019).

According to the Clark and Wells (1995) model, individuals with SAD excessively desire to present themselves with a favorable impression from others and hold negative self-beliefs and expectations about their performance in social situations. They tend to focus on signs that reinforce their negative beliefs and interpret ambiguous social cues as negative or threatening. In addition, they tend to employ safety behaviours such as avoiding social situations or reassurance seeking to cope with anxiety. These cognitive biases and safety behavior maintain the cycle of social anxiety. Nevertheless, though cognitive models such as the Clark and Wells (1995) model attempts to explain how SAD is maintained, it falls short in explaining the initial development of SAD.

In line with the above model, Cognitive Behavioural Therapy (CBT) that targets underlying psychological factors is an effective and commonly used treatment for SAD. CBT aims to minimize safety behaviors and avoidance, challenge distorted beliefs, and promote exposure to feared social situations (Masia et al., 2016). Exposure therapy based on the cognitive behavioural model involve gradually exposing the client to feared social

situations, without using safety behaviours (Pelissolo et al., 2019). Cognitive restructuring helps the client to challenge their negative thoughts and beliefs about themselves and social situations, which can be done using techniques such as socratic questioning, behavioral experiment or exposure therapy (Pelissolo et al., 2019). A large number of studies indicate the effectiveness of incorporating Clark and Wells model in reducing social anxiety symptoms. For instance, a systematic review and a network analysis for intervention of SAD identified CBT to have the highest effect size compared to other forms of interventions (Mayo-Wilson et al., 2014). This highlights the strong efficacy of CBT in addressing SAD.

Though MD and SAD might appear as two distinct concepts, emerging evidence suggests they may be related. For instance, studies have revealed a correlation between MD and SAD (e.g. Soffer-Dudek & Somer, 2018; Somer & Herscu, 2017), indicating that MD might be more prevalent among individuals with SAD. However, the precise underlying reasons for this relationship remain somewhat elusive. One possible explanation is that emotional regulation difficulties shared by both MD and SAD might possibly serve as a mediator in their relationship.

1.1.3 Emotional Regulation

Emotional Regulation (ER) refers to the process of consciously or unconsciously recognizing, understanding, and responding appropriately to one's own or others' emotions in order to promote psychological wellbeing and adaptive behavior (Gross, 2015; McRae & Gross, 2020). Given that Emotional Regulation (ER) allows individuals to cope with various emotions such as anger, sadness, or anxiety, it is closely associated with mental wellbeing. Studies indicate that while the use of effective ER aid in the prevention of emotional distress, the ineffective use of ER can increase the likelihood of developing psychological disorders such as depression, anxiety, and other mood disorders (McRae & Gross, 2020).

Research indicates that individuals use a range of ER strategies to modulate their emotions (Dixon-Gordon et al., 2015). These strategies can be classified into adaptive and maladaptive ER strategies. Adaptive strategies are a positive and constructive way of managing one's emotions. Maladaptive strategies, on the other hand, refer to the use of

unhealthy and counterproductive strategies (Boehme et al., 2019). In a meta-analysis conducted by Aldoa et al. (2010), it was revealed that individuals who use maladaptive ER strategies such as rumination and suppression were at an increased risk of developing psychopathology, while the use of adaptive ER strategies such as cognitive appraisal and problem-solving was negatively linked with symptoms of psychopathology (Aldoa et al., 2010).

MD is often associated with emotional regulation difficulties. Several studies have indicated that individuals with MD are more likely to have poor emotional regulation abilities, as they often depend on MD to avoid perceived emotional pain (West & Somer, 2019). Etiological factors associated with emotional regulation difficulties seem akin to etiologies identified for MD. For instance, life experiences, particularly childhood trauma, violence, or abuse, have significantly affected one's ability to regulate emotions effectively. A review conducted by Dvir et al. (2014) exploring the relationship between childhood maltreatment and emotional dysregulation found that childhood maltreatment is associated with difficulty in identifying and labeling emotions, tolerating negative emotions, and expressing emotions in a healthier way.

In addition, studies exploring the relationship between childhood maltreatment and emotional regulation have also highlighted the role of attachment styles in the development of emotional regulation (Dvir et al., 2014; Oshri et al., 2015). Research has consistently demonstrated the development of secure attachment in early childhood as an important basis for developing effective emotional regulation abilities later in life (Waters et al., 2009), while disruption of secure relationships due to experiencing childhood trauma can hinder the development of emotional regulation abilities. A study conducted by Ye et al. (2023) found adverse childhood experiences to be associated with both emotional regulation difficulties and insecure attachment style, and having an insecure attachment style was associated with a higher likelihood of using ineffective emotional regulation strategies. The study also found both emotional dysregulation and insecure attachment style to mediate the relationship between adverse childhood experience and depression, suggesting that adverse childhood experience might

indirectly increase the risk of depression due to insecure attachment style and emotional dysregulation (Ye et al., 2023).

According to attachment theory, when a child's needs are not met consistently and responsively, they may develop an insecure attachment style (Moutsiana et al., 2014). Individuals with insecure attachment styles tend to have negative views of themselves and others (Moutsiana et al., 2014). They might think they are unlovable or that they cannot trust anyone. As a result, insecurely attached individuals may find it difficult to control their emotions and feel forced to suppress or express them in unhealthy ways (Moutsiana et al., 2014; Oshri et al., 2015). Attachment-based therapy has been shown to have a moderate effect in helping people improve their emotional regulation skills (Allen et al., 2014).

Apart from life experiences, everyday hassles and stress can impact emotional regulation abilities in a number of ways (Richardson, 2017). Studies indicate higher levels of stress to be linked with difficulty identifying, labeling, and regulating emotions (Liberzon et al., 2015). In addition, stress and anxiety associated with everyday stressors can cause changes to the brain's circuitry (Liberzon et al., 2015). The amygdala, part of the brain responsible for processing emotions, gets activated by constant everyday stressors, leading to an intense experience of emotions (Liberzon et al., 2015). Apart from the amygdala, individuals with emotional regulation difficulties have decreased activity in the prefrontal cortex, part of the brain responsible for emotional regulation and decision-making (Hänsel & von-Känel, 2008). Changes in brain circuitry have been attributed to experiences of adverse life experiences, especially in childhood (Peverill et al., 2019), and have also been linked with everyday experiences of heightened stress and anxiety (McEwen, 2007).

From the perspective of CBT, emotional regulation difficulties are seen to be caused by maladaptive thinking patterns and coping mechanisms (Suveg et al., 2009). Therefore, treatment focuses on identifying and challenging negative thoughts and beliefs and aims to develop healthy alternative ways of coping. A study conducted by Nasaji et al. (2010) examined the effectiveness of cognitive behavioral intervention in improving the coping response cognitive emotion regulation strategies with 58

employees in Iran. The results revealed that treatment in the cognitive behavioural intervention group significantly improved their coping responses, such as problem-solving, positive reappraisal, and emotional support seeking. In addition, significant improvements were noted in their cognitive emotion regulation strategies, such as cognitive reappraisal and mindfulness.

Several studies also indicate difficulties in emotional regulation as a common characteristic of those with SA (Helbig-Lang et al., 2014). Socially anxious individuals are also found to over-rely on less effective ER strategies and indulge in ineffective use of adaptive ER strategies (Eres et al., 2020). Therefore, given that ER difficulties are often associated with both MD and SA (Helbig-Lang et al., 2014; West & Somer, 2019), the current study attempts to explore whether emotional regulation difficulty mediates the relationship between MD and SA.

1.2 Statement of the Problem

The literature is limited in providing epidemiological data surrounding MD. In particular, no studies provide conclusive evidence of the prevalence of MD in the general population. Though few studies have looked at the prevalence of MD, they often focused on the clinical population, overlooking the general population (e.g. Somer et al., 2019; Theodor-Katz et al., 2022). The current research will provide insight into the prevalence of MD among undergraduate students in the UAE. Such insights would allow us to understand the impact and the magnitude of the issue in the population, thus further allowing us to assess the significance of the issue and allocate health resources appropriately.

Furthermore, research exploring MD and its relationship with SA is fairly limited. Therefore, exploring the connection between both phenomena would contribute to filling the gap in the literature, along with expanding our understanding. In addition, by investigating the mediating role of emotional regulation difficulties, the current study would help us explain underlying mechanisms contributing to the relationship between MD and self-perceived levels of SA.

Finally, existing literature lacks research on treatment approaches relevant specifically to MD and SA. Through exploring the mediating role of emotional regulation, the current study could shed light on the potential relevance of targeting ER difficulties while attempting to treat MD and SA symptoms.

