EXPLORING THE INTERPLAY OF EPISTEMIC CURIOSITY AND SELF-REGULATION IN MIND WANDERING AND CREATIVITY OF ADULTS

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Candidate of **Master of philosophy** at the National University of Modern Languages do hereby declare that the thesis **"Exploring the Interplay of Epistemic Curiosity and Self-Regulation in Mind Wandering and Creativity of Adults"** submitted by me in partial fulfillment of MPhil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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Abstract

Mind wandering, a distinctive human activity which refers to a period of time in which an individual's mind is off-track, that is, the individual's thoughts are not focused on the task being undertaken. While thinking is not always useful, it has few advantages, including helping solve problems creatively, but also make the individual curious about the incoming information and keeping oneself regulated and focused on the task at hand. The current research aims to look at how mind wandering contributes to creativity of a person and how epistemic curiosity and self-regulation mediates the process. It was a cross sectional study, with a convenience sample of 514 participants categorizing as emerging adults, establishing adults and middle adults whose ages range from 19-60 years. The subjects were selected from both employed and non-employed groups in the private and government sectors of Islamabad and Rawalpindi. In the first part of the study i.e. pilot study, firstly the English scales were translated in to Urdu by using the Brislin method of translation. The scales used were translated for the understanding, suitability and ease of filling the questionnaires. The assessment tools that are translated and used for this study are Spontaneous and Deliberate Mind Wandering (Carriere et.al., 2013), Kaufman Domains of Creativity Scale (Kaufman, 2012), Epistemic Curiosity Interest and Deprivation Type (Litman, 2008), and Short Self-Regulation Questionnaire (Brown et.al., 1999).

Next statistical analyses were used to draw the reliabilities of these scales and moved on to the second and main part of this study. Results showed that there exists a positive correlation between deliberate mind wandering and various aspects of creativity except scientific creativity whereas there is negative correlation between the spontaneous mind wandering and various aspects of creativity except the scholarly type of creativity. Further the results are depicted that epistemic curiosity and self-

regulation are also correlated. Moreover results also revealed that artistic type creativity and total creativity was found to be more significant for the individuals in nuclear family type. It was also found out that adults who belonged to the working class showed more significant differences in different types of creativity i.e. every day, scholarly, and total creativity with a slight difference on the interest type epistemic curiosity. Significant differences were also reported that adults who prefer to day dream scores higher on the deliberate mind wandering, performance creativity and total creativity.

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In the name of Allah, the most merciful and beneficent

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DEDICATION

Dedicated to my beloved family

CHAPTER 1

INTRODUCTION

Imagine our thoughts, the thinking process, how we articulate these thoughts and things related to it, how we execute them, implement these thoughts, and how we understand things are like a big puzzle. This puzzle has four important pieces, and they all fit together to make our thoughts coherent, comprehensive, reasonable, and logical, and then set our minds to work better accordingly. First, there's the boss of the puzzle and that part helps us control ourselves and our thoughts. This part helps us pay attention, control our feelings, and make good choices, even when we're tempted by distractions. Then, we have second piece of the puzzle, like a solo musician. This part let our minds wander, like daydreaming. Sometimes, when our minds wander, we come up with creative ideas or learn new things. Then next in line, we have a piece of the puzzle that's like a flexible instrumentalist. This part helps us change our thinking and adapt to new information, and stay updated with the changes. It's like when we switch from thinking about one thing to another without getting stuck. Finally, there's a piece of the puzzle that's like our curiosity. This is what makes us unique and want to explore more, ask questions, acquire knowledge, and satisfy the need that arises from this urgency and curiosity. It's the spark that drives us to discover the secrets of the world. All these pieces of the puzzle work together, just like a well-practiced orchestra. They help us understand and explore the world, guiding our thoughts and actions. In this overview, we'll take a closer look at how these puzzle pieces fit together and help us make sense of our world and ourselves (Smallwood & Schooler, 2015).

As you read through the present paper, there may be a time when it will appear that your eyes are racing through the lines of a paragraph, but your mind is wandering. Thus even though your eyes are open and moving over the print thereby reading, your mind is not listening. This process is called mind wandering, (Smallwood et al., 2013; Smallwood & Schooler, 2006), and it is a rather frequent activity that takes between 30% and 50% of our awake time (Kane et al., 2007; Kiilingsworth & Gilbert, 2010; McVay et al., 2009). The primary aspect of mind wandering is the shifting of attention away from the world to thoughts and possible images of a subject. Therefore, when mind wanders, external stimuli cease and give way to internal ones, a process known as 'perceptual decoupling' (Schooler et al., 2011). The most popular measures that are used to define mind wandering are the number of task irrelevant thoughts (Smallwood & Schooler, 2010; Giambra, 1989) stimulus unrelated thoughts (Antrobus, 1968; Stawarczyk et al., 2011) or the idea that mind wandering is related to the uncontrollable and unstructured thinking (Christoff & Irving, 2013). Furthermore, it has been suggested to distinguish two forms of mind wandering, by definition, spontaneous and deliberate mind wandering by the individual (Kane et al., 2007; Carriere et al., 2013; Seli et al., 2016). The first of them refers to an automatic shift of focus from the task-related stimuli to the stimuli unrelated to the task, while the second defines a deliberate decision made by a subject to stop attending to the task-implied stimuli. This distinction highlights two different causes for mind wandering i.e. spontaneous mind wandering appears to be the result of a failure of executive control of attention (McVay & Kane, 2010) and is related to high distractibility (Chiorri & Vannuci, 2019; Vannuci et al., 2020) while for voluntary mind wandering is found to be more related to a lack of motivation (Robinson, 2017; Seli et al., 2017).

Many people have pondered over the question that what makes somebody or something creative? Typically, something—like an idea, a product, or solution, is creative when it is new. To put it straightforwardly, only the creative musician creates the boundless understanding of musical notes and can find out one more musical combination of tastes and so on. But novelty isn't everything from the perspective of many, the invention should expose certain utility to somebody (Dietrich, 2019; Hennessey & Amabile, 2009; Kenett et al., 2020). After all, anyone can play piano inconsistently or whip up a bunch of dishes they have in their home. What makes the musician or chef unique and not a mere hack, it is the creative process—innovation, is the birth of something which is at the same time radical and efficient. Not all kinds of problems are the same and therefore, can be solved with different types of creative thinking. Some problems are endemic to such domains, and in these realms, the imaginative person is one who can move within an idea of how all of these people and organizations must occupy this certain problem space to coalesce around this single solution (Murray et al., 2021). Stimulating creativity is important to support many of the distinctive and, therefore, desirable pursuits we engage in. It's crucial and at times indispensable for scientific, artistic, and political success that people achieve.

But creativity is also important to normal tasks It can be seen that there are not trivial correlations for creativity. It is the ability of a person to cook a meal from scratch and having no particular item to cook it with to keeping a dialogue going, conversations over dinner even when there is no interest at hand. Creative people have been found to report enhanced mood compared to non-creative people (Nadler et al., 2010), are likely to have better self-esteems (Barbot, 2018), and self-reported better scores on a number of well-being factors (Conner et al., 2016).

Biography as the detailed information about the behavior and findings of the extraordinary talented people, shed a certain amount of light on the processes which underpin creative thinking. Many creative ideas appear to happen when, in fact, the individual does not engage in conscious effort to yield a creative insight. For instance, Kekulé supposes that the shape of the benzene was revealed to him in a dream (1865). Indeed, the Indian mathematician Ramanujan had several thoughts that hit him about which he could not account (to such an extent that he attributed his thoughts to a spirit of Namagiri, the Hindu Goddess known as Lakshmi; Cheng, 2017). Poincaré, Einstein and Edison are among the famous personalities had made similar claims. From these examples, it is suggested that the 'temporary disengagements' which are known as the incubation period, suggests with evidence that it enhances and leads to the creative process. For example, Gable et al., 2019 recently showed that, when probed to such a degree as to explain the originality and relevance of the most significant 'eureka' experience of the day and, in particular, the physicists and writers provided more indicative and frequent enlightening solution generation during mind wandering to a greater extent or in comparison to focused thinking (Murray et al., 2021).

Claiming that incubation is, overall, highly favorable for creativity but it raises the question of what facilitates the incubation towards creativity. This is important to understand, because they pose a question that such cognitive modes might be indispensable for mediating or even amplifying creativity (Orwig et al., 2021). One of the relevant reason is mind wandering. Bear in mind that when incarnating, an individual does not obsess on a particular problem. Therefore, when a person is incubating, he is well positioned to detach and go through cognitive exploration. It is understood that mind wandering during an incubation interval should improve more of the divergent creativity (Ellamil et al., 2016; McCormick et al., 2018). To some

extent, there is also a correlational data for this association between mind wandering and divergent creativity. More recently, Yamaoka and Yukawa (2020) have shown both a small but significant relationship between scores on a task enhancing creativity and self-estimated rate of mind wandering (Kajimura and Nomura, 2016).

Epistemic curiosity as a positive personality trait that can potentially favors mind wandering (Sekiguchi, 2023). Epistemic curiosity as defined by Berlyne (1954) and Loewenstein (1994) involves the pursuit of knowledge that propels exploratory behaviors and is an important factor that has been linked with learning outcomes and processes (Von Stumm et al., 2011). Two types of epistemic curiosity have been identified (Berlyne, 1966; Day, 1969; Litman, 2008): the first one is called divergent curiosity, which means the curiosity to secure information from different sources, the second one is called specific curiosity – the curiosity to secure information in order to resolve cognitive conflict. Specific curiosity utilizes aversive reinforcements, these include; the allocation of loss or penalty following uncertainty or lack of information (Berlyne, 1966); various neuroimaging studies with functional Magnetic Resonance Imaging [fMRI] have supported this aspect (Jepma et al., 2012; Kang et al., 2009). These two types of curiosity are perceived as two different personality dimensions that individuals differ in (Spielberger & Starr, 1994) and there are several self-report instruments for measuring them separately (Day, 1969; Litman & Jimerson, 2004; Litman & Spielberger, 2003). While this is a crude prediction, one could imagine that individuals with high levels of deprivation curiosity might have many things to think about because they are interested in so many new experiences; thus mind wandering might go up. Specific curiosity was positively associated with mind wandering, participants with a high degree of specific curiosity may think about the questions to

be resolved during some activities. Perhaps for this reason, epistemic curiosity could be expected to lead people to mind wandering (Sekiguvhi, 2023).

Self-regulation thus makes it is possible for a person to make plans and also select among alternatives thus besides facilitating inhibition of unwanted thoughts the person is also able to regulate their behaviors in case of conflict (Kelly et al., 2015). Indeed, focusing on a specific goal as a reference point to be achieved by individual's self-regulation is the way through which individuals scrutinize, address and achieve this goal (Lock & Latham, 1990; Bruso & Orvis, 2013). In order to achieve the goal, the thoughts and actions of individuals have to be controlled; their effort and attention directed towards the tasks (Bruso & Orvis, 2013). Conventionally, the modulation of behavior towards the accomplishment of self-related objectives has been expected to occur in a deliberate and voluntary manner, evidently involving minimal executive capacity (Kanfer & Ackerman, 1989; Pappies & Aart, 2011). However, accumulating data have shown that much of the control of our thinking and acting can be achieved in an unconscious manner via the dynamic interplay between the features of situations, the known self-states, and the scripts that may be effectively and adaptively enacted (Pappies & Aart, 2011).

This current research is mainly focusing on the interplay of mind wandering and creativity of adults and to explore the effects of epistemic curiosity and self-regulation as a mediator in different groups of adults.

1.1 Rationale of the Study

The main goal of this research is to delve into how the connection, between mind wandering and creativity unfolds during life transitions in adults (Christoff et al.,

2016). Mind wandering, characterized by off-task, spontaneous thoughts has been viewed as a cognitive distraction that impairs the focus and task performance. However emerging research shows that mind wandering also serves functional cognitive roles, such as facilitating problem-solving, and creativity (Racy & Morin, 2024; Smallwood & Schooler, 2015). While mind wandering can disrupt attention, particularly during complex or monotonous tasks (Sullivan & Davis , 2020), it simultaneously promotes generative thinking, internal dialogue, and access to cognitive resources stored in memory (Baird et al., 2012; Fox & Christoff, 2014). This duality positions mind wandering as both a cognitive liability and a potential enhancer, particularly in creative processes. Mind wandering aligns with the generative phase of creativity where openness and divergence are crucial for producing novel ideas (Irving, 2022). Though creativity also requires structured evaluation and refinement and this process is facilitated by self-regulation. Therefore, the relationship between mind wandering and self-regulation is critical in balancing these phases optimizing the creative process (Feng et al., 2024). Despite its significance this relationship remains underexplored, particularly regarding how self-regulation might connect mind wandering's generative potential while mitigating its disruptive effects. Also, in previous literature it is shown that Individuals with Epistemic curiosity are more likely to embrace uncertainty, engage deeply with exploratory processes, and establish learning goals, all of which align with the cognitive demands of creativity (Li et al., 2023). Moreover epistemic curiosity's role in motivating sustained cognitive engagement suggests it may influence how mind wandering and self-regulation interact, particularly in creative context (Lauriola et al., 2015). This research seeks to fill the existing gap in understanding the connections between creativity, mind wandering, self-regulation and different aspects of curiosity.

Another important gap this study fills is that most studies on mind wandering, self-regulation, and creativity are conducted in Western contexts, limiting the cross-cultural applicability of findings. Exploring these dynamics in diverse cultural settings can provide deeper insights into the universality and variability of the cognitive processes underpinning creativity (Martinona et al., 2019). Additional feature that make this study unique and not found in Pakistani literature is the adult group types, three age groups were studied over a maximum average life span of an adult; emerging adults, established adults and middle-aged adults to deeply evaluate that how adults navigate shifts between different life stages (Maillet et al., 2018). The main goal of this study is to investigate that how mind wandering and creativity levels, in adults relate, within the cultural context. It also aims to focus on the relationship of mind wandering and creativity level in adults, as well as the how the relationship may be influenced by factors such as age and gender, and whether it has a progressive impact on adults over time.

1.2 Statement of the Problem

The proposed research aims to explore how mind wandering, whether spontaneous is linked to forms of creativity (such, as every day, scholarly, performance, scientific and artistic) as well as the influencing roles of interest and deprivation curiosity and self-regulation. The study intends to address the inquiries;

- How does deliberate mind wandering relate to types of creativity?
- How does spontaneous mind wandering relate to various forms of creativity in adults?
- To what extent do interest curiosity and deprivation curiosity impact the connections between mind wandering and creativity in adults?

- What is the role of self-regulation between connections of mind wandering and creativity of adults?

Understanding these connections is crucial for multiple reasons;

It can offer insights, into the cognitive processes involved in creative thinking and problem solving. It can illuminate the aspects (curiosity) and self-regulation mechanisms that support turning mind wandering into results. The results could have real world applications, for promoting creativity in areas, like education, business leadership and self-improvement. By exploring these research inquiries the planned study seeks to add to the body of knowledge on the motivational and self-regulation elements that impact creativity.

1.3 Research Objectives

- To translate the measures into Urdu language.
- To explore the psychometric properties of the translated measures.
- To explore the relationship among mind wandering, creativity, epistemic curiosity, and self-regulation in adults.
- To explore the mediating role of epistemic curiosity and self-regulation on the relationship between mind wandering and creativity in adults
- To explore the effects of demographics (i.e. age, gender, education level) on the study variables.

1.4 Research Question

The research questions for the current study are framed as follows;

- How mind wandering influences different forms of creativity in adults?

- How self-regulation and curiosity for knowledge impact the link between mind wandering and creativity?
- How the connections between mind wandering, creativity, self-regulation and curiosity for knowledge vary among three age categories?
- How gender affects the relationships among mind wandering, creativity, self-regulation and curiosity for knowledge?
- How mind wandering have an impact on creativity and what impact mind wandering have on creativity with the mediating roles of self-regulation and curiosity for knowledge evolve over time in adults?
- How the connection among mind wandering, creativity, epistemic curiosity and self-regulation are reflected within culture and to understand the enhanced adult developmental transitions?

