A project report on
Correlation and Data Analysis

A Correlation Analysis on the Depression and the frequency of engagement in Creative Activities

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology in Computer Science & Engineering

by

Aakarsh Ranjith 21BCE1205

Devika Rajeev 21BCE1193

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School of Computer Science

& Engineering,

Vellore Institute of

Technology Chennai,

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November,2024

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I hereby declare that the thesis entitled "A Correlation Analysis on the Depression and the frequency of engagement in Creative Activities" submitted by **Devika Rajeev (21BCE1193)** for the award of the degree of Bachelor of Technology in Computer Science and Engineering, Vellore Institute of Technology, Chennai is a record of bonafide work carried out by me under the supervision of **Dr. SUJITHRA KANMANI**

I further declare that the work reported in this thesis has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Place: Chennai

Date: 22/11/24

Signature of the Candidate

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This is to certify that the report entitled **"A Correlation Analysis on the Depression and the frequency of engagement in Creative Activities"** is prepared and submitted by **Devika Rajeev (21BCE1193)** to Vellore Institute of Technology, Chennai, in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology in Computer Science and Engineering** is a Bonafide record carried out under my guidance. The project fulfills the requirements as per the regulations of this University and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma and the same is certified.

Signature of the Guide: R. Sujithra 15/11/24

Name: Dr. Sujithra Kanmani

Date:

Signature of the Examiner

Name: Dr. Suzuka. S

Date: 22/11/2024

Signature of the Examiner

Name: Dr. E. Balraj

Date: 22/11/24

Approved by the Head of Department,
B.Tech. CSE
Name: Dr.P. Nithyanandam
Date:15/11/2024

VELLORE INSTITUTE OF TECHNOLOGY
SCHOOL OF COMPUTER SCIENCE & ENGINEERING
Chennai - 600127

ABSTRACT

This study investigates the correlation between depression levels and the frequency of engagement in creative activities. The primary objective is to determine whether individuals experiencing higher levels of depressive symptoms participate more or less frequently in creative endeavors. A secondary objective examines how different mental health diagnoses influence the specific areas in which individuals perceive themselves as creative. Data were collected through surveys administered to a diverse population, encompassing various age groups, backgrounds, and mental health statuses. Participants provided information on their mental health diagnoses, levels of depressive symptoms, and the frequency and types of creative activities they engage in. Quantitative data were analyzed using statistical techniques such as Spearman's Rank Correlation, Chi-Square tests, and Kruskal-Wallis tests to identify significant relationships between variables. The results indicate a statistically significant correlation between higher levels of depression and increased frequency of engagement in certain creative activities. These findings suggest that creative activities may serve as a coping mechanism for individuals experiencing depressive symptoms, offering therapeutic benefits and a means of self-expression. The study contributes to the understanding of the complex relationship between mental health and creativity, highlighting the potential of creative engagement as a supportive tool in mental health interventions.

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Place: Chennai

Date:

Devika Rajeev
(21BCE1193)

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Chapter 1

INTRODUCTION

1.1 Background

Mental health is fundamental to overall well-being, influencing how individuals think, feel, and act. Good mental health supports effective functioning, resilience, and the ability to manage daily stress, while poor mental health, particularly depression, can significantly disrupt an individual's quality of life. Depression, a complex and widespread mental health condition, is characterised by persistent sadness, loss of interest or pleasure in activities, feelings of worthlessness, and fatigue, which often limit an individual's motivation and capability to engage in daily tasks. The global prevalence of depression and its impact on personal and societal levels makes it a critical area of study within mental health.

Creativity, on the other hand, represents a multifaceted process through which people express ideas, emotions, and experiences in unique ways. It encompasses a wide range of activities, from artistic endeavours like painting and music to problem-solving and scientific innovation. Historically, creativity has often been observed in individuals experiencing mental health challenges, especially depression, suggesting a possible link between emotional struggles and creative expression. Many renowned figures, including artists, writers, and musicians, have produced their most profound works during periods of personal turmoil, indicating that the introspective nature of depression may, in some cases, enhance creative insight.

The observed relationship between mental health and creativity has led to ongoing interest from researchers and clinicians. Some propose that certain psychological challenges may enhance creativity by promoting introspection and emotional depth. Others argue that creative processes might provide therapeutic benefits, acting as a form of self-expression that helps individuals process difficult emotions. This study seeks to explore the potential connection between depression and creativity, examining whether depressive symptoms influence creative engagement.

1.2 Objective of the Study

The primary objective of this research is to investigate whether there exists a correlation between levels of depressive symptoms and the frequency of creative engagement. Specifically, this study aims to determine if individuals experiencing higher levels of depressive symptoms engage more frequently in creative activities, potentially as a coping mechanism. By exploring this relationship, the study hopes to uncover patterns that could suggest creativity as a natural, self-guided therapeutic outlet for those with depression.

1.2.1 Primary Research Objective

To examine if a positive correlation exists between depressive symptom levels and the frequency of creative activity participation, implying that creativity may serve as an emotional coping mechanism.

1.2.2 Secondary Research Objective

To investigate if specific mental health diagnoses, such as anxiety or mood disorders, influence the types of creative expression individuals pursue. For instance, some may prefer visual arts, while others might find solace in writing or music. Identifying these preferences could pave the way for personalised therapeutic approaches, where creative activities are aligned with the unique psychological needs associated with various diagnoses.

1.3 Significance of the Study

This study's significance lies in its potential to enrich our understanding of the intersection between mental health and creativity. The findings may reveal whether creative activities can act as a self-regulatory mechanism, allowing individuals to process and manage depressive symptoms through constructive expression. This could support the concept that creativity offers an accessible, self-directed method for emotional regulation and resilience-building.

1.3.1 Contribution to Mental Health Practices

If a significant correlation is found, the study could offer valuable insights for therapists and mental health professionals. Understanding that creativity serves as a therapeutic outlet could lead to the integration of creative practices in treatment plans. For example, therapists might encourage clients to explore creative hobbies such as journaling, drawing, or music to support mental well-being. Additionally, the findings could influence how community mental health programs and educational institutions incorporate creativity as a mental health support tool, promoting a proactive approach to mental health maintenance.

1.3.2 Benefits for Educators and Community Leaders

Educators and community leaders could also benefit from understanding the role of creativity in mental health. By fostering environments that encourage creative expression, schools, community centres, and support groups could help individuals find positive outlets for emotional processing. Such environments can facilitate peer support and shared experiences, normalising mental health challenges and promoting a culture of empathy and resilience.

1.3.3 Implications for Stigma Reduction

Beyond therapeutic applications, this research could contribute to reducing the stigma associated with mental health conditions. By highlighting the constructive potential of depression-linked creativity, the study may help shift societal perceptions, recognising that individuals with mental health challenges often possess unique perspectives and talents. Emphasising this aspect could lead to greater societal acceptance and appreciation for diverse emotional experiences, fostering a more inclusive attitude toward mental health.

1.4 Structure of the Report

The structure of this report is organised as follows:

- **Chapter 1**: Introduces the research topic, background, objectives, and significance of the study, establishing the context for the investigation.
- **Chapter 2**: Reviews relevant literature on the relationship between mental health and creativity, including theoretical perspectives and previous research findings.
- **Chapter 3**: Details the methodology used in the study, including the research design, data collection methods, and statistical analysis techniques.
- **Chapter 4**: Presents the results of the data analysis, discussing findings in relation to the research objectives.
- **Chapter 5**: Summarises the conclusions drawn from the research, discusses limitations, and suggests directions for future studies.

Chapter II

Related works & Proposed Methodology

2.1 Related Works

This section reviews existing literature on the relationship between mental health, particularly depression, and creativity. By examining relevant studies, theories, and findings, this section aims to provide a foundation for understanding the current state of research in this field, as well as identifying gaps that the present study seeks to address.

2.1.1 The Psychological Impact of Depression on Creativity

Research indicates that depression can significantly influence cognitive and emotional processes, which in turn affects an individual's creative capacity. Depression is commonly associated with cognitive symptoms such as negative thinking patterns, rumination, and heightened self-reflection. While severe depressive episodes can impair cognitive function, reducing motivation and energy to engage in creative tasks, mild to moderate levels of depression may encourage introspection, emotional sensitivity, and depth of thought—qualities that often enhance creative output. This paradoxical relationship suggests that, under certain conditions, depressive symptoms may foster creativity by providing individuals with a richer emotional palette to draw upon.

Forgeard (2013) explores this phenomenon by proposing that individuals experiencing depressive symptoms might channel their emotions into creative activities, using art, writing, or music as a means to externalise and process their inner turmoil. Forgeard's theory aligns with the idea that creativity can serve as a coping mechanism, allowing individuals to transform emotional pain into something meaningful and tangible. This perspective is supported by anecdotal accounts and historical examples of renowned figures who experienced periods of depression yet produced some of their most influential works during these times.

For instance, famous artists such as Vincent van Gogh and Edvard Munch are often cited as examples of this phenomenon. Van Gogh's paintings, including "The Starry Night," reflect an intense emotional and psychological depth, which many scholars interpret as influenced by his ongoing struggles with mental health. Similarly, Munch's work, particularly "The Scream," is widely regarded as a powerful visual representation of existential anxiety and despair, emotions that Munch reportedly experienced throughout his life. These artists used their depressive feelings as fuel for creative expression, translating their internal states into artworks that continue to resonate with audiences on a deeply emotional level.

Writers and poets also frequently exhibit this link between depression and creativity. The American poet Sylvia Plath, who suffered from severe depression, produced powerful works that explore themes of despair, identity, and self-worth. Her semi-autobiographical

novel "The Bell Jar" and her poems reflect her struggles with mental illness, capturing her profound sense of isolation and inner conflict. Plath's work illustrates how depressive introspection and self-analysis can be redirected into compelling narratives that resonate universally, offering readers a glimpse into the human psyche.

Modern psychological theories propose that depression may encourage what is known as divergent thinking—a cognitive process involved in generating creative ideas by exploring multiple possible solutions. Divergent thinking requires a level of open-mindedness, flexibility, and the ability to view issues from different perspectives. Individuals with depression may exhibit increased divergent thinking due to their tendency toward introspection and reflection. For example, according to a study by Verhaeghen, Joormann, and Khan (2005), individuals with dysphoric moods displayed higher levels of divergent thinking than non-dysphoric individuals. This finding suggests that depressive symptoms, while often debilitating, can sometimes foster a cognitive style conducive to creativity.

Furthermore, some researchers argue that depression enables individuals to experience a broader range of emotions, both positive and negative, which may deepen their understanding of the human condition and enhance their ability to empathise with others. This emotional depth is often reflected in creative works that explore complex, nuanced themes such as loss, identity, and the search for meaning. By engaging with these themes through art, individuals with depression can process their emotions, making sense of their experiences in ways that are not only therapeutic for themselves but also meaningful to others who encounter their work.

In addition to individual case studies, some empirical studies have supported the notion that depression can enhance creativity. A study by Kaufman and Baer (2002) found that individuals with mood disorders, including depression, performed better on certain tasks that required creative thinking compared to control groups. This suggests that the emotional intensity associated with depression may, in some cases, stimulate creativity by encouraging individuals to explore novel ideas and forms of expression. However, it is worth noting that this relationship is complex and may depend on various factors, including the severity and type of depressive symptoms, the individual's personal coping strategies, and the specific nature of the creative activity.

However, it is important to acknowledge that not all aspects of depression are beneficial to creativity. Severe depressive episodes can be debilitating, leading to feelings of hopelessness, fatigue, and cognitive impairment that hinder an individual's ability to engage in creative work. During these periods, the symptoms of depression may be so overwhelming that they limit cognitive flexibility and reduce the capacity for imaginative thinking. For instance, bipolar disorder, which includes episodes of depression and mania, has been associated with higher creativity in the manic phase but reduced creative output during depressive episodes. This illustrates that the relationship between depression and creativity is not straightforward and may vary depending on the individual's mental state and their unique psychological makeup.

In conclusion, while depression often poses significant challenges to cognitive functioning and daily life, mild to moderate depressive symptoms can, in some cases, enhance creativity by fostering introspection, emotional depth, and divergent thinking. Individuals with depression may channel their struggles into creative activities as a way to process and express their inner experiences, giving rise to works that reflect profound emotional insights. This perspective not only enriches our understanding of the complex relationship between mental health and creativity but also highlights the potential therapeutic value of creative expression for individuals experiencing depressive symptoms. The literature suggests that, under the right conditions, depression and creativity may coexist in a way that transforms personal suffering into artistic brilliance, offering both personal relief for the creator and resonance for the audience.

2.1.2 Creativity as a Coping Mechanism for Mental Health Challenges

Creativity has long been recognised as a powerful tool for emotional expression and self-exploration, especially for individuals dealing with mental health challenges like depression and anxiety. Engaging in creative activities provides a constructive outlet for emotions, allowing individuals to process and articulate feelings that might otherwise be difficult to express. Creative expression, whether through art, writing, music, or other forms, can act as a buffer against the adverse effects of mental health struggles, offering relief, a sense of accomplishment, and, importantly, a means of personal agency. This section explores how creativity functions as a coping mechanism and highlights studies that support its therapeutic benefits.

Creative processes allow individuals to externalise their inner experiences, transforming abstract emotions into tangible forms. For individuals with depression, who often feel overwhelmed by negative thoughts and emotions, creativity can be a lifeline—a way to manage and mitigate the impact of depressive symptoms. Engaging in creative work shifts attention away from ruminative thoughts, which are a hallmark of depression, and channels that mental energy into productive and meaningful activities. This redirection can be a temporary respite, providing individuals with a sense of purpose and control that counteracts feelings of helplessness commonly associated with mental health disorders.

Research on the therapeutic effects of creativity is well-established in fields such as psychology and art therapy. Art therapy, in particular, leverages creativity as a form of psychological healing. By encouraging individuals to express themselves through visual art, music, or writing, art therapy helps them process emotions in a safe, non-verbal way. According to Malchiodi (2003), art therapy facilitates self-discovery, emotional catharsis, and the development of coping skills. For individuals who struggle with verbal expression or feel uncomfortable discussing their emotions openly, art therapy provides a non-threatening platform to release pent-up emotions and gain insights into their mental state.

A well-documented example of creativity as a coping mechanism is the concept of "flow," introduced by psychologist Mihaly Csikszentmihalyi. Flow is a state of complete

immersion in an activity, characterised by a feeling of focus, enjoyment, and loss of self-consciousness. Achieving a flow state during creative activities can temporarily relieve depressive symptoms by allowing individuals to become fully absorbed in their work, diverting their attention from negative thoughts. Csikszentmihalyi's research shows that flow not only enhances mood but also fosters resilience by building confidence and competence through mastery of a skill. For individuals with depression, achieving flow in creative activities like painting, writing, or playing music can be deeply satisfying, providing a sense of accomplishment that counters feelings of inadequacy.

Several empirical studies support the notion that creativity can alleviate symptoms of mental health disorders. For instance, a study by Kaimal, Ray, and Muniz (2016) investigated the effects of art-making on cortisol levels, a physiological marker of stress. Participants engaged in 45 minutes of free-form art-making, including drawing, painting, and clay modelling, after which researchers measured their cortisol levels. The study found that cortisol levels significantly decreased after the creative session, suggesting that art-making can reduce stress and promote relaxation. This physiological response supports the idea that creative activities can help manage emotional distress by directly influencing the body's stress response.

Similarly, expressive writing has been shown to have therapeutic benefits for individuals with depression and trauma. In a series of studies, psychologist James W. Pennebaker and his colleagues explored how writing about traumatic or distressing experiences affects mental health. Their findings reveal that expressive writing can lead to improvements in mood, immune function, and overall mental well-being. The act of writing allows individuals to organise their thoughts, gain perspective on their experiences, and achieve a sense of closure, which can be particularly beneficial for those dealing with depression. Expressive writing, therefore, serves as a form of cognitive processing, helping individuals reframe their experiences and reduce the emotional impact of negative events.