1.3 Literature Review

1.3.1 Prevalence of Maladaptive Daydreaming and Social Anxiety

Literature is scarce in exploring the prevalence of MD in the general population. It has been generally noted that MD is more prevalent in the clinical population compared to the general population (Somer et al., 2017). For instance, a recent study exploring the prevalence of MD among individuals with Narcissistic Personality Disorder (NPD) revealed that 67% of NPD patients exhibited scores indicative of MD (Pietkiewicz et al., 2023). Similarly, another study that explored the prevalence of MD among substance use disorder patients revealed that those recovering from substance use disorder had a 16% prevalence of MD based on their scores on the MDS-16 (Somer et al., 2019). On the other hand, none of the participants in the control group (those without substance use disorder) met the required cut-off as indicated by MDS-16. Nevertheless, after applying The Structured Clinical Interview for Maladaptive Daydreaming (SCIMD), the prevalence was narrowed to 5% among substance use disorder patients, thus suggesting the need for using more rigorous tools to obtain accurate prevalence rates.

In the general population, studies have generated mixed evidence regarding the magnitude of the prevalence of MD. A study conducted by Soffer-Dudek and Theodor-Katz (2022) that utilized the MDS-16 and a structured interview to evaluate the prevalence of MD in the Israeli population revealed a 4.2% prevalence rate. Nevertheless, similar to Somer et al. (2019), the prevalence rate was narrowed to 2.5% after administering The Structured Clinical Interview for Maladaptive Daydreaming (SCIMD).

In contrast to the above studies, a study conducted in Sudan revealed a relatively high prevalence of MD among medical students (Bashir, 2021). The study found that 35% of medical students who participated in their study met the cut-off score for MD as

indicated by MDS-16. Nevertheless, despite the high prevalence, the study did not note any significant correlation between MD and gender, suggesting that gender might not play an important role in the development of MD (Bashir, 2021). Previous studies have also noted a higher prevalence of MD among the student population. For instance, a study conducted in Saudi Arabia found that 70% of medical students who participated in their study met the criteria for MD based on MDS-16 (Alenizi et al., 2020). Nonetheless, even with several studies attempting to explore the prevalence of MD, the literature provides inconsistent evidence due to variability in the prevalence rate reported in each study. Hence, it becomes crucial to generate further studies exploring the prevalence in the general population in order to arrive at a more conclusive understanding.

On the other hand, SAD appears to be one of the most common anxiety disorders, with a prevalence of up to 18% in American communities (Kessler et al., 2005). A similar magnitude of prevalence can be noted in the UAE as well. For instance, a cross-sectional study analyzing the prevalence of anxiety disorder in adolescents in the UAE revealed that 20% of the surveyed sample experienced SAD (Al-Yateem et al., 2020). Girls had significantly higher rates of SAD compared to boys in the studied sample (Al-Yateem et al., 2020). Several other studies have indicated a similar pattern where women are more likely to have SAD than men (Asher & Aderka, 2018). The self-construal theory provides a theoretical framework for understanding such differences. According to self-construal theory, it is assumed that men and women differ in how they construct their sense of self. While men tend to emphasize maintaining independence, women tend to emphasize interdependence, which makes women more sensitive to the quality and the results of social interactions. This increased sensitivity could make anxiety and fear more pronounced in social situations for women (Asher & Aderka, 2018).

1.3.2 Maladaptive Daydreaming and Emotional Regulation Difficulties

The concept of Maladaptive Daydreaming (MD) was first publicized by Somer (2002) in his qualitative study exploring the characteristics and experiences of MD. He described six patients with a history of severe trauma who preferred to be immersed in their dream world while engaging in repetitive physical actions. Verbatim transcripts of the participants were cross-sectionally analyzed to identify various themes related to

MD. A primary theme discovered by Somer (2002) is that MD serves the function of enhancing mood and offering disengagement from pain and stress. All the participants of Somer (2002) had an abusive childhood and used MD to cope with difficult life events. Therefore, in addition to providing a first insight into how MD affects individuals' experiences differently, Somer (2002) also provided the first account for the possible use of MD to regulate emotions.

More recent studies have found MD to be associated with poor emotional regulation abilities. For instance, a study exploring the network structure of MD and the connections between MD and various aspects of emotional dysregulation revealed a significant correlation (Greene et al., 2020). This suggests that individuals who report difficulties regulating emotions tend to experience a higher degree of MD symptoms (Greene et al., 2020).

Besides, in line with the argument that MD emerges as a form of coping to regulate one's emotion, several studies have noted a predominant presence of MD in those with childhood trauma who utilizes MD to regulate their emotions (Somer & Herscu, 2017; Somer, Lehrfeld, Bigelson & Jopp, 2016). For instance, a study exploring potential etiologies of MD revealed a significant relationship between certain types of childhood trauma and the use of MD (Sándor, Bugán, Nagy, Tóth-Merza, et al., 2021).

Other recent studies have identified that those with a history of childhood abuse have distinct themes to their MD that are aimed at regulating their emotional pain (Somer et al., 2020). For instance, in one study, participants who experienced early physical and emotional abuse daydreamt about an idealized version of their family, while those with early emotional and sexual abuse daydreamt about an idealized version of their current relationship (Somer et al., 2020). This suggests that MD might be utilized to avoid perceived emotional pain by attempting to enhance one's mood. Similar accounts of the use of MD to serve as a distraction from painful memories have been documented. For instance, Sharma and Mahapatra (2021) reported a case study of a 16-year-old boy who developed MD after experiencing cyberbullying. Similar to the contents of daydream provided by the participants in Somer et al. (2020), the patient described in

Sharma and Mahapatra (2021) used MD to distract from distressing emotions and painful memories that emerged from experiencing cyberbullying.

West and Somer (2019), on the other hand, attempted to argue that the highly immersive nature of MD might be advantageous for regulating emotions. They developed their assumption based on the finding that daydreaming causes a variety of pleasant emotions, such as calmness and confidence (e.g., Bigelsen & Schupak, 2011; Somer et al., 2016a) and based on the findings that suggest guided daydreaming imagery to have positive effects such as lowering anxiety and boosting positive emotions (e.g. Frick et al., 2008). They tested their assumption through exploring the relationship between MD, emotional regulation, empathy, and creativity in 542 participants from 56 countries. Nevertheless, in contrast to their assumption, the findings of their study revealed that both immersive and maladaptive components of MD predict poor emotional regulation abilities.

In addition, the addictive and compulsive aspect of MD could cause significant emotional distress. A case study by Schupak and Rosenthal (2009) described a patient with a history of MD that caused her significant distress over time, even when other psychological disorders did not accompany MD. Similarly, the time-consuming nature of MD has been shown to interfere with social and academic performance by causing significant interference with daily life (Sharma & Mahapatra, 2021). This further suggests that though it might be likely that MDers find temporary relief from uncomfortable emotions through MD, in the longer term, MD is an ineffective way of managing emotional distress.

Moreover, MDers also display considerably higher levels of emotional dysfunction than non-MDers. Sándor, Bugán, Nagy, Bogdán and Molnár (2021) attempted to compare MDers with normal daydreamers in their ability to regulate emotions. As expected, their results showed MDers to score significantly higher on the Difficulties in Emotional Regulation Scale (DERS) compared to the normal daydreamers. Some of the emotional regulation difficulties identified among MDers were non-acceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to

emotional regulation strategies, and lack of emotional clarity (Sándor, Bugán, Nagy, Bogdán & Molnár, 2021).

In addition, the presence of MD has also been suggested to exacerbate other forms of psychological distress, such as social anxiety and social isolation. In a study comparing those with Childhood Sexual Abuse (CSA) and those without childhood sexual abuse, it was found that survivors of Childhood Sexual Abuse (CSA) who had higher scores on MD scales also scored higher on scales of psychological distress, social anxiety, and social isolation, suggesting that MD may make the psychosocial issues associated with CSA worse (Abu-Rayya et al., 2019). Therefore, it can be suggested that though MD might emerge as a form of coping to regulate one's emotions, it is not an adaptive or effective way to cope with emotional difficulties.

1.3.3 Social Anxiety and Emotional Regulation Difficulties

The cognitive-behavioral models of SAD strongly emphasize the role of emotional regulation in the development and maintenance of SA and other anxiety disorders (Hofmann et al., 2012). Given that socially anxious individuals often perceive the expression of intense emotions as a possible threat, they have been consistently reported to pay attention to their internal states and restrain emotional reactions in social circumstances (Clark & Wells, 1995). Consequently, the cognitive resources available for constructing and understanding social situations are diminished, thus making it more difficult to react appropriately to social cues (Clark & Wells, 1995). In addition, unsuccessful social interactions resulting from their restrained emotional reactions result in maintaining situational and anticipatory anxiety (Barrett et al., 2001).

Moreover, socially anxious individuals tend to have deficits in their emotion regulatory process. A study by Turk et al. (2005) identified that individuals with SA are less expressive of positive emotions, pay less attention to their emotions, and find it challenging to describe their emotions compared to the control group and individuals diagnosed with generalized anxiety disorder. A possible reason for their struggle could be attributed to their attentional resources being primarily directed toward negative self-evaluative cues, making it difficult to recognize, express, and understand emotions effectively (Dua, 2019).