1.5 Hypotheses

In the light of the current literature and the above mentioned research questions following hypotheses were postulated

H1: There is a positive association between deliberate mind wandering and creativity.

H1a: There is a positive correlation between deliberate mind wandering and everyday creativity.

H1b: There is a positive correlation between deliberate mind wandering and performance creativity.

H1c: There is a positive correlation between deliberate mind wandering and scholarly creativity.

H1d: There is a positive correlation between deliberate mind wandering and scientific creativity.

H1e: There is a positive correlation between deliberate mind wandering and artistic creativity.

H1f: There is a positive correlation between deliberate mind wandering and total creativity.

H2: There is a positive relationship between spontaneous mind wandering and creativity.

H2a: There is a positive correlation between spontaneous mind wandering and everyday creativity.

H2b: There is a positive correlation between spontaneous mind wandering and performance creativity.

H2c: There is a positive correlation between spontaneous mind wandering and scholarly creativity.

H2d: There is a positive correlation between spontaneous mind wandering and scientific creativity.

H2e: There is a positive correlation between spontaneous mind wandering and artistic creativity.

H2f: There is a positive correlation between spontaneous mind wandering and overall total creativity.

H3: There is a positive association between deliberate mind wandering and epistemic curiosity.

H3a: There is a positive correlation between deliberate mind wandering and interest type epistemic curiosity.

H3b: There is a positive correlation between deliberate mind wandering and deprivation type epistemic curiosity.

H3c: There is a positive correlation between deliberate mind wandering and epistemic curiosity total.

H4: There is a positive association between spontaneous mind wandering and epistemic curiosity.

H4a: There is a positive association between spontaneous mind wandering and interest type epistemic curiosity.

H4b: There is a positive association between spontaneous mind wandering and deprivation type epistemic curiosity.

H4c: There is a positive association between spontaneous mind wandering and epistemic curiosity total.

H5: There is a positive association between interest type epistemic curiosity and creativity.

H5a: There is a positive correlation between interest type epistemic curiosity and everyday creativity.

H5b: There is a positive correlation between interest type epistemic curiosity and performance creativity.

H5c: There is a positive correlation between interest type epistemic curiosity and scholarly creativity.

H5d: There is a positive correlation between interest type epistemic curiosity and scientific creativity.

H5e: There is a positive correlation between interest type epistemic curiosity and artistic creativity.

H5f: There is a positive correlation between interest type epistemic curiosity and the total creativity.

H6: There is a positive association between deprivation type epistemic curiosity and creativity.

H6a: There is a positive association between deprivation type epistemic curiosity and everyday creativity.

H6b: There is a positive association between deprivation type epistemic curiosity and performance creativity.

H6c: There is a positive association between deprivation epistemic curiosity and scholarly creativity.

H6d: There is a positive association between deprivation epistemic curiosity and scientific creativity.

H6e: There is a positive association between deprivation epistemic curiosity and artistic creativity.

H6f: There is a positive association between deprivation epistemic curiosity and total creativity.

H7: There is a positive association between epistemic curiosity and creativity.

H7a: There is a positive association between epistemic curiosity and everyday creativity.

H7b: There is a positive association between epistemic curiosity and performance creativity.

H7c: There is a positive association between epistemic curiosity and scholarly creativity.

H7d: There is a positive association between epistemic curiosity and scientific creativity.

H7e: There is a positive association between epistemic curiosity and artistic creativity.

H7f: There is a positive association between epistemic curiosity and total creativity.

H8: There is a positive correlation between deliberate mind wandering and self-regulation.

H9: There is a positive correlation between spontaneous mind wandering and self-regulation.

H10: There is a positive correlation between self-regulation and creativity.

H10a: There is a positive correlation between self-regulation and everyday creativity.

H10b: There is a positive correlation between self-regulation and performance creativity.

H10c: There is a positive correlation between self-regulation and scholarly creativity.

H10d: There is a positive correlation between self-regulation and scientific creativity.

H10e: There is a positive correlation between self-regulation and artistic creativity.

H10f: There is a positive correlation between self-regulation and total creativity.

H11: Epistemic curiosity mediates the relationship between mind wandering and creativity in adults.

H12: Self-Regulation mediates the relationship between mind wandering and creativity in adults.

1.6 Conceptual Framework

The findings of this study are discussed in the context of the connections between deliberate and spontaneous mind-wandering and the types of creativity, as well as the mediating effects of epistemic curiosity and self-regulation. As with any study that relies on self-generated questionnaires, it is to understand that the results reported here were collected only from self-report data of adults. To enhance credibility, published questionnaires were used to assess mind-wandering, creativity, epistemic curiosity, and self-regulation with the consent from the authors. These tools were used to measure the consequences of mind wandering on creativity, given the mediational influence of epistemic curiosity and self-regulation. The study design section provides details on how the current study has been planned, a brief description of the particular instruments that are employed to gauge the study variables, whether or not these tools have been validated or not, details of the sampling approach that was adopted, more information about data collection, the target population, and the statistical approach to be used in analysis.

According to Schooler et.al, 2011 and Schooler and Smallwood, (2015) the Decoupling Hypothesis proposes that mind wandering involves the decoupling of attention from the immediate external environment, allowing individuals to focus on internally generated thoughts. This shift of attention from external stimuli enables cognitive processes like daydreaming, reflection, and idea generation, which can foster creative thinking.

In the context of current framework:

- **Connection to Creativity**: By decoupling from the present task, individuals can explore mental associations, consider alternative ideas, and experience "aha" moments—key elements in creativity. This aligns well with incubation theory, suggesting that creative insights may emerge during mind-wandering episodes (Nijstad et al, 2010). Mind wandering engages the brain's Default Mode Network (DMN), which is crucial for divergent thinking—a key component of creativity. The DMN allows for the spontaneous association of ideas, fostering novel and creative connections. (Christoff et al., 2016). Mind wandering operates within the framework of dual-process theories, where spontaneous and deliberate types influence creativity differently. Spontaneous mind wandering promotes free-flowing idea generation, while deliberate mind wandering helps refine and apply these ideas in structured tasks (Smallwood & Schooler, 2015)
- **Connection to Epistemic Curiosity**: When mind wandering shifts attention inward, curiosity can drive the exploration of new ideas encountered during this state, bridging mind wandering and creativity (Sio, 2009, & Baird et al., 2012). Mind wandering is often triggered by curiosity, driving exploration of knowledge and fostering creative outcomes. This curiosity-driven wandering can particularly support creativity in scholarly and scientific domains (Litman, 2005). When epistemic curiosity interacts with mind wandering, it promotes the generation of novel ideas. Interest-type curiosity (seeking new knowledge) encourages open-ended exploration, while deprivation-type curiosity (resolving knowledge gaps) aligns wandering with goal-directed problem-solving (Grossnickle, 2016). Epistemic curiosity can help regulate spontaneous mind wandering by transforming it into deliberate exploration.

here self-regulation ensures that the creative potential of mind wandering is utilized effectively rather than being random or unproductive (Kidd & Hayden, 2015)

- **Connection to Self-Regulation**: The hypothesis implies that self-regulation affects how beneficial mind wandering can be. Deliberate, well-regulated mind wandering allows purposeful decoupling, which can be more productive for creativity, while unregulated, spontaneous mind wandering may not yield the same benefits (Baumeister et al., 2007 & Carver and Scheier, 2011). Self-regulation enables individuals to transition between spontaneous and deliberate mind wandering. By redirecting spontaneous thoughts into more purposeful and goal-oriented deliberation, self-regulation enhances the creative utility of mind wandering. (Seli et al., 2015). Self-regulation helps filter irrelevant or distracting thoughts during mind wandering, allowing individuals to focus on thoughts that are more relevant to creative problem-solving. This ensures that mind wandering is productive rather than disruptive (Smallwood & Schooler, 2015). Self-regulation allows individuals to bring their wandering thoughts back to the task at hand, maintaining engagement with creative challenges. This cyclical process of wandering and returning fosters idea refinement and implementation (Baumeister & Vohs, 2007).

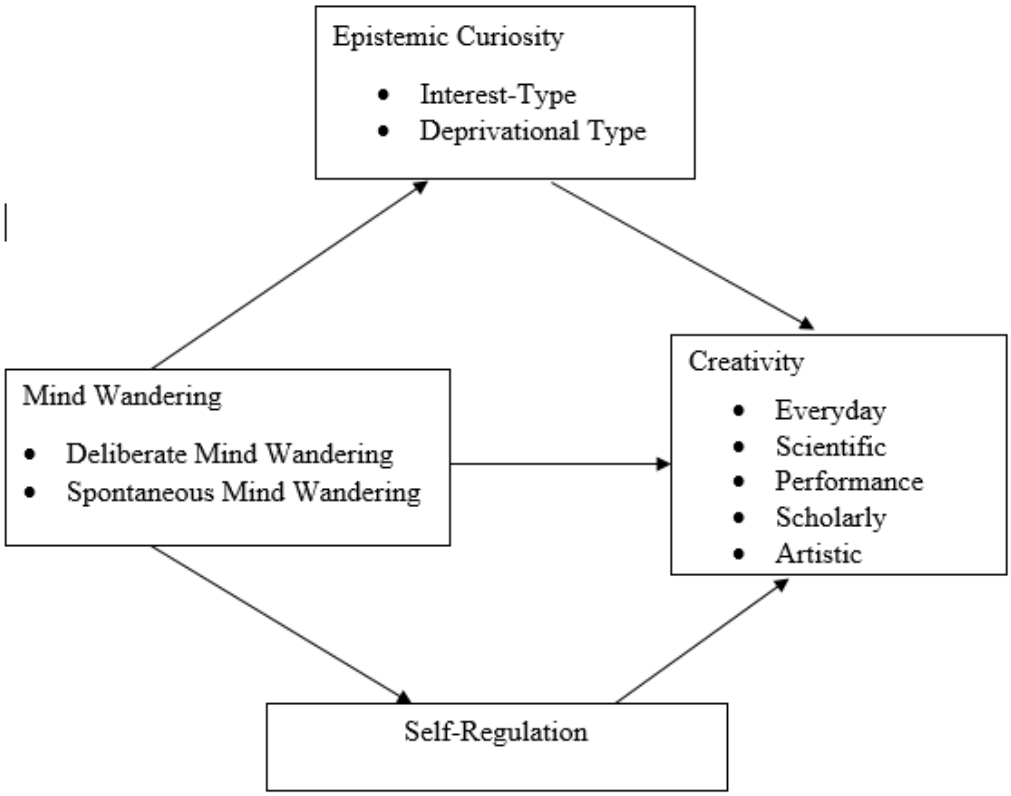
Application in Current Framework

By integrating Bandura's theory, this study emphasizes the importance of self-regulatory mechanisms in channeling mind wandering and epistemic curiosity into productive and creative outcomes. It underscores that fostering self-regulation is

essential for optimizing creativity across various domains, from everyday problem-solving to scholarly innovation.

Using the Decoupling Hypothesis as a connection, it is explored that mind wandering, through its attention-decoupling mechanism, enables creative cognition and is further mediated by curiosity and self-regulation. This theory can serve as a solid foundation for explaining why both types of mind wandering (deliberate and spontaneous) impact creativity differently based on self-regulatory capacities and curiosity-driven exploration.

Figure 1.1



1.7 Operational Definition

1.7.1 Mind Wandering

Mind wandering is the process where an individual diverges from focal task to the internal cognition that has no any relationship with the task in progress. Mind wandering is categorized into two subtypes: the deliberate mind wandering happens when people consciously decide to let their mind wander, whereas spontaneous mind wandering happens unconsciously (Carriere et al; 2013). In the present study mind wandering is operationally defined as the scores on the Spontaneous and Deliberate Mind Wandering scale developed by Carriere and his colleagues in 2013. This scale measures two sub types of mind wandering, spontaneous and deliberate, each sub scale

is having 4 items making a total of 8 items. Higher score on each sub type defines a person inclination towards the type of mind wandering they experience.

1.7.2 Creativity

Creativity refers to employing new and appropriate ideas, solutions, or products or a process of creating arts and products across the domains (Kaufman, 2012; Baer, 2012). In this research, creativity is operationally defined as the scores on the Kaufman Domains of Creativity Scale (Kaufman, 2012). This scale has 5 sub types of creativity that are separately scored and also a total creativity score is reported globally. The first two sub types every day and scholarly creativity consists of 11 items, performance consists of 10 items and scientific and artistic creativity has 9 items making it a total of 50 items. Higher the score on any sub scale categorizes the participant as higher on that specific type of creativity.

1.7.3 Epistemic Curiosity

Epistemic curiosity implies to a persons' want/need for acquiring new knowledge and information. It encompasses two subtypes i.e. Interest type is learning new and interesting information and deprivational type used to fill a certain void or due to the unpleasant feeling due to lack of knowledge (Litman, 2008). In this study, epistemic curiosity is operationally defined as the score on the Epistemic Curiosity scale of Interest and Deprivation type developed by Litman in 2008. It has two sub scales i.e. the interest type which consist of 5 items and deprivation type which also has 5 items, making it a total of 10 items. Again the scores on this scale are reported separately and

also globally as a total of epistemic curiosity. Higher the score on the sub scale classifies the participant more curios of that specific type.

1.7.4 Self-Regulation

Self-regulation is the ability to manage and control one's thoughts, emotions, and behaviors in pursuit of long-term goals. It involves goal setting, self-monitoring, self-evaluation, and the ability to delay gratification (Baumeister & Heatherton, 1996 and Zimmerman, 2000). Lastly, the self-regulation is operationally defined in this research as the scores on the Short Self-Regulation Questionnaire, which is established by Brown and his colleagues in 1999. It consists of 31 items in total, and the items are reversed scored. Higher the scores on this scale depicts better self-regulation in daily life dealings.

Chapter 2

Literature Review

2.1 Mind Wandering

In this enthralling world one must keep on wondering and keep the brain curious about the things around it and at the same time regulate the mind from wandering. In a bid to explain this Kashdan and Silvia in 2009 shed information that curiosity either dims or inflates the mind to wonder. Nevertheless, the very versatility of the human brain allows these connections to be retained or supplemented at a certain level. This exploration contributes to extend what we already know about the relation between out-of-execution control and our thoughts, as well as about how curiosity, flexibility and imagination frame this whole process.

The human mind therefore can be viewed as a changing function of thoughts, feelings that are in a constant self-regulation and involved in various high order cognitive operations. Self-regulation as a form of behavior refers to the capacity to control and guide ones thoughts, emotions, actions, and feelings and is a process that holds great consequences, for several facets of human life (Baumiester & Vohs, 2007). It is involved in actualization of long term plans and objectives, inhibitory processes involving making of desires and impulse, and other change related processes (McVay & Kane, 2010). At the same time the mechanism of mind wandering, which is defined as the transition of one’s focus from one task to another or to one’s own thoughts has also attracted growing interest in cognitive psychology and neuroscience. This work tries to fill this deficit of knowledge by seeking to

understand the empirical and theoretical links between creativity and mind wandering (Mrazek et al., 2013).

When psychologist Jonathan Smallwood began researching on mind-wandering in 1997, few of his colleagues believed that was a very good thing to do. One may wonder how those spontaneous and unpredictable thoughts might appear when people do not concentrate on what is going on around them and on the job to be done, could be studied? Whispered thoughts that had no correlation with any observable motor output? But Smallwood, carried on the work, as his tool, he employed a thoroughly mind-numbing computer activity that was designed to simulate the sort of attention deficit that causes someone to pour milk into a cup when the other person asked for black coffee. He began by first grouping the study participants and asked them a few questions on when they think their mind wanders and towards what? After a while, he also started monitoring their scalp electrical activity to get an idea of what they were thinking about when they drifted off. Smallwood came to know that people with unhappy hearts think a lot more in the past while people with happy hearts think a lot in the future. He also became convinced that wandering among our memories is important in order to prepare for what is still ahead. While some forms of mind-wandering – for instance, ruminating on problems that are unresolvable – may be linked with depression, Smallwood now considers mind-wandering to be never pointless. It is just our brain attempting to get some work done while it thinks that there is no other business to take care of (Vemimen, 2022).