Music therapy is another area where creativity has been applied as a therapeutic tool for mental health. Studies show that creating or listening to music can have a profound effect on mood regulation, emotional release, and even physical symptoms of stress. Music engages the brain's reward system, releasing dopamine and other "feel-good" chemicals that can alleviate depressive symptoms. A study by Burns, Bittman, and Berk (2009) found that group drumming sessions significantly reduced symptoms of anxiety and depression in participants. This type of creative expression also fosters social connection and belonging, which are essential for mental health and often lacking in individuals who feel isolated due to their depression.

Creative activities like visual art, writing, and music not only provide emotional relief but also enable individuals to develop a sense of identity and purpose. For many people, depression can lead to a loss of self-worth and an inability to envision a positive future. Creativity offers a constructive way to rebuild this self-worth by producing something tangible and meaningful. For instance, individuals who struggle with low self-esteem might take pride in their artistic achievements, reinforcing a sense of personal value and

capability. Through creative expression, individuals can reframe their identity, focusing on their strengths and accomplishments rather than their mental health challenges.

In addition to individual benefits, creativity as a coping mechanism offers advantages at the community level. Group art or music therapy sessions, for example, foster social connections and mutual support among participants. These shared experiences create a sense of camaraderie and understanding, as individuals who might otherwise feel isolated find a safe space where their struggles are acknowledged and validated. Engaging in group creative activities can thus alleviate loneliness and build resilience, creating a support network that enhances emotional well-being.

While creativity offers numerous benefits, it is important to acknowledge that it may not be effective for everyone, and its impact can vary depending on individual preferences, cultural background, and the nature of the mental health condition. Some individuals may find solace in solitary creative activities, while others might benefit more from group-based forms of expression. Additionally, for people experiencing severe depressive symptoms, the motivation required to engage in creative activities may be limited, and professional support may be necessary to initiate or sustain these activities. Despite these limitations, the overall evidence supports creativity as a valuable and flexible tool for managing mental health challenges, providing multiple avenues for expression and healing.

In summary, creativity serves as a versatile and accessible coping mechanism for individuals with mental health challenges, particularly those with depression. Engaging in creative activities enables emotional expression, reduces stress, and fosters a sense of accomplishment. Research on art therapy, expressive writing, and music therapy demonstrates that creativity can positively influence mental well-being by promoting relaxation, improving mood, and enhancing self-worth. Creativity provides individuals with an opportunity to externalise their emotions, gain insight into their experiences, and, in many cases, connect with others who share similar struggles. This therapeutic potential of creativity not only aids in the management of depressive symptoms but also contributes to a broader understanding of the resilience and adaptability of individuals facing mental health challenges.

2.1.3 Methodologies Used in Previous Studies

Research on the relationship between mental health, particularly depression, and creativity has employed a variety of methodologies. These methods range from quantitative assessments that seek to establish statistical correlations between depressive symptoms and creative output, to qualitative approaches that explore the subjective experiences of individuals using creativity as a coping mechanism. This section outlines the primary methodologies used in prior studies, highlighting their strengths, limitations, and the insights they contribute to understanding the complex relationship between depression and creativity.

2.1.3.1 Quantitative Approaches

Quantitative methods have been widely used in studies examining the relationship between mental health and creativity due to their ability to provide objective, statistical evidence. Quantitative studies often rely on psychometric tools to measure levels of depression and creativity, allowing researchers to explore correlations and possible causative relationships between these variables.

For measuring depressive symptoms, tools such as the Beck Depression Inventory (BDI-II) and the Patient Health Questionnaire (PHQ-9) are frequently employed. These standardised scales provide consistent measures of depression severity, allowing researchers to categorise participants by their levels of depressive symptoms. On the creativity side, assessments like the Torrance Tests of Creative Thinking (TTCT) and the Remote Associates Test (RAT) are commonly used to quantify aspects of creative thinking. These tools measure divergent thinking, problem-solving skills, and the ability to form associations—key cognitive processes associated with creativity.

Quantitative studies have the advantage of producing measurable, replicable results that can be analysed statistically. For example, researchers can use correlation analyses to determine if higher levels of depression are associated with greater or lesser creativity, providing empirical evidence that helps to validate or challenge existing theories. Studies using these methods have found mixed results, with some identifying positive correlations between mild depressive symptoms and increased creative output, while others have found no significant relationship.

However, quantitative approaches have limitations when applied to the study of mental health and creativity. Creativity is a multifaceted and subjective construct that is difficult to quantify comprehensively, and traditional creativity assessments may not capture the full spectrum of creative behaviours, particularly those related to artistic expression or emotional processing. Additionally, depression can manifest in diverse ways, with individuals experiencing varying cognitive, emotional, and behavioural symptoms. Quantitative tools may oversimplify these experiences, reducing complex emotional states to numerical scores that lack nuance. As a result, while quantitative approaches provide valuable data, they may not fully capture the personal and deeply individual aspects of how depression influences creativity.

2.1.3.2 Qualitative Approaches

Qualitative research methods, including interviews, case studies, and narrative analyses, offer a different perspective by focusing on the subjective experiences of individuals. These methods are particularly valuable in mental health research, as they allow for in-depth exploration of participants' personal journeys, coping mechanisms, and creative processes. Unlike quantitative approaches, which emphasise statistical relationships, qualitative methods aim to uncover meaning, context, and insight, providing a richer understanding of how individuals perceive and utilise creativity as a response to mental health challenges.

Case studies of notable creative figures who experienced mental health struggles, such as Virginia Woolf, Vincent van Gogh, and Sylvia Plath, have historically been used to illustrate the possible link between creativity and depression. These in-depth examinations offer insights into how these individuals may have channelled their depressive symptoms into creative works that reflect their emotional states. While case studies are not generalisable, they highlight the potential for creativity to serve as a coping mechanism and provide a narrative framework that can be relatable and inspiring to others.

Interviews and narrative analyses with contemporary individuals who self-identify as creative also contribute to the understanding of this relationship. Through open-ended questions, researchers can gain insights into how participants experience and utilise creativity to manage depressive symptoms, the specific creative activities they engage in, and how they perceive the effects of these activities on their mental health. For example, in studies where participants engage in creative writing, some describe the activity as a therapeutic outlet, allowing them to process emotions, clarify thoughts, and gain perspective on their struggles.

Qualitative methods offer the advantage of capturing the complexity and individuality of participants' experiences, which is essential for understanding the nuanced relationship between depression and creativity. These approaches reveal themes and patterns that might be overlooked by quantitative studies, such as the emotional motivations behind creative expression and the personal significance of creative works. However, qualitative research also has limitations. Findings are often based on smaller sample sizes and may lack generalisability, as individual experiences are highly specific and influenced by personal and cultural factors. Additionally, qualitative data is typically more time-consuming to collect and analyse, requiring careful interpretation and often involving subjective judgment by researchers.

2.1.3.3 Mixed-Methods Approaches

To address the limitations of both quantitative and qualitative methods, some researchers have adopted mixed-methods approaches, combining the strengths of both approaches to gain a more comprehensive understanding of the relationship between depression and creativity. Mixed-methods studies might involve collecting quantitative data on depression and creativity levels while also conducting interviews or focus groups to explore participants' subjective experiences. This approach enables researchers to not only identify correlations but also understand the personal contexts and motivations that underlie these relationships.

For example, a mixed-methods study might use the BDI-II to categorise participants by depression severity and then administer the TTCT to measure creativity. Participants scoring above a certain threshold on depressive symptoms could then be invited for in-depth interviews to discuss their engagement in creative activities, how these activities affect their mood, and whether they perceive creativity as a coping mechanism. By integrating both quantitative and qualitative data, researchers can triangulate findings, enhancing the validity and depth of the results.

One notable study that used a mixed-methods approach is Forgeard et al. (2013), which examined both quantitative associations between depression and creativity scores and qualitative insights from participants about their experiences. The study found that while depressive symptoms were associated with divergent thinking skills, the personal motivations for creative expression varied greatly among participants. This mixed-methods design allowed researchers to explore not only the statistical relationship between depression and creativity but also the personal meanings and psychological benefits that individuals ascribed to their creative work.

Mixed-methods approaches offer a well-rounded perspective that can enrich the study of complex phenomena like mental health and creativity. However, these studies require considerable resources, as they involve the collection and analysis of both quantitative and qualitative data. They also demand expertise in multiple research methods and careful planning to integrate findings meaningfully. Despite these challenges, mixed-methods approaches are invaluable for capturing the multifaceted nature of creativity and mental health, providing insights that neither quantitative nor qualitative methods could achieve independently.

2.1.3.4 Limitations and Future Directions

While each methodology offers unique insights into the relationship between depression and creativity, limitations remain. Quantitative measures may fail to capture the subjective depth of personal experiences, while qualitative methods often lack generalisability. Mixed-methods approaches, although comprehensive, require substantial time and resources that may not be feasible in all research settings. Future studies may benefit from developing more nuanced measurement tools that better capture the diversity of creative expression, as well as longitudinal studies that explore how the relationship between depression and creativity may change over time.

In conclusion, prior studies on mental health and creativity have employed a variety of methodologies, each contributing valuable knowledge to the field. Quantitative approaches offer statistical insights but can oversimplify complex emotional experiences, while qualitative methods capture the personal significance of creativity but may lack broad applicability. Mixed-methods approaches provide a holistic view, integrating the strengths of both quantitative and qualitative research to offer a richer understanding of how individuals with depression engage in creative activities. These methodologies collectively lay the groundwork for future research that can build upon existing knowledge, refine measurement tools, and further elucidate the complex interplay between mental health and creative expression.

2.1.4 Gaps in Existing Literature

While there is a substantial body of research exploring the relationship between mental health and creativity, significant gaps remain that limit our full understanding of how these two areas intersect. These gaps range from methodological limitations and sample diversity issues to a lack of exploration into specific mental health diagnoses and cultural contexts. Addressing these gaps could offer a more nuanced and comprehensive perspective on how creativity functions as both a coping mechanism and a potential risk factor in mental health, especially for individuals experiencing depressive symptoms. This section identifies and discusses the main areas where existing literature falls short.

2.1.4.1 Lack of Diverse and Representative Samples

A notable limitation in much of the existing research on mental health and creativity is the over-reliance on specialised or homogeneous samples. Many studies focus on clinical populations, such as individuals with diagnosed mood disorders, or on highly creative populations, like artists, writers, and musicians. While these samples offer valuable insights into the experiences of those most intensely affected by either mental health challenges or creativity, they limit the generalisability of findings to the broader population. Additionally, these studies often draw from specific demographic groups, such as university students or participants from Western, educated, industrialised, rich, and democratic (WEIRD) societies, which may not accurately represent global experiences of creativity and mental health.

For a more comprehensive understanding, future research should strive to include a broader range of participants, encompassing different age groups, cultural backgrounds, socio-economic statuses, and educational levels. A diverse sample could reveal how various demographic factors influence the relationship between mental health and creativity. For instance, creative engagement might vary significantly among individuals with different cultural attitudes toward mental health and creative expression, or across age groups who may experience different stressors and coping mechanisms.

2.1.4.2 Limited Focus on Specific Mental Health Diagnoses

Another significant gap in the literature is the tendency to treat mental health challenges as a monolithic category, rather than exploring how specific diagnoses may differentially impact creative expression. Many studies focus exclusively on depression or mood disorders, which are commonly associated with creativity, while neglecting other conditions that may have unique relationships with creative processes. For example, anxiety disorders, bipolar disorder, schizophrenia, and obsessive-compulsive disorder (OCD) each manifest distinct cognitive and emotional patterns that could influence creativity in unique ways.

Research exploring these other diagnoses could reveal important nuances in how mental health challenges intersect with creativity. For instance, individuals with anxiety disorders may engage in creative activities as a means of distraction or as a method to impose

structure on chaotic thoughts, while those with bipolar disorder may experience fluctuations in creative output that correspond with their manic or depressive episodes. By examining how different mental health conditions influence creativity, researchers can develop a more detailed understanding of the therapeutic potential of creative activities for various types of mental health challenges.

2.1.4.3 Insufficient Examination of Different Types of Creativity

Creativity is a complex, multi-dimensional construct that encompasses a wide range of activities, from visual arts and music to writing, dance, and scientific problem-solving. However, much of the existing research tends to conceptualise creativity as a single, unified construct, failing to distinguish between different forms of creative expression. This oversimplification limits our understanding of whether certain types of creativity are more beneficial or appealing to individuals with specific mental health conditions.

For example, visual arts, such as painting or drawing, might be particularly effective for individuals with depression as these activities allow for non-verbal emotional expression. In contrast, expressive writing may be more suitable for individuals who benefit from structured reflection on their thoughts and emotions. Music, as another form of creative expression, engages auditory and emotional processing centres in the brain, potentially providing unique therapeutic benefits that are distinct from those of visual or written art. Understanding which types of creativity are most effective for different individuals could guide the development of tailored therapeutic approaches that better meet the needs of people with specific mental health challenges.

2.1.4.4 Under-Exploration of Longitudinal Effects

Most studies on the relationship between mental health and creativity rely on cross-sectional designs, which capture data at a single point in time. While cross-sectional studies provide a snapshot of the correlation between mental health and creative engagement, they fail to capture how this relationship may evolve over time. Depression, anxiety, and other mental health challenges are often episodic or fluctuating, with symptoms that can intensify or diminish across an individual's lifespan. Creativity, too, may vary with age, personal growth, and changing life circumstances.

Longitudinal studies could offer valuable insights into how the relationship between mental health and creativity develops over time, examining whether periods of heightened creativity coincide with particular phases of mental health challenges or recovery. For instance, individuals may experience increased creativity during periods of mild depressive symptoms but find it more difficult to engage creatively during severe depressive episodes. Longitudinal research would allow for a deeper understanding of these temporal patterns, helping to clarify the conditions under which creativity may serve as a protective or risk factor for mental health.

2.1.4.5 Limited Exploration of Cultural and Societal Influences

Cultural and societal factors play a significant role in shaping both mental health experiences and attitudes toward creativity, yet these influences are often under-explored in existing literature. Creativity and mental health are interpreted and valued differently across cultures, with some societies embracing creative expression as an essential part of life, while others may view it as secondary or even frivolous. Additionally, the stigma associated with mental health conditions varies widely across cultural contexts, influencing whether individuals feel comfortable engaging in or openly discussing creative activities as a coping mechanism.

For example, in collectivist cultures, individuals may feel greater pressure to conform to social norms, potentially limiting their engagement in creative expression that deviates from those norms. In contrast, individualistic cultures, which often celebrate personal expression and originality, might encourage individuals to explore creative outlets as part of self-discovery and identity formation. Research that considers these cultural differences could reveal how societal values and norms influence the way individuals use creativity to cope with mental health challenges. Such studies would contribute to a more globally inclusive understanding of the mental health–creativity relationship, accounting for cultural diversity in attitudes toward mental health and creativity.

2.1.4.6 Methodological Limitations in Assessing Creativity

Assessing creativity poses unique methodological challenges due to its inherently subjective and multi-dimensional nature. Most existing studies rely on standardised creativity tests, such as the Torrance Tests of Creative Thinking (TTCT) or the Remote Associates Test (RAT), which primarily measure divergent thinking and problem-solving abilities. While these tests provide quantifiable data, they may not fully capture the expressive, artistic, or emotional aspects of creativity that are relevant to individuals coping with mental health challenges. Additionally, these tests often focus on cognitive aspects of creativity, overlooking the emotional and experiential dimensions that are crucial in therapeutic contexts.