Socially anxious individuals also place an overreliance on less effective ER strategies, which may have unfavorable social and emotional consequences. A review by Dryman and Heimberg (2018) attempted to analyze the use of expressive suppression and cognitive reappraisal, two common emotional strategies in individuals with SA. The results indicated that SA could be characterized by overreliance on expressive suppression, a maladaptive ER strategy associated with unfavorable social and emotional implications. Moreover, SA could also be characterized by the ineffective use of cognitive reappraisal, an adaptive ER strategy (Dryman & Heimberg, 2018). Another similar study by Sackl-Pammer et al. (2019) examined how adolescents with SA differ from those without SA in using maladaptive and adaptive ER strategies. Their results showed that adolescents with SA utilized less adaptive ER strategies, such as cognitive reappraisal and problem-solving, and more maladaptive ER strategies, such as withdrawal and rumination, compared to adolescents without SA (Sackl-Pammer et al., 2019).

In addition, it has been shown that the presence of maladaptive ER strategies can be detrimental to one's psychological well-being compared to the relative absence of adaptive ER strategies. A meta-analytic conducted by Aldoa and Schweizer (2010) analyzed various emotional regulation strategies such as acceptance, avoidance, problem-solving, reappraisal, rumination, and suppression across several psychological disorders. An important finding that emerged from the meta-analyses was that individuals who utilized maladaptive ER strategies experienced higher levels of psychological distress than those with a relative absence of adaptive ER strategies. According to Dua (2019), using maladaptive ER strategies can exacerbate social anxiety. For instance, individuals with social anxiety might use maladaptive strategies such as avoiding social situations to reduce anxiety. However, this might maintain their anxiety by reinforcing their inability to function appropriately in social situations, leading to a vicious cycle of avoidance and anxiety.

Besides using maladaptive ER strategies, factors such as cognitive biases and loneliness experienced by socially anxious individuals might contribute to emotional dysregulation. Cognitive biases, such as negative beliefs about expressing one's emotions, could further contribute to emotional dysregulation. For instance, a study

investigating the relationship between SA and suppression of emotional expression revealed a positive association (Spokas et al., 2009). More importantly, it was found that individuals diagnosed with SA tend to hold beliefs that emotions should be controlled, and displaying emotions is considered a sign of weakness (Spokas et al., 2009). Such beliefs about expressing emotions held by socially anxious individuals were shown to mediate the relationship between SA and the use of suppression of emotion as a regulatory strategy.

In addition, studies have also shown that those with SA are more prone to experiencing loneliness compared to those without SA (Eres et al., 2020). A study by Meltzer et al. (2012) showed SA to be strongly linked with loneliness. Similarly, experiences of loneliness are also associated with poor ER abilities. For instance, when Eres et al. (2020) explored how individuals with and without SA differ in their level of loneliness and the use of ER strategies, it was revealed that in comparison to those without SA, those with SA experienced higher levels of loneliness and more difficulty regulating their emotions (Eres et al., 2020). Moreover, studies also indicate a reciprocal relationship between SA and loneliness. The findings of Lim et al. (2016) indicate that SA strongly predicts past and future loneliness. Therefore, it might be the case that loneliness associated with SA can cause ER difficulties, which can further maintain SA through increased loneliness. Nevertheless, further research is required to draw a more conclusive understanding.

1.3.4 Maladaptive Daydreaming (MD) and Social Anxiety (SA)

The literature, in general, have not been extensive in exploring the relationship between MD and SA. One study conducted by Soffer-Dudek and Somer (2018) attempted to explore factors associated with MD through assessing daily psychopathological symptoms in a sample of self-diagnosed individuals with MD. The results indicated that MD was more intense on days when individuals experienced heightened levels of SA (Soffer-Dudek & Somer, 2018). Thus, suggesting that SA might be a contributing factor to the intensity and the occurrence of MD.

Another study exploring the relationship between SA and MD showed a significant correlation (Somer & Herscu, 2017). It was shown that individuals

experiencing high levels of SA tend to daydream about imagined social situations rather than deal with social anxiety in real life. Moreover, it was also revealed that the relationship between SA and MD was mediated by absorption and the degree of addiction to daydreaming. This suggests that, as the demand for social avoidance grows due to social anxiety, addiction to daydreaming also increases as it serves as a pleasant and compensatory activity replacing real social situations.

In addition, social avoidance and the resulting social isolation give further space for experiencing MD. For instance, MDers might utilize MD to avoid social situations that trigger their anxiety. This may set off a vicious cycle in which the person gets more socially isolated, which in turn leads to an increase in their social anxiety, thus further leading to an increase in MD. The assumption that social isolation can increase MD has been supported by studies that indicate social isolation to be a key precursor to MD. Somer et al. (2016b) conducted 21 in-depth interviews with MDers in order to analyze the conditions and requirements needed to activate MD. The results of their phenomenological study suggested that MD is incompatible when social interaction is taking place, thus compelling those with MD to socially isolate in order to facilitate their MD (Somer et al., 2016b). Another study exploring the experience of MDers suggested that the concept of MD and social isolation could be a 'two-way street' (Somer et al., 2016a). They identified childhood social isolation as one of the precursors to MD, which results in social dysfunctions and social inadequacy, which in turn results in increased social isolation and MD. The findings of Somer et al. (2016a) thus demonstrate the vicious cycle of how social dysfunctions, a common feature of SA, could be related to MD.

Moreover, given that individuals with MD often isolate themselves, they are also more prone to develop a deficiency in social skills. A study conducted by Bigelsen and Schupak (2011) attempted to explore experiences, habits, and potential causes of distress in those with MD. The results revealed that perceived social impairment, such as social awkwardness and social anxiety, was present in 24% of the participants, while nine percent of the participants neither had friends nor meaningful relationships (Bigelsen & Schupak, 2011). This further suggests that MD can lead to deficiency in social skills, a characteristic that is often associated with SA.

In addition, it is plausible that social skill deficiency and MD have a bidirectional relationship. For instance, it may be the case that individuals with social skill deficiency use MD as a way of coping. However, on the other hand, MD can also make it difficult for the individual to develop adequate social skills, given the avoidance and isolation characteristics associated with social skill deficiencies. Nevertheless, these assumptions need to be further researched to form conclusive suggestions.

1.4 Purpose of the Study

The current study attempted to investigate the prevalence of Maladaptive Daydreaming (MD) and self-perceived levels of Social Anxiety (SA) among undergraduate students in UAE. Furthermore, it attempted to explore whether difficulties in regulating emotions mediate the relationship between Maladaptive Daydreaming (MD) and levels of Social Anxiety (SA) among undergraduate students in the UAE.

1.5 Research Questions

1. What is the prevalence of Maladaptive Daydreaming (MD) and Social Anxiety (SA) among undergraduate students in the UAE?
2. What are the demographic factors associated with the presence of Maladaptive Daydreaming (MD) and Social Anxiety (SA) among undergraduate students in the UAE?
3. Is there a relationship between the levels of Maladaptive Daydreaming (MD) and Social Anxiety (SA)?
4. Do emotional regulation difficulties mediate the relationship between Maladaptive Daydreaming (MD) and Social Anxiety (SA)?

1.6 Research Hypotheses

Based on previous research that suggests an association between Maladaptive Daydreaming (MD) and Social Anxiety (SA) (Soffer-Dudek & Somer, 2018; Greene et al., 2020) and research that shows factors such as social isolation associated with Maladaptive Daydreaming (MD) to indirectly lead to Social Anxiety (SA) (Somer et al., 2016), it is hypothesized that Maladaptive Daydreaming (MD) will be positively

correlated with self-perceived levels of Social Anxiety (SA). Moreover, given that emotional regulation difficulties are often associated with both Maladaptive Daydreaming (MD) and Social Anxiety (SA) (Sándor, Bugán, Nagy, Bogdán & Molnár, 2021; Somer, 2019; Dryman & Heimberg, 2018), it is hypothesized that the relationship between self-perceived levels of Social Anxiety (SA) and Maladaptive Daydreaming (MD) may be mediated by difficulty in regulating emotion. Besides, it is hypothesized that those experiencing higher levels of Maladaptive Daydreaming (MD) will have more severe difficulties in regulating emotions compared to those with lower Maladaptive Daydreaming (MD) scores. In addition, it is hypothesized that individuals with higher self-perceived levels of Social Anxiety (SA) will experience more difficulty regulating their emotions compared to those with lower self-perceived levels of Social Anxiety (SA).

1.7 Significance of the Study

The current study attempted to investigate the prevalence of Maladaptive Daydreaming (MD) and self-perception of Social Anxiety (SA) among undergraduate students in the UAE. Given the limited attention in previous research on MD and SA in the UAE, the results of the study would fill the gap in our understanding through providing a unique epidemiological insight. The findings would also contribute to public awareness, and provide a guide for clinicians and mental health practitioners in the UAE through aiding their assessment and treatment for individuals experiencing MD and SA.