Mind Wandering is a phenomenon that is inherent in everyone and is continually present in people's lives; may be the brains basic function (Buckner et al., 2008; Christoff et al., 2009; Mason et al., 2007; Raichle et al., 2001). It is an event

that according to the research done by Singer & McCraven (1961), 96% of American adults reported that they experience it in day to day lives, and as pointed out by (Kane et al., 2007; Killingsworth & Gilbert, 2010; Klinger, 1999, 2009; Klinger et al., 1987), it takes up to 50% of the day. How is it actually conceptualized and defined? On a more general level and across studies, mind wandering has been defined as a process whereby there is a diversion of an individual's thoughts away from the ongoing task; it has also been described as task unrelated thoughts (Smallwood & Schooler, 2006). It is, however, necessary to notice that there is an inconsistency in the use of the term mind wandering. Actually, there are so many variants of stimulus independent thoughts (Maason et al., 2007) referenced in the literature that many authors provide a list of the corresponding terms used in the literature (Christoff, 2011; Gruberger et al., 2011). Other terms that have been employed in the place of mind wandering include: daydreaming, spontaneous thinking, imagination, mindless thoughts, thought intrusions, task irrelevant cognitions, decoupling of perception, stimulus independent thinking, EGM (executive, goal, memory), unconscious thinking, in-task thinking, random reflection, and self-generated thinking (Christoff, 2011; McMillan et al., 2013).

These terms are in some way a reference to task unrelated thoughts. While some can be said to have identical meanings to the other word, others have different meanings though closely related. Of the aforementioned terms that are either highly similar to, or in some cases completely overlapping with, mind wandering, daydreaming appears to have a particular, somewhat more nuanced association with the concept. There are authors who partially equate the two terms (Carciofo et.al., 2017; Fox et al., 2015; Lindquist & McLean, 2011; Poerio & Smallwood, 2016), and apply them as synonyms to some extent there are authors that acknowledge the close

relationship between the two states but nevertheless maintain a minor difference (Berntsen et al., 2015; Christoff, 2012; Marcusson-Clavertz et al., 2016), although the nature of the difference is not described (Brown, 1927; Klinger, Henning, & Janssen, 2009; Zedelius & Schooler, 2015). Their respective papers show that, with few exceptions, daydreaming and mind wandering are closely related to each other to the point that, in many cases; they can be used interchangeably. The term daydreaming has been replaced by a term that is used frequently in current literature which is 'mind wandering'. This could be due to the fact that mind wondering encompasses a wider meaning as compared to daydreaming. (McMillan et al., 2013).

Having offered an account of the phenomenon that is mind wandering, the next task is to determine some of the central elements in it. In as much as this task was aimed to be achieved, the literature was therefore reviewed to ascertain the various component parts described as constituting mind wandering. They are primary factors that may relate to a larger degree and also those used more sporadically that may also add to the degree to how mind wandering is assessed. Like many of the concepts involved with mind wandering, all of these phenomena have multiple synonyms in the literature (Kaufman et al., 2020)

Establishing a conceptual structure for these components enables a more systematic, encompassing, and standardized approach to analyzing and, therefore, talking about mind wandering. Two of the main variables regarding most, if not all, types of mind wandering are intentionality (whether mind wandering is carried out consciously (deliberate) or unconsciously (spontaneous)) and correctness (the extent to which mind wandering relates to real life). The components that may not be relevant for every thought are time perspective – future or past oriented thoughts,

purpose – if it is contemplating about the plan or just thinking, focus – self or others or none, and valence – positive or negative (Barnett et al., 2020).

2.1.1 Types of Mind Wandering

As mentioned earlier, mind wandering is often referred to as distractions. Mind wandering involves shifting of focus, from one task to another task, from task to thoughts, from thoughts to emotions. It can be classified into two types i.e. Deliberate and Spontaneous Mind Wandering (Carriere et al., 2013).

Deliberate Mind Wandering

Deliberate Mind Wandering is when you consciously choose to shift your focus from the task at hand. This is a type of zoning out where one deliberately steps out of the current stream of thought in order to focus on something else in which one is interested for a given need of problem solving, planning or day dreaming among other things (Seli et al., 2016). The main characteristics of deliberate mind wandering is that is volitional in the sense that concentrates on changing the focus on purpose. It engages the mind in actual intentions or plans to achieve the goal in question and the focal direction of the mind upon certain thoughts or fantasies. Thus, it can happen even in those activities that require a lot of attention, but the subject decides to zone out. In most cases, it has a practical use, for instance, coming up with an idea or the following activities organization (Smallwood & Schooler, 2016).

Spontaneous Mind Wandering

Thoughts arising from spontaneous mind wandering are those that are not planned and can be thought of as being unaware of them as in like the automatic

process. It is a behavior that occurs when the thoughts become idle, and this mainly arises when the main activity that a person is required to do is uninteresting, monotonous, or requires lesser mental capacity to execute (Kane et al., 2007). Contrary to deliberate mind wandering, it occurs without any intention of switching ones attention to the other. Spontaneous thoughts are thoughts that will occur outside of the topic no matter what is the focus of the mind. It usually happens when the core task is rather unchallenging to the intellect of the worker and also they are long term, can be influenced voluntarily by the current emotional state, for example, stress or anxiety, leading to the emergence of intrusions (Christoff et al., 2016).

Seli et al., 2016), they distinguish between deliberate and spontaneous mind wandering, and it is noted that, in particular, the former can be useful for creative and innovative tasks. Christoff et al., 2016, go further in their elaboration by explaining that deliberate mind wandering or shifting of focus can be linked to the executive control network in the brain that is attributed with deliberate mind wandering.

Smallwood and Schooler (2006) also explained in their research that spontaneous mind wandering is linked with default mode network which is the part of the brain that is activated when the mind is idle and not occupied with the external environment. Kane et al., 2007 note that spontaneous mind wandering thoughts can be generated only in case a person's mind is not occupied with other tasks and there is a higher working memory capacity, thus enabling the mind to generate thoughts during the wandering.

Spontaneous mind-wandering involves absence of control and the same happens involuntarily while deliberate mind wandering on the other hand is controlled mind-wandering and occurs as a result of intention by the subject (Smallwood & Schooler,

2006). Moreover, Mind wandering might be nuisance here that hampers efficient performance of tasks, though there is positive mind wandering, which is actually helpful and constructive, in the sense that it helps in thinking and problem solving (Seli et al., 2016). Lastly, the researchers advocates contrast spontaneous mind-wandering with deliberate mind-wandering, with the former relative to the 'default mode network' and the latter to the 'executive control network' (Christoff et al., 2016). Knowledge of these two forms of mind wandering gives an understanding of how our minds work in two different settings and how may be these two processes can be utilized optimally for productive work.

2.1.2 Cognitive Mechanism of Mind Wandering

Mind wandering has been studied by Jonathan Smallwood and Jonathan W. Schooler (2015) wherein they have offered a comprehensive account of the cognitive underpinnings.

Self-generated thoughts or mind wandering is connected to a certain network in the brain called default mode network, which is used when the brain is idle and not focused on a particular task. This implies that mind wandering is an innate part of cognition and this paper provides an account of this argument. While mind wandering during a task is known to impair achievement of tasks, reflective mind wandering is known to enhance skills of creativity and thinking: this is because it enables thinking outside the box and considering a number of possibilities (Smallwood & Schooler, 2015).

Their work also shows that there are two faces of mind-wandering; it can be counterproductive as well as a useful cognitive state according to the type and

circumstances. This knowledge has important practical effects on self-regulation, on creativity, and on cognitive functioning as a whole.

2.2 Creativity

Creativity is a phenomenon and concept that can be described as a complex and constantly evolving ability to come up with something new and useful. It is the process of creating new and productive concepts, the answers for a question, a piece of art, or an innovative product, which goes beyond the known frames and rules. Drawing from cognitive activities, creativity defines a combination of imagination and effective problem-solving abilities. This capability is not only used in arts but in other areas like science and technology and even in everyday life (Runco, & Jaeger, 2012). It is critical to discuss creativity as it stimulates change, contributes to social and technological development, and enhances single and multiple people's lives. The definition of creativity deals with its antecedents in terms of individual psychological features, social roles of creativity, environmental factors and seeks to find out how creativity can be fostered in various settings (Guilford, 1950).

According to Sternberg & Lubart (1999) Creativity is defined as a capacity to formulate products that are both novel and relevant. In the same capacity, Sternberg and Lubart came up with a triarchic theory of creativity which contends that, in addition to producing novel ideas that have not been previously used before, it is also vital to ensure that the ideas that are created are useful and can be implemented in a particular setting. This definition extends the concern of originality with that of utility while underlining creativity as one of the crucial forces of innovations and solutions to problems in different fields.

Creativity involves two primary processes: Thinking and producing idea that are interlocked like the two gears because of their functions. It is noteworthy that a collection of ideas without action is considered more wishful thinking and not inventive at all (Amabile, 1996). Key characteristics of creative individuals include certain qualities that involves having ideas and how they solve problems, creative people are individuals have tendencies to have their own ideas and may not accept other ideas or view as the best solution Runco, 2004). This is the capacity to come up with many ideas or solutions this is in contrast to divergent thinking in that it searches for a single correct solution (Barron & Harrington, 1981). All these are traits that were outlined by psychologist E. Paul Torrance and they pertain to the capacity of generating many ideas in the course of a given phase, modifying them in certain ways and coming up with a new idea (Simonton, 2000).

2.2.1 The Nature of Creativity

Creativity is not synonymous with art; they need to be emphasized in different spheres of human activity including science, technologies, and business. It assists the person solve difficulties within a unique technique, and the aspect of creativity could be viewed as being instrumental in propelling change and adaptation in society (Csikszentmihalyi, 1996). It is only from the period referred to as the renaissance that creativity got partially recognized as the specifically human capacity. This evolution can be seen in relation to the gradual shift in people's estimates of creative thinking as a positive quality irrespective of cultural differences and discipline boundaries (Sawyer, 2012).

2.2.2 Creativity versus Innovation

Creativity is more about coming up with ideas while innovation is about bringing those ideas into reality. For instance, a particular idea is being thought out and may lead to a new product; however, the idea only transforms into an innovation when it is deployed or when it is functioning (West & Farr, 1990).

2.2.3 Underlying Structure of Creativity

Dr. James C. Kaufman and Dr. Ronald Beghetto (2009) have worked out the developmental mode of creativity and describe it in four stages. “In this model, creativity is perceived as a life span phenomenon,” notes the Dr. Kaufman. “From our understanding of the Four C model it can be suggested individuals that adopt some of these ideas together with their own ideas in cultivating creativity in their daily life activities.”

The mini-c level of creativity

Learning is modeled by creativity. Novelty is always associated with creativity because any time one tries to undertake a new activity then they will be creative. In the mini-c level of creativity, there may not be anything that one comes up with that can be deemed novel to the world but to them it is a novel idea.

The little-c level of creativity

Little-c level of creativity possesses some features of the transition from the level of mini-c. If the right feedback is given some improvements are made, and what has been made might be useful to other people.

The pro-c level of creativity

At this level, one is capable of doing so, and doing so in a professional manner and setting, creatively. At this stage, one would have accumulated many years out-right practice and training. Not every person who is at the Pro-c level can earn his or

her living from the chosen creative pursuits, but it is usually the aspiration of most persons at this level to do so.

Big-C level of creativity

Those at the Big-C level will be enshrined in the annals of history. The Big-C level encompasses an evaluation of the career of the individual and of work at large and then compares the work with other giant contributors before deducing the position of the individual.

On the basis of above mentioned model of creativity, Kaufman developed Kaufman Domains of Creativity Scale (K-DOCS) in the year 2012 based on the analysis of the validation and suggests a five factor model of creativity dimensions. The five dimensions namely are Self/Everyday, Scholarly, Performance, Mechanical/Scientific and Artistic. All four dimensions of creativity are linked with the tasks that may be assigned to individuals and might be solved creatively. Self/Every-day is a domain embracing all the tasks which people can stumble across in everyday life, for instance, it involves searching for a particular solution to some problem or helping other people in one or the other creative manner. The Scholarly domain covers those activities, which presuppose the analysis or discussion of subjects or other activities related to academic life, for example, the critique of the given scientific paper. Actions in the Performance domain can be done for others to observe, or can be presented to other people, for example, playing the guitar and singing, writing poetry and dancing and other actions related to public performance. Mechanical/Scientific activities involve those in which an interest and or knowledge in Stem subjects come in handy; like programming, building a mechanical structure and the likes. Artistic on the other hand should encompass activities like; sketching people or objects, making sculpture and such other artistic endeavors.

Kaufman and Behghetto in 2009 expressed that the nature of creativity is multidimensional and that's why as compared to other measuring tools there is need to develop a more comprehensive measure that can encompass the horizons of creativity. Kaufman in 2007 addressed the gaps and issues in the preexisting measures of creativity. These may include overcoming the general gaps in measuring creativity and highlighted the diversity in creative expression. Kaufman (2007) predicated on the fact that creativity is domain specific rather than expecting general ability measures. This approach enables one to come up with a better estimate of how innovative a person is. Criticizing the idea of creativity as a general factor, Kaufman (2012) stated that creativity seems to be specific to certain domains and for that reason there is a need to design instruments that would adequately describe creativity in different domains. Kaufman and Baer (2005) underlined that the differentiation of the creativity types helps to understand the mechanisms of creative thinking and actions better and target interventions correspondingly.

However, studies have also proved that the cognitive endeavor that forms the basis of creative tasks differs from these numerous realms. Certain people respond to creativity in many domains, and that is, not because of the general creativity skill, but owing to domain specific skills, traits, motivation, and attitude (Baer, 2016). It is established that creativity is both, general and specific to certain fields of study (Lebedeva et al, 2018, Qian et al, 2019, & Palmiero et al, 2015). However, there are some generic attributes like divergent thinking that are connected with creativity, but in general creativity is very domain specific particularly if one concentrates on the creative outcomes. Hence, the interaction between creativity and the underlying processes such as visual imagery is also found to be task and expertise specific (Palmiero et.al, 2015).

2.3 Relationship between Mind Wandering and Creativity

A more recent delineation is deliberate and spontaneous mind wandering (Seli, Carriere & Smilek 2015) where the former is the feature of creative work (Preiss & Cosmelli 2017). Spontaneous Mind wandering has also been tied to creativity, especially during maturation (Baird et al., 2012). As pointed out by eminent creativity scholar Keith Sawyer (2011),

"People spend more of their daily lives engaged in an incubation-like state than they probably realize: People typically are only consciously aware of one-half of their mind wandering episodes. This suggests an interesting possibility that creativity researchers might study further: these brief episodes of mind wandering may provide the mind with moments of 'mini incubation' that contribute to creative thought, by temporarily taking conscious attention away from the problem at hand and providing a brief opportunity for insight to occur" (p.146).

The existing literature has evidences of a positive relationship between mind wandering and creativity. Baird et al., 2012 note that mind wandering is essential in the creation of new networks of ideas and therefore fosters creativity. The following analysis shows that this relationship is applicable to each of the two forms of mind wandering – Deliberate and Spontaneous, that was brought up earlier while discussing the influence of mind wandering on creativity. According to the research done by Baird et al., 2012 the findings showed that as much as an individual is involved in a simple task that allows the mind to wander the next set of creative tasks will be enhanced. Based on this study, it revealed that if one has to perform a low-demand task, and at the same time, let one's mind wander, one enjoys a better divergent thinking performance than if he or she engages in a demanding task or even takes a

break. Also, in a study done by Zedelius & Schooler (2016), mind wandering was also pointed out to enhance creative thinking due to the creation of a ‘climate of disinhibition’, meaning that one temporarily loses his or her crucial thinking boundaries that hinder creative ideas. This implies that the informal and unrestricted characteristics of mind wandering are propitious for creativity because they allow for the incubation of novel thoughts.