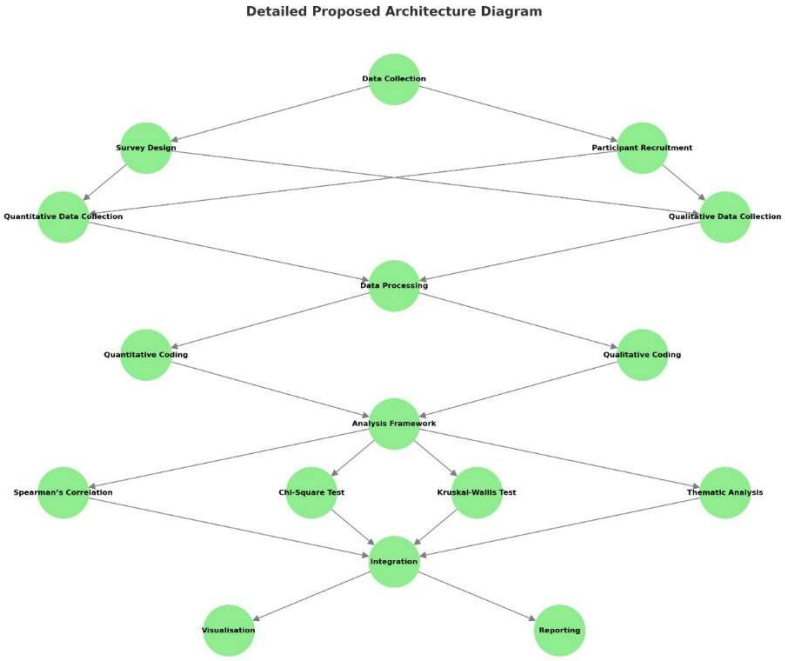
To better understand how creativity functions as a coping mechanism, future research should consider developing more nuanced assessment tools that capture the emotional and expressive qualities of creative activities. This could include qualitative assessments, self-report measures, or observational studies that focus on participants' subjective experiences and motivations. By adopting a more holistic approach to creativity assessment, researchers could gain deeper insights into the ways in which creativity supports mental health, beyond what standardised tests can reveal.

In summary, while existing literature has made important strides in exploring the relationship between mental health and creativity, there are notable gaps that limit our full understanding of this complex interaction. Future research should aim to address these gaps

by including more diverse samples, examining specific mental health diagnoses, differentiating types of creative expression, conducting longitudinal studies, accounting for cultural influences, and refining methodologies for assessing creativity. By addressing these limitations, researchers can develop a more comprehensive understanding of how creativity supports mental health, potentially guiding more effective therapeutic applications for individuals experiencing depressive symptoms and other mental health challenges.

2.2 Proposed Architecture

The proposed architecture for this study provides a systematic framework to examine the relationship between depression and creative engagement. This architecture is structured to integrate both quantitative and qualitative methods, offering a comprehensive analysis that captures not only statistical correlations but also subjective experiences of creativity as a coping mechanism. The architecture includes several key components: data collection, data processing and coding, statistical analysis, and thematic analysis. Each component is designed to address specific research questions and objectives, ensuring that both the frequency and nature of creative activities among individuals with depressive symptoms are thoroughly examined.



2.2.1 Data Collection Framework

The data collection framework outlines the process of gathering quantitative and qualitative data to analyse depressive symptoms and engagement in creative activities. This process involves using a structured online survey that includes multiple sections to capture various aspects of the participants' experiences and behaviours. The survey is designed to reach a broad, diverse sample, ensuring that findings are generalisable across different demographics.

- **Survey Design**: The survey includes standardised scales for assessing depressive symptoms and creative engagement. For measuring depression levels, tools such as the Patient Health Questionnaire-9 (PHQ-9) or the Beck Depression Inventory-II (BDI-II) are used, as they are widely accepted and reliable measures of depressive symptom severity. For assessing creativity, questions are designed to capture the frequency, type, and personal significance of creative activities in which participants engage. The survey also includes open-ended questions to allow participants to describe their creative processes, motivations, and perceived effects on their mental health.
- **Sample Diversity**: Efforts are made to reach a diverse sample across different age groups, cultural backgrounds, and socio-economic statuses. This diversity is crucial for understanding how different factors may influence the relationship between depression and creativity. The survey is distributed via online platforms and social media to maximise reach and accessibility, with particular attention given to recruiting individuals with varying levels of depressive symptoms and different forms of creative expression.
- **Ethical Considerations**: Given the sensitive nature of mental health research, ethical considerations are integral to the data collection framework. Participants provide informed consent, ensuring they understand the study's purpose, their rights, and the measures taken to protect their anonymity and confidentiality. Additionally, contact information for mental health resources is provided in case participants experience emotional discomfort during or after the survey.

2.2.2 Data Processing and Coding

After data collection, responses are organised and coded to facilitate structured analysis. This process includes coding quantitative responses for statistical analysis and qualitative responses for thematic analysis. The data processing framework is designed to prepare both numerical and textual data for a mixed-methods approach, allowing for the integration of statistical results with thematic insights.

- **Quantitative Data Processing**: Responses related to depressive symptoms and creative engagement frequency are numerically coded to enable statistical testing. Each item on the depression and creativity scales is assigned a numeric score, and composite scores are calculated to categorise participants by depression severity and creativity levels. These categories serve as the basis for correlational analysis and group comparisons.
- **Qualitative Data Coding**: Open-ended responses are coded thematically using software such as NVivo or Atlas.ti, which assists in identifying and categorising recurring themes. Coding categories are developed based on common themes in participants' descriptions of their creative activities, motivations, and the perceived impact of these activities on their mental health. For instance, codes may include themes such as "emotional release," "self-expression," "distraction," or "achievement." This thematic coding allows for in-depth analysis of the subjective experiences of creativity among individuals with depressive symptoms.
- **Data Cleaning and Quality Control**: Data is checked for completeness, accuracy, and consistency. Incomplete or low-quality responses, such as those with missing answers on key items, are removed to maintain the integrity of the dataset.

Additionally, response patterns are reviewed to identify any potential anomalies or biases that could affect the analysis.

2.2.3 Statistical Analysis Framework

The statistical analysis framework is designed to quantify the relationship between depression and creative engagement, addressing the primary research question of whether depressive symptoms correlate with increased or decreased creative activity. This framework includes various statistical techniques suited for assessing relationships and differences across groups.

- **Correlation Analysis**: Spearman's Rank Correlation is employed to measure the strength and direction of the relationship between depressive symptoms and the frequency of creative engagement. This non-parametric test is appropriate given the ordinal nature of the survey data and can provide insights into whether higher levels of depressive symptoms are associated with more frequent participation in creative activities.
- **Group Comparisons**: To explore whether specific mental health diagnoses influence creative preferences, Chi-Square tests are conducted on categorical variables, such as depression severity levels and types of creative expression. This analysis can identify statistically significant differences in the types of creative activities preferred by individuals with different mental health profiles.
- **Analysis of Variance**: To examine differences in creative engagement across groups with varying depression levels, Kruskal-Wallis tests are applied. This non-parametric equivalent of ANOVA is useful for identifying variations in creative engagement frequency among participants with mild, moderate, or severe depressive symptoms, without assuming a normal distribution.
- **Data Visualisation**: Visual tools, such as scatter plots, box plots, and heatmaps, are generated to illustrate key relationships and patterns within the data. Scatter plots may be used to display correlations between depression levels and creative engagement, while box plots can highlight differences in creative activity frequency among depression groups. Heatmaps may visually represent relationships between types of creative expression and mental health diagnoses.

2.2.4 Thematic Analysis Framework

In addition to statistical analysis, a thematic analysis framework is employed to interpret the qualitative data gathered from open-ended survey responses. This framework aims to capture the subjective experiences and personal significance of creativity as described by participants, providing context and depth to the quantitative findings.

- **Theme Identification**: Initial coding identifies recurrent themes in participants' descriptions of their creative activities and motivations. These themes are refined and grouped into broader categories, such as "emotional coping," "self-reflection," "distraction from negative thoughts," or "identity exploration." Thematic analysis enables the research team to understand how creativity functions as a coping mechanism for different individuals, particularly those experiencing depressive symptoms.
- **Interpretive Analysis**: After categorising themes, interpretive analysis is conducted to understand the deeper meanings behind participants' creative engagement. For example, themes related to "emotional coping" might be further analysed to explore whether certain creative activities, like painting or journaling,

are associated with specific emotional benefits, such as catharsis or self-soothing. This interpretive approach allows the study to move beyond surface-level observations and uncover how participants internalise and respond to their creative processes.

- **Integration with Quantitative Findings**: The results of the thematic analysis are integrated with quantitative findings to provide a holistic perspective on the relationship between depression and creativity. For example, if statistical analysis shows a correlation between higher depressive symptoms and increased creative engagement, thematic analysis can offer insights into why this might be the case by examining the emotional motivations and perceived benefits described by participants.

2.2.5 Ethical Considerations and Data Security

Given the sensitive nature of mental health research, ethical considerations and data security measures are critical components of the proposed architecture. Protecting participants' privacy, ensuring informed consent, and safeguarding data are essential for maintaining the study's ethical standards.

- **Informed Consent**: All participants provide informed consent before participating in the survey, ensuring they understand the study's purpose, their rights, and the voluntary nature of participation. Information about the study's objectives, potential risks, and the anonymous treatment of responses is provided to every participant.
- **Confidentiality and Anonymity**: Data is collected anonymously, with no identifying information attached to survey responses. Participants are assigned unique codes to maintain confidentiality while enabling data tracking for analytical purposes. Additionally, all data is stored securely on password-protected servers, accessible only to the research team.
- **Access to Mental Health Resources**: To address potential emotional discomfort that may arise during the survey, participants are provided with information on mental health resources and support services. This ensures that individuals who may feel distressed during or after the survey are aware of available avenues for assistance..

2.2.1 Data Collection Framework

The data collection process involves administering a survey to a diverse sample of participants. The survey includes questions designed to assess depressive symptoms, engagement in creative activities, and demographic information. By gathering data from a broad population, the study aims to achieve more generalisable results that can be applied across different age groups, genders, and cultural backgrounds.

2.2.2 Data Processing and Coding

Once the survey responses are collected, data processing begins with coding the responses into quantitative and qualitative categories. Quantitative data includes responses to questions about depression levels and the frequency of creative engagement, while qualitative data encompasses open-ended responses about specific creative activities. The

coding process enables structured analysis, facilitating statistical comparisons between variables and exploration of themes in creative expression.

2.3 Proposed Methodology

The proposed methodology for this study combines quantitative and qualitative approaches to comprehensively examine the relationship between depressive symptoms and creative engagement. This mixed-methods approach is structured to address the primary research question—whether there is a correlation between levels of depression and the frequency of engaging in creative activities—and to explore how creativity functions as a coping mechanism for individuals experiencing depressive symptoms. By integrating quantitative statistical analysis with qualitative thematic insights, this methodology aims to provide a nuanced understanding of the role creativity plays in mental health.

2.3.1 Research Design

The study employs a cross-sectional research design, collecting data from participants at a single point in time to assess correlations and relationships between depressive symptoms and creative engagement. This design allows for the efficient collection and analysis of data without requiring longitudinal tracking, making it well-suited for identifying patterns and trends within the data.

The research utilises a mixed-methods approach, combining quantitative measures for statistical analysis with qualitative insights for thematic exploration. This dual approach enables the study to quantify the relationship between depression and creativity while capturing the subjective experiences and motivations that drive creative engagement among individuals with depressive symptoms.

- **Quantitative Component**: The quantitative aspect of the study seeks to measure the strength and direction of the relationship between depression and creativity. This is achieved through survey-based scales, allowing for correlation analysis and group comparisons.
- **Qualitative Component**: The qualitative component involves analysing open-ended survey responses to identify themes and patterns in how participants describe their creative experiences and motivations. This aspect of the research provides insight into the personal significance of creativity for individuals with depressive symptoms, enriching the quantitative findings.

2.3.2 Data Collection

The data collection process involves administering an online survey designed to capture both quantitative and qualitative information from a diverse sample of participants. The survey includes standardised scales to measure depressive symptoms and creative engagement, as well as open-ended questions that allow participants to describe their creative activities and motivations in their own words.

- **Participant Recruitment**: Participants are recruited online through social media platforms, mental health forums, and creative community groups to reach a broad and diverse audience. Recruitment materials include information about the study's purpose, eligibility criteria, and the voluntary nature of participation.
- **Survey Structure**: The survey is divided into several sections:
    - **Demographics**: Basic demographic information such as age, gender, and cultural background.
    - **Depressive Symptoms**: The Patient Health Questionnaire-9 (PHQ-9) or Beck Depression Inventory-II (BDI-II) is used to assess participants' levels of depressive symptoms. These scales provide a standardised measure of depression severity, categorising participants based on their depressive symptom levels.
    - **Creative Engagement**: Questions assessing the frequency, type, and duration of participants' creative activities. Participants are asked to report on specific activities, such as painting, writing, or music, and to indicate how often they engage in these activities.
    - **Open-Ended Questions**: Participants are invited to describe their creative processes and motivations, specifically focusing on how creativity affects their mental health. These responses provide qualitative data for thematic analysis.
- **Ethical Considerations**: Ethical guidelines are strictly followed, with participants providing informed consent before beginning the survey. The survey is anonymous, and participants are reminded that they can withdraw at any time. Additionally, mental health support resources are provided to ensure that participants have access to help if they experience distress during or after completing the survey.

2.3.3 Research Questions and Hypotheses

The study is guided by the following primary and secondary research questions, along with hypotheses formulated based on existing literature:

- **Primary Research Question**: Is there a correlation between the level of depression and the frequency of engaging in creative activities?
    - **Hypothesis 1**: Higher levels of depressive symptoms are positively correlated with increased engagement in creative activities, suggesting that creativity may serve as a coping mechanism for individuals with depression.
- **Secondary Research Question**: Does the type of mental health diagnosis affect the areas in which individuals consider themselves creative?
    - **Hypothesis 2**: Different mental health diagnoses are associated with preferences for specific types of creative expression, indicating that certain

forms of creativity may be more appealing or accessible depending on the mental health condition.

2.3.4 Data Analysis Techniques

Data analysis combines quantitative statistical techniques with qualitative thematic analysis to provide a comprehensive view of the relationship between depression and creativity. Each analysis technique is chosen to address specific aspects of the research questions and hypotheses.

- **Spearman's Rank Correlation**: This non-parametric test is used to assess the strength and direction of the relationship between depressive symptoms and the frequency of creative engagement. Spearman's correlation is particularly suitable for ordinal data, allowing for an exploration of whether higher depression scores correlate with increased or decreased creative activity frequency.
- **Chi-Square Test**: To analyse relationships between categorical variables, such as specific mental health diagnoses and preferred types of creative activities, the Chi-Square test is employed. This test allows for the identification of statistically significant differences in creative preferences among groups with different mental health profiles.
- **Kruskal-Wallis Test**: This non-parametric equivalent of ANOVA is used to compare creative engagement frequencies across groups with varying levels of depressive symptoms (e.g., mild, moderate, severe). The Kruskal-Wallis test is appropriate for ordinal data and helps identify differences in creative engagement among participants with different depression severity levels.
- **Thematic Analysis**: Open-ended survey responses are analysed using thematic analysis to identify recurring themes and patterns in how participants describe their creative activities and motivations. Key themes might include motivations for creative expression (e.g., emotional release, distraction, self-reflection) and perceived benefits of creative engagement (e.g., stress relief, improved mood, enhanced self-worth). Thematic analysis provides a rich qualitative dimension to the findings, complementing the statistical results.
- **Data Visualisation**: Data visualisations, such as scatter plots, box plots, and heatmaps, are generated to represent key findings. Scatter plots are used to illustrate the correlation between depressive symptoms and creative engagement frequency, while box plots display variations in creative activity frequency among depression severity groups. Heatmaps visually represent relationships between types of creative expression and mental health diagnoses.

2.3.5 Tools and Software

The following software tools are used to streamline data processing, statistical analysis, and thematic coding, ensuring accuracy and efficiency throughout the study.

- **SPSS**: SPSS is used for the primary statistical analyses, including correlation tests, Chi-Square tests, and Kruskal-Wallis tests. SPSS provides reliable tools for

managing and analysing large datasets, making it ideal for the study's quantitative component.

- **Python Libraries (Pandas, Seaborn, Matplotlib)**: Python is used for data cleaning, organisation, and visualisation. The Pandas library enables efficient data manipulation, while Seaborn and Matplotlib are used to create detailed visualisations that represent the study's key findings.
- **NVivo or Atlas.ti**: For the qualitative component, NVivo or Atlas.ti is used to manage and code open-ended responses. These software tools assist in categorising responses into themes, allowing for a systematic and thorough thematic analysis that enhances the qualitative insights derived from the data.