Moreover, though few studies have noted a link between MD and SA, literature is sparse in exploring factors that might mediate the relationship between MD and SA. The current work furthers the research area by investigating underlying processes between MD and SA and subsequently contributing to the growing literature on MD. This knowledge would help us understand the complex relationship between MD and SA while providing insights into target for treatment. The current research would also identify that MD is not an adaptive or an effective way of coping with emotional difficulties, given its association with difficulties in regulating emotions and SA.

Furthermore, the current study would also further our understanding of whether emotional regulation difficulties maintain the presence of MD and SA, thereby allowing

us to formulate treatment aimed at treating difficulties in regulating emotions when dealing with those experiencing MD and SA.

Chapter 2: Methods

2.1 Participants and Sampling

The target population for the current study was undergraduate students in the UAE. A convenience sampling method was utilized to obtain a sample of 418 students from various undergraduate courses of United Arab Emirates University.

2.2 Sample Size Calculation

Given the mixed evidence from previous studies for the prevalence of MD and SA, the current study uses 50% as an estimation of the population probability, in order to yield the largest sample size. In order to determine the sample size on the assumption of population size to be infinite, the following formula was used:

$$n = z\frac{\alpha}{2} * p\frac{(q)}{(d)2} = \frac{(1.96)2 * 0.5(0.5)}{(0.05)2} = 384.16$$

Sample size = 384

To validate the manually computed calculation for sample size, an online Raosoft sample size calculator was used to determine the sample size which indicated a sample size of 385 (Raosoft, 2023).

2.3 Design and Data Analyses

The current study utilized a cross-sectional design. Data was analyzed using Statistical Package for the Social Sciences (SPSS) software version 29. Demographic data are represented as counts and associated percentages, and statistical significance was set at $p < 0.05$. Preliminary descriptive analyses were conducted to measure the prevalence rate of Maladaptive Daydreaming (MD) and self-perceived levels of Social Anxiety (SA) among undergraduate students in the UAE. Chi-square test of independence and binary logistic regressions were performed to examine the relationship between the studied socio-demographic variables and the presence of MD and SA. A Pearson correlation coefficient was performed to evaluate the relationship between MD and SA. A simple mediational model was utilized to investigate the

research question of whether difficulties in regulating emotions mediate the relationship between MD and SA. This model included SA as an outcome variable, difficulties in regulating emotions as mediator, and MD as the predictor variable (Figure 1). MD was chosen as the predictor variable given the limited attention provided in the literature on the influence of MD on SA. In addition, the potential implications for clinicians and researchers from understanding the role of Maladaptive Daydreaming (MD) in Social Anxiety (SA) further provided justification for MD to be used as the predictor variable. The mediating role was explored using model 4 of the PROCESS macro version 4.3 (www.processmacro.org/inde.g.html).

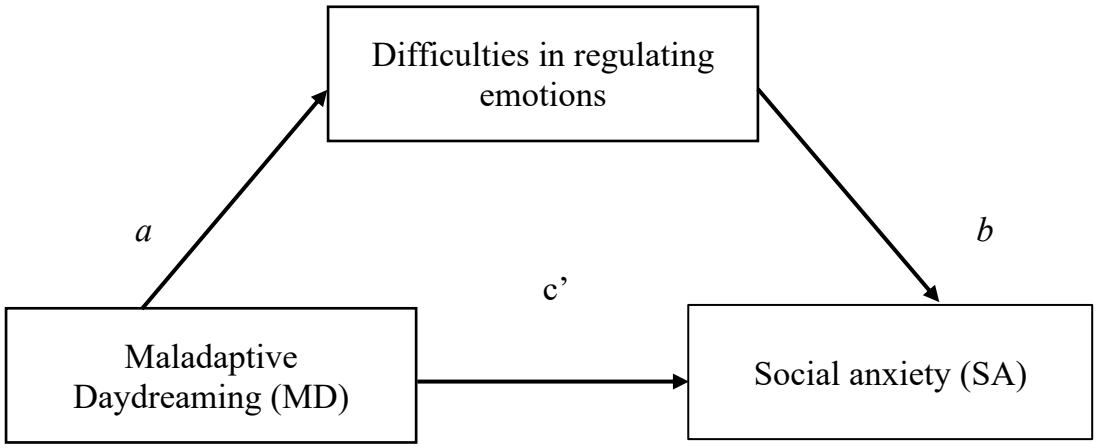

Figure 1: Proposed mediation model. Difficulties in regulating emotion (mediator) is hypothesized to mediate the relationship between Maladaptive Daydreaming (MD) (predictor) and self-perceived levels of Social Anxiety (SA) (dependent variable).

2.4 Materials

The present study utilized a paper-pencil survey. Demographic information such as the gender, age, country of residence, educational level and socioeconomic status of the participants were obtained to draw meaningful observation from the sample.

Maladaptive Daydreaming Scale (MDS-16): MDS-16, created by Somer, Lehrfeld, Bigelsen and Jopp (2016), was used in the current study to examine the level of MD in the participants. The scale consists of 16 items, with responses given on a scale ranging from 0% to 100% with 10%-wide intervals (with 0% being never and 100% being extremely frequently). Absorption, control, distress, positive affect, negative

affect, and impairment are the six dimensions of maladaptive daydreaming measured by the scale. Scores range from 0 to 100, with average of score of 40 or higher indicating suspected clinical range for MD. MDS-16 has demonstrated high internal consistency (α = .93) and test-retest reliability (r = .77) (Błachnio et al., 2018; Somer, Lehrfeld, Bigelsen & Jopp, 2016).

The Difficulties in Emotion Regulation Scale Short Form (DERS-SF): DERS-SF is a self-report questionnaire that consists of 18 items, with responses given on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). DERS-SF, created by Kaufman et al. (2016), was used in the current study to assess the level of difficulty in regulating emotions in the participants. The scale assesses six aspects of emotional regulation difficulties: nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Scores range from 16 to 80, with higher scores indicating higher levels of difficulties in regulating emotions. DERS-SF has shown to have good psychometric properties, such as high internal consistency (α = .93) and test-retest reliability (r = .71) (Kaufman et al., 2015).

Scales of Social Interaction Anxiety (SIAS-6) and Social Phobia Scale (SPS-6): SIAS-6 and SPS-6 was used to measure the level of social anxiety in the participants. SIAS-6 and SPS-6 are self-report questionnaires developed by Peters et al. (2012) to assess anxiety related to social interaction and anxiety related to being scrutinized or observed, respectively. SIAS-6 was used to calculate the prevalence rate of self-perceived levels of social anxiety. Based on the guidelines of Peters et al (2012), score of 7 or higher was used as the cut off score in SIAS-6 to determine the probable presence of SA. Scores from both SIAS-6 and SPS-6 were used to measure the overall level of self-perceived social anxiety, which was used in the correlational and mediational analyses of the current study. Responses are given on a 5-point Likert ranging from 0 (not at all) to 4 (extremely). The scales have demonstrated high internal consistency [SPS-6 (α = .92) and SIAS-6 (α = .91)] and test-retest reliability [SPS-6 (r = .77) and the SIAS-6 (r = .71)] (Peters et al., 2012). Based on the guidelines of Peters et al (2012), score of 7 or higher was used as the cut off score in SIAS-6 to determine the probable presence of SA.

2.5 Procedure

418 undergraduate students were selected using convenience sampling from various undergraduate courses of UAE University. Undergraduate courses taught by the faculties of college of humanities and social sciences were approached. After obtaining prior approvals from the faculties, students from 12 courses, including Introduction to Psychology, Creative Innovation, and Research Methods in psychology were approached. Students were briefed about the nature and purpose of the study and reiterated their rights to deny or withdraw from participation. Students spent 15 minutes either at the beginning or at the end of their class to complete the survey for the research.

The first part of the survey contained informed consent, in which the nature of the study, along with their right to withdraw from the study at any time, and the confidentiality of their data were presented. Participants were also informed that their participation was voluntary and that no compensation would be provided. They were told that the study did not pose any risk or cost. After consenting to participate, participants were presented with demographic information such as gender, age, marital status, staying in the hostel, emirate, level of study, college of study, Grade Point Average (GPA), employment and family income. Participants were then presented with the Maladaptive Daydreaming Scale (MDS-16), Difficulties in Emotion Regulation Scale Short Form (DERS-SF), and the Social Interaction Anxiety (SIAS-6) and Social Phobia Scale (SPS-6), respectively.

2.6 Ethical Considerations

The current research project was be approved by the social sciences research ethics committee at United Arab Emirates University (UAEU) No. ERSC_2023_3329. Informed consent was obtained from all the participants of the study. This involved providing participants with information about the research, including its objectives, the right to withdraw, potential benefits and risks, and privacy and confidentiality. Participants then voluntarily agreed to take part in the project. All the data collected were stored securely and will be destroyed/disposed after the approval of the thesis.