Deliberate mind wandering is a constructive process that has been revealed to be associated with creativity as people are encouraged to deliberately bring their mind to a more creative thought process. It also permits the gestation of thoughts and consideration of diverse views, which can contribute to course and unique evaluation. According to research, self-initiated fluctuations enhance creativity because they foster more original and avenue spindle thinking (Agnoli et al., 2018; Fox & Beaty, 2019). When dealing with comprehensive tasks, mind wandering can provide incubation periods in which some of the work on the problem can be carried out unconsciously and may result in what is referred to as ‘’Eureka’’ effects (Sio & Ormerod, 2009).

Spontaneous mind wandering that takes place without an individual’s intervention is also beneficial to creativity. This kind of mind wandering can give the rise to new ideas and perspectives as it engages the conscious mind with the unconscious mind process and use of creative connections. This has been revealed to enhance divergent thinking that is essential in coming up with several different ideas (Gable et al., 2019). Spontaneous mind wandering is considered to be related to the activation of the ‘default mode network’ that concerns self-generated thoughts and the mental probe. The ‘default mode network’ is responsible for the creative thinking

because it allows the information and the narratives generated inside the brain to flow freely (Fox et al., 2015). Self-generated thoughts which occur without any direction, can also aid in the emotional regulation and thus produce a state that is optimal for creativity. Regression of affect to creativity, commonly results in richer and stylistical creative products (Smallwood & Schooler, 2015).

Though they are a source of creativity, distractions can also portray some effects. When the mind wandering turns into continuous state it may become a major disadvantage since it hinders the focus necessary for creative work. Furthermore, mind wandering's negative emotions, like depressive moods, may adversely affect creative qualitative work (Fox & Beaty, 2019). More precisely, spontaneous mind wandering is considered detrimental to creative accomplishment if it remains uncontrolled (Agnoli et al., 2018). Thus, although mind-wandering can be beneficial as a form of daydreaming, it has consequences. In simple terms, mind wandering when it is excessive or beyond one's control can hinder creativity since less focus is applied to tasks. Furthermore, the negative emotions linked to mind wandering include the interference of depressive moods when designing, which negatively affects the creative productivity (Fox & Beaty, 2019). More precisely, it has been established that spontaneous mind wandering decreases creative effectiveness when it is not controlled (Agnoli et al., 2018).

Consequently, it could be useful to find a way of learning how to engage in more deliberate and precise mind wandering that would allow for higher creativity. While there should be ways to organize a time frame for controlled mind wandering to get the constructive aspect of it, there should also be ways to contain it so that it does not lead to poor concentration levels. This is because understanding of the

various effects of these types of mind wandering, can help in identifying the right measures that can help in boosting creativity in the right manner. All in all, it can be concluded that deliberate and spontaneous mind wandering both can lead to an increase in creativity, yet therein lies the difference. Mindfulness also shows a strong positive relationship with creativity because deliberate mind-wandering's effect is generally positive, even though the effect of spontaneous mind-wandering can be either positive or negative depending on the context and regulation (Fox & Beaty, 2019; Agnoli et al., 2018; Gable et al., 2019).

2.4 Epistemic Curiosity as a Mediator

Expansion of knowledge is an inherent quality of human beings, and due to the curiosity, people search for different opportunities to learn and develop. It is a natural motivation which drives individuals in the pursuit of further information and, consequently, new experiences; the major breakthroughs very often stem for this motivation (Berlyn, 1954). Curiosity can be defined as a complex that can be expressed as an interest in a particular field or as a desire to know something new. It should be noted that there is nothing more human in this world than this desire to discover and learn and the absence of such desire inhibits not only individual development but also societal advancement. Thus, classified according to their nature, epistemic curiosity is indeed up there as one of the most influential variables among academicians (Litman, 2005). Curiosity is the need to know something or experience something new and may be conceived as one of the primal motives for learning and discovering. It is a category of verbal and thought activities involved in acquiring data, critical thinking, and a desire to resolve a curiosity (Litman & Jimerson, 2004). Thus, following the target theorization of Loewenstein (1994), curiosity is defined as

the state that comes into being when there is a divergence between what the person knows and what the person wants to know in order for the cognitive gap to be closed at least in part. This desire to decrease the uncertainty of differing knowledge and beliefs can be short-term and long-term learning phenomena.

Epistemic curiosity means a person's curiosity relating to attainment of knowledge and knowing. It entails a high degree of concern towards the process of attaining new knowledge, solving mental puzzles, and understanding abstract concepts (Berlyne, 1960). Perceptual curiosity, on the other hand, is more easily aroused when there is a novelty or something surprising is seen, and prompts exploration at the time it is aroused. Epistemic curiosity is more enduring and linked to learning motivation and pursuit of knowledge. Litman and Jimerson (2004) defines epistemic curiosity as a motivation for activities that would enhance the amount of knowledge and level of understanding, it demands an effortful cognitive operation, and continues even after a time.

Epistemic curiosity is believed to be identified by what a person deliberately selects to focus on, learn, try to figure out, search for, or acquire information on without the drive of vital external pressures or motivation (MetCalfe et al, 2020). It is the global subjective experience of knowing about learning and the individual's relation to the mental construct dubbed by Vygotsky as the region of proximal learning, which is an optimally challenging zone where one feels that he or she is capable of learning the material (MetCalfe, 2020). The results of this study showed that epistemic curiosity significantly relates with GPA, alongside general intelligence and conscientiousness (Kosslyn, 2007). The temporal lobe is oriented towards

understanding and interest curiosity may be perceived as an attribute that leads to the development of the above-mentioned part of the brain (Kosslyn, 2007).

2.4.1 Types of Epistemic Curiosity

It can be categorized in to two types.

Interest-Type Epistemic Curiosity

This kind of curiosity is based on the sheer enjoyment that one derives from acquisition of knowledge for the sake of it. People with high I-type EC are interested in acquiring new knowledge for the sake of the enthusiasm or the interest given to new ideas, concept or phenomenon. It is linked with a positive affect and the nature of actual knowledge as a joyful procedure (Litman, 2005).

Deprivation-Type Epistemic Curiosity

This type of epistemic curiosity originates from the mere drive to eliminate the unpleasant feelings of not knowing something. It is based on the need to address the state of lack of knowledge or to get rid of the uncertainty. This kind of curiosity is felt as a stronger, quite often painful, urge that makes people desire particular information to dispel the subjective mental discomfort (Litman, 2005). Depending on its type, epistemic curiosity can affect people's learning processes and problem-solving; interest-type is more closely connected to exploration and deprivation-type – to dealing with uncertainty (Litman, 2008).

2.5 Role of Epistemic Curiosity in the Relationship of Mind Wandering and Creativity

In a research on epistemic curiosity it was investigated as a possible positive personality trait, which could impact on mind wandering tendency, a possibility to mind wander. Epistemic curiosity involves the drive to gain new information that underlies knowledge seeking and general exploration (Berlyne 1954, Loewenstein 1994), and has been found to be particularly relevant for learning in educational context to the extent and manner it supports learning outcomes and process (von Stumm et al., 2011). Presumably, it is because those who possess a high degree of deprivation curiosity might be interested in a range of different new experiences; thus, they would have plenty to think about and, accordingly, a higher mind wandering may emerge. Individuals depicting higher levels of interest curiosity may have thoughts on the questions to be solved during some of the activities and thus are likely to exhibit more frequent mind wandering. Thus, it is possible that only epistemic curiosity is likely to lead people to mind wander. However, to the best of the author's knowledge, no prior research has investigated the impact of epistemic curiosity on mind wandering tendency (Sekiguchi, 2023). Kane et al., 2017, Yamaoka and Yukawa (2019), as well as Zhiyan and Singer (2016) found that the more openness to experience can be enhanced, the high mind wandering tendency can be also observed. The openness reflects one of the five-factor model known as the Big Five personality traits which means that the person in question is open to new ideas and experiences (McCrae & Sutin, 2009). Since people with high openness are said to have high levels of curiosity (Silvia & Christensen, 2020), it is expected that epistemic curiosity increases mind wandering frequency.

According to Golchert et al., 2017, people with higher levels of trait curiosity do show frequent and entertaining mind-wandering episodes. In their study, they found that these people employ mind-wandering in a manner that helped them in

coming up with new ideas and approaches to issues; they connected curiosity as the primary reason for learning to mind-wandering. Namely, creativity and epistemic curiosity are engaging in research as more naturally complementary approaches. There is also high energy and curiosity of creative people, they actively explore the world to gain knowledge that can be useful in introducing innovative ideas. According to Silvia (2008), curiosity is seen as the motivational starting point for creativity because it leads people to pursue activities that enhance creativity. Moreover, the indicated connection implies that epistemic curiosity not only stimulates but also keeps creativity replenished with information and stimuli. In addition, Kashdan et al., 2013 have confirmed that curiosity and creativity go hand in hand following the fact that both factors depend on openness to experience and intrinsic motivation. Intrinsic motivation is characterized by curiosity which make people to engage themselves in unusual and uncertain situations, which are essential for generation of new ideas. This makes the general environment suitable for incorporating novel ideas and perspectives in individuals' creative work.

Moreover, it is also concluded that people with high level of Epistemic Curiosity are likely to do both deliberate and spontaneous Mind Wandering. This is so because their self-generated interest with search for information and experiences makes them easily get lost with their minds wandering around trying to get answers to questions and probably even imagining different possibilities (Golchert et al., 2017). For example, if a person has interest-type curiosity, he may allow his thoughts to wander to some interesting idea, while a person with deprivation-type curiosity may have a mind wandering because he has some unsolved issues. Deprivation-type of curiosity favors towards more sudden and random episodes of mind wandering occurring because people inevitably switch their focus to the unsolved questions or

issues. On the positive side deliberate mind wandering enables the mind to come up with new associations and connections of its own choice and this could be very useful in creativity. The spontaneous nature of mind wandering may result in guarded insightful moments in which the mind works through data on auto-pilot and comes up with creative solutions (Zedelius & Schooler, 2016). Golchert et al., 2017 also suggest that the people with high level of trait curiosity, namely interest-type and deprivation-type curiosity, are likely to have more mind wandering episodes. This indicates that mind wandering comes freely with curiosity and people in the category engage in the process whenever they are working on new ideas to solve a particular problem.

Furthermore, as Silvia (2008) noted curiosity and creativity are related because curiosity includes aspects of openness to experiences and intrinsic motivation. According to Kashdan et al. (2013), curiosity is a driving force of play related to creativity due to its function of making people engage in appealing and creative endeavors at deliberate or random mind wandering. For example, the high interest-type curious may get the most out of mind wandering since they will proactively seek out opportunities for concept exploration (Litman, 2005; Baird et al., 2012). However, those showing high deprivation-type curiosity might daydream more often, and as a result, have unanticipated creative ideas (Zedelius and Schooler, 2016; Golchert and colleagues, 2017). Allowing the mind to wander has been associated with motivate and goal congruent thinking, hence mindful wandering is indeed good for your brain. In their study, Smeekens and Kane (2016) confirm that, moreover, significant working on the specific problems and preparation for the following tasks meaning the reflection can be beneficial due to the intentional distraction from the primary task. It can give the mind a break and allow time for the mechanics of the organizing to come up with creative strategies. Spontaneous mind wandering,

however, can emerge unconsciously and therefore can result to unexpected creative insights. The brilliant idea again falls under this category since it is not explained how one can intentionally let his or her mind wander. Other study by Mooneyham and Schooler (2013) showed that uncontrolled thinking, or mind wandering that takes place when a person is not actively engaged in a task can be beneficial for creativity because the mind forms new relationships and links between ideas. This type of mind wandering can lead to 'Eureka' moments, whereby one comes up with innovative solutions from what may be a chain of thoughts bearing no any logic.

Based on the research carried out by Von Stumm, et al., 2011, the actual and planned mind wandering reflects the disposition to task-type curiosity and interest-type curiosity hence indicating that people with increased interest-type curiosity practice deliberate mind wandering with the purpose of fulfilling the inherent fascination to acquire knowledge. Deprivation type curiosity which is concerned with the overcoming of uncertainty and filling of knowledge gaps results in spontaneous mind wandering. Mussel's (2013) study concerning deprivation-type curiosity suggests that people with such motives could have more frequent automatic self-generated thoughts because their mind wanders in a search for answers to unresolved questions or challenges.

Curiosity is work that is done out of sheer creativity. Kashdan and Fincham (2004) have provided empirical evidence, which proves that curiosity does lead to the undertaking of creative acts such as the exploration of new territories, the search for new experiences as well as the taking of interest risks. This intrinsic motivation pushes people to learn and explore hence deliberate and spontaneous mind wandering boosting creativity. For example, the participants with high interest-type curiosity can

benefit more from DMI because they consciously look for the chance to exercise creativity (Litman, 2005; Smeekens & Kane, 2016; Von Stumm et al., 2011). In turn, the individuals higher in deprivation-type curiosity might get lost in thought more often and gain improbable creative ideas at some point (Zedelius and Schooler, 2016; Golchert, et al., 2017; Mussel, 2013).

It is also noteworthy that when conducting your research, exploring the relation between planned and non-planned mind wandering to creativity with epistemic curiosity being a moderator will give a better understanding of the cognitive mechanisms of creativity. Saying this, you can specify that if one takes into consideration the specifics of interest-type and deprivation-type curiosity, then their understanding of how various motives influence the correlation between mind wandering and creativity will be much more accurate. For instance, those with interest-type curiosity are likely to deliberate mind-wander more because they purposefully look for time to freely innovate. Those with higher deprivation-type curiosity may spontaneously wander more often and therefore come up with ideas and inspiration at the most unexpected times.

To sum up, based on the findings of the studies discussed here, it can be stated that creative cognition is multifaceted and far from being a simple process that can be explained solely with psychological or neurological factors. Knowledge of these structures may help one to design ways to promote creativity, while building on one's deliberate and more incidental train of thought due to curiosity.

2.6 Self-Regulation

Self-regulation can be understood as a motivational system that involves processes. First it includes setting goals, developing strategies to achieve those goals, and evaluating the progress. It also involves managing the responses which are considered components of motivation and closely tied to cognitive process (Ridder & Witt, 2006). DeSchon and Rench (2009) state that self-regulation encompasses micro process such setting goals, strategic planning, effective organization, and storage of information, monitoring and metacognition, volitional control of actions, efficient time management, self-motivational beliefs (such as self-efficacy outcome expectations, intrinsic motivation/interest) evaluation and self-reflection. Self-regulation refers to the processes involved in attaining and maintaining (i.e., keeping regular) goals, where goals are internally represented (i.e., within the self) desired states Vancouver and Day (2005, p. 158). Both behavior and biology, plays a role in self-regulation, which is essential for managing new situations. Self-regulation is influenced by factors such as temperament, early experiences and personality traits (Thomson & Jacque, 2017). It involves regulating ones state in order to overcome internal or external obstacles that could hinder the achievements of desired actions. This process relies on Meta knowledge, which includes Meta motivational knowledge. These additional processes support actions like motivation and attention when they alone are not enough for optimal goal attainment (Beckman, 2001).

Baumeister and Heatherton's (1996) research on self-regulation describe how it assists people in coping with stress and on attention. Tangney, Baumeister, & Boone (2004) also highlight the difference between self-control which is presented as a trait though the work of Baumeister. There are researchers who compares the

process of self-regulation to a temperature regulator: This metaphor can be related to other cybernetic models of self-regulation, for instance, the ones developed by Carver and Scheier (1982) who referred to self-regulation as to the feedback loops of mechanical devices. Self-regulation is not an ability that one can attain easily and it is not an ability that he or she is born with. However, self-regulation is not created at a single instance or point in time. Self-regulation starts from infancy as children make choices, and changes in the food they accept, search for new things that interest them and lead to energetic exploration (Zelazo & Carlson, 2012). It was found that attributes related to self-regulation, namely, temptation control and delay observed during infancy and early childhood are related to future school results and social competencies (Mischel et al., 1988).