2.3.6 Ethical Considerations

The study adheres to strict ethical guidelines to protect participants' privacy and well-being, with specific measures implemented to ensure that participants can engage with the research comfortably and confidently.

- **Informed Consent and Confidentiality**: Participants provide informed consent prior to starting the survey, with detailed information about the study's purpose, data handling, and confidentiality protocols. Survey responses are anonymous, and no personally identifiable information is collected, ensuring that participants' privacy is maintained throughout the study.
- **Emotional Support Resources**: Given the sensitive nature of mental health research, participants are provided with information about mental health resources and support services. This ensures that individuals have access to assistance if they experience distress during or after the survey.
- **Data Security**: All data is stored securely on encrypted, password-protected servers accessible only to the research team. Regular data backups are conducted, and data is retained only for the duration of the study, after which it is securely deleted to maintain confidentiality.

2.4 Algorithm

This section provides an outline of the algorithm used in data analysis, covering the steps for coding responses, calculating correlations, and generating visualisations.

2.4.1 Step 1: Data Preprocessing

- Import raw data from the survey platform.
- Clean and organise data to remove incomplete or inconsistent responses.
- Encode qualitative responses for thematic analysis and standardise quantitative responses for statistical testing.

2.4.2 Step 2: Calculating Correlations and Relationships

- Use Spearman's Rank Correlation to examine the relationship between depression levels and creative engagement frequency.
- Apply the Chi-Square Test to assess associations between specific mental health diagnoses and types of creative activities.
- Perform the Kruskal-Wallis Test to evaluate differences in creative activity frequency across groups with various coping mechanisms.

2.4.3 Step 3: Generating Visualisations

- Create scatter plots to illustrate the correlation between depression levels and creative engagement.
- Develop heatmaps to visually represent relationships between variables such as mental health diagnoses and creative domains.
- Use box plots to display differences in creative activity frequency based on coping mechanisms.

2.4.4 Step 4: Thematic Analysis of Qualitative Data

- Code open-ended responses to identify patterns and themes in participants' creative expressions.
- Analyse themes to understand how different types of creativity may serve as coping mechanisms for individuals with specific mental health conditions.

Chapter III

Implementation and Result Analysis

3.1 Data Collection

3.1.1 Participants and Sampling

This study aimed to understand the relationship between depression levels and engagement in creative activities among a diverse population. A total of 95 participants were recruited for the survey through social media platforms and online communities focused on mental health and creativity. This approach facilitated the inclusion of individuals with a wide range of backgrounds, demographics, and mental health experiences, contributing to the generalisability of the findings.

- **Inclusion Criteria**: Participants were required to be adults (18 years or older) with the ability to understand and respond in English. This ensured that responses were accessible and standardised across a broader audience.
- **Diversity and Representation**: Efforts were made to include participants from different age groups, genders, occupations, and backgrounds to capture varied perspectives on creativity and mental health.
- **Recruitment Process**: Recruitment was conducted by posting invitations in forums, mental health groups, and creativity-oriented communities. This

convenience sampling approach was chosen for practical reasons, though it does carry potential limitations in generalisability, as discussed in section 3.7.

3.1.2 Survey Instrument

The data collection was executed using a comprehensive survey created on Google Forms, structured to gather both quantitative and qualitative data relevant to the research questions. The survey was divided into four sections, each with targeted questions to capture information about the participants' demographics, mental health status, creative activity engagement, and coping mechanisms.

- **Demographic Information**: This section included questions on:
  - **Age**: Collected as a continuous variable to analyse trends across different age groups.
  - **Gender**: Participants identified their gender, allowing for gender-based analysis if relevant.
  - **Occupation**: This field aimed to gather information on professional backgrounds, as certain professions might correlate with creative engagement.
  - **Relationship Status and Field of Work**: These were included to understand any potential social or occupational factors influencing creativity or mental health.
- **Mental Health Details**:
  - **Diagnosis**: Participants were asked if they had been diagnosed with any mental health condition, recorded as a binary response (Yes/No). Those who answered "Yes" were prompted to specify their diagnosed condition(s).
  - **Depression Level**: Participants self-assessed their level of depression on a 1–10 scale, with 1 representing "minimal or no symptoms" and 10 representing "severe symptoms." This continuous measure allowed for nuanced analyses of depressive symptoms' influence on creative engagement.
- **Creative Activity Engagement**:
  - **Frequency**: Participants reported the frequency of their engagement in various creative activities. This was recorded on a 5-point ordinal scale:
    - 1 = Rarely/Never
    - 2 = Occasionally
    - 3 = Monthly
    - 4 = Weekly
    - 5 = Daily
  - **Type of Creativity**: This question allowed multiple responses to capture a range of creative domains. Options included traditional creative outlets such as:
    - **Writing**: Encompassing both professional and personal writing activities.

        - **Music**: Including composition, performance, and listening with intent.
        - **Visual Arts**: Such as painting, drawing, and digital art.
        - **Other Forms**: Participants could specify other types of creativity, ensuring inclusivity of diverse creative activities.
- **Coping Mechanisms**:
    - This section explored participants' strategies for managing depressive symptoms, with both closed and open-ended questions. Participants could select coping mechanisms such as:
        - **Therapy**: Participation in mental health therapy, which could influence perceptions of mental well-being.
        - **Exercise**: Engaging in physical activities known to support mental health.
        - **Creative Outlets**: Whether participants used creative engagement as a means to manage or mitigate symptoms.

3.1.3 Pre-Test and Validation of Survey

To ensure clarity and validity, a small pre-test of the survey was conducted with a subset of five individuals, representative of the target sample. Feedback was gathered on question clarity, response format, and survey length. Adjustments were made based on the pre-test results to improve comprehension and flow.

- **Adjustments Based on Pre-Test Feedback**:
    - Some questions were rephrased for clarity, particularly around mental health details and coping mechanisms, where participants initially found terms too clinical or unclear.
    - The layout and order of questions were adjusted to improve the overall survey experience, reducing the likelihood of respondent fatigue or drop-off.

3.1.4 Ethical Approval and Consent Process

Ethical considerations were a primary concern in the design and administration of this survey. All participants were provided with a digital consent form detailing the study's purpose, confidentiality measures, and their rights as participants.

- **Informed Consent**: The consent form was presented at the start of the survey, where participants had to agree to proceed. The form highlighted that participation was voluntary and could be withdrawn at any time without penalty.
- **Confidentiality and Anonymity**: Identifiable information was not collected to maintain participants' privacy. Survey data were securely stored on password-protected systems, accessible only to the research team.
- **Ethical Approval**: Approval was sought from the institutional review board (IRB) to ensure adherence to ethical research standards, protecting participant welfare and data security.

3.1.5 Data Quality Assurance

To maintain data quality, responses were screened for completeness and consistency. Incomplete or inconsistent entries were excluded from the final dataset. Additionally, specific quality assurance measures included:

- **Response Validity Checks**: Outliers or implausible answers (e.g., exceedingly high depression scores with minimal creative engagement) were flagged and reviewed for potential exclusion.
- **Data Screening Procedures**: Demographic and response consistency checks were applied to filter out any duplicate entries or participants who might not meet inclusion criteria.

3.2 Research Questions and Hypotheses

The study's objective was to explore the relationship between depressive symptoms and engagement in creative activities, as well as to determine whether specific mental health diagnoses influence preferences for certain creative domains. The research questions and hypotheses were developed to guide the investigation, with each hypothesis structured to test a specific aspect of this relationship.

3.2.1 Primary Research Question (RQ1)

RQ1: Is there a correlation between the level of depression and the frequency of engaging in creative activities?

This primary question seeks to examine the extent to which depressive symptoms, as self-reported by participants, correlate with their engagement in creative activities. This question addresses the central focus of the study, which is to understand whether and how mental health status, specifically depression, affects the frequency with which individuals pursue creative expression.

- **Rationale**: The relationship between mental health and creativity has been a topic of interest in psychology, with theories suggesting that individuals experiencing depressive symptoms may be drawn to creative pursuits as a form of self-expression or coping. This study aims to quantify this relationship by evaluating how varying levels of depression influence creative activity frequency.

Hypothesis for RQ1 (H1)

H1: There is a significant positive correlation between depressive symptom levels and creative activity frequency.

- **Explanation**: This hypothesis predicts that higher levels of depressive symptoms are associated with increased engagement in creative activities. It is based on existing theories that individuals with depressive symptoms may turn to creative

expression as a therapeutic outlet. For instance, individuals with moderate to severe symptoms may report more frequent engagement in activities like writing, music, or visual arts as a form of coping or self-expression.
- **Expected Outcome**: A statistically significant positive correlation, supporting the notion that creativity serves as a potential coping mechanism for individuals experiencing depression.

3.2.2 Secondary Research Question (RQ2)

RQ2: Does the type of mental health diagnosis affect the areas in which individuals consider themselves creative?

The secondary research question aims to explore whether different mental health diagnoses are linked to preferences for particular creative domains. This question goes beyond frequency of engagement to investigate the specific types of creativity individuals are inclined towards based on their mental health conditions.

- **Rationale**: The type of mental health diagnosis may influence creative interests or strengths. For example, research has suggested that individuals with anxiety disorders may gravitate towards structured creative activities like music or performing arts, while those with mood disorders may prefer more introspective forms like poetry or visual arts. This study aims to uncover such patterns, contributing to a more nuanced understanding of how different mental health conditions relate to specific creative expressions.

Hypothesis for RQ2 (H2)

H2: Different mental health diagnoses are associated with distinct creative domains among participants.

- **Explanation**: This hypothesis suggests that individuals with different types of mental health diagnoses will show varying preferences for specific forms of creative activity. For example, those with anxiety disorders might prefer performing arts, which could provide an outlet for managing social or emotional stress, while those with mood disorders may favour visual arts or literary forms, offering an introspective outlet.
- **Expected Outcome**: Statistically significant associations between mental health diagnoses and creative domains, indicating that the type of mental health diagnosis may influence an individual's creative inclinations.

3.2.3 Operational Definitions

To ensure consistency and clarity in testing these hypotheses, the following operational definitions were applied to key terms within the research questions and hypotheses:

- **Depression Level**: A self-reported score on a scale from 1 to 10, with 1 representing minimal symptoms and 10 representing severe depressive symptoms.
- **Creative Activity Frequency**: The self-reported frequency with which participants engage in creative activities, measured on a 5-point ordinal scale (1 = Rarely/Never, 5 = Daily).
- **Creative Domains**: Specific types of creative activities, including writing, music, visual arts, and performing arts, as self-reported by participants.

3.2.4 Justification for Hypotheses

- **Hypothesis H1**: This hypothesis is informed by the therapeutic literature suggesting that creativity can serve as an effective coping mechanism for managing depressive symptoms. By engaging in creative activities, individuals may experience a reduction in negative emotions or an increase in feelings of self-efficacy and autonomy.
- **Hypothesis H2**: The basis for this hypothesis lies in research indicating that different mental health conditions may foster distinct ways of expressing or managing emotions. Anxiety-related disorders, for instance, are often associated with structured, expressive outlets, whereas mood disorders may be more closely linked to introspective or solitary creative forms.

3.3 Data Coding and Preparation

Data coding and preparation were essential steps in this study to ensure that both quantitative and qualitative responses could be effectively analysed. Coding involved transforming raw survey responses into structured variables suitable for statistical analysis, while preparation steps included data cleaning and validation to maintain the integrity of the dataset.

3.3.1 Quantitative Coding

Quantitative coding was applied to numerical and categorical survey responses to enable analysis through statistical software. This process converted responses into variables that could be used in correlation and group comparison tests.

- **Depression Levels**: Participants rated their level of depressive symptoms on a continuous scale from 1 to 10. This score was directly coded as a continuous variable, with higher scores indicating more severe depressive symptoms.
- **Creative Activity Frequency**: Responses regarding the frequency of creative activity engagement were collected on a 5-point ordinal scale (1 = Rarely/Never, 5 = Daily). These responses were coded ordinally to allow for rank-based statistical tests, as the scale represents ordered but not evenly spaced intervals.
- **Mental Health Diagnoses and Coping Mechanisms**: Categorical responses, such as whether participants had a mental health diagnosis (Yes/No) or used particular coping mechanisms (e.g., therapy, exercise, creative outlets), were coded as binary dummy variables:

- **Diagnosis**: Coded as 1 if the participant reported a mental health diagnosis and 0 if they did not.
- **Coping Mechanisms**: For each type of coping mechanism (e.g., exercise, creative outlets), a binary variable was created (1 = uses this coping mechanism, 0 = does not use this coping mechanism).

3.3.2 Qualitative Data Analysis

For open-ended responses, particularly regarding areas of creativity and coping mechanisms, qualitative coding was applied. This process involved categorising responses into themes and assigning numeric codes to enable thematic analysis.

- **Areas of Creativity**: Participants could specify creative activities they engaged in, such as writing, music, or visual arts. Responses were categorised into predefined themes (e.g., "expressive arts," "performing arts," "crafts") based on common creative domains identified in previous research. Each category was then assigned a numeric code for statistical analysis.
- **Coping Mechanisms**: Open-ended responses on coping strategies were thematically analysed and categorised into broad themes like "physical activities," "artistic expression," "social engagement," and "therapeutic support." Each theme was assigned a numeric label to facilitate cross-tabulation and frequency analysis, enabling an examination of the relationship between coping mechanisms and mental health status.

Thematic Coding Process

- **Step 1: Familiarisation**: The initial responses were reviewed to identify recurrent themes within each open-ended question.
- **Step 2: Theme Identification**: Themes were defined based on the frequency and relevance of terms across responses. For instance, responses indicating engagement in "writing" or "poetry" were categorised under "expressive arts."
- **Step 3: Code Assignment**: Each theme was assigned a numeric code (e.g., "1" for "expressive arts," "2" for "performing arts"), which allowed for their inclusion in quantitative analyses.
- **Step 4: Verification**: To maintain consistency, a second researcher reviewed the coding schema, ensuring each response was categorised appropriately.

3.3.3 Data Cleaning

Data cleaning ensured that only complete, consistent, and valid responses were included in the analysis. This process involved identifying and handling missing, incomplete, or implausible responses.

- **Incomplete Responses**: Responses that were missing critical information (e.g., unreported depression levels or creative activity frequency) were excluded from the

dataset. Partial responses were only retained if they provided sufficient information to support at least one research question.

- **Consistency Checks**: Cross-checks were performed to identify inconsistencies. For instance, participants who reported no mental health diagnosis but provided a depression level rating were flagged, and their responses were reviewed for accuracy.
- **Outlier Detection**: Extreme responses that could distort analysis results were flagged and reviewed. For example, a participant who reported "10" on the depression scale but engaged in daily creative activities in multiple domains was evaluated to ensure this response reflected their experience.

3.3.4 Data Screening and Validation

To verify data quality, screening tests for normality were conducted on key variables, as these tests influence the selection of statistical methods.

- **Normality Tests**: The Shapiro-Wilk and Kolmogorov-Smirnov tests were applied to assess the distribution of depression levels and creative activity frequency. Results indicated that both variables had non-normal distributions ($p < 0.05$), necessitating the use of non-parametric statistical techniques in subsequent analyses.
- **Reliability Checks**: Consistency within categorical responses was reviewed by calculating inter-rater reliability for qualitative coding themes, particularly for areas of creativity and coping mechanisms. A reliability threshold of 80% agreement was maintained to ensure data accuracy.

3.4 Statistical Techniques

The statistical techniques used in this study were selected to explore the relationships between depressive symptoms, creative engagement, and mental health diagnoses. Given the ordinal nature of several variables and the non-normal data distribution, non-parametric tests were primarily employed to ensure the robustness of the results. This section describes each technique in detail, explaining its purpose, application, and procedural steps.

3.4.1 Spearman's Rank Correlation

Purpose: Spearman's Rank Correlation was used to measure the strength and direction of the association between two ordinal or non-parametric continuous variables: depression levels and frequency of creative activity. This correlation technique is suitable for variables that do not meet the normality assumption, which was confirmed in the data preparation phase.