Chapter 3: Results

A total of 418 undergraduate students between the age of 18 and 25 from the UAE University participated in the current study, yielding a response rate of 90%. 369 of the participants were females (88.3%). The majority of the respondents 400 (95.7%) were single, 228 did not stay in the hostel (54.5%), 284 were from the emirate of Abu Dhabi (67.9%) and 388 were not employed (92.8%). Furthermore, a large portion of the participants were affiliated with the college of humanities and social sciences (59.6%) followed by college of science (12.7%) (Table 1).

Table 1: Demographic data of the participants of the study

Variable		Count (%)
Gender	Male	49 (11.7)
	Female	369 (88.3)
Age	18.00	120 (28.7)
	19.00	121 (28.9)
	20.00	71 (17.0)
	21.00	52 (12.4)
	22 +	54 (12.9)
Marital Status	Single	400 (95.7)
	Married	18 (4.3)
Hostel	Yes	190 (45.4)
	No	228 (54.5)
Emirate	Abu Dhabi	284 (67.9)
	Dubai	38 (9.1)
	Fujairah	20 (4.8)
	Ras Al Khaimah	42 (10.0)
	Other Emirates	34 (8.1)
Study Level	First Year	96 (22.9)
	Second Year	150 (35.8)
	Third Year	90 (21.5)
	Fourth Year	64 (15.3)
	Fifth Year	18 (4.3)

Table 1: Demographic data of the participants of the study (continued)

Variable		Count (%)
College of Study	College of Humanities and Social Sciences	249 (59.6)
	College of Science	53 (12.7)
	College of Information Technology	44 (10.5)
	College of Medicine and Health Sciences	44 (10.5)
	Other	28 (6.7)
GPA	Below 2.5	52 (12.4)
	2.51 - 3.00	125 (29.9)
	3.01 - 3.50	107 (25.6)
	3.51 - 4	134 (32.1)
	Below 2.5	52 (12.4)
Employment	Yes	30 (7.2)
	No	388 (92.8)
Monthly Income	Less than 5,000 AED	98 (23.4)
	5,000 to 10,000 AED	45 (10.8)
	10,000 to 20,000 AED	51 (12.2)
	20,000 to 30,000 AED	79 (18.9)
	More than 30,000 AED	145 (34.7)

3.1 Prevalence of Maladaptive Daydreaming and Self-Perceived Levels of Social Anxiety

In accordance with Somer, Lehrfeld, Bigelsen et al. (2016), a cutoff score of 40 on the MDS-16 was used in determining the likely presence of MD using MDS-16. Moreover, based on the guidelines of Peters et al. (2012), score of 7 or higher was used as the cut off score in SIAS-6 to determine self-perceived SA. The results indicated that 53.8% of the participants exhibited scores indicative of the presence of MD (M=41.91, SD ± 20.75), 95% CI [49% - 58.6%]. Additionally, 62% of the participants had scores indicative of SA (M=10, SD ± 6.05), 95% CI [57.2% - 66.5%] (Table 2).

Table 2: Prevalence of maladaptive daydreaming and self-perceived social anxiety among undergraduate students in the UAE

Variable	N	Prevalence	95% CI for the prevalence	
			Lower limit	Upper limit
Maladaptive Daydreaming	225	53.8%	49.0	58.6
Social Anxiety	259	62.0%	57.2	66.5

3.2 Demographic Variables Associated with the Presence of Maladaptive Daydreaming and Self-Perceived Social Anxiety

Chi-square test of independence were performed to examine the relationship between the studied socio-demographic variables and the presence of MD and SA among undergraduate students in the UAE. The results revealed a significant relationship between MD and GPA, X^2 (3, N = 418) = 10.49, p = .01 (Table 3). Additionally, the results also showed a significant relationship between self-perceived SA and gender, with female student significantly scoring 4.84 times higher on the scales measuring SA compared to male students, X^2 (1, N = 418) = 14.98, p <0.001 (Table 4). There were no significant relationships between other studied demographic variables and MD, and self-perceived SA (p>0.05).

Table 3: Demographic variables associated with maladaptive daydreaming

Variable	Groups	Count	%	95% CI	aOR	p-value
Gender	Male	25	51.0	37.3, 64.6	Reference	0.67
	Female	200	54.2	49.1, 59.2	2.04	
Marital Status	Single	213	53.3	48.4, 58.1	Reference	0.48
	Married	12	66.7	43.7, 84.7	1.55	
Age	18	68	56.7	47.7, 65.3	Reference	0.48
	19	68	56.2	47.3, 64.8	1.46	
	20	35	49.3	37.9, 60.8	1.15	
	21	23	44.2	31.3, 57.7	.92	

Table 3: Demographic variables associated with maladaptive daydreaming (continued)

Variable	Groups	Count	%	95% CI	aOR	p-value
Age	22 +	31	57.4	44.1, 69.9	1.22	
Hostel	Yes	102	53.7	46.6, 60.7	Reference	0.96
	No	123	53.9	47.5, 60.3	1.151	
Emirate	Abu Dhabi	151	53.2	47.4, 58.9	Reference	0.48
	Dubai	21	55.3	39.6, 70.2	1.22	
	Fujairah	12	60.0	38.4, 78.9	1.37	
	Ras Al Khaimah	22	52.4	37.5, 66.9	1.00	
	Other Emirates	19	55.9	39.3, 71.5	1.16	
Study Level	First Year	59	61.5	51.5, 70.7	Reference	0.15
	Second Year	80	53.3	45.3, 61.2	0.54	
	Third Year	40	44.4	34.5, 54.8	0.38	
	Fourth Year	34	53.1	41.0, 65.0	0.53	
Study Level	Fifth Year	12	66.7	43.7, 84.7	1.26	
College of Study	College of Humanities and Social Sciences	131	52.6	46.4, 58.8	Reference	0.23
	College of Science	33	62.3	48.8, 74.4	1.40	
	College of Information Technology	28	63.6	48.9, 76.6	1.71	
	College of Medicine and Health Sciences	19	43.2	29.4, 57.9	.67	
	Other	14	50.0	32.2, 67.8	0.95	
GPA	Below 2.5	31	59.6	46.1, 72.1	Reference	0.01*
	2.51 - 3.00	80	64.0	55.3, 72.0	1.46	
	3.01 - 3.50	48	44.9	35.7, 54.3	1.14	
	3.51 - 4	66	49.3	40.9, 57.7	0.92	
Employment	Yes	17	56.7	39.0, 73.1	Reference	0.75

Table 3: Demographic variables associated with maladaptive daydreaming (continued)

Variable	Groups	Count	%	95% CI	aOR	p-value
Employment	No	208	53.6	48.6, 58.5	1.20	
Monthly Income	Less than 5,000 AED	49	50.0	40.2, 59.8	Reference	0.19
	5,000 to 10,000 AED	30	66.7	52.2, 79.1	2.16	
	10,000 to 20,000 AED	32	62.7	49.1, 75	1.68	
	20,000 to 30,000 AED	36	45.6	34.9, 56.5	0.86	
	More than 30,000 AED	78	53.8	45.7, 61.8	1.24	

*Note: *p<0.05*

Table 4: Demographic variables associated with self-perceived social anxiety

Variable	Groups	Count	%	95% CI	aOR	p-value
Gender	Male	18	36.7	24.3, 50.7	Reference	<0.001*
	Female	241	65.3	60.4, 70.0	4.84	
Age	18.00	74	61.7	52.8, 70.0	Reference	0.29
	19.00	84	69.4	60.8, 77.1	1.81	
	20.00	42	59.2	47.5, 70.0	1.16	
	21.00	2329	55.8	42.3, 68.7	1.07	
	22 +	30	55.6	42.3, 68.2	0.784	
Marital Status	Single	247	61.8	56.9, 66.4	Reference	0.67
	Married	12	66.7	43.7, 84.7	1.34	
Hostel	Yes	118	62.1	55.4, 68.8	Reference	0.96
	No	141	61.8	55.4, 68.0	0.88	
Emirate	Abu Dhabi	177	62.3	56.6, 67.8	Reference	0.21
	Dubai	22	57.9	42.1, 72.5	0.84	

Table 4: Demographic variables associated with self-perceived social anxiety (continued)

Variable	Groups	Count	N%	95% CI	aOR	p-value
Emirate	Ras Al Khaimah	23	54.8	39.8, 69.1	0.50	
	Other Emirates	20	58.8	42.1, 74.1	0.84	
Study Level	First Year	56	58.3	48.3, 67.8	Reference	0.55
	Second Year	100	66.7	58.9, 73.8	0.54	
	Third Year	55	61.1	50.8, 70.7	0.38	
	Fourth Year	36	56.3	44.0, 67.9	0.53	
	Fifth Year	12	66.7	43.7, 84.7	1.26	
College of Study	College of Humanities and Social Sciences	152	61.0	54.9, 66.9	Reference	0.39
	College of Science	34	64.2	50.8, 76.0	0.85	
	College of Information Technology	27	61.4	46.6, 74.7	0.59	
	College of Medicine and Health Sciences	32	72.7	58.4, 84.1	0.55	
	Other	14	50.0	32.2, 67.8	1.64	
GPA	Below 2.5	33	63.5	49.9, 75.5	Reference	0.30
	2.51 - 3.00	85	68.0	59.5, 75.7	1.12	
	3.01 - 3.50	65	60.7	51.3, 69.6	0.67	
	3.51 - 4	76	56.7	48.3, 64.9	0.52	
Employment	Yes	17	62.4	39.0, 73.1	Reference	0.535
	No	242	56.7	57.5, 67.1	1.64	
Monthly Income	Less than 5,000 AED	49	61.5	51.4, 70.4	Reference	0.99
	5,000 to 10,000 AED	30	62.2	47.7, 75.3	1.30	