2.6.1 Importance of Self-Regulation

Self-regulation is necessary relevant to numerous facets of individual practice as well as in the working world since it allows a person to regulate his/her feelings, actions, and cognition to establish lasting change. By controlling one's behavior, self-regulation allows people to achieve their objectives by sustaining efforts. They found that it empowers people to veto self- gratify self-serving behaviors and remain loyal to long-term goals (Delcamp et al., 2005). According to Duckworth et al. (2005), it is noteworthy that self-regulation is crucial to ensure that goal setting as well as the sustenance of important commitments is achieved. Self-regulation enables control over feelings thus checking on irritability, a lack of ability to delay gratification and how one handles stress. This regulation plays a critical role in one's psychological health and development as a person thus enabling one to cope with outcomes of daily

endeavors (Gross, 2002). Gross in his article also provides the rationale of self-regulation as a process of controlling emotions to address stress.

It should also be noted that in an academic and professional environment, self-regulation positively correlates with the success and efficiency of the work done. Self-control students and employees who can control their behavior always earn better grades or get better posts in organizations (Zimmerman, 2002). Self-regulation is also essential in the practices of healthy habits, including exercise, proper diet, and non-use of-developing such bad habits like smoking, or excessive drinking. These behaviors enhance the general well-being of an individual both physically and mentally (Baumeister et al., 2007).

It was concluded that self-regulation improves social skills and relationships with others. Self-regulation is seen as a positive quality that enhances people's capacity to resolve disputes, interact with others, and sustain constructive relationships (Eisenberg et al., 2000).

2.7 Role of Self-Regulation in the Mind Wandering and Creativity

One could propose that high levels of self-regulation aid people in regulating the degree and the type of mind wandering experienced. Mind wandering is helpful when it is done occasionally so that it aids in refreshing the mind and allows it to be creative; however, when one wanders off too much or at a wrong time, he or she risks being unproductive (Mrazek et.al., 2012). Self-regulation therefore enhances mind wandering as well as concentration which enables one to be both creative as well as efficient, and productive. In the realm of creativity, the concept of self-regulation features as an authoritative aspect of creativity in a way that guides the creative

process to ensure innovations are realized and not left as mere impulses. It assists people to remain stalwart through the processes involved in creativity-related work and keep on track during possible interferences (De Dreu et al., 2008). Thus, self-regulation promotes the effective use of the key resource in creative work, mind wandering, since wandering contributes to creativity where it is forecasted and controlled.

Another thing that was observed is that self-regulation also mediates the effects of epistemic curiosity. Exploratory behavior derives from curiosity, and it must be controlled to ensure that it facilitates the processing of new information that can enrich the individual's knowledge base. People with well-developed self-regulation skills are well placed to satisfy their curiosity in the most constructive manner, hence increasing their learning and the progress of their brains (Vohs, & Baumiester, 2016). Thus, the self-regulation could be considered as the mediator between mind wandering and creativity. Mind wandering is joined with creativity, but this creativity may at times go without direction through corrective feedback and poor implementation. Thus, self-regulation is sane since it provides structure that is required to foster and filter thoughts that arise from mind-wandering (Dane, 2010).

Particularly, for the epistemic curiosity, self-regulation assists with changing the process of information search into knowledge acquisition. It helps to guide the curiosity into meaningful directions, thus making sure that the acquired knowledge is used and stored in the right way (Grossnickle, 2016). In the existing literature a classification of epistemic curiosity has been identified as interest-type and of deprivation type (Litman, 2005). Thus it can be concluded that both types of curiosity can be invoked by mind wandering, but the manner of this invocation may differ.

Clearly, engaging in intentional cognizance encourages curiosity of the interest type and, consequently, strengthens the spontaneous desire to acquire knowledge (Golman & Loewenstein, 2018).

Self-Regulation, an individual's capability to manage his thoughts, emotions, and behaviors in a manner that achieves the highest level of goals. That is why it is involved in both deliberate and spontaneous mind wandering. Thus, when this self-regulation is properly applied, one is able to reap the positive impact of deliberate mind wandering in creativity and knowledge seeking endeavors whereas the drawbacks of spontaneous mind wandering could be avoided. However, self-regulation can improve the epistemic curiosity by regulating of the attention towards learning objectives and thus avoid temptations (Metcalfe & Mischel, 1999). Indeed, when in analyzing the various effects in relation to self-regulation as a mediator, it can be affirmed that its impact is rather notable. In the case of the link between deliberate mind wandering and creativity, self-regulation enables one to let the mind wander and also to bring it back to focus to the task at hand. This balance is paramount when introducing innovation at the workplace to ensure that the creative work does not get sidetracked (Zedelius and Schooler 2015).

Therefore, self-regulation acts as an effective buffer against the detrimental impact of interference, so in n the case of creativity and spontaneous mind-wandering, self-regulation assists in reducing the impact of distractions on information processing. The amount of self-generated thought during mind-wandering does not impact creative performance, but it paralyzes creative flow, and people with strong self-regulation skills can only get back to the creative task and restart the creative flow (Smeekens & Kane, 2016).

Regarding the nature of epistemic curiosity self-regulation helps to control both interest-type and deprivation-type curiosity. It affords people the guarantee that they can follow their self-generated learning objectives averted by digressing to unimportant information or demotivated owing to unanswered inquiries (Litman, 2005). Due to the relationship between deliberate and spontaneous mind-wandering, creativity, epistemic curiosity, and self-regulation, there are nuances to their connections. Self-regulation can be seen as a crucial hybrid, and indeed, self-regulation plays the role of the mediator which can intensify the positive impact of deliberate mind wandering on such types of mental processes as creativity and curiosity while, at the same time, it can reduce the negative impact of spontaneous mind wandering. Knowledge of these relationships may offer significant data regarding how people may obtain the finest mental performance for breakthrough and scholarly tasks (Baumiester & Bohs, 2004). Still, it can be stated that studies show that mind wandering is a process that is most likely to reduce with age. While comparing a younger and an older individual, the general results show that more frequency of both intentional and incidental mind wandering is observed in the younger subjects (Giambra, 1993). This decrease in mind wandering with age, may be due to the decrease in working memory and cognitive control associated with older adults, which are known to play a critical role in maintaining an individual's focus and controlling off-task thinking (Jackson & Balota, 2012). Also, creativity appears to vary with regard to its stability or change across the life span. While the young people are normally more open-minded and get more ideas than older people, the latter show higher scores in creative tasks with utilizing the information (Sternberg & Lubart, 2001). Nonetheless, creativity in relation to age can be described as ambiguous with specific elements such as cognitive involvement and way of life

defining the entire subject (Dennis & Thomas, 2007). Based on the current literature and synthesis it can be noted that interest- type curiosity seems to be a stable construct albeit for age, and its content may varies as age increases. Source: Kashdan et al., (2018). It is essential to note that today's elder people seem to have a predilection for meaningful and more so personally relevant knowledge and experiences. Deprivation-type curiosity may decline as people age, as they may achieve a certain level of balanced concern with resolving uncertainty and thus involve themselves in the acquisition of specific, rather than broad, information in order to reduce varieties of uncertainties (Rudd, 2019).

Self-bureaucracy commonly heightens with age, in that elderly persons have considerably better self-regulation and adept control of emotions and thinking compared to young persons (Charles & Carstensen, 2010). This enhancement of self-regulation assists the older people to regulate mind wandering and direct them to accomplish goal attainment activities (Scheibe & Blanchard-Fields, 2009). Mind wandering gender comparison shows that man experience more mind wandering than women, or in the words of Seli et al. (2016). This difference may be relative with the cognitive control mechanisms and the ability to perform multitasking exercises from the two genders. Differences in the kind of creativity found in male and female have also been postulated from research. Analytical and divergent ways of considering a task are performed better by men while women are better suited to perform integrative and collaborative creative tasks (Baer, & Kaufman 2008). Epistemic curiosity has varying gender differences, it was seen that women are interested more on the interest type curiosity as compared to men who show more of the deprivation type curiosity (Litman & Spielberger, 2003). Such differences are due to differences in motivation and cognitive profiles with regards to gender. Gender differences in self-regulation

also show that women are more likely to demonstrate higher levels of self-regulation and proper ways of dealing with their emotions than male counterparts as noted by Nolen-Hoeksema and Aldao (2011). Such differences are as a result of socialization processes and gender roles within the society.

Another part of classification could be the employment status of the individual which also influences cognitive parameters. Employed individuals particularly in professional positions are likely to show optimal self-regulation and cognitive control because their work demands cognitive exercises (Lachman et al., 2010). Operation: unemployed people or those people who work in the less thinking demanding positions may have more of mind wandering and low levels of thought control (Windsor et al., 2009).

The findings of the above mentioned literature were that employment status and age affect mind-wandering, creativity, epistemic curiosity, and regulation. College students and knowledge workers are inclined to state that they mind-wander more often and creatively than older people, although the latter evaluate their self-regulation abilities higher. Such differences must be acknowledged to determine ways to modify cognitive treatment and care for elder employees based on age and employment settings.

2.7.1 Self-Regulation Theory as the Baseline for the Study

Self-Regulation Theory (SRT), introduced by Bandura (1991), emphasizes the mechanisms through which individuals control their thoughts, emotions, and behaviors to achieve personal goals. This theory operates on the premise that self-regulation is a dynamic and iterative process involving three key components: self-

monitoring (observing one's behavior), self-evaluation (comparing current performance against desired standards), and self-reinforcement (rewarding or correcting oneself based on progress). These processes are integral to maintaining focus, managing distractions, and achieving complex objectives such as creativity.

In this research, SRT serves as the foundational framework for understanding the interplay between mind wandering, epistemic curiosity, and creativity. It explains how self-regulation mediates these relationships, enabling individuals to leverage cognitive and motivational processes effectively.

Mind Wandering and Self-Regulation

Mind wandering, the shift of attention away from an immediate task toward unrelated thoughts, can be deliberate or spontaneous (Seli et al., 2016). Deliberate mind wandering is intentional and goal-oriented, often aiding in creative problem-solving by allowing for idea incubation and divergent thinking (Smallwood & Schooler, 2015). For example, individuals may deliberately disengage from a task to explore novel concepts or reflect on personal goals.

In contrast, spontaneous mind wandering is unintentional and frequently disruptive, posing challenges to self-regulation by diverting attention away from tasks (Mooneyham & Schooler, 2013). However, the impact of mind wandering depends largely on self-regulatory capacity. Individuals with strong self-regulatory skills can harness deliberate mind wandering for creative insights while minimizing the adverse effects of spontaneous distractions.

Bandura's theory provides a lens to understand these dynamics: individuals actively monitor and adjust their cognitive engagement, using self-regulation to strike a balance between productive exploration and task focus.

Epistemic Curiosity and Self-Regulation

Epistemic curiosity, described by Litman (2005) as the intrinsic motivation to acquire knowledge, is a key driver of learning and creativity. It is categorized into two types i.e. Interest-type epistemic curiosity (I-type): The desire to explore enjoyable or fascinating topics. Deprivation-type epistemic curiosity (D-type): The need to resolve information gaps or reduce uncertainty.

Both types of curiosity require self-regulation to sustain goal-directed exploration. For instance, individuals pursuing curiosity-driven learning often face distractions or challenges, such as frustration over ambiguous information or competing demands for attention (Grossnickle, 2016). Self-regulation enables them to maintain focus, allocate cognitive resources efficiently, and persist in the face of obstacles, ensuring curiosity contributes to creative outcomes.

Litman’s work emphasizes that the successful transformation of curiosity into creativity hinges on the ability to regulate attention and motivation, aligning with Bandura's principles of self-evaluation and adjustment.

Creativity and Self-Regulation

Creativity, defined as the production of novel and valuable ideas (Runco & Jaeger, 2012), is inherently linked to self-regulation. The creative process often requires individuals to:

- Overcome cognitive and emotional barriers, such as mental blocks or fear of failure.
- Persist through iterative refinement and problem-solving.
- Integrate diverse perspectives into cohesive solutions.

According to SRT, self-regulation is critical in managing these challenges. Research by De Dreu et al. (2008) highlights that effective self-regulation fosters creativity by facilitating goal setting, cognitive flexibility, and sustained effort. For instance, creative individuals frequently shift between convergent and divergent thinking modes, a process requiring deliberate control of attention and mental energy (Moran, 2010).

The Mediating Role of Self-Regulation

Self-regulation plays a pivotal mediating role in the relationships between mind wandering, epistemic curiosity, and creativity.

1. **Mind Wandering and Creativity**: Deliberate mind wandering enhances creativity through self-regulated exploration of ideas, while spontaneous mind wandering's effect depends on the individual's ability to manage distractions (Baird et al., 2012).
2. **Epistemic Curiosity and Creativity**: Curiosity-driven knowledge acquisition fosters creativity, but its success is contingent on self-regulation to sustain effort and focus, especially in complex tasks (Von Stumm et al., 2011).

By integrating Bandura's theory, this study emphasizes the importance of self-regulatory mechanisms in channeling mind wandering and epistemic curiosity into productive and creative outcomes. It underscores that fostering self-regulation is

essential for optimizing creativity across various domains, from everyday problem-solving to scholarly innovation.

2.8 Literature from Pakistan

Although there is limited body of information and literature to support the variables in this research from Pakistani context but few of them will be mentioned here to understand their direction of work with these variables in combination with other variables. Kiran et al. (2020) has concluded mind wandering as a positive predictor of depressive symptoms. In a study conducted by Anwar et al. (2018), it was formulated that social anxiety and social support maladaptively support and stimulate the day dreaming in university students of Rawalpindi and Islamabad.

In a study performed in a collectivistic culture by Anwar et.al (2021), on the effects of incubation to promote the creative problem solving strategies, but the results did not show any significant outcomes may be because of an impeded education system in Pakistan. Tanveer & Hassan in 2020 successfully concluded that creativity is required in every industry meaning IT, education and manufacturing. The aspect of creativity is becoming a significant part of the educational system of Pakistan that realizes the need of nurturing creative minds in a fast-growing education sector. There is also the current trend of creativity in the improvement of efficiency in the manufacturing industry. For creativity to reach its optimum industrial structures have to be changed across the board. In conclusion, the acceptance of creative ideas will go a long way to spurting growth in society. When filtering out the data of Pakistani teachers the results depicted that Pakistani teachers had high perception regarding those promoters who foster the creativity in students. As for demographic features, the teachers' age and their academic degree significantly differed with reference to their approach to the identification of creativity promoters. At the same

time, no difference was identified in teachers' professional qualifications concerning their attitudes towards creativity promoters (Andaleeb et al., 2022).

There are multiple researches in Pakistan that has focused on the mediating role of epistemic curiosity, in a research conducted by Hassan et al. (2015) has also considered epistemic curiosity as important explanatory variable in consideration of the personality-learning from training equation. In this study the mediating effects of epistemic curiosity has shown a positive correlation between openness to experience and innovative behavior. It is further investigated the relation between openness to experience and epistemic curiosity with moderation as its variable (Jabeen, 2020). It is further illustrated that creativity is positively related with the support for creative workers and curiosity. Epistemic curiosity goes a notch further in moderating the relationship between role perception, management support to creativity, and creativity of employees; further, trust in leadership as a moderator variable. Results of this study are discussed with reference to the current environment in the private sector organizations of Pakistan (Zafar, 2017). Another study also confirmed the mediating position of epistemic curiosity within the relations between personality characteristics and balanced contracts although hypotheses about the mediating position of rule following behavior with regard to personality and balanced psychological contracts were not supported (Hassan et al., 2021).

A study conducted by Fatima et al. (2022) depicted no gender differences in self-regulated learning among students of Pakistan. Students from higher socio-economic category were also privileged to have better resources, lesser problems of finances and more time for studies hence better time utilization, concentration and self-appraisal. In another study, feedback and enjoyment was found to be significant

and with active use while ignorance was found to have negative significant effect on Self efficacy. In the same respect, Self-efficacy proved that it has a positive and direct impact on self-regulation. In the same regard the help from peers and a tutor comment was a positive but statistically insignificant on self-efficacy (Aziz et al., 2017). Self-regulation was discovered to moderate the negative relationship between positive religious coping and stress and anxiety as well as the positive relationship between negative religious coping and stress. Besides this, it also identified that mediated associations were higher and significant in young men than in women (Fatima, Mehmood, & Shakil, 2022).