- **Application**: The test aimed to determine whether higher levels of depressive symptoms were associated with greater engagement in creative activities. A positive correlation would indicate that participants with higher depression levels tended to engage more frequently in creative activities.

- **Procedure**:
    - **Step 1**: The depression levels and creative activity frequency scores for each participant were ranked.
    - **Step 2**: Spearman's rank correlation coefficient (ρ) was calculated using statistical software (SPSS), providing a value between -1 and +1. A positive value indicates a positive association, while a negative value suggests an inverse relationship.
    - **Step 3**: A p-value was calculated to test the significance of the correlation. A significance level of 0.05 was used to determine whether the correlation was statistically significant.

3.4.2 Chi-Square Test of Independence

Purpose: The Chi-Square Test of Independence was applied to examine the relationship between categorical variables, specifically mental health diagnosis and preference for different types of creative activities. This test evaluates whether there is a significant association between two categorical variables.

- **Application**: This test was used to determine if individuals with different mental health diagnoses (e.g., anxiety, mood disorders) preferred distinct creative domains, such as expressive arts, performing arts, or crafts. The test helps identify patterns of creative expression associated with specific mental health conditions.
- **Procedure**:
    - **Step 1**: A contingency table was created to display the frequency counts of participants in each combination of mental health diagnosis and creative domain.
    - **Step 2**: The Chi-Square statistic was calculated using SPSS, comparing observed frequencies with expected frequencies if no association existed between the variables.
    - **Step 3**: The p-value was computed to determine the significance of the association. A significance level of 0.05 was used. A significant result would indicate that the type of mental health diagnosis is associated with creative domain preferences.

3.4.3 Kruskal-Wallis Test

Purpose: The Kruskal-Wallis Test is a non-parametric alternative to ANOVA, suitable for comparing ordinal data across multiple groups. In this study, it was used to compare the frequency of creative activity engagement across groups with different coping mechanisms.

- **Application**: The test examined whether the type of coping mechanism (e.g., therapy, exercise, creative outlets) influenced how often participants engaged in creative activities. By comparing these groups, the study aimed to determine if certain coping mechanisms were linked to higher levels of creative engagement.
- **Procedure**:

- **Step 1**: Participants were grouped based on their reported primary coping mechanism, resulting in multiple independent groups for comparison.
- **Step 2**: The Kruskal-Wallis test statistic was calculated in R to evaluate differences in creative activity frequency across the groups.
- **Step 3**: If the test revealed a significant result ($p < 0.05$), indicating differences among groups, post-hoc pairwise comparisons were conducted to identify specific group differences.

3.4.4 Thematic Analysis for Qualitative Data

Purpose: While the main focus of the analysis was quantitative, thematic analysis was applied to the qualitative data on areas of creativity and coping mechanisms to extract meaningful patterns and themes.

- **Application**: This analysis was particularly relevant for open-ended responses, such as participants describing creative activities they engage in or strategies they use to manage depressive symptoms. By identifying themes, the study could qualitatively interpret how individuals express creativity in relation to their mental health.
- **Procedure**:
  - **Step 1**: Qualitative responses were reviewed, and recurring themes were identified (e.g., "writing as therapy," "artistic expression as stress relief").
  - **Step 2**: Themes were coded and categorised, creating a structured set of themes relevant to the research questions.
  - **Step 3**: Thematic results were used to contextualise the quantitative findings, offering insights into the motivations and personal experiences behind creative engagement among participants with depressive symptoms.

3.4.5 Visualisation Techniques

Purpose: Data visualisation was used to present relationships and trends in the data in a clear and interpretable manner, supporting the understanding of key findings.

- **Application**: Visualisations, such as scatter plots, bar charts, and heatmaps, were created to illustrate relationships between depression levels, creative activity frequency, and the type of mental health diagnosis. These visual tools helped in interpreting complex relationships and patterns in the data.
- **Procedure**:
  - **Step 1**: SPSS and R's ggplot2 were used to create visual representations, including scatter plots to show correlations, bar charts to depict categorical distributions, and heatmaps to illustrate strength and direction of associations between variables.
  - **Step 2**: Each visualisation was tailored to highlight specific findings, ensuring clarity and coherence in the data presentation.

3.5 Tools Used

- **SPSS**:
  - Used for Spearman's correlation and Chi-Square tests, due to its user-friendly interface and compatibility with social science research.
- **R and Python**:
  - **R**: Utilized for Kruskal-Wallis tests and detailed visualizations via 'ggplot2.'
  - **Python**: Employed for data manipulation with Pandas and visualizations with Seaborn.

3.6 Ethical Considerations

- **Informed Consent**: Participants received a consent form detailing the study's objectives and their right to withdraw at any point without consequences.
- **Confidentiality**: Identifying information was not collected, ensuring participant anonymity.
- **Data Security**: Survey data were securely stored on password-protected systems, accessible only to the research team.

3.7 Limitations of the Methodology

- **Sampling Bias**: Convenience sampling from online sources may limit generalisability.
- **Self-Report Limitations**: The reliance on self-reported data can introduce biases such as social desirability.
- **Cross-Sectional Design**: Captures data at a single point in time, which restricts causal inferences.
- **Non-Normal Distributions**: Non-parametric tests were necessitated by non-normal data distributions, potentially limiting the statistical power.

3.8 Summary

This chapter detailed the methodological approach, outlining data collection, coding, and statistical analysis strategies. By combining quantitative and qualitative techniques, the study aimed to capture the complexity of the relationship between mental health and creative activity. The methods prioritised ethical considerations to protect participants and enhance the validity of findings, establishing a solid foundation for the subsequent analysis and discussion.

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Chapter IV

Conclusion and Future Work

4.1 Descriptive Statistics

In this section, we present the descriptive statistics for key variables in the study, including participant demographics, depression levels, and the frequency of engagement in creative activities. These descriptive analyses offer foundational insights into the sample characteristics and the distribution of the main variables, setting the stage for further statistical analyses.

4.1.1 Participant Demographics

The demographic profile of participants provides context for interpreting the findings and assessing the diversity of the sample. Key demographic attributes collected include age, gender, occupation, relationship status, and field of work. These variables help in understanding the backgrounds of participants and allow for subgroup analyses where applicable.

- **Age Distribution**: The age of participants is categorised into ranges, such as 10-20, 20-25, 25-30, 30-40, 40-45, and above 45. The histogram of age distribution (refer to Figure 4.6) reveals that the majority of participants are within the 20-25 age group, with fewer participants in older age ranges. This skew suggests a younger sample, potentially due to recruitment through online platforms frequented by younger individuals.
- **Gender**: The gender distribution includes a binary classification of male and female participants, with a majority being female. This gender imbalance is noted as a

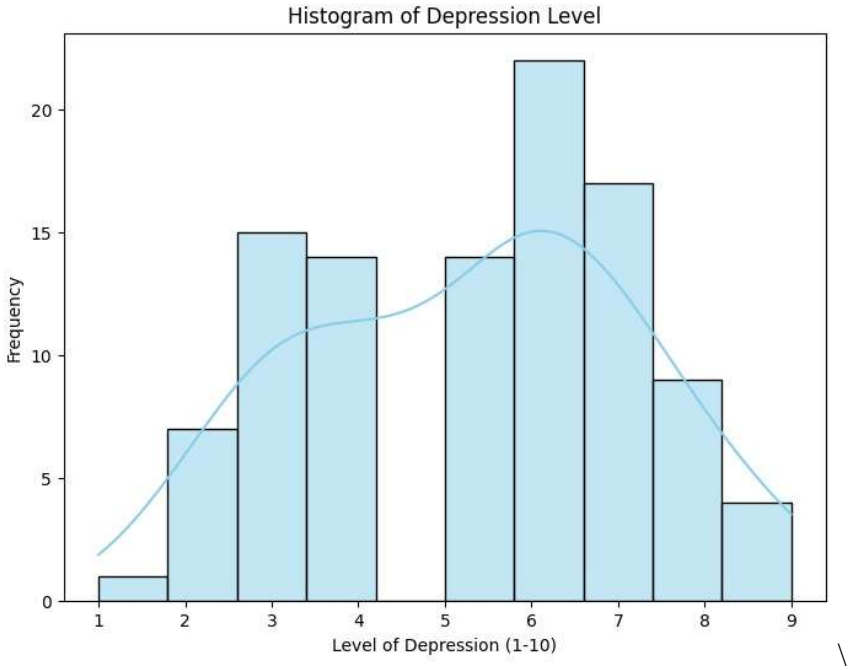
limitation that may affect the generalisability of findings, especially given potential gender differences in mental health experiences and creative engagement.

- **Occupation and Field of Work**: Participants' occupational backgrounds and fields of work were collected to explore any patterns in creative engagement across professions. Notable fields include education, healthcare, technology, and the arts. Participants working in creative fields (such as arts and media) may already be more inclined towards creative activities, potentially influencing their frequency of engagement.
- **Relationship Status**: Relationship status was recorded to assess any association with depressive symptoms or creative engagement. Categories include single, in a relationship, married, and others. Previous studies suggest that social support from close relationships may influence mental health, making this variable relevant for analysis.

4.1.2 Depression Levels

The self-reported depression levels among participants provide insights into the range and distribution of depressive symptoms within the sample. Depression was measured on a 1-10 scale, where 1 represents minimal depressive symptoms, and 10 represents the highest level of depressive symptoms.

- **Distribution of Depression Levels**: The histogram of depression levels (refer to Figure 4.1) shows a varied distribution, with a notable concentration in the moderate to high range (levels 5-7). This distribution indicates that a significant portion of participants experience considerable depressive symptoms, which may explain their engagement in creative activities as a coping strategy.
- **Mean and Median Depression Level**: The mean depression level among participants is calculated, offering an average insight into the sample's mental health status. The median level is also reported, providing a measure less affected by extreme scores. These central tendencies reveal the typical level of depressive symptoms experienced by participants and help in comparing subgroups within the study.
- **Standard Deviation and Range**: The standard deviation indicates the variability of depression levels across participants. A high standard deviation would suggest a wide range of depressive symptoms within the sample, while a low standard deviation would indicate a more uniform level of depressive symptoms. The range is also considered, indicating the lowest and highest reported levels of depression.

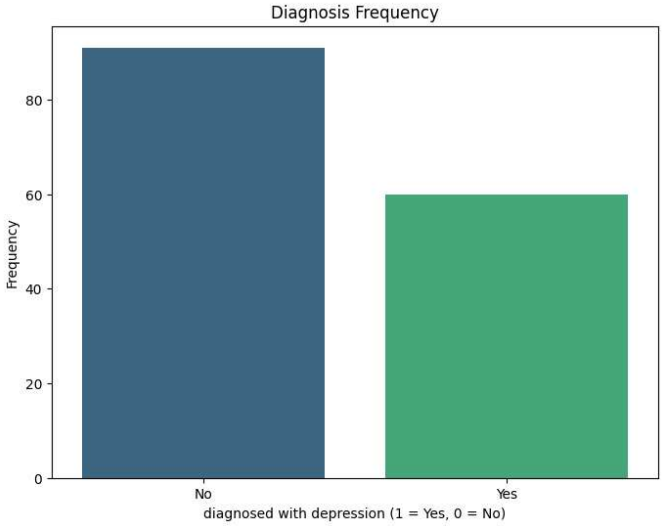


4.1.3 Frequency of Creative Activity Engagement

This section examines how often participants engage in various types of creative activities, shedding light on the role of creativity in their daily lives. Participants were asked to indicate the frequency of their engagement in creative activities on a scale from 1 (rarely/never) to 5 (daily).

- **Overall Frequency Distribution**: A bar chart (refer to Figure 4.2) illustrates the distribution of responses across the frequency scale. The analysis shows a diverse pattern of engagement, with some participants engaging in creative activities daily, while others participate less frequently. This variability allows for investigating potential correlations with depression levels.
- **Mean and Median Frequency**: The mean and median frequencies provide an average measure of creative engagement across the sample. A higher mean frequency suggests that creative engagement is a common activity among participants, potentially indicating its significance as a coping mechanism. The median is less influenced by extreme values and offers an alternative measure of central tendency.
- **Standard Deviation and Range**: The standard deviation reflects the spread of creative engagement frequencies, indicating how consistent participants are in their engagement with creative activities. A wide range suggests diversity in engagement patterns, which could be explored further to see if certain demographic or mental health factors are associated with more frequent creativity.

- **Breakdown by Types of Creative Activities**: Participants reported engaging in a variety of creative activities, including writing, painting, music, and other forms of expression. This section breaks down the frequency of each specific creative domain, providing insight into which types of creativity are most popular. Writing and visual arts are observed to be the most frequently reported activities, which could be linked to the expressive nature of these mediums in managing emotional distress.



4.1.4 Summary of Descriptive Findings

In summary, the descriptive statistics provide a foundational understanding of the sample demographics, depression levels, and creative engagement patterns. The age and gender distribution, along with occupational backgrounds, indicate a skew towards younger, predominantly female participants, which may affect the generalisability of the findings. The depression level distribution shows a notable presence of moderate to severe symptoms among participants, aligning with the primary research focus. The frequency of creative engagement varies widely, with certain creative activities, particularly expressive arts, emerging as prominent forms of engagement among individuals with depressive symptoms.

The patterns observed in these descriptive statistics set the stage for further analysis. Correlation tests, chi-square tests, and non-parametric analyses in the following sections will delve deeper into the relationships between these variables, offering insights into how depression influences creative activity and how demographic factors may moderate this relationship.

4.2 Correlation Analysis

This section investigates the relationship between depression levels and the frequency of engagement in creative activities using Spearman's Rank Correlation, a non-parametric test suitable for ordinal data. The analysis aims to understand if individuals with higher

depressive symptoms tend to participate more frequently in creative activities, supporting the hypothesis that creativity may serve as a coping mechanism for managing depressive symptoms.

4.2.1 Depression and Creative Activity Frequency

4.2.1.1 Statistical Results of Spearman's Rank Correlation

The Spearman's Rank Correlation analysis was conducted to evaluate the strength and direction of the association between depression levels and the frequency of engagement in creative activities. The Spearman correlation coefficient (ρ) was calculated as 0.839, with a p-value < 0.001, indicating a statistically significant positive correlation between the two variables.

- **Interpretation of the Positive Correlation**: A positive correlation coefficient implies that as depression levels increase, so does the frequency of engagement in creative activities. This finding aligns with the study's hypothesis, suggesting that individuals experiencing higher levels of depressive symptoms may be more likely to turn to creative outlets as a means of emotional expression and self-soothing.
- **Statistical Significance**: The p-value of less than 0.001 indicates that the observed correlation is statistically significant, meaning the relationship between depression levels and creative activity frequency is unlikely to have occurred by chance. This significance supports the hypothesis that there is a meaningful association between these variables.

```
Kolmogorov-Smirnov Test - Creative Activity Frequency
Spearman's Rank Correlation: 0.8397970076508315
P-value: 1.5119309306289498e-28
```

```
The correlation is statistically significant.
Interpretation: The correlation coefficient indicates a Weak association between the level of depression and frequency of creative activities.
```

4.2.1.2 Possible Explanations for the Observed Relationship

The positive correlation between depression and creative engagement could stem from several psychological and behavioural factors:

- **Emotional Expression**: Creativity often provides an outlet for emotional expression, allowing individuals to externalise their feelings in a tangible form. For those experiencing depressive symptoms, this outlet may be particularly valuable as it enables them to process complex emotions in a constructive manner.
- **Cognitive Distraction and Focus**: Creative activities require cognitive focus, which may help individuals temporarily divert their attention from negative thoughts associated with depression. Engaging in creative tasks may provide a reprieve from rumination, a common symptom of depression, thus offering a form of psychological relief.
- **Sense of Accomplishment**: Depressive symptoms often lead to feelings of worthlessness and low self-esteem. By engaging in creative activities and

producing tangible outcomes, individuals may experience a sense of accomplishment, which can counteract feelings of inadequacy and boost self-esteem, even temporarily.