Table 4: Demographic variables associated with self-perceived social anxiety (continued)

Variable	Groups	Count	N%	95% CI	aOR	p-value
Monthly Income	10,000 to 20,000 AED	32	60.8	47.1, 73.3	0.85	0.99
	20,000 to 30,000 AED	36	60.8	49.8, 71.0	0.99	
	More than 30,000 AED	78	63.4	55.4, 71.0	1.05	

*Note: *p<0.05*

A binary logistic regression was employed due to the binary nature of the dependent variables (probable presence of MD/SA and not probable presence of MD/SA). Multicollinearity assumption for the logistic analyses were met, as all of the independent variables had Variance Inflation Factor (VIF) scores closer to 1, except for age group (VIF = 2.70) and level of study (VIF = 2.80). Nevertheless, VIF scores of all the independent variables were within the acceptable range of less than 3.

A binary logistic regression was conducted to investigate whether the presence of MD can be predicted by the studied socio-demographic variables (gender, age, marital status, staying in the hostel, emirate, level of study, college of study, GPA, employment and family income). The hosmer and lemeshow goodness of fit was not significant (p=0.01). The overall model based on the omnibus test of model coefficients was also not significant, X^2 (27) = 36.6, p = 0.10. The model revealed GPA as a significant predictor of MD. Other socio-demographic variables did not add significantly to the model ($p > 0.05$).

A binary logistic regression model was performed to see whether the socio-demographic variables investigated in the study predicted the presence of self-perceived SA (gender, age, marital status, staying in the hostel, emirate, level of study, college of study, GPA, employment and family income). The overall model based on omnibus test of model coefficients was significant, X^2 (27) = 42.5, p = 0.02. The explained variance of SA based on our model ranged between 9.7% to 13.2%, based Cox & Snell R2 or

Nagelkerke R2 methods, respectively, and the model correctly classified 67.5% of cases. Females were 4.84 times more likely to exhibit symptoms of Social Anxiety (SA) compared males. Other socio-demographic variables did not add significantly to the model ($p > 0.05$).

3.3 The Relationship between Maladaptive Daydreaming and Social Anxiety

A Pearson correlation coefficient was performed to evaluate the relationship between MD and self-perceived levels of SA. The scores from SIAS-6 and SPS-6 were taken together to determine the overall level of self-perceived SA. The result revealed a significant positive and a moderate relationship between MD and self-perceived SA, suggesting that increase in the level of MD was associated with the increase in the level of SA and vice versa ($r = 0.44$, $p < 0.001$). Similarly, a significant positive and moderate correlation between MD and difficulties in regulating emotions was noted ($r = 0.41$, $p < 0.001$). Likewise, a significant positive and a moderate correlation between difficulties in regulating emotions and self-perceived SA was noted ($r = 0.56$, $p < 0.001$).

3.4 The Mediational Role of Difficulties in Regulating Emotions on the Relationship between MD and SA

Model 4 of the PROCESS macro model was employed via bootstrapping method to determine the mediating role of difficulties in regulating emotions in the relationship between MD and self-perceived SA. Following considerations were made to determine that the mediator has a mediational effect. Firstly, there should be an Indirect Effect (IE) of MD on SA via difficulties in regulating emotions (i.e., IE = path a x path b; where 'a' represents the effect of MD on difficulties in regulating emotions, and 'b' denotes to the direct effect of difficulties in regulating emotions on SA. Secondly, the IE will be considered statistically significant only if bias-corrected 95% Confidence Interval (CI) around the IE from 5000 bootstrap resamples did not include zero.

The results of the mediational analysis indicated that there was a significant total effect between MD and SA (B= 0.26, p<.001), and path a (i.e. MD on difficulties in regulating emotions) (β =.303, p<0.001) and path b (i.e. difficulties in regulating emotions on SA) (β =0.71, p<0.001) were both significant (Figure 2). The direct effect remained significant when difficulties in regulating emotions was introduced as a

mediator in the relationship between MD and SA (β =0.146, p<.001). The results revealed a significant indirect effect of MD on SA (β =0.15) p<0.001). Finally, the bias-corrected 95% CI for the indirect effect did not include zero, and ranged from 0.074 and 0.160. Overall, the mediational model indicated a partial mediation of difficulties in regulating emotions on the relationship between MD and self-perceived SA.

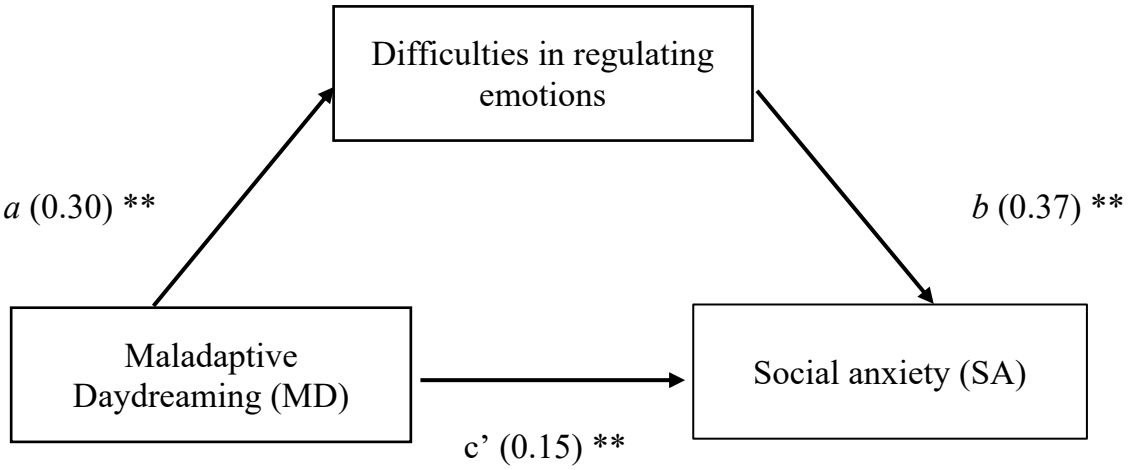

Figure 2: Results of the hypothesized mediational model. Difficulties in regulating emotions is shown as a mediator between MD and self-perceived SA (unstandardized regression coefficients in parenthesis (β); **p <01).

Chapter 4: Discussion

4.1 Prevalence of Maladaptive Daydreaming and Social Anxiety among Undergraduate Students in the UAE

The current study attempted to gain a comprehensive understanding of the prevalence of MD and self-perceived levels of SA in the student population of the UAE in light of the limited attention directed to its prevalence and the potential clinical implication of prevalence-based studies in the region. The results of the study revealed that 53.8% of the participants exhibited scores indicative of the presence of MD, suggesting that a substantial portion of the population might be affected by this condition.

However, while attempting to contextualize and compare this prevalence rate with previous studies, certain disparities can be noted. In particular, the prevalence rate is substantially higher than that of Soffer-Dudek and Theodor-Katz (2022), where only 4.2% of their Israeli sample had elevated scores indicative of MD. Similarly, the prevalence rate identified in the current is also substantially higher than that of Bashir (2021), where 35% of medical students from Sudan who participated in the study were observed to have scores indicative of MD. Nevertheless, on the other hand, the 53.8% prevalence of MD noted in the present study is particularly low compared to the study conducted by Alenizi et al. (2020), where 70% of the medical students from Saudi Arabia who participated in the study indicated to have MD. The disparities in the rate of prevalence between the current study and previous studies from across different regions and populations could possibly suggest that various other factors might impact the prevalence. It also highlights the multifaceted nature of MD and how factors independent of demographic variables could affect its prevalence.

Furthermore, in line with Soffer-Dudek and Theodor-Katz (2022) and Bashir (2021), the present study did not yield any significant gender difference in the presence of MD. This suggests that gender might not be a strong or determining factor in the development and/or maintenance of MD. Instead, the findings imply the possibility that MD might be more strongly associated with other individual psychological traits that are independent of gender.

In terms of self-perceived levels of SA, the current study indicated that 62% of the participants had scores indicative of higher levels of SA. This is in sharp contrast with Kessler (2005), which indicated that 18% of individuals in American communities' experience symptoms of SAD. Similarly, the results are notably higher compared to Al-Yateem et al. (2020), where the prevalence of SAD among UAE children and adolescents was reported to be 20%.