Chapter 3

Methodology

3.1 Introduction

The aim of the current study was to explore the outcomes of mind wandering on the creativity of adults, and also to discover the mediating roles of epistemic curiosity and self-regulation. It is pertinent to mention here that the data collected in the current research is from self-reported measures from the adult population, here they were divided into three distinct groups namely as emerging adults, establishing adults, and middle adults. Standardized assessment tools were employed in this research, with the consent and permission of the authors of these questionnaires. This section of research methodology is comprised of the research framework, explaining the design of the research, complete details of all the assessment tools used to collect data and information regarding the research variables of the study, validation of these tools, sampling technique, process of data collection, population and sample size, and analytical plan.

3.2 Research Design

This research is comprised of two phases: the first phase is the pilot study and the second one is main study, a cross-sectional design is used to conduct this research study. The translated Urdu versions of the all the scales and questionnaires were used i.e. Spontaneous and Deliberate Mind Wandering Scales (SDMWS: Carriere et al., 2013), Kaufman Domains of Creativity Scale (K-DOCS: Kaufman, 2012), Epistemic Curiosity Scale (ECS: Litman et al., 2003), and Short Self-Regulation Questionnaire (SSRQ: Brown et al., 1999) were used in this research. All the above mentioned

scales were applied in the pilot study first and then subsequently in the main study to test the research hypotheses.

3.3 Instruments

Below mentioned assessment measure are used in the current study. The participants are handed over a comprehensive demographic sheet which includes the basic information related to age, gender, marital status, no of years of marriage, no of children, and also their preferences to spend time on social media, and also a choice of types of social media they prefer spending time on, along with the informed consent and all the questionnaires attached to it which are as follows

1. Spontaneous and Deliberate Mind Wandering Scales (SDMWS) (Carriere et.al. 2013)
2. Kaufman Domains of Creativity Scale (K-DOCS) (Kaufman, 2012)
3. Epistemic Curiosity Interest (I) Type and Deprivation (D) type (ECS) (Litman, 2008).
4. Short Self-Regulation Questionnaire (SSRQ) (Brown et al, 1999)

3.3.1 Spontaneous and Deliberate Mind Wandering Scales (SDMWS)

Spontaneous and Deliberate Mind Wandering Scales (Carriere et al., 2013) is an 08 item scale which measure the mind wandering of an individual but in a two different ways i.e. spontaneous that happens without the intention of a person and the other one deliberate is the one that a person does on purpose after getting bored from the current task or just wants to shift the attention. Both Spontaneous and Deliberate Mind Wandering has both four items each. It is a 7-point likert scale ranging from *1*

"Not at all true" to 7 "A lot". This scale possess sound psychometric properties with a reliability of .74 and .81 respectively.

3.3.2 Kaufman Domains of Creativity Scale (K-DOCS)

Kaufman Domains of Creativity Scale was developed by Kaufman in 2012 in which he tries to establish a connection and differentiate between different types of creativity. He divided these different kinds of creativity into five sub domains i.e. Self/Everyday, Scholarly, Performance, Scientific, and Artistic. It is a 50 item questionnaire and is a 5-point likert scale from *1 "Much Less Creative" to 5 "Much More Creative".* The scores on these five sub-domains reveals about an individual that in which area lies his creativity. The sub-domains are calculated individually and also can be reported in the same manner, where as it can also be reported globally. The overall reliability of K-DOCS is .90, whereas the sub scales Self/Ever day has a reliability of .86, Scholarly has .86, Performance has .87, Scientific has .87, and Artistic has a reliability of .83.

3.3.3 Epistemic Curiosity Interest (I) Type and Deprivation (D) Type (ECS)

The Epistemic Curiosity Scale was established by Jordan Litman in 2008. It is a 10 item scale where the odd no of items are measuring the Interest or Interest type of Curiosity whereas the even numbered 5 items are measuring the Deprivation or Deprivation type of Curiosity. The Interest or Interest type as the name implies focuses or motivates an individual to gain more or knowledge or to gather information related to his/her own interest that satisfies that part of curiosity vice versa the other Deprivation or Deprivation type is more inclined to satisfy those curiosity needs where an individual feels deficit or low in that particular area of interest or to fill the gaps in

knowledge and information that has already achieved. It is a 4-point likert scale where the responses are marked from *1 "Almost Never" to 4 "Almost Always"*. For the total score of Epistemic Curiosity the Cronbach's Alpha reliability is .81.

3.3.4 Short Self-Regulation Questionnaire (SSRQ)

The Short Self-Regulation Questionnaire was extracted from the long version of 63 items established by Borwn, Miller, and Lewandowski in 1999. It assess seven dimensions of Self-Regulation as articulated by Brown and Miller, 1999. Later on in the same year it was shortened down to 31 items by Brown et al. (1999) to make it more user friendly. The basic focus of this questionnaire is to assess the one's ability to regulate their behaviors to achieve the preferred future outcomes. It is a 5-point likert scale in which the responses are marked from *1 "Strongly Disagree" to 5 "Strongly Agree"*, the items on this scale are reverse scored. The Cronbach's Alpha reliability for this scale is .86.

3.4 Phase I: Translation of Study Measures and Pilot Testing

3.4.1 Objectives

1. To translate the measures into Urdu language.
2. To explore the psychometric properties of the translated measures,
3. To explore the relationship among mind wandering, creativity, epistemic curiosity, and self-regulation in adults.

3.4.2 Step I: Translation of the Instrument

The translation of the instruments was done in line with Brislin's (1976) method this involves several steps. In the first step the forward translation to Urdu

the target language was done by a committee of translators. The committee comprises of three doctorate holders and an English language expert as well as a psychology expert with a doctorate. All items of the scale were reviewed by the experts, while making sure that the key meaning of the constructs was preserved. Special emphasis was placed on the syntactical correctness, standard of writing, and terminology as much as was possible to maintain the translated text close to the actual text. The second step was translation of the questionnaire items to another language or translation back to English where necessary; this was followed by another committee's scrutiny by myself, my supervisor and two other teachers who teach subjects in the field. This review process proved effective in checking translated contents from being distorted by a translator keen on making literal translation but without bearing in mind the cultural differences between two companies and their common external environment.

The third step was back translation in which a different team of translators comprising three experts in English language and an Urdu language expert holding a doctorate in the subject as well as a professor specialized in the subject translated the Urdu versions into English. The last version was developed with modifications where the comparison and evaluation processes had been made carefully. This final version was reviewed for the third time by the committee consisting the author, the supervisor and two teachers specialized in the subject. After this step by step translation, the last version of the instruments were administered to the desired population for pilot testing and for the analysis of psychometric properties of each instrument.

3.4.3 Step II: Pilot Testing of Urdu versions of the assessment tools

The results were obtained from a highly selected sample of the population which received all the scales and their subscales. The goals of conducting the pilot testing were as follows: The assessment of the validity and reliability of the instruments as well as practicability and acceptability in the selected population.

3.5 Sample

A total of 100 individuals, between the ages of 19 and 60 (M=35.30 and SD = 11.37) participated in the initial pilot study, belonging from various occupational backgrounds in Rawalpindi and Islamabad. Prior to their involvement in this research study, participants were given information, about the study's objectives along with the informed consent. It was also assured that their personal details would remain confidential.

3.5.1 Inclusion/Exclusion Criteria

1. Age must be between 19-60 years.
2. Participants must be proficient in Urdu language (can read and understand Urdu).
3. Participants in the study must have provided the informed consent and willingness to participate in all components of the study.
4. Participants with neurological disorders that has affected their cognitive functioning were excluded.
5. Participants having severe hearing and visual impairment that can impede and hinder their participation were excluded.

3.6 Results of Pilot testing

Table 3.1

Demographic Characteristics

Variables	*f (%)*	Mean (SD)
Age		34.98 (11.42)
Gender		
Male	45 (45)	
Female	55 (55)	
Age Categories		
Emerging Adults	39 (39)	
Establishing Adults	39 (39)	
Middle Adults	22 (2)	
Education		
Matric	02 (02)	
FA/F.Sc	05 (05)	
BA/BSc	19 (19)	
Masters	54 (54)	
MPhil and above	20 (20)	
Marital Status		1.68 (.73)
Single	43 (43)	
Married	51 (51)	
Widowed	01 (01)	
Divorced/Separated	05 (05)	
If Married No of Years		7.51 (9.37)
No of Children		1.23 (1.58)
Family Type		
Nuclear	55 (55)	
Joint	45 (45)	
Working Status		
Working Status	70 (70)	
Non-Working Status	30 (30)	
Day Dreaming		
Yes	51 (51)	
No	49 (49)	
Prefer time spending on social media		
Yes	77 (77)	
No	23 (23)	
If yes how much time (In Hours)		3.43 (2.87) hour

f = Frequency, %= percentage

Table 1 summarizes demographics of the Pilot Study.

Table 3.2

Descriptive Statistics of the major study variables ***(N=100)***

Scales	No. of Items	*α*	*M*	*SD*	Range		Skewness	Kurtosis
					Actual	Potential		
Deliberate Mind Wandering	04	.80	12.48	4.00	4-28	04-28	.642	1.58
Spontaneous Mind Wandering	04	.80	11.26	4.56	4-28	04-28	1.22	2.40
Creativity Total	50	.95	152.52	33.06	50-220	50-250	-.64	.91
Everyday	11	.88	37.82	8.07	11-55	11-55	-.52	.59
Scholarly	11	.92	35.24	9.59	11-55	11-55	-.53	.42
Performance	10	.91	23.67	9.06	10-48	10-50	-.06	-1.04
Scientific	9	.88	25.12	7.73	9-43	9-45	-.24	-.32
Artistic	9	.92	27.82	8.23	9-44	9-45	-.37	-.32
Short Self-Regulation	31	.86	97.74	14.28	37-124	31-155	-.18	1.54
The Epistemic Curiosity	10	.77	27.12	6.72	10-40	10-40	-.13	-.06
Interest Type	5	.74	14.52	3.64	5-20	05-20	-.63	.26
Deprivation Type	5	.64	12.60	4.21	5-29	5-20	.54	1.34

Table 2 presents descriptive details, reliability scores, and assessments of normality for the Urdu Translated Scales. The internal consistency, ranging from average to moderate, underscores the relevance of these measures for the sample under study. Specifically, Cronbach's alpha coefficients for the Deliberate and Spontaneous Mind Wandering (DSMW), Boredom Proneness Scale (BPS), Kaufman Domains of Creativity Scale (K-DOCS), Epistemic Curiosity (EC), and Short Self-Regulation Questionnaire (SSRQ), including all subscales, exceed the threshold of 0.5, indicating satisfactory reliability. Skewness and kurtosis values for all constructs lie within the acceptable range of -2 to +2, confirming normal distribution assumptions.

3.7 Item Total Correlation

Table 3.3

Item-Total Correlation for Deliberate Mind Wandering Questionnaire (N=100)

Items	M	SD	Item Total Correlation
DMSW_1	3.07	1.42	.636
DMSW_2	3.10	1.45	.760
DMSW_3	3.17	1.52	.699
DMSW_4	3.20	1.51	.625

Table 3.4

Item-Total Correlation for Spontaneous Mind Wandering (N=100)

Items	M	SD	Item Total Correlation
DMSW_5	3.01	1.47	.635
DMSW_6	3.23	1.47	.655
DMSW_7	2.53	1.55	.618
DMSW_8	2.71	1.47	.659

Table 3.5

Item-Total Correlation for Everyday Creativity of Kaufman's Domains of Creativity Scale (N=100)

Items	M	SD	Item Total Correlation
K_DOCS_1	3.03	.95	.491
K_DOCS_2	3.65	.99	.705
K_DOCS_3	3.77	1.00	.643
K_DOCS_4	3.40	1.10	.626
K_DOCS_5	3.46	1.00	.656
K_DOCS_6	3.32	1.07	.632
K_DOCS_7	3.57	1.08	.716
K_DOCS_8	3.47	1.09	.698

K_DOCS_9	3.26	1.22	.590
K_DOCS_10	3.39	1.04	.590
K_DOCS_11	3.50	1.12	.616

Table 3.6

Item-Total Correlation for Scholarly Creativity of Kaufman's Domains of Creativity Scale (N=100)

Items	M	SD	Item Total Correlation
K_DOCS_12	3.00	1.22	.693
K_DOCS_13	2.85	1.26	.684
K_DOCS_14	3.24	1.25	.708
K_DOCS_15	3.12	1.24	.727
K_DOCS_16	3.31	1.09	.761
K_DOCS_17	3.32	1.12	.782
K_DOCS_18	2.93	1.13	.533
K_DOCS_19	3.40	1.11	.752
K_DOCS_20	3.38	1.05	.696
K_DOCS_21	3.34	1.08	.728
K_DOCS_22	3.35	1.01	.668

Table 3.7

Item-Total Correlation for Performance Creativity of Kaufman's Domains of Creativity Scale (N=100)

Items	M	SD	Item Total Correlation
K_DOCS_23	2.68	1.26	.685
K_DOCS_24	2.69	1.29	.777
K_DOCS_25	2.79	1.20	.790
K_DOCS_26	2.33	1.27	.804
K_DOCS_27	2.56	1.20	.778
K_DOCS_28	2.69	1.25	.714
K_DOCS_29	2.85	1.20	.720

K_DOCS_30	2.54	1.24	.787
K_DOCS_31	2.54	1.27	.705
K_DOCS_32	2.64	1.30	.786

Table 3.8

Item-Total Correlation for Scientific Creativity of Kaufman's Domains of Creativity Scale (N=100)

Items	M	SD	Item Total Correlation
K_DOCS_33	2.73	1.15	.543
K_DOCS_34	2.70	1.12	.522
K_DOCS_35	2.53	1.23	.652
K_DOCS_36	3.09	1.20	.574
K_DOCS_37	2.86	1.21	.752
K_DOCS_38	2.60	1.15	.761
K_DOCS_39	2.91	1.17	.646
K_DOCS_40	2.99	1.25	.623
K_DOCS_41	2.71	1.19	.653

Table 3.9

Item-Total Correlation for Artistic Creativity of Kaufman's Domains of Creativity Scale (N=100)

Items	M	SD	Item Total Correlation
K_DOCS_42	2.85	1.17	.632
K_DOCS_43	2.94	1.18	.798
K_DOCS_44	3.10	1.18	.765
K_DOCS_45	2.98	1.17	.797
K_DOCS_46	3.14	1.19	.726
K_DOCS_47	2.80	1.13	.635
K_DOCS_48	3.45	1.11	.733
K_DOCS_49	3.24	1.10	.761
K_DOCS_50	3.32	1.18	.673

Table 3.10

Item-Total Correlation for Interest Epistemic Curiosity of Epistemic Curiosity Scale (Credulity) (N=100)

Items	M	SD	Item Total Correlation
EC_1	3.00	.89	.621
EC_3	2.79	.95	.624
EC_5	3.08	.97	.677
EC_7	3.09	.95	.677
EC_9	2.73	1.01	.546

Table 3.11

Item-Total Correlation for Deprivation Epistemic Curiosity of Epistemic Curiosity Scale (Credulity) (N=100)

Items	M	SD
EC_2	2.61	1.02
EC_4	2.67	.99
EC_6	2.69	1.02
EC_8	2.61	.98
EC_10	2.62	1.01

Table 3.12

Item-Total Correlation for The Short Self-Regulation Questionnaire (SSRQ) (N=100)

Items	M	SD	Item Total Correlation
SSRQ_1	2.45	1.09	.418
SSRQ_2	3.19	1.01	.230
SSRQ_3	3.37	1.05	.215