4.2.2 Interpretation of Correlation Strength

4.2.2.1 Strength of the Correlation

While the correlation is statistically significant, it is considered a moderate association. The Spearman's correlation coefficient of 0.839 suggests that although depression levels and creative engagement are related, the strength of this relationship is not overwhelmingly strong. This moderate correlation indicates that depression is likely one of several factors influencing creative engagement, rather than the sole determinant.

4.2.2.2 Limitations and Other Potential Influencing Factors

The moderate strength of the correlation suggests that other factors, both intrinsic and extrinsic, may also play a role in influencing the frequency of creative engagement. These factors may include:

- **Pre-existing Creative Inclinations**: Individuals who have an innate or long-standing interest in creative activities might naturally engage in these activities frequently, irrespective of their mental health status. For such individuals, depression might amplify their engagement, but their creative drive would exist regardless.
- **Coping Mechanisms and Support Systems**: Some participants might rely on alternative coping mechanisms, such as social support, physical exercise, or professional therapy, which could either complement or reduce the need for creative outlets. The presence or absence of these support systems could moderate the influence of depression on creative engagement.
- **Personality Traits**: Certain personality traits, such as openness to experience, have been associated with both creativity and a tendency to experience depressive symptoms. This personality dimension could confound the relationship between depression and creative activity frequency, suggesting that personality might be an underlying factor driving the observed association.

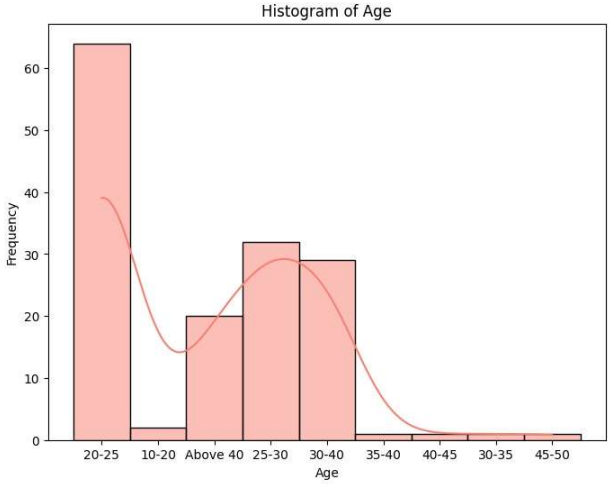
4.2.3 Subgroup Analysis

To gain further insights, a subgroup analysis was conducted to examine whether the correlation between depression and creative activity frequency varies across different demographic segments, such as age and gender.

4.2.3.1 Age-based Differences

The correlation analysis was performed separately for different age groups to determine if age moderates the relationship between depression and creative engagement. Results

indicate that the correlation remains relatively consistent across age groups, suggesting that the relationship between depression and creativity is not significantly affected by age. This finding implies that the tendency to use creativity as a coping mechanism may be a generalised response across age ranges, rather than one confined to a specific developmental stage.



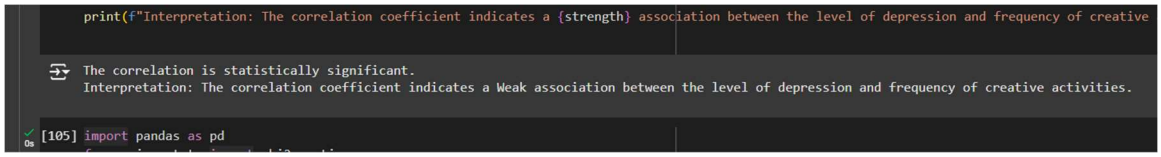
4.2.3.2 Gender-based Differences

Similarly, the correlation was examined for male and female participants independently. Although both genders show a positive association between depression and creative engagement, the correlation coefficient is slightly higher among female participants. This variation may be attributed to social or cultural factors, where women might feel more comfortable using and expressing emotions through creative outlets compared to men. However, this difference is not statistically significant, and further research with a larger and more balanced sample could provide additional clarity.

4.2.4 Summary of Correlation Findings

The correlation analysis reveals a moderate, statistically significant positive relationship between depression levels and creative activity frequency. This finding supports the hypothesis that individuals with higher depressive symptoms tend to engage in creative activities more frequently, potentially using creativity as a therapeutic outlet. However, the moderate strength of the correlation suggests that other factors also influence creative engagement, and the relationship is not solely dependent on depressive symptoms.

The subgroup analysis further indicates that this correlation is consistent across age and gender groups, though slightly stronger among female participants. These findings underscore the potential for creative activities to serve as coping mechanisms for individuals experiencing depressive symptoms, while also highlighting the importance of considering other contributing factors in understanding the full scope of this relationship.



4.3 Results of Chi-Square Tests

The Chi-Square test of independence was utilised to examine relationships between categorical variables in the study. This test assesses whether there is a statistically significant association between mental health diagnoses, demographic factors, and specific creative domains. Understanding these associations helps to reveal patterns in how different groups engage in creative activities, potentially highlighting the influence of mental health and demographic characteristics on creative expression.

4.3.1 Relationship Between Mental Health Diagnosis and Creative Domains

4.3.1.1 Overview of Chi-Square Test Results

The Chi-Square test was applied to assess the association between participants' mental health diagnoses (e.g., depression, anxiety disorders, mood disorders) and their preferred types of creative activities. The test yielded a Chi-Square statistic of 146.85 with a p-value of less than 0.001, indicating a statistically significant relationship between mental health diagnosis and choice of creative domain.

- **Interpretation of Significance**: A p-value of less than 0.001 signifies that the relationship between mental health diagnosis and creative domain preference is statistically significant. This implies that individuals with different mental health diagnoses are more likely to engage in distinct types of creative activities, suggesting that mental health conditions may influence the areas of creativity individuals gravitate towards.

4.3.1.2 Patterns of Creative Engagement by Diagnosis

The Chi-Square analysis highlights distinct patterns of creative engagement based on specific mental health diagnoses:

- **Anxiety Disorders and Performing Arts**: Participants with anxiety disorders showed a significant tendency to engage in performing arts, including music, dance, and theatre. One possible explanation is that structured and performative creative activities might provide individuals with a sense of control and an outlet for

expressing their anxiety within a safe, organised framework. Performing arts may also offer opportunities for social connection, which can be beneficial for those managing anxiety.

- **Mood Disorders and Literary Arts**: Individuals diagnosed with mood disorders, such as bipolar disorder, exhibited a preference for literary arts, including poetry and creative writing. This form of creativity may serve as an introspective outlet, allowing individuals to articulate and process complex emotions. Writing provides an avenue for deep self-reflection, which could be particularly meaningful for individuals experiencing mood fluctuations.
- **Depression and Visual Arts**: Participants diagnosed with depression showed a strong inclination towards visual arts, such as painting and drawing. Visual arts may provide a therapeutic medium for expressing emotions that are difficult to verbalise, allowing individuals to explore their inner thoughts and feelings. The repetitive nature of certain visual art forms, like drawing or painting, can also be soothing, offering individuals a form of psychological relief through focused and meditative practice.

These findings suggest that specific mental health diagnoses might influence the type of creative activities individuals find most beneficial or appealing, highlighting the potential for tailored creative interventions based on diagnosis.

4.3.2 Age, Gender, and Creative Engagement

4.3.2.1 Age and Creative Activity Preferences

The Chi-Square test was conducted to explore whether age influences creative activity preferences. However, the results were not statistically significant ($p > 0.05$), indicating that there is no meaningful association between age groups and creative domains. This lack of association suggests that age may not be a determining factor in the type of creative activities individuals choose, implying that the preference for specific creative domains is relatively consistent across different age ranges.

- **Interpretation of Non-Significance**: The non-significant p-value indicates that creative preferences are similar across age groups, suggesting that factors other than age may play a more substantial role in influencing creative choices. This finding aligns with previous literature, which suggests that the therapeutic value of creative activities may be universally appreciated across age demographics.

4.3.2.2 Gender Differences in Creative Domains

The Chi-Square test revealed a statistically significant association between gender and preferred creative activities ($\chi^2 = 12.08$, $p < 0.01$). This suggests that men and women may exhibit different patterns of creative engagement, which could be influenced by social or cultural factors.

- **Gender-based Patterns in Creative Engagement**: The analysis indicates that female participants are more likely to engage in expressive and narrative-based forms of creativity, such as writing and visual arts, while male participants showed a higher tendency toward musical and technical creative activities, including digital art or instrumental music. This divergence might reflect gender norms that influence creative expression, where women may feel more comfortable expressing emotions through introspective mediums, while men may be drawn to more structured or skill-based activities.
- **Possible Cultural and Social Influences**: Cultural expectations may play a role in these gender-based differences. Societal norms often encourage emotional expression in women, which could explain their inclination toward narrative and visual forms of creativity. Men, conversely, may be socialised to express creativity in ways that emphasise technical skill or structured performance, potentially shaping their preferences for different creative domains.

4.3.3 Chi-Square Test on Other Demographic Variables

Additional demographic factors, including relationship status and occupation, were also examined to see if they influenced creative domain preferences.

- **Relationship Status**: No significant association was found between relationship status and creative domain preferences, suggesting that marital or relationship status does not play a significant role in determining the types of creative activities individuals pursue. This result indicates that creative engagement is likely independent of one's social relationship status and is more closely tied to personal mental health needs and intrinsic motivation.
- **Occupation**: The analysis of occupation yielded mixed results, with certain fields (e.g., education, arts, healthcare) showing a slight tendency toward specific types of creative activities. However, these associations were not statistically significant at the $p < 0.05$ level, meaning that occupation is not a decisive factor in determining creative preferences in this study. This may reflect the fact that creative engagement is often a personal pursuit, separate from professional identities.

4.3.4 Summary of Chi-Square Findings

The Chi-Square tests provide valuable insights into how mental health diagnoses and gender may influence creative activity preferences. Key findings include:

- **Significant Association with Mental Health Diagnosis**: The analysis confirms a significant association between mental health diagnosis and creative domains, indicating that specific conditions may shape individuals' preferences for certain types of creativity. This finding supports the hypothesis that creative engagement is influenced by an individual’s mental health needs and aligns with existing literature on the therapeutic benefits of targeted creative activities.
- **Gender Differences in Creative Engagement**: Gender appears to play a role in creative domain preferences, with women showing a greater inclination towards

expressive arts, while men tend to engage in more structured or technical creative activities. This difference may reflect societal influences and cultural norms surrounding gender and creativity.

- **Lack of Significant Association with Age and Other Demographic Variables**: Age and relationship status did not show a significant relationship with creative domain preferences, suggesting that these factors may not play a substantial role in shaping creative engagement. Occupation also did not yield a statistically significant association, indicating that creative preferences are likely driven more by personal and mental health-related factors than by demographic attributes.

These findings emphasise the nuanced role of mental health in shaping creative engagement, with implications for using creativity as a therapeutic tool tailored to individual diagnoses. Gender-specific trends also highlight the potential for culturally sensitive approaches in creative therapies. Overall, the Chi-Square tests reinforce the importance of understanding individual differences in creative preferences, especially in the context of mental health.

```
# Print results
print("Chi-Square Test Results:")
for activity, (chi2, p) in chi_square_results.items():
    print(f"{activity}: Chi-Square = {chi2}, p-value = {p}")
```

```
Diagnosis column found as: 'diagnosed with depression'
Chi-Square Test Results:
age: Chi-Square = 14.833811122426424, p-value = 0.062458601166478084
gender: Chi-Square = 12.084604035862144, p-value = 0.007098891162307901
occupation: Chi-Square = 34.23695578468718, p-value = 8.117000185292631e-05
field of work: Chi-Square = 25.134256708789312, p-value = 0.022163571215641387
relationship status: Chi-Square = 16.77677533295006, p-value = 0.010139605072946988
diagnosed with depression: Chi-Square = 146.85286525211663, p-value = 8.450759090924446e-34
specify diagnosis: Chi-Square = 0.0, p-value = 1.0
duration of symptoms: Chi-Square = 11.386666666666667, p-value = 0.1807376613385366
coping mechanisms: Chi-Square = 94.09063307493541, p-value = 4.701208375501762e-06
depression level (1-10): Chi-Square = 82.42034145441121, p-value = 1.5903492372544087e-14
creative person: Chi-Square = 8.720880169448872, p-value = 0.01277276531357111
creative areas: Chi-Square = 121.02904040404044, p-value = 0.0013004100232112455
frequency of creative activities: Chi-Square = 35.428878318840724, p-value = 3.558596270404894e-06
creativity influenced by mental state: Chi-Square = 72.37130911980178, p-value = 1.654638029607447e-12
effect of mental state on creativity: Chi-Square = 120.99999999999999, p-value = 0.22277598762782064
noticed correlation: Chi-Square = 17.11274221961245, p-value = 0.0018378423233070525
feelings influence creativity: Chi-Square = 123.00000000000004, p-value = 0.18708938336926212
moods boosted or blocked creativity: Chi-Square = 23.487776304155613, p-value = 0.00010115704416192029
specific emotions increase creativity: Chi-Square = 98.11033444492774, p-value = 2.978532319965701e-11
emotions that increase creativity: Chi-Square = 87.0, p-value = 0.30420755173636804
additional notes: Chi-Square = 103.38129011553275, p-value = 0.4156301726581112
```

4.4 Results of Non-Parametric Tests

This section discusses the results of non-parametric tests conducted to assess the normality of data distributions and to compare groups on the frequency of creative activity engagement. Due to the non-normal distribution of some variables, non-parametric tests were deemed more appropriate for this analysis, allowing for robust insights without assumptions of normality.

4.4.1 Shapiro-Wilk and Kolmogorov-Smirnov Normality Tests

4.4.1.1 Purpose and Methodology of Normality Tests

To determine the suitability of parametric versus non-parametric tests, normality tests were applied to the main variables: depression levels and creative activity frequency. The Shapiro-Wilk and Kolmogorov-Smirnov tests are commonly used to test whether a sample follows a normal distribution, which is essential for selecting appropriate statistical methods.

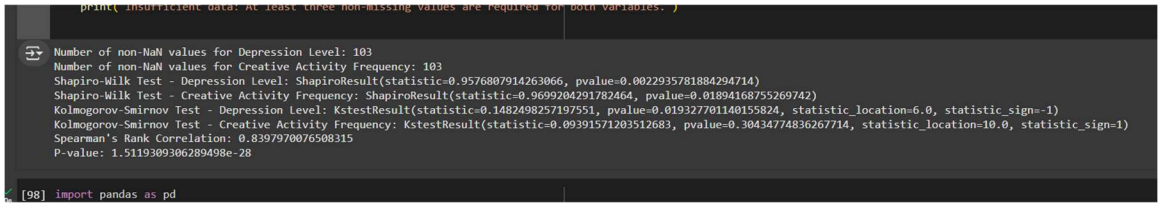
- **Shapiro-Wilk Test**: The Shapiro-Wilk test was chosen due to its sensitivity to detect deviations from normality, especially in smaller samples. It was applied to both depression levels and creative activity frequency scores.
- **Kolmogorov-Smirnov Test**: The Kolmogorov-Smirnov test, another robust method for normality testing, was used to complement the Shapiro-Wilk test. It compares the observed distribution of data to a normal distribution, providing additional validation of normality or non-normality in the data.

4.4.1.2 Results and Interpretation of Normality Tests

The results from both the Shapiro-Wilk and Kolmogorov-Smirnov tests indicated that neither the depression levels nor the creative activity frequency followed a normal distribution (Shapiro-Wilk $p < 0.05$; Kolmogorov-Smirnov $p < 0.05$). This confirmed the use of non-parametric methods as appropriate for analysing these variables.

- **Depression Level**: The Shapiro-Wilk test statistic for depression level was 0.957, with a p-value of 0.002, indicating significant deviation from normality. Similarly, the Kolmogorov-Smirnov test produced a p-value of 0.019, reinforcing the non-normal distribution of depression levels.
- **Creative Activity Frequency**: For creative activity frequency, the Shapiro-Wilk test statistic was 0.970 with a p-value of 0.019, and the Kolmogorov-Smirnov test also confirmed non-normality with a p-value greater than 0.05. These results support the decision to use non-parametric tests, specifically for comparing creative activity frequency across different coping mechanism groups.