However, these discrepancies in the prevalence rate can be attributed to several reasons. Firstly, differences in the assessment and the diagnostic criteria used in these studies might contribute to the variations. For instance, in the study conducted by Al-Yateem et al. (2020), the Child Anxiety Related Disorders Scale was utilized for assessing the level of anxiety, which is in contrast to the SIAS-6 and the SPS-6 used in the current study. It is plausible that the SIAS-6 and the SPS-6 are more sensitive to detecting SA symptoms in adults, which could account for the higher prevalence rate in the current study. Secondly, variations in the sample characteristics of previous studies compared to the present study might also contribute to the disparity. Given that undergraduate students studied in the current study are older than children and adolescents studied in Al-Yateem et al. (2020), and given the evidence that undergraduate students often experience academic pressures and social competition (Misra & Castillo, 2004), these stressors might plausibly contribute to SA.

Additionally, the current study showed a significant relationship between self-perceived SA and gender, with female students scoring 4.83 times higher on the scales measuring SA compared to male students. This finding is in line with other previous studies that have noted a higher prevalence of SA among females compared to males (e.g. Al-Yateem et al., 2020; Asher & Aderka, 2018). This effect of gender can be explained in the context of self-construal theory. From the perspective of self-construal theory, females are more likely to have an interdependent self-construal than males. Those with interdependent self-construal are described as placing a higher emphasis on interconnectedness and belongingness with others. This makes them more concerned about social situations and societal norms, thus increasing their vulnerability to developing SA (Asher & Aderka, 2018). Therefore, it is suggested that the

interdependent self-construal of females increases their susceptibility to experiences of SA.

4.2 The Mediating Role of Emotional Regulation Difficulties in the Relationship between Maladaptive Daydreaming and Self-Perceived Levels of Social Anxiety

The current study attempted to explore the relationship between MD and self-perceived SA while exploring the mediating role of difficulties in regulating emotions among undergraduate students in the UAE. Firstly, it was hypothesized that there would be a positive correlation between MD and self-perceived levels of SA. As predicted, the results of the current study revealed a positive moderate correlation between MD and self-perceived SA. The results suggest that those experiencing higher levels of MD also tend to experience higher levels of SA. This is in line with previous studies that have indicated an association between MD and SA and also in line with studies that have suggested that the episodes of MD are more intense on days when individuals experience heightened levels of SA (Soffer-Dudek & Somer, 2018; Somer & Herscu, 2017). It is plausible to argue that individuals who experience both MD and SA may employ daydreaming as a coping mechanism to avoid anxiety-inducing social situations.

It was also hypothesized that there would be a positive correlation between MD and difficulties in regulating emotions. As predicted, the current study revealed a significant correlation between MD and difficulties in regulating emotions. This suggests that those experiencing higher levels of MD also tend to experience higher levels of difficulties in regulating their emotions. The findings are in line with studies that have indicated MD to be associated with poor emotional regulation abilities. For instance, previous studies have found connections between MD and various aspects of emotional dysregulation (Greene et al., 2020). Similarly, studies have also shown MD to emerge as a maladaptive way of regulating emotions in response to stressors and adverse experiences such as cyberbullying, sexual abuse, emotional abuse, and childhood trauma (e.g. Somer, 2002; Somer et al., 2020; Sharma & Mahapatra, 2021). It has also been argued that MD tend to emerge as a form of distraction to avoid perceived emotional pain associated with life stressors and experiences.

In addition, the positive association between MD and difficulties in regulating emotions found in the current study also complies with The Emotional Processing Theory (EPT) and the Differential Emotional Processing Theory of Maladaptive Daydreaming (DEPTMD). According to EPT and DEPTMD, the use of imagination and fantasy associated with MD might be related to the emotional processing of challenging life events and difficult emotions (Alpert et al., 2021; Haynes, 2022). Given the interferences of MD to everyday activities, it can be suggested as an unhealthy way of regulating emotions.

The current study also hypothesized an association between self-perceived levels of SA and difficulties in regulating emotions. As predicted, the results revealed a significant positive relationship between self-perceived SA and difficulties in regulating emotions. This suggests that those with higher levels of SA also tend to have higher difficulties in regulating their emotions. The current finding is in line with the CBT model for Social Anxiety (SA) that emphasizes the role of emotional regulation in the development and maintenance of SA and other anxiety disorders (Hofmann et al., 2012). It is also in line with previous research that has identified individuals with SA to have deficits in their emotion regulatory process, wherein they tend to be less expressive of positive emotions, pay less attention to their emotions, and find it challenging to describe their emotions (Turk et al., 2005). Previous studies have identified that socially anxious individuals place an overreliance on less effective emotion regulation strategies, making it difficult to regulate emotions (e.g. Aldoa & Schweizer, 2010; Dryman & Heimberg, 2018; Sackl-Pammer et al., 2019; Spokas et al., 2009).

Finally, as hypothesized, the current study indicated that difficulties in regulating emotions mediate the relationship between MD and self-perceived levels of SA. This suggests that those experiencing higher levels of MD might be more prone to SA due, in part, to their difficulties in regulating emotions. Previous studies have pointed out factors such as social avoidance, social isolation, feelings of loneliness, and social skill deficiencies as possible factors associated with the development of MD among those who have SA (e.g. Bigelsen & Schupak, 2011; Somer et al., 2016a; Somer et al., 2017). The current study has broadened the existing literature to add difficulties in regulating

emotions as a possible factor associated with the development of SA among those who have MD.

Moreover, the findings suggest that MD might not be an adaptive way of regulating emotions, given its association with SA and difficulties in regulating emotions. Previous studies have demonstrated that individuals may use MD as a way to cope in response to stress, anxiety, trauma, or difficult emotions. However, in the longer term, MD has been identified as an ineffective way of regulating emotions due to increased distress and its interference with important areas of functioning (Bigelsen & Schupak, 2011; Bigelsen et al., 2016; Sándor, Bugán, Nagy, Bogdán & Molnár, 2021).

4.3 Implications of the Study

The findings of the study have several empirical and theoretical implications. The high prevalence rate for MD (53.8%) and self-perceived levels of SA (62%) among UAE undergraduate students indicates that a substantial portion of the population might be affected by these conditions, thus underscoring the need for public awareness. Educational institutions can play an important role in creating awareness and offering a supportive environment through services such counseling centers and peer support programs. Given the higher prevalence of MD and self-perceived SA, student led support groups can create a safe space for the students to discuss and share their experiences. In addition, workshops and seminars can be organized by educational institutions on mental health topics such as MD and SA that could offer coping strategies, skill training and interactive discussions to the students.

Besides, the study also attempts to guide clinicians in recognizing MD as a potential factor when assessing individuals who are presented with excessive daydreaming. This study creates awareness and underscores the importance of proactive screening when individuals are presented with symptoms consistent with MD.

Similarly, the comorbidity between MD and SA identified in the study serves to encourage clinicians to recognize and be vigilant of the possibility of co-occurring mental health conditions with MD.

The study extends the theoretical understanding and adds to the growing literature on MD and SA by highlighting the role of emotional regulation. Though previous studies have identified the association between MD and SA, the present study furthers our knowledge by identifying difficulties in regulating emotions to partially mediate the relationship between MD and SA. The findings highlight that the relationship between MD and SA might be rooted in multi-faceted factors, including emotional regulation.

Furthermore, recognizing the mediating role of emotion regulation between MD and SA paves the way for more targeted and effective interventions for those affected by MD and SA. Clinicians and other mental health professionals can consider interventions that focus on emotion regulation as a component while addressing both MD and SA.

4.4 Limitations and Future Research

The current study is not without its limitations. The cross-sectional design of the study restricts our ability to establish causal relationships between the variables studied. Therefore, future studies are recommended to include longitudinal and experimental research designs to overcome this limitation. This would allow us to arrive at a more robust conclusion on the causal relationships.

Similarly, several potential confounding variables may influence both Maladaptive Daydreaming (MD) and perceived Social Anxiety (SA) leading a possible misinterpretation of results. For instance, factors such as trauma history (e.g. Kuo et al., 2011; Somer et al., 2021), personality traits (e.g. Brenner et al., 2022; Kotov et al., 2007), and social media consumptions (e.g. Costanzo et al., 2021; O'Day & Heimberg, 2021) may independently influence both MD and self-perceived SA. Hence, it is crucial to interpret the results of the study in light of the possible effect of confounding variables.

Another notable limitation of the study is the use of convenience sampling as the data collection method, which might limit the generalizability of the findings identified. Even though the current study important insights into the prevalence of MD and self-perceived SA, caution should be taken while attempting to generalize these findings.

In addition, the self-reported nature of data collection in the current study raises the potential for common method biases more likely. Therefore, it is recommended for future research to adopt a multi-method approach to data collection. For instance, while assessing for MD, it would be beneficial to combine different testing tools such as the Structured Clinical Interview for Maladaptive Daydreaming (SCIMD) (Somer et al., 2017) with the MDS-16 to obtain robust outcomes.