SSRQ_4	3.25	1.16	.280
SSRQ_5	2.56	1.05	.467
SSRQ_6	3.06	1.12	.317
SSRQ_7	3.50	1.14	.247
SSRQ_8	2.44	.94	.364
SSRQ_9	2.88	1.06	.422
SSRQ_10	3.05	1.01	.369
SSRQ_11	3.57	1.02	.197
SSRQ_12	2.36	1.03	.428
SSRQ_13	2.79	1.14	.499
SSRQ_14	2.47	1.11	.508
SSRQ_15	2.50	1.06	.522
SSRQ_16	2.97	1.17	.424
SSRQ_17	2.41	1.02	.434
SSRQ_18	2.43	.97	.416
SSRQ_19	3.04	.96	.337
SSRQ_20	2.67	1.08	.447
SSRQ_21	2.64	.99	.565
SSRQ_22	3.44	.98	.252
SSRQ_23	3.44	1.09	.241
SSRQ_24	2.68	.98	.508
SSRQ_25	2.42	.96	.417
SSRQ_26	2.52	.96	.446
SSRQ_27	3.25	.99	.152
SSRQ_28	2.46	1.03	.482
SSRQ_29	2.32	.96	.480
SSRQ_30	2.48	1.07	.496
SSRQ_31	3.65	1.12	.181

Table 3.13

Correlation Matrix of Study Variables (N=100)

No	Scales	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
I.	Deliberate Mind Wandering	1	.58**	.16	.16	.08	.20*	.19	-.04	.15	-.05	.04	-.17
II.	Spontaneous Mind Wandering		1	.04	-.05	.05	.11	.17	-.12	.16	.06	.12	-.22*
III.	Creativity (Total)			1	.76**	.78**	.78**	.72**	.72**	.48**	.40**	.51**	-.28**
IV.	Everyday Creativity				1	.68**	.38**	.48**	.39**	.40**	.32**	.42**	-.38**
V.	Scholarly Creativity					1	.44**	.40**	.39**	.60**	.35**	.55**	-.25*
VI.	Performance Creativity						1	.50**	.57**	.23*	.24*	.28**	-.09
VII.	Scientific Creativity							1	.39**	.34**	.22*	.32**	-.20*
VIII.	Artistic Creativity								1	.23*	.37**	.36**	-.15
IX.	Interest Epistemic Curiosity									1	.46**	.83**	-.30**
X.	Deprivation Epistemic Curiosity										1	.87**	-.28**
XI.	Epistemic Curiosity Total											1	-.34**
XII.	Self-Regulation												1
	Mean	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48
	SD	4.00	4.570	33.07	8.07	9.60	10.08	8.23	7.73	3.64	4.21	6.72	14.28

**p<0.05, **p<0.01*

The above Table 3.13 signifies correlation of Mind Wandering and its two sub scales of Spontaneous and Deliberate Mind Wandering, Creativity and its five sub domains of Every day, Scholarly, performance, Scientific and Artistic, along with Epistemic Curiosity emphasizing on its sub types of Interest or Interest type and the second one is Deprivation or Deprivation type, and Self-Regulation.

3.8 Phase –II (Main Study-Hypotheses Testing)

Next comes the main or the second part of this research study.

3.8.1 Objectives

1. To explore the relationship among mind wandering, creativity, epistemic curiosity, and self-regulation in adults.
2. To explore the mediating role of epistemic curiosity and self-regulation on the relationship between mind wandering and creativity of in adults
3. To explore the effects of demographics (i.e. age, gender, education level) on the study variables.

3.8.2 Hypotheses

In the light of the current literature and the above mentioned research questions following hypotheses were postulated

H1: There is a positive association between deliberate mind wandering and creativity.

H1a: There is a positive correlation between deliberate mind wandering and everyday creativity.

H1b: There is a positive correlation between deliberate mind wandering and performance creativity.

H1c: There is a positive correlation between deliberate mind wandering and scholarly creativity.

H1d: There is a positive correlation between deliberate mind wandering and scientific creativity.

H1e: There is a positive correlation between deliberate mind wandering and artistic creativity.

H1f: There is a positive correlation between deliberate mind wandering and total creativity.

H2: There is a positive relationship between spontaneous mind wandering and creativity.

H2a: There is a positive correlation between spontaneous mind wandering and everyday creativity.

H2b: There is a positive correlation between spontaneous mind wandering and performance creativity.

H2c: There is a positive correlation between spontaneous mind wandering and scholarly creativity.

H2d: There is a positive correlation between spontaneous mind wandering and scientific creativity.

H2e: There is a positive correlation between spontaneous mind wandering and artistic creativity.

H2f: There is a positive correlation between spontaneous mind wandering and overall total creativity.

H3: There is a positive association between deliberate mind wandering and epistemic curiosity.

H3a: There is a positive correlation between deliberate mind wandering and interest type epistemic curiosity.

H3b: There is a positive correlation between deliberate mind wandering and deprivation type epistemic curiosity.

H3c: There is a positive correlation between deliberate mind wandering and epistemic curiosity total.

H4: There is a positive association between spontaneous mind wandering and epistemic curiosity.

H4a: There is a positive association between spontaneous mind wandering and interest type epistemic curiosity.

H4b: There is a positive association between spontaneous mind wandering and deprivation type epistemic curiosity.

H4c: There is a positive association between spontaneous mind wandering and epistemic curiosity total.

H5: There is a positive association between interest type epistemic curiosity and creativity.

H5a: There is a positive correlation between interest type epistemic curiosity and everyday creativity.

H5b: There is a positive correlation between interest type epistemic curiosity and performance creativity.

H5c: There is a positive correlation between interest type epistemic curiosity and scholarly creativity.

H5d: There is a positive correlation between interest type epistemic curiosity and scientific creativity.

H5e: There is a positive correlation between interest type epistemic curiosity and artistic creativity.

H5f: There is a positive correlation between interest type epistemic curiosity and the total creativity.

H6: There is a positive association between deprivation type epistemic curiosity and creativity.

H6a: There is a positive association between deprivation type epistemic curiosity and everyday creativity.

H6b: There is a positive association between deprivation type epistemic curiosity and performance creativity.

H6c: There is a positive association between deprivation epistemic curiosity and scholarly creativity.

H6d: There is a positive association between deprivation epistemic curiosity and scientific creativity.

H6e: There is a positive association between deprivation epistemic curiosity and artistic creativity.

H6f: There is a positive association between deprivation epistemic curiosity and total creativity.

H7: There is a positive association between epistemic curiosity and creativity.

H7a: There is a positive association between epistemic curiosity and everyday creativity.

H7b: There is a positive association between epistemic curiosity and performance creativity.

H7c: There is a positive association between epistemic curiosity and scholarly creativity.

H7d: There is a positive association between epistemic curiosity and scientific creativity.

H7e: There is a positive association between epistemic curiosity and artistic creativity.

H7f: There is a positive association between epistemic curiosity and total creativity.

H8: There is a positive correlation between deliberate mind wandering and self-regulation.

H9: There is a positive correlation between spontaneous mind wandering and self-regulation.

H10: There is a positive correlation between self-regulation and creativity.

H10a: There is a positive correlation between self-regulation and everyday creativity.

H10b: There is a positive correlation between self-regulation and performance creativity.

H10c: There is a positive correlation between self-regulation and scholarly creativity.

H10d: There is a positive correlation between self-regulation and scientific creativity.

H10e: There is a positive correlation between self-regulation and artistic creativity.

H10f: There is a positive correlation between self-regulation and total creativity.

H11: Epistemic curiosity mediates the relationship between mind wandering and creativity in adults.

H12: Self-Regulation mediates the relationship between mind wandering and creativity in adults.

3.8.3 Sample

The sample of the main study comprises of 514 participants (Male=284, Female=230; M= 1.45, SD= .498) from various backgrounds of working, non-working class, and students, with age range of 19 to 60 years (M=35.30, SD=11.37). The sampling method used here is the convenience sampling from various localities of Rawalpindi and Islamabad. The inclusion/ exclusion criteria is this

3.8.4 Inclusion/Exclusion Criteria

1. Age must be between 19-60 years.
2. Participants must be proficient in Urdu language (can read and understand Urdu).
3. Participants in the study must have provided the informed consent and willingness to participate in all components of the study.
4. Participants with neurological disorders that has affected their cognitive functioning were excluded.
5. Participants having severe hearing and visual impairment that can impede and hinder their participation were excluded.

3.9 Measures

3.9.1 Spontaneous and Deliberate Mind Wandering (SDMWS)

The detailed description of the above mentioned measures can be found on page no 74.

3.9.2 Kaufman Domains of Creativity Scales (K-DOCS)

The detailed description of the above mentioned measures can be found on page no 75.

3.9.3 Epistemic Curiosity Interest (I) type and Deprivation (D) type (ECS)

The detailed description of the above mentioned measures can be found on page no 75.

3.9.4 Short Self-Regulation Questionnaire (SSRQ)

The detailed description of the above mentioned measures can be found on page no 76.

3.10 Procedure

The pilot study was collected through convenience sampling, from a variety of places such as government and private offices, schools, colleges, hospitals, universities and households with non-working residents both male and female in Rawalpindi and Islamabad. A detailed form about personal information was given at the beginning to introduce the study's purpose along with a consent form and a pledge of confidentiality. Participants were reassured about the confidentiality of their data handling and analysis. The survey, which included sections and all relevant

measurements took around 15-20 minutes to finish. The data collected was then analyzed using methods in SPSS software.

3.11 Data Analysis

For hypotheses and objectives of the present study, data analysis was done using SPSS-26 and Process macro version 4. 2. After data collection, the data cleaning and the assumptions for normality were checked. To evaluate the study variables' psychometric properties, descriptive analysis such as mean, standard deviation, kurtosis, and skewness, were computed. Cronbach's alpha was used to assess the reliability and validity of the study measures with reference to their appropriateness. Regarding categorical demographic data, frequencies and percentages were computed and for the continuous variables standard deviations and means were estimated. Then, the Pearson product-moment correlation was adopted for analyzing the associations between the study variables. In addition to all these analysis, ANOVA and factorial analysis were also used for finding out differences in means of the independent variable, and differences in means of multiple dependent variables, and for the interactions of multiple variables respectably. In the context of this paper, regression analysis was used specifically for prediction while the analytical tool used was Process Macro version 4. 2 which was used to apply mediation analyses.

Chapter 4

4.1 Analysis and Interpretation of Data

The aim of the current study was to investigate the effect of GW on creativity, with moderation effects of self-regulation and epistemic curiosity. To check the reliability of the measure with reference to Pakistani population a pilot study was also carried out to confirm the scale. To a certain extent, the following statistical procedures were applied so as to accomplish the research objectives and the gathered data were analyzed with the help of SPSS-25 software and Process Macro 4. 0. Descriptive statistics, pre and posttest, t-tests, normal regression, mediation and simple correlation tests were performed for the analysis. Independent samples t-tests were employed to between groups comparisons of mean differences across such demographic variables: age, gender, handedness, and creative achievement; between-subjects analyses for the between-groups designs for the relationships and outcomes of the types of mind wandering and creativity. The statistics of correlation and regression were carrying out for further understanding of these relationships. For the purpose of testing the mediating effects of epistemic curiosity and self-regulation, mediation analysis were used. Only material trends are published, and all facts are shown sequentially.

Table 4.1

Demographic Characteristics

Variables	*f (%)*	Mean (SD)
Age		35.30 (11.37)
Gender		
Male	284 (55.3)	
Female	230 (44.7)	
Age Categories		
Emerging Adults	202 (39.3)	
Establishing Adults	197 (38.3)	
Middle Adults	115 (22.4)	
Education		
Matric	20 (3.9)	
FA/F.Sc	33 (6.4)	
BA/BSc	119 (23.2)	
Masters	250 (48.6)	
MPhil and above	92 (17.9)	
Marital Status		
Single	226 (44)	
Married	266 (51.8)	
Widowed	09 (1.8)	
Divorced/Separated	13 (2.5)	
Family Type		
Nuclear	283 (55.1)	
Joint	231 (44.9)	
Working Status		
Working Status	338 (65.8)	
Non-Working Status	176 (34.2)	
Day Dreaming		
Yes	243 (47.3)	
No	271 (52.7)	
Prefer time spending on social media		
Yes	395 (76.8)	
No	119 (23.2)	
If yes how much time (In Hours)		3.25 (2.65)

f = Frequency, %= percentage

Table 4.1 summarizes demographics of the second and the main phase of the current study which includes age, gender, age categorization, education, marital status, married years, no of siblings, family type, working status and the preference and time spend on social media on daily basis.

Table 4.2

Descriptive Statistics of the major study variables ***(N=514)***

Scales	K	*α*	*M*	*SD*	Range Actual	Potential	Skew	Kurt
Spontaneous & Deliberate Mind Wandering								
Deliberate Mind Wandering	04	.84	12.53	4.88	4-28	04-28	.78	.54
Spontaneous Mind Wandering	04	.82	11.48	4.82	4-28	04-28	1.02	1.11
Creativity Total	50	.95	141.90	33.27	50-220	50-250	-.28	-.06
Everyday	11	.88	36.81	8.53	11-55	11-55	-.54	.14
Scholarly	11	.91	33.56	9.55	11-55	11-55	-.37	.001
Performance	10	.91	25.80	9.68	10-48	10-50	.02	-.78
Scientific	9	.90	25.17	8.66	9-43	9-45	-.08	-.66
Artistic	9	.91	26.70	8.60	9-44	9-45	-.10	-.46
Short Self-Regulation Questionnaire	31	.87	97.14	15.85	37-124	31-155	-.76	1.54
The Epistemic Curiosity Scale	10	.88	27.90	6.92	10-40	10-40	-.52	1.20
Interest Type	05	.83	13.21	3.92	5-20	05-20	-.63	-.01
Deprivation Type	05	.83	27.90	6.92	5-29	5-20	-.16	-.57

Table 4.2 defines the descriptive details, for this purpose, in the premises of research work, we have adapted the Urdu translated versions of all the assessment scales used in this research. Values of these scales demonstrated reasonable internal consistency rates, which are ranging from average to moderate as mentioned in the table below. This point leads to an inference that the measures are pertinent to the sample of the study. Especially, the Cronbach's alpha reliability for the many scales and their related sub-scales is definitely greater than 0. 5. This also shows that the degree of reliability of these scales lies within the acceptable level of reliability. In addition, all constructs' skewness and kurtosis are also less than 2, which means that which is within the acceptable level of skewness -2 and + 2 (George & Mallery, 2010) to support the normality of the data distribution.

4.2Relationship between study variables

To find out the relationship between the study variables Pearson product moment correlation was calculated.

Table 4.3

Correlation Matrix of Study Variables (N=514)

No	Scales	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
I.	Deliberate Mind Wandering	1	.65**	.18**	.13**	.20**	.06	.15**	.19**	.16**	.11*	.15**	.27**
II.	Spontaneous Mind Wandering		1	-.00	.06	.14**	-.03	.06	.05	.13**	.18**	.17**	.21**
III.	Everyday Creativity			1	.60**	.31**	.42**	.43**	.71**	.50**	.25**	.41**	.41**
IV.	Scholarly Creativity				1	.46**	.55**	.52**	.80**	.61**	.37**	.54**	.33**
V.	Performance Creativity					1	.50**	.54**	.75**	.30**	.27**	.32**	.15**
VI.	Scientific Creativity						1	.52**	.78**	.43**	.44**	.48**	.28**
VII.	Artistic Creativity							1	.79**	.45**	.28**	.39**	.33**
VIII.	Creativity (Total)								1	.58**	.41**	.55**	.39**
IX.	Interest Epistemic Curiosity									1	.64**	.90**	.42**
X.	Deprivation Epistemic Curiosity										1	.91**	.30**
XI.	Epistemic Curiosity Total											1	.40**
XII.	Short Self-Regulation Questionnaire												1
	Mean	12.53	11.48	36.81	33.56	25.80	25.17	26.70	141.90	14.69	13.21	27.90	97.14
	SD	4.88	4.82	8.53	9.56	9.69	8.67	8.60	33.26	3.70	4.00	7.00	15.90

***p<0.01, *p<0.05*

Table 4.3 is of Correlational matrix of all the variables which depicts that both subscale of Mind Wandering i.e. spontaneous mind wandering is positively correlated to deliberate mind wandering. Everyday type of Creativity is positively related to deliberate mind wandering, but no correlation with spontaneous mind wandering. Further the results of correlation have shown that Scholarly type of Creativity is positively correlated to deliberate mind wandering and Everyday Creativity simultaneously spontaneous mind wandering is depicting no correlation at all. Whereas Performance type of Creativity is showing a positively correlated with all other variables of deliberate mind wandering, spontaneous mind wandering, other types of creativity, total score of creativity i.e. Kaufman Domains of Creativity scale, epistemic curiosity total score, Interest Curiosity, Deprivation Curiosity, and Self-Regulation. The Scientific type of Creativity is depicting no correlation at all with deliberate mind wandering, and spontaneous mind wandering, but is depicting a correlation with all other mentioned variables. Artistic type of Creativity is affirmatively showing a correlation with deliberate mind wandering, Spontaneous Mind Wandering, and with other types of Creativity types but showing no correlation with the Kaufman Domains of Creativity scale total score and Epistemic curiosity total, along with its sub scales of Interest and Deprivation Curiosity, and Self-Regulation. The Kaufman Domains of Creativity scale total score has a positive correlation with deliberate mind wandering, spontaneous mind wandering, and with all its sub scales of Creativity, but no relationship with the total of Curiosity, Interest and Deprivation type along with Self-Regulation. There is no relationship between the Scientific Type of Creativity with Self-Regulation. Interest Curiosity has a positive link with deliberate mind wandering and spontaneous mind wandering, and an affirmative relationship with all other Creativity types. All variables have a positive

link with the Deprivation Curiosity along with the total of Epistemic Curiosity total and same as with the Self-Regulation.

4.3 Impact of Simple and Multiple Linear Regression on Study Variables

Regression analysis i.e. multiple and simple linear regression was conducted to examine the relationships among mind wandering (deliberate and spontaneous), creativity (across various domains), epistemic curiosity (interest-type and deprivation-type), and self-regulation. The analysis tested direct effects, as well as the mediating roles of epistemic curiosity and self-regulation in linking mind wandering to creativity.

Table 4.4

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, & Creativity Total Score (N=514)

Creativity Total

						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*P*	*LL*	*UL*
Deliberate Mind Wandering	1.90	.39	.27	4.86	.000	1.13	2.68
Spontaneous Mind Wandering	-.89	.39	-.12	-2.25	.025	-1.67	-.11

*R = .217, R²= .047, (F = 12.63***)*

This is a multiple regression table that depicts the influence of Deliberate Mind Wandering and Spontaneous Mind Wandering on the total scores of Kaufman Domains of Creativity and in turn effecting the various kinds of Creativity. The Value of R^2 depicts that Deliberate and Spontaneous Mind Wandering brings a 47% variance in the major aspects of Creativity in an individual with F ratio of (F= 12.63***). Further the results explained that Deliberate Mind wandering is affirmative predictor (B = 1.90, β = .27) of Creativity which infers a positive connection where each one unit corresponds to the Deliberate Mind Wandering leading to an increase of 1.90 units in the overall Creativity of an individual. Moreover the table figures depicts that Spontaneous Mind Wandering is negative predictor (B = -.89, β = .12) of overall Creativity which explains a negative relationship where each one unit tallies to the Spontaneous Mind Wandering leading to a decrease of 89 units in the global Creativity of the participant.

Table 4.5

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Everyday Creativity (N=514)

Everyday Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.58	.09	.33	5.90	.000	.39	.78
Spontaneous Mind Wandering	-.40	.10	-.23	-4.04	.000	-.60	-.21
*R = .25, R^2= .064, (F = 17.34***)*							

This table shows the effects of Deliberate and Spontaneous Mind Wandering on Everyday creativity. The Value of R^2 depicts that the Deliberate and Spontaneous Mind Wandering brings about a 64% increased variance in the Everyday Creativity with F ratio of (F= 17.34***). Further the table also shows that Deliberate Mind Wandering is a positive predictor (B = .586, β = .33) of Everyday Creativity which depicts a positive relationship, and with that with every unit increase in Deliberate Mind Wandering there will be an increase of 58 units in Everyday Creativity will occur. Further the values depicts that Spontaneous Mind Wandering is a negative predictor (B = -.40, β = -.23) of Everyday type of Creativity explaining a negative relationship where each one unit corresponds to the Spontaneous Mind Wandering bringing a decrease of 40 units in Everyday type of Creativity.

Table 4.6

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Scholarly Creativity (N=514)

Scholarly Creativity							
						95% CI	
Variables	*B*	*SE B*	*B*	*T*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.30	.11	.16	2.70	.007	.08	.53
Spontaneous Mind Wandering	-.07	.11	-.04	-.66	.505	-.30	.15
*R = .13, R²= .018, (F = 4.77***)*							

This table of multiple regression shows the outcome of Deliberate and Spontaneous Mind Wandering on the Scholarly type of Creativity in an individual. The Value of R^2 infers that Deliberate and Spontaneous Mind Wandering contributes to about an 18% increase in variance change in the Scholarly Creativity with an F ratio ((F = 4.77***) is observed. The results also depicted that Deliberate Mind Wandering is an affirmative predictor (B = .30, β = .16) of Scholarly type of Creativity and is showing a positive relationship, and with every unit increase in Deliberate Mind Wandering there will be a 30 increase in the Scholarly type of Creativity. Further it is also concluded that Spontaneous Mind Wandering is a negative predictor (B = -.07, β = -.04) in the Scholarly type of the Creativity which shows that with every unit decrease there will be a 7 decrease in the later.

Table 4.7

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Performance Creativity (N=514)

Performance Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.408	.114	.206	3.6	.000	.18	.63
Spontaneous Mind Wandering	.008	.116	.004	.07	.942	-.22	.23
*R = .208, R^2= .043, (F = 11.60***)*							

The figures of this table illustrates the end results of deliberate mind wandering and spontaneous mind wandering on the performance creativity of an individual. the value of r^2 concludes that deliberate mind wandering and spontaneous mind wandering adds up to about 43% increased variance in the performance type of creativity with an f ratio (f = 11.60***) can be perceived. moreover the deliberate mind wandering is a positive definite predictor (b = .40, β = .206) of the performance creativity, and this affirmative relationship is depicting that with every unit increase of 40 units in deliberate mind wandering increases a unit in the performance creativity. whereas the spontaneous mind wandering is also a definite predictor (b = .008, β = .004) confirming a positive relationship, which again adds that every unit increase of 8 in spontaneous mind wandering will also increase a unit in performance creativity.

Table 4.8

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Scientific Creativity (N=514)

Scientific Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.278	.104	.16	2.7	.008	.07	.48
Spontaneous Mind Wandering	-.253	.105	-.14	-2.4	.016	-.46	-.05
*R = .12, R²= .015, (F = 3.97***)*							

The above mentioned tables demonstrates the results of multiple regression between Deliberate and Spontaneous Mind Wandering with Scientific type of Creativity of a person. The value of R^2 shows that the Deliberate and Spontaneous Mind Wandering contributes up to 15% increased variance in the Scientific Type of Creativity with an F ratio (F=3.97***). The values of Deliberate Mind Wandering (B = .27, β = .16) depicts itself as a positive predictor of the Scientific Creativity, and this positive relationship shows that with every unit increase there will be a 27 unit correspondence increase of units respectively in the Scientific Creativity, whereas the values of Spontaneous Mind Wandering (B = -.25, β = -.14) depicts that it is a negative predictor of Scientific Creativity i.e. every unit of Spontaneous Mind Wandering will be a simultaneous 25 units decrease in the Scientific Creativity.

Table: 4.9

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Artistic Creativity (N=514)

Artistic Creativity							
						95% CI	
Variables	*B*	*SEB*	*β*	*T*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.352	.102	.20	3.43	.001	.15	.55
Spontaneous Mind Wandering	-.126	.104	-.07	-1.22	.223	-.33	.08
*R = .16, R²= .026, (F = 6.87***)*							

This table of multiple regression is between the Deliberate and Spontaneous Mind Wandering of the Artistic type of creativity of an individual. Here the value of R^2 reveals that 26% variance is caused by the Deliberate and Spontaneous Mind Wandering in the Artistic type of Creativity with F ratio of (F = 6.87***). Further in depth analysis confirms Deliberate Mind Wandering an affirmative predictor (B = .35, β = .20) of Artistic Creativity where everyone units corresponds to the Deliberate Mind Wandering causing an increase of 35 units increase in the Artistic Creativity of an individual, whereas also the table figures shows that Spontaneous Mind Wandering is a confirm negative predictor (B = .35, β = -.12) of the Artistic type Creativity of an individual, where a decrease of one unit in the Spontaneous Mind Wandering corresponds to the respective 12 unit decrease in the Artistic type of Creativity of an individual.

Table: 4.10

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Total Score of Epistemic Curiosity (N=514)

Epistemic Curiosity Total							
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.098	.082	.07	1.2	.233	-.06	.26
Spontaneous Mind Wandering	.183	.083	.12	2.2	.028	.01	.34
*R = .18, R²= .032, (F = 8.58***)*							

This above mentioned table of multiple regression is among the Deliberate and Spontaneous Mind Wandering of the total score of Epistemic Curiosity of an individual. Value of R^2 shows that a 32% variance is caused by the Deliberate and Spontaneous Mind Wandering in the total Epistemic Curiosity of a person. Furthermore, the values shows that Deliberate (B = .098, β = .07) and Spontaneous Mind Wandering (B= .183, β = .12) both are positive predictors of the Epistemic Curiosity of a person where one unit increase corresponds to the respective increase in Epistemic Curiosity total score i.e. 98 units and 18 units of Deliberate and Spontaneous Mind Wandering respectively will increase the Epistemic Curiosity of an individual.

Table: 4.11

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Deprivation Curiosity (N=514)

Deprivation Curiosity							
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Deliberate Mind Wandering	-.011	.046	-.01	-.24	.80	-.10	.08
Spontaneous Mind Wandering	.155	.047	.19	3.2	.001	.06	.25
*R = .18, R^2= .033, (F = 8.64***)*							

This table is depicting the multiple regression analysis of Deliberate and Spontaneous Mind Wandering with the Deprivation Curiosity of an individual. The value of R^2 shows that Deliberate and Spontaneous Mind Wandering can cause a 33% increase in variance in the Deprivation Curiosity of an individual with F ratio (F = 8.64***). Next up in the analysis it is revealed that Deliberate Mind Wandering is a negative predictor (B = -.011, β = -.01) of the Deprivation Curiosity of a person, which can be further explained as that every unit decrease of Deliberate Mind Wandering will bring a similar decrease in the Deprivation Curiosity of a person so 11 unit decrease in Deliberate Mind Wandering will cause a corresponding decrease in Deprivation Curiosity, similarly every unit increase in Spontaneous Mind Wandering will cause a similar increase in the Deprivation Curiosity of an individual so here 15 unit increase in Spontaneous Mind Wandering will cause a similar increase in the Deprivation curiosity of a person.

Table: 4.12

Multiple Regression Analysis on Deliberate & Spontaneous Mind Wandering, and Interest Curiosity (N=514)

Interest Curiosity							
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Deliberate Mind Wandering	.109	.044	.14	2.4	.013	.02	.19
Spontaneous Mind Wandering	.028	.045	.03	.62	.531	-.06	.11
*R = .17, R^2= .029, (F = 7.60***)*							

This multiple regression table shows the analysis among the Deliberate and Spontaneous Mind Wandering and the Interest Curiosity of an individual. The value of R^2 depicts that Deliberate and Spontaneous Mind Wandering can cause a 29% increase in variance in the Interest Curiosity of an individual with an F ratio of (F = 7.60***). The value of B shows that both Deliberate (B = .109, β = .144) and Spontaneous Mind Wandering (B = .028, β = .036) are positive predictors of the Interest Curiosity of a person which mean that every one unit increase in them will cause a simultaneous increase in the Interest Curiosity of an individual. Here a 10 unit and 28 unit increase respectively will bring an increase in the Interest Curiosity of a person.

Table: 4.13

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Everyday Creativity (N=514)

	Everyday Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	1.33	.115	.58	11.65	.000	1.11	1.56
Deprivation Epistemic Curiosity	-.26	.108	-.12	-2.42	.016	-.475	-.050
*R = .51, R^2= .261, (F = 90.30***)*							

This table of multiple regression displays the analysis between the Interest and Deprivation Epistemic Curiosity and Everyday Creativity of an individual. The value of R^2 demonstrates a 26% change, an increased variance in the Everyday type of Creativity of an individual with an F ratio of (F = 90.30***). Moreover the Interest Epistemic Curiosity is a positive predictor (B = 1.33, β = .115) in Everyday Creativity of an individual, which explains that every 13 unit increase in Interest Curiosity will bring a corresponding increase of units in the Everyday Creativity of a person. Likewise the Deprivation Curiosity is a negative predictor (B = -.262, β = .108) of Everyday type of Creativity of an individual, these values explains that with every unit decrease in the Deprivation Epistemic Curiosity will cause a matching decrease in the Everyday Creativity of a person, so here a 26 unit decrease in Deprivation Epistemic Curiosity will cause a similar decrease in the Everyday Creativity of an individual.

Table: 4.14

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Scholarly Creativity (N=514)

Scholarly Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	1.65	.11	.64	14.06	.000	1.42	1.88
Deprivation Epistemic Curiosity	-.09	.11	-.03	-.82	.408	-.31	.12
*R = .61, R²= .381, (F = 157.42***)*							

The above table is a multiple regression analysis between the Interest and Deprivation Epistemic Curiosity and the Scholarly type of Creativity of an individual. The value of R^2 shows that Interest and Deprivation Epistemic Curiosity will bring a 38% increased variance change in the Scholarly type of Creativity with a significant F ratio of (F = 157.42***). The results of the table describes that Interest Epistemic Curiosity is a positive predictor (B = 1.65, β = .641) of the Scholarly type of Creativity, it adds to the notion that every unit increase in the Interest Epistemic Curiosity will cause a corresponding increase in the Scholarly Creativity of the individual, so here a 16 unit increase in the Interest Epistemic Curiosity will cause a likewise increase in the Scholarly Creativity. Vice versa the Deprivation Epistemic Curiosity is a negative predictor (B = -.092, β = -.038) of the Scholarly type of Creativity of a person, this again explains that a decrease of 92 units of Deprivation Epistemic Curiosity will cause an equivalent decrease in the Scholarly Creativity of an individual.

Table: 4.15

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Performance Creativity (N=514)

Performance Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	.57	.14	.22	4.04	.000	.29	.86
Deprivation Epistemic Curiosity	.32	.13	.13	2.42	.016	.06	.56
*R = .32, R²= .105, (F = 29.97***)*							

This table depicts the effects of Interest and Deprivation Epistemic Curiosity on the Performance type of Creativity of an individual. The value of R^2 displays that a 10% increase in the Interest and Deprivation Epistemic Curiosity will cause a similar increased variance in the Performance type of Creativity of a person with an F ratio (F = 29.97***). The above table illustrates that both Interest Epistemic Curiosity (B = .579, β = .222) and Deprivation Epistemic Curiosity (B = .329, β = .133) are affirmative predictors of the Performance type of Creativity of a person, again a one unit increase in the former i.e. Interest Epistemic Curiosity 22 units and Deprivation Epistemic Curiosity 13 units will bring a corresponding increase of units in the Performance type of creativity of an individual.

Table 4.16

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Scientific Creativity (N=514)

Scientific Creativity							
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	.603	.119	.25	5.08	.000	.37	.83
Deprivation Epistemic Curiosity	.605	.112	.27	5.40	.000	.38	.82
*R = .48, R^2= .233, (F = 77.56***)*							

This table also shows the influence of Interest and Deprivation Epistemic Curiosity on the Scientific type of Creativity of an individual. The value of R^2 shows that a 23% increase in the Interest and Deprivation Epistemic Curiosity