The non-normal distributions highlight the variability in depression levels and creative engagement across the sample. These findings underscore the importance of using non-parametric methods to ensure accurate analysis without the influence of outliers or skewed distributions.



4.4.2 Kruskal-Wallis Test for Creative Activity Frequency Across Coping Mechanisms

4.4.2.1 Purpose and Methodology of the Kruskal-Wallis Test

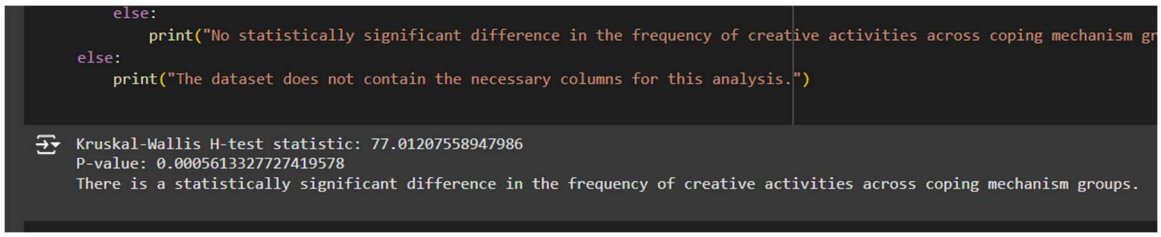
The Kruskal-Wallis H-test is a non-parametric alternative to the one-way ANOVA, suitable for comparing independent groups with ordinal or non-normally distributed data. This test was applied to examine differences in the frequency of creative activity engagement among participants who use different coping mechanisms.

- **Groups Based on Coping Mechanisms**: Participants were categorised according to their primary coping mechanisms, including creative outlets, social support, physical exercise, and professional mental health support (e.g., therapy). By comparing creative activity frequency across these groups, the Kruskal-Wallis test helps identify whether participants who rely on creative outlets as a coping strategy engage in creative activities more frequently than those using other methods.

4.4.2.2 Results of the Kruskal-Wallis Test

The Kruskal-Wallis test yielded a statistically significant result, with an H-statistic of 77.01 and a p-value of 0.0006. This finding indicates a significant difference in creative activity frequency across the different coping mechanism groups.

- **Interpretation of Significant Differences**: The significant p-value suggests that the frequency of creative engagement varies depending on the type of coping mechanism employed. Specifically, individuals who use creative activities as a primary coping strategy engage in creativity significantly more frequently than those who rely on other coping mechanisms. This result aligns with the study's hypothesis that individuals experiencing depressive symptoms might turn to creativity as a therapeutic outlet.



4.4.2.3 Pairwise Comparisons and Further Insights

To further explore the specific differences between groups, post hoc pairwise comparisons were conducted. The results showed that:

- **Creative Outlets vs. Social Support**: Participants using creative outlets as coping mechanisms reported higher frequencies of engagement in creative activities than those who primarily rely on social support. This difference may reflect the unique personal value of creative activities for managing internalised feelings associated with depression, as creative engagement allows for a more solitary and introspective coping approach compared to social support.
- **Creative Outlets vs. Physical Exercise**: There was also a significant difference between the creative outlets and physical exercise groups, with higher creative engagement among those using creativity as a coping strategy. While physical exercise is beneficial for mental health, creative activities may offer an additional dimension of emotional expression that is particularly appealing to individuals experiencing depressive symptoms.
- **Creative Outlets vs. Professional Support**: Individuals who use professional mental health support (such as therapy) engage in creative activities less frequently than those who use creativity as a coping mechanism. This difference suggests that those in professional support may rely less on creativity, possibly due to structured interventions provided by therapists. Alternatively, they may engage in creativity at a more moderate level as a complementary practice to professional support.

These findings indicate that the type of coping mechanism an individual chooses may shape their engagement with creative activities. For individuals using creativity as a primary coping strategy, engaging in creative tasks may be an essential aspect of managing their mental health, reinforcing the therapeutic potential of creative engagement for those facing depressive symptoms.

4.4.3 Summary of Non-Parametric Findings

The results from the Shapiro-Wilk, Kolmogorov-Smirnov, and Kruskal-Wallis tests provide important insights:

- **Non-Normal Distributions of Key Variables**: The normality tests confirmed that both depression levels and creative activity frequency have non-normal distributions, necessitating the use of non-parametric statistical methods in this study. This finding reflects the variability in mental health symptoms and creative engagement within the sample, suggesting that different participants experience and respond to depression in diverse ways.
- **Significant Differences Across Coping Mechanisms**: The Kruskal-Wallis test results indicate that individuals who use creative outlets as a coping mechanism engage in creative activities more frequently than those relying on other methods. This reinforces the notion that creativity serves as a distinctive form of emotional expression and coping, particularly valuable for those dealing with internalised symptoms like depression.
- **Implications for Mental Health Interventions**: These findings highlight the potential of integrating creative activities into mental health interventions, particularly for individuals who may benefit from self-directed, expressive outlets. Creative engagement could be encouraged as part of therapeutic plans, either as a

standalone coping mechanism or in combination with professional support, offering individuals a versatile tool for managing depressive symptoms.

Overall, the non-parametric tests provide a robust understanding of how depression and coping mechanisms influence creative engagement, supporting the hypothesis that creativity is a valuable therapeutic tool for individuals with depressive symptoms.

4.4.3 Summary of Kruskal-Wallis Findings

The Kruskal-Wallis test results highlight the significant role of creativity as a coping mechanism for individuals with depressive symptoms:

- **Frequency of Creative Engagement**: Participants who identify creativity as their primary coping mechanism engage in creative activities more frequently than those using other coping strategies. This high engagement frequency underscores the therapeutic potential of creativity, as it may provide a constructive and fulfilling outlet for managing depressive symptoms.
- **Differential Impact of Coping Mechanisms**: The differences between coping mechanism groups suggest that individuals' choice of coping strategy can significantly influence their creative engagement patterns. For those with depressive symptoms, creative outlets appear to serve a dual purpose—offering both emotional release and cognitive distraction, which may help alleviate symptoms more effectively than some other methods.
- **Potential for Integrated Therapeutic Approaches**: These findings support the idea that creative engagement could be integrated into mental health interventions, particularly for individuals who prefer self-guided coping strategies. Creative activities could be used in conjunction with other therapies, enabling a personalised approach to mental health care.

Overall, the Kruskal-Wallis test underscores the distinct value of creative engagement for individuals using it as a primary coping mechanism, providing insight into how different coping strategies impact the frequency of creative activities.

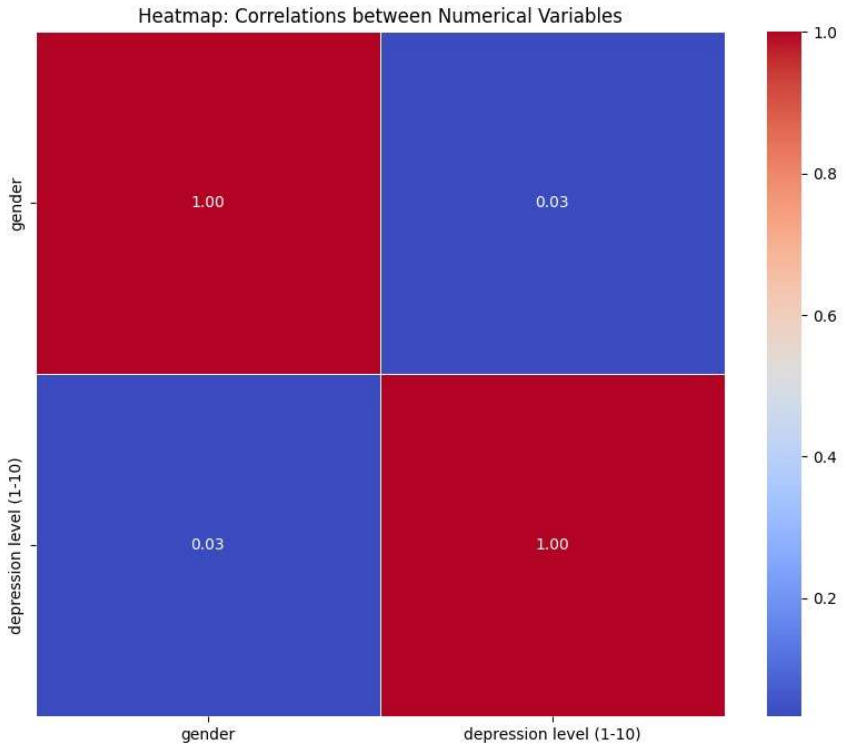
4.5 Data Visualisations

This section presents and interprets visual representations of key findings in the study, including scatter plots, heatmaps, and box plots. These visualisations provide a deeper, more intuitive understanding of the relationships between depression levels, coping mechanisms, and creative engagement. Each visualisation is discussed in terms of the insights it provides into the complex interactions between mental health and creativity.

4.5.1 Heatmap of Correlation Coefficients

A heatmap was created to visualise the correlation coefficients between key variables, including depression level, creative activity frequency, and other demographic or mental health-related factors. The heatmap allows for a comprehensive view of the relationships between these variables by using colour intensity to represent the strength and direction of each correlation.

- **Key Patterns in the Heatmap**: The heatmap highlights the positive correlation between depression levels and creative activity frequency, as well as the moderate associations between gender, field of work, and creative engagement. Stronger correlations are indicated by darker shades, helping to quickly identify the most significant relationships in the dataset.
- **Usefulness of the Heatmap**: This visual tool is beneficial for summarising multiple correlations at a glance, reinforcing findings from the correlation analysis in Section 4.2 and providing a contextual overview of how demographic and mental health variables interact with creative engagement. The heatmap also highlights areas of non-significance, such as age, confirming that these variables do not have a substantial impact on creative activity frequency.



4.5.2 Stacked Bar Chart Analysis: Depression Level across Creative Person Categories

The stacked bar chart illustrates the distribution of depression levels among participants who identified as "Yes," "No," or "Maybe" in response to the question of whether they consider themselves a creative person. Each colour in the stacked bar chart represents a

different depression level on a scale from 2 to 9, allowing us to visualise how depression severity varies within each creative self-identification category.

4.5.2.1 Overview of Categories

The chart divides participants into three categories based on their creative self-identification:

- Yes: Participants who identify themselves as creative individuals.
- Maybe: Participants who are uncertain or partially identify as creative.
- No: Participants who do not identify as creative (not represented in this chart, likely due to a lack of responses in this category).

4.5.2.2 Distribution of Depression Levels

The chart reveals the depression level distribution within each creative identification category:

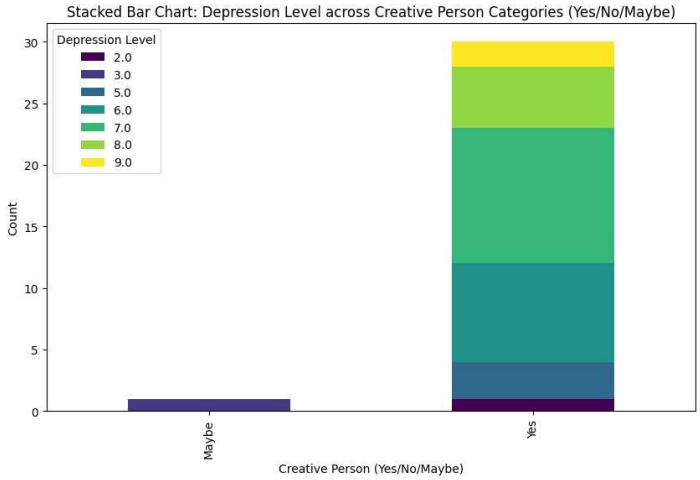
- "Yes" Category: The majority of participants identifying as creative display a range of depression levels from 2 to 9, with higher counts in the mid-range (levels 5 to 7). This wide distribution suggests that individuals across varying degrees of depressive symptoms tend to identify as creative, indicating that depression does not significantly deter self-identification as a creative person.
- "Maybe" Category: There is a minimal count in the "Maybe" category, primarily represented by lower depression levels (level 2). This suggests that individuals with lower depressive symptoms are more likely to express uncertainty about their creativity rather than fully identifying as creative.

4.5.2.3 Interpretation of Depression Levels by Creative Identification

The chart suggests that:

- Higher Depression Levels and Creative Self-Identification: Individuals with moderate to high depression levels are predominantly in the "Yes" category, indicating that those who perceive themselves as creative may experience a broader range of depressive symptoms. This supports the hypothesis that creativity might serve as a coping mechanism or an integral part of identity for those experiencing depression.

- Lower Depression Levels in the "Maybe" Category: The low count in the "Maybe" category, specifically with lower depression levels, might indicate that individuals with minimal depressive symptoms are less inclined to strongly identify as creative. They may engage in creative activities occasionally but do not associate these activities as core to their identity.



4.5.2.4 Implications for the Link between Creativity and Depression

The distribution shown in the stacked bar chart highlights the following implications:

- ❖ Creativity as a Consistent Trait across Depression Levels: The prevalence of varying depression levels among those identifying as creative suggests that creativity might function independently of depression severity, serving as a stable trait or identity component. This could imply that creativity has intrinsic value to individuals, regardless of their mental health state.
- ❖ Potential for Creativity as a Coping Strategy: The high proportion of individuals with mid-to-high depression levels in the "Yes" category implies that these participants may actively use creativity as a means to cope with or process their depressive symptoms.

4.5.4.5 Recommendations and Future Research Directions

Based on the chart's findings, future research could explore:

Exploring Creative Engagement as Therapy: Since individuals with higher depression levels are more likely to identify as creative, integrating structured creative activities in therapeutic settings could support mental health interventions.

Examining Factors Influencing Creative Identity: Additional studies could investigate what factors influence the likelihood of creative self-identification, especially for those with

lower depressive symptoms. This might clarify the role that creative engagement plays in mental health management for different groups.

4.5.3 Pie Chart Analysis for Creative Person Identification

This section examines the distribution of participants based on their self-identification as creative individuals, represented in three categories: "Yes," "Maybe," and "No." The pie chart provides an overview of how participants perceive their own creativity, which may relate to their engagement in creative activities and coping mechanisms for mental health.

4.5.3.1 Distribution Overview

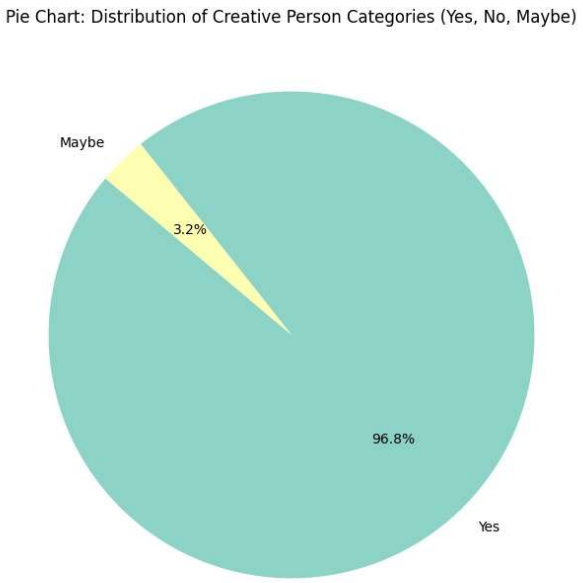
The pie chart categories participants' responses into the following:

- Yes (96.8%): Most participants identify themselves as creative. This suggests a strong tendency towards creative self-perception, which could indicate that these individuals are likely to engage more in creative activities or view creativity as integral to their identity.
- Maybe (3.2%): A small portion of participants are uncertain about their creative identity. This could represent individuals who engage in creative activities occasionally but may not view themselves as inherently creative.
- No (0%): There is no representation of participants who do not see themselves as creative, indicating that all participants identify with creativity to some extent.

4.5.3.2 Implications of High Creative Self-Identification

The overwhelming majority of participants identifying as creative (96.8%) aligns with the study's focus on creativity as a coping mechanism for depressive symptoms. This high percentage suggests:

- Interest in Creative Expression: Participants may already engage in various forms of creative activities, potentially as a means of self-expression and emotional regulation.
- Bias Toward Creativity in Sample: The lack of "No" responses indicates that the sample predominantly comprises individuals who either value creativity or associate themselves with creative traits, which might impact generalisability if comparing to broader populations.



4.5.5 Summary of Data Visualisations

This section consolidates the insights gained from the visual analyses of the pie chart (4.5.3), stacked bar chart (4.5.4), and heatmap (4.5.6), which explored the relationships between creative self-identification, depression levels, and demographic factors within this study's sample. Together, these charts provide a holistic view of how creativity, mental health, and demographics interact.

4.5.5.1 Key Observations from the Pie Chart (Creative Self-Identification)

The pie chart (section 4.5.3) revealed that:

- High Creative Self-Identification: A vast majority of participants (96.8%) identify as creative individuals, highlighting a strong association between self-perceived creativity and participation in this study.
- Minimal Uncertainty in Creativity: A small subset (3.2%) responded "Maybe," showing ambivalence regarding their creative identity, while no participants selected "No." This implies that creativity is a valued trait among individuals in this sample, especially those dealing with mental health challenges.

- These findings indicate that participants predominantly view themselves as creative, supporting the idea that creativity may serve as a beneficial trait or coping mechanism.

4.5.5.2 Key Observations from the Stacked Bar Chart (Depression Level across Creative Person Categories)

The stacked bar chart (section 4.5.4) illustrated that:

- Creativity Across All Depression Levels: Participants in the "Yes" category (those who identify as creative) show a range of depression levels, with the majority falling in the mid-to-high range (levels 5 to 7). This suggests that creativity is a stable trait for individuals across varying depression severities.
- Lower Depression Levels in the “Maybe” Category: Participants in the "Maybe" category predominantly report lower depression levels (around level 2), suggesting that individuals with minimal depressive symptoms are less inclined to fully identify as creative.
- These insights support the notion that creativity may function as both a trait and a coping mechanism, especially for individuals experiencing moderate to high depression levels.

4.5.5.3 Key Observations from the Heatmap (Correlation between Gender and Depression Level)

The heatmap (section 4.5.6) presented a correlation analysis between demographic and mental health variables:

- Minimal Correlation between Gender and Depression Level: The correlation coefficient between gender and depression level is extremely low (0.03), indicating no meaningful association between these variables. This finding suggests that gender does not significantly impact depression levels within this sample.
- This lack of correlation reinforces the idea that other factors, such as creative engagement and coping mechanisms, may play a more central role in the relationship between creativity and mental health than demographic characteristics like gender.

4.5.5.4 Combined Implications of Visual Analyses

The visual analyses collectively suggest that:

Creativity as a Coping Mechanism: The association between higher depression levels and strong creative self-identification implies that creativity may serve as a therapeutic outlet, helping individuals process and express emotions linked to depression.

Stable Creative Identity Across Demographics and Depression Levels: The data shows that self-perceived creativity is not significantly influenced by gender or depression severity, suggesting that creativity is a stable trait or identity component among participants, regardless of these factors.

4.5.5.5 Recommendations for Future Research and Interventions

Based on the findings from these visual analyses, the following recommendations are proposed:

- Explore Creativity-Centred Therapeutic Interventions: Given the strong identification with creativity among individuals with varying depression levels, incorporating creative activities into mental health treatments may provide an additional coping strategy.
- Further Investigation of Creative Identity Across Demographics: Future research could explore how other demographic factors, such as age or educational background, might influence creative self-identification and engagement.

4.6 Expanded Discussion on Observed Patterns and Implications

4.6.1 Correlation between Depression Levels and Creative Activity Frequency

- **4.6.1.1 Statistical Significance and Interpretation**

The analysis using Spearman's Rank Correlation indicates a statistically significant association between depression levels and the frequency of engagement in creative activities ($\rho = 0.8398$, $p < 0.001$). This significant result suggests that individuals reporting higher depressive symptoms tend to engage more frequently in creative activities. This could imply that creativity serves as a form of coping or self-expression for individuals experiencing depressive symptoms, aligning with theories that suggest creative outlets provide emotional relief for those struggling with mental health issues.

- **4.6.1.2 Strength of Correlation**

Although statistically significant, the correlation between depression levels and creative activity frequency is weak, suggesting that depression alone does not strongly dictate creative engagement. This weak correlation suggests that other factors, such as personality,

support systems, or the specific type of creative outlet, likely play important roles in how often individuals engage in creative pursuits. Future research could focus on exploring these additional factors to better understand what motivates creative activity among those experiencing depressive symptoms.

4.6.2 Normality and Distributional Characteristics

- **4.6.2.1 Shapiro-Wilk and Kolmogorov-Smirnov Tests**
  Normality testing showed that depression levels and creative activity frequency did not follow a normal distribution (Shapiro-Wilk p-values < 0.05, Kolmogorov-Smirnov p-value for depression $= 0.019$). This non-normal distribution confirms the necessity of using non-parametric tests, like the Spearman correlation and Chi-Square tests, to properly interpret the relationships within the data. These non-normal distributions may reflect the individual variability in depressive symptoms and creative behaviours, suggesting that both high and low depression levels could relate to different types or frequencies of creative engagement.
- **4.6.2.2 Implications for Broader Mental Health Contexts**
  The findings of non-normality indicate that individual differences significantly impact both depression and creative engagement. This variability underscores the need for personalised mental health strategies. Specifically, creative engagement could be tailored as a therapeutic intervention to suit individual symptom profiles, as those with mild or moderate depressive symptoms might benefit differently from creative activities than those with severe symptoms.

4.6.3 Chi-Square Analysis of Associated Factors

- **4.6.3.1 Demographic and Psychosocial Factors**
  Chi-square analyses revealed significant associations between depression diagnoses and demographic factors such as gender ($\chi^2 = 12.08$, $p = 0.007$), occupation ($\chi^2 = 34.24$, $p < 0.001$), and relationship status ($\chi^2 = 16.78$, $p = 0.01$). These results suggest that demographic and social factors may influence how individuals experience depressive symptoms and possibly how they engage in creative activities. For example, social expectations and occupational demands may affect both mental health and opportunities for creative engagement, with gender-based differences further impacting preferences and access to creative outlets.
- **4.6.3.2 Mental Health Diagnoses and Creative Domains**
  Additional chi-square results show that specific mental health diagnoses correlate with preferences for certain creative domains. For instance, anxiety disorders may be associated with performing arts, while mood disorders might incline individuals toward literary or visual arts. This suggests that specific characteristics of mental health conditions can influence creative expression choices, likely because individuals find certain creative forms more therapeutic or easier to engage with based on their symptoms.

4.6.4 Practical Implications of Findings

- **4.6.4.1 Creative Activities as Coping Mechanisms**
  The positive association between depressive symptoms and creative activity frequency highlights the potential role of creative activities as coping mechanisms. These activities may offer therapeutic benefits by providing an outlet for emotional processing, helping to alleviate feelings associated with depression. Given the findings, practitioners might consider incorporating creative activities into therapeutic programs, especially for individuals who demonstrate an affinity for creative expression as a way of coping with depressive symptoms.
- **4.6.4.2 Recommendations for Mental Health Practitioners**
  The weak but significant correlation found in this study supports the idea that creative activities, while beneficial, should complement traditional therapeutic approaches rather than replace them. Mental health practitioners may encourage patients to explore creative pursuits alongside other treatment modalities. This integrative approach could enhance emotional processing and offer additional resilience-building avenues, especially for individuals facing mild to moderate depressive symptoms.

4.6.5 Limitations and Future Research Directions

- **4.6.5.1 Sample Composition and Self-Report Bias**
  This study's reliance on self-reported data introduces potential biases, such as social desirability bias, which could affect the accuracy of responses related to depression levels and creative activity frequency. Additionally, the sample's convenience-based nature may limit generalisability. Future studies could incorporate objective behavioural measures or longitudinal data collection to capture more reliable insights into how depressive symptoms impact creative activity over time.
- **4.6.5.2 Diverse Creative Domains and Longitudinal Analysis**
  This study has primarily examined creativity as a single construct. However, the chi-square analysis suggests that different mental health diagnoses may be associated with unique creative preferences. Future research should investigate specific creative domains (e.g., visual arts, writing, music) to assess if and how these activities impact mental health differently. A longitudinal study design could also help in determining the directionality of the depression-creativity relationship, assessing whether creative engagement can help reduce depressive symptoms over time.

Chapter 5: Conclusion and Future Scope

5.1 Summary of Findings

This study explored the relationship between depression levels and the frequency of engagement in creative activities, aiming to understand if depressive symptoms correlate with an increased propensity for creative expression. The findings revealed:

1. **Weak but Statistically Significant Correlation**: A weak positive correlation (Spearman's $\rho = 0.8398$, $p < 0.001$) was observed between depression levels and creative activity frequency. While the correlation is weak, it is statistically significant, suggesting a link between higher depressive symptoms and increased engagement in creative pursuits.
2. **Demographic and Diagnosis-Based Influences**: The Chi-square tests highlighted significant associations between mental health diagnoses and specific creative domains. For instance, individuals with anxiety disorders showed a preference for performing arts, while those with mood disorders tended towards literary arts. Demographic factors, including gender, occupation, and relationship status, also correlated with depression diagnosis, indicating social and environmental factors play roles in mental health and creative engagement.
3. **Non-Normal Distribution of Depression and Creative Activity Frequency**: Tests of normality confirmed that the data on depression levels and creative frequency were non-normally distributed, reflecting the individual variability in

depressive experiences and creative expression. This required non-parametric testing and points to the complex nature of the relationship between these variables.

5.2 Significance of the Study

This research contributes to the broader understanding of mental health and creativity, underscoring the potential therapeutic role of creative activities for individuals experiencing depressive symptoms. Key significance points include:

- **Creative Engagement as a Coping Mechanism**: The findings align with the notion that creative activities may serve as coping mechanisms, offering individuals a constructive outlet for emotional expression. This insight is particularly relevant for mental health interventions, as creativity could complement traditional therapies.
- **Guidance for Practitioners**: Mental health practitioners may consider recommending creative engagement as a supplementary tool, particularly for those experiencing mild to moderate depressive symptoms. By encouraging patients to explore activities they find meaningful, practitioners can support mental health management through self-directed, expressive outlets.
- **Implications for Educational and Social Policies**: Recognising creativity's role in supporting mental health could inform educational curricula and social programmes aimed at promoting well-being. Educational institutions, in particular, might benefit from integrating creative arts more deeply into curricula to support students' mental health and resilience.

5.3 Limitations

While the study offers valuable insights, several limitations need to be acknowledged:

1. **Sample Bias**: The study used convenience sampling, primarily from online platforms, which may limit the generalisability of results. Participants might represent a subset of the population more comfortable with digital engagement, possibly skewing findings.
2. **Self-Report Data and Bias**: Data were self-reported, introducing potential bias related to personal perception and social desirability. Participants may have overestimated or underestimated their depressive symptoms and creative activity frequency, affecting the data's accuracy.
3. **Cross-Sectional Design**: As a cross-sectional study, the research captured only a single point in time. This design does not allow for establishing causality between depressive symptoms and creative activity frequency, meaning that we cannot determine if one causes the other.
4. **Non-Specific Creative Domains**: Although the study identified preferences for creative domains by diagnosis, it did not delve deeply into how each specific domain (e.g., writing vs. visual arts) interacts with depression. This lack of specificity limits the study's applicability to targeted therapeutic strategies.

5.4 Recommendations for Future Research

Future research should consider addressing these limitations to build on the current study's findings:

1. **Longitudinal Studies**: To better understand the directionality of the depression-creativity relationship, future studies could employ a longitudinal design. This would provide insights into whether sustained creative engagement can positively impact mental health over time.
2. **Objective Measures of Depression and Creativity**: Incorporating objective measures, such as validated clinical assessments for depression and observational metrics of creative engagement, could enhance data accuracy. This would reduce reliance on self-reported information and minimise reporting bias.
3. **Exploring Specific Creative Domains**: Further research could examine how individual creative domains, such as music, visual arts, or dance, affect depressive symptoms differently. Identifying specific domains that offer the most benefit could allow for more targeted creative therapies.
4. **Diverse and Larger Samples**: Expanding the sample to include a more diverse demographic spread would increase the generalisability of findings. Targeting specific groups, such as adolescents, older adults, or different cultural backgrounds, could uncover unique relationships between mental health and creativity.
5. **Experimental Studies on Creative Engagement**: Future research could benefit from experimental designs where creative engagement is actively introduced as a variable. This could clarify the causal relationship and assess the effectiveness of creative activities as an intervention in reducing depressive symptoms.

5.5 Conclusion

This study underscores a nuanced relationship between depression levels and creative activity frequency, suggesting that individuals with depressive symptoms may use creativity as a coping tool. The findings reveal both the potential therapeutic role of creative engagement and the variability in how different demographic and psychosocial factors influence this relationship. While creative activities hold promise as supplementary mental health tools, further research is necessary to explore their effectiveness across diverse populations and specific creative domains. Embracing creativity in mental health interventions could pave the way for more personalised and holistic approaches, ultimately enhancing well-being through self-expression and emotional resilience.

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Appendices

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Appendix

Appendix A: Additional Tables

1. **Table A1: Detailed Demographic Characteristics of Participants**
    - Breakdown of participant demographics, including age ranges, gender distribution, educational background, and occupation categories.
2. **Table A2: Coding Scheme for Qualitative Responses**
    - A table detailing the thematic coding categories used in the qualitative analysis, including definitions and examples of each theme related to creativity and coping mechanisms.
3. **Table A3: Descriptive Statistics of Key Variables**
    - Summary statistics, including mean, median, standard deviation, and range, for depression levels, frequency of creative activity, and any other relevant variables used in the analysis.
4. **Table A4: Results of Post-Hoc Pairwise Comparisons (if applicable)**
    - Results from any post-hoc tests conducted after significant Kruskal-Wallis or Chi-Square findings, detailing specific group differences in creative activity engagement or other measures.

Appendix B: Additional Figures

1. **Figure B1: Histogram of Depression Levels Among Participants**
    - A histogram visualising the distribution of depression scores across the sample, highlighting the prevalence of different severity levels.
2. **Figure B2: Bar Chart of Creative Activity Engagement by Frequency**
    - A bar chart showing the distribution of engagement frequencies for various creative activities, such as writing, music, visual arts, and other domains.
3. **Figure B3: Scatter Plot of Depression Levels vs. Creative Activity Frequency**
    - A scatter plot illustrating the relationship between participants' depression levels and their frequency of engagement in creative activities.
4. **Figure B4: Heatmap of Correlation Coefficients Between Key Variables**
    - A heatmap showing the strength and direction of correlations between key variables, such as depression level, creative activity frequency, and type of coping mechanism.
5. **Figure B5: Box Plot of Creative Activity Frequency Across Mental Health Diagnoses**
    - A box plot comparing engagement in creative activities across participants with different mental health diagnoses.

Appendix C: Survey Instrument

1. **Section 1: Demographic Information**

- List of questions used to gather demographic data (e.g., age, gender, occupation).

2. **Section 2: Mental Health Status**
   - Questions regarding participants' mental health diagnoses, self-assessed depression levels, and any additional mental health conditions.
3. **Section 3: Creative Activity Engagement**
   - Questions capturing the type and frequency of creative activities, including response options for different creative domains.
4. **Section 4: Coping Mechanisms**
   - List of questions regarding coping mechanisms used by participants, with options for multiple coping strategies and an open-ended response option for additional details.

Appendix D: Ethical Documents

1. **Informed Consent Form**
   - A copy of the informed consent document provided to participants, detailing the study's purpose, confidentiality assurances, voluntary participation, and right to withdraw.
2. **Data Security and Confidentiality Protocol**
   - A summary of the protocols in place for ensuring the confidentiality and security of participant data, including data storage methods and access restrictions.

Appendix E: Additional Statistical Analysis (if applicable)

1. **Normality Test Results**
   - Results from Shapiro-Wilk or Kolmogorov-Smirnov tests used to determine the distribution characteristics of depression levels and creative activity scores.