Given the finding that difficulties in emotional regulation mediate the relationship between MD and SA, the current study lays a foundation for future research for exploring the relevance of developing and testing emotional regulation-based interventions in the treatment of MD and SA. Through exploring the effectiveness and relevance of such interventions, it is possible to improve the mental health and well-being of those dealing with these conditions.

Furthermore, the lack of association between demographic factors and MD prompts future research exploring MD to investigate its relationship with psychological traits and individual differences such as cognitive styles, self-esteem, personality traits, and social support that are largely independent of demographic factors.

Chapter 5: Conclusion

In conclusion, the current study identified that a substantial portion of undergraduate students in the UAE might be affected by MD and SA, with 53.8% exhibiting symptoms indicative of MD and 62% experiencing symptoms of SA. These prevalence rates provide a unique epidemiological perspective while underscoring the need for increased public awareness and clinical actions. Moreover, the present study found that difficulties in regulating emotions partially mediate the relationship between MD and SA. Thus, providing valuable insight into the complex factors that may underlie the relationship between MD and SA. Future studies are recommended to investigate the effectiveness and relevance of emotional regulation-based interventions in the treatment of MD and SA.

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Appendix

Questionnaire for the research

Information Sheet & Informed Consent

The current study attempts to explore whether emotional regulation difficulties mediate the relationship between Social Anxiety (SA) and Maladaptive Daydreaming (MD) among university students. It also attempts to investigate the prevalence of MD and SA in the student population of the UAE.

In this study, you will be asked to complete a series of questions that assess your level of daydreaming, levels of social anxiety and levels of difficulties in regulating your emotions. You have the option to withdraw from the study at any time, without any obligation. There are no known risks or benefits from participating in this study. Your participation is solicited, yet strictly voluntary. All information will be kept confidential and anonymous and will be used for research purposes only. The survey is estimated to take about 10 minutes to complete. If you have any questions or concerns about the research, please contact Riffa Syed (202170187@uaeu.ac.ae) or Dr. Salma Daiban (Sdaiban@uaeu.ac.ae)

Do you agree to participate in this study?

- Yes
- No

Demographic Variables

1. What is your gender?
   - Male
   - Female

2. What is your age?

3. Specify your country of residence?
   - UAE
   - Other (Please specify)

4. What is your marital status?
   - Single
   - Married
   - Divorced
   - Widowed

5. If you are married, how many children do you have (if any)?

6. Do you stay at the university hostel?
   - Yes
   - No

7. Which emirate do you live in?
   - Abu Dhabi
   - Dubai
   - Sharjah
   - Ajman
   - Umm Al-Quwain
   - Fujairah
   - Ras Al Khaimah

8. Current educational level:
   - First year
   - Second year
   - Third year
   - Fourth year
   - Fifth year
   - Other (Please specify)

9. What is your affiliated college?
   - College of Business and Economics
   - College of Education
   - College of Information Technology
   - College of Law
   - College of Engineering
   - College of Science
   - College of Food and Agriculture
   - College of Medicine and Health sciences
   - College of Humanities and Social Sciences

10. What is your major?

11. What is your cumulative GPA?

12. Are you currently employed?
   - Yes
   - No

13. Monthly household income:
   - Less than 5,000 AED
   - 5,000 to 10,000 AED
   - 10,000 to 20,000 AED
   - 20,000 to 30,000
   - More than 30,000 AED

Maladaptive Daydreaming Scale (MDS – 16) (Somer et al., 2016)

In answering the following questions, please refer to your daydreaming activities in the last month, if not otherwise specified. Choose the option that best fits your experience.

0% **NEVER**	10%	20%	30%	40%	50%	60%	70%	80%	90%	100% **EXTREME**

1. Some people notice that certain music can trigger their daydreaming. To what extent does music activate your daydreaming?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
2. Some people feel a need to continue a daydream that was interrupted by a real world event at a later point. When a real world event has interrupted one of your daydreams, how strong was your need or urge to return to that daydream as soon as possible?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
3. How often are your current daydreams accompanied by vocal noises or facial expressions (e.g. laughing, talking or mouthing the words)?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %

4. If you go through a period of time when you are not able to daydream as much as usual due to real world obligations, how distressed are you by your inability to find time to daydream?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
5. Some people have the experience of their daydreaming interfering with their daily chores or tasks. How much does your daydreaming interfere with your ability to get basic chores accomplished?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
6. Some people feel distressed or concerned about the amount of time they spend daydreaming. How distressed do you currently feel about the amount of time you spend daydreaming?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
7. When you know you have had something important or challenging to pay	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %

attention to or finish, how difficult was it for you to stay on task and complete the goal without daydreaming?											
8. Some people have the experience of their daydreaming hindering the things that are most important to them. How much do you feel that your daydreaming activities interfere with achieving your overall life goals?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
9. Some people experience difficulties in controlling or limiting their daydreaming. How difficult has it been for you to keep your daydreaming under control?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
10. Some people feel annoyed when a real world event interrupts one of their daydreams. When the real world interrupts one of your daydreams, on average how	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %

annoyed do you feel?											
11. Some people have the experience of their daydreaming interfering with their academic/occupational success or personal achievements. How much does your daydreaming interfere with your academic/occupational success?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
12. Some people would rather daydream than do most other things. To what extent would you rather daydream than engage with other people or participate in social activities or hobbies?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
13. When you first wake up in the morning, how strong has your urge been to immediately start daydreaming?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
14. How often are your current daydreams accompanied by	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %

physical activity such as pacing, swinging or shaking your hands?											
15. Some people love to daydream. While you are daydreaming, to what extent do you find it comforting and/or enjoyable?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
16. Some people find it hard to maintain their daydreaming when they are not listening to music. To what extent is your daydreaming dependent on continued listening to music?	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %

Social Interaction Anxiety Scale (SIAS-6) and Social Phobia Scale (SPS-6) (Peters et al., 2012)

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true of you

Not at all characteristic or true of me 0	**Slightly characteristic or true of me** 1	**Moderately characteristic or true of me** 2	**Very characteristic or true of me** 3	**Extremely characteristic or true of me** 4

1. I have difficulty making eye contact with others	0	1	2	3	4
2. I find it difficult mixing comfortably with the people I work with	0	1	2	3	4
3. I tense up if I meet an acquaintance on the street	0	1	2	3	4
4. I feel tense if I am alone with just one person	0	1	2	3	4
5. I have difficulty talking with other people	0	1	2	3	4
6. I find it difficult to disagree with another's point of view	0	1	2	3	4
7. I get nervous that people are staring at me as I walk down the street	0	1	2	3	4
8. I worry about shaking or trembling when I'm watched by other people	0	1	2	3	4
9. I would get tense if I had to sit facing other people on a bus or train	0	1	2	3	4
10. I worry I might do something to attract the attention of other people	0	1	2	3	4
11. When in an elevator, I am tense if people look at me	0	1	2	3	4
12. I can feel conspicuous standing in a line	0	1	2	3	4

Difficulties in Emotion Regulation Scale – 16 items (DERS-16) (Kaufman et al., 2016)

Please indicate how often the following statements apply to you

Almost Never 1	**Sometimes** 2	**About half the time** 3	**Most of the time** 4	**Almost Always** 5

1. I have difficulty making sense out of my feelings	1	2	3	4	5
2. I am confused about how I feel.	1	2	3	4	5
3. When I am upset, I have difficulty getting work done.	1	2	3	4	5
4. When I am upset, I become out of control.	1	2	3	4	5
5. When I am upset, I believe that I will remain that way for a long time	1	2	3	4	5
6. When I am upset, I believe that I'll end up feeling very depressed.	1	2	3	4	5
7. When I am upset, I have difficulty focusing on other things.	1	2	3	4	5
8. When I am upset, I feel out of control.	1	2	3	4	5
9. When I am upset, I feel ashamed with myself for feeling that way.	1	2	3	4	5
10. When I am upset, I feel like I am weak.	1	2	3	4	5
11. When I am upset, I have difficulty controlling my behaviors.	1	2	3	4	5
12. When I am upset, I believe that there is nothing I can do to make myself feel better.	1	2	3	4	5
13. When I am upset, I become irritated with myself for feeling that way	1	2	3	4	5

14. When I am upset, I start to feel very bad about myself.	1	2	3	4	5
15. When I am upset, I have difficulty thinking about anything else.	1	2	3	4	5
16. When I am upset, my emotions feel overwhelming.	1	2	3	4	5

UAE UNIVERSITY MASTER THESIS NO. 2023: 94

The study attempted to investigate the prevalence of Maladaptive Daydreaming and self-perceived levels of Social Anxiety among undergraduate students in the United Arab Emirates (UAE). It also attempted to explore whether difficulties in regulating emotions mediate the relationship between Maladaptive Daydreaming and self-perceived levels Social Anxiety.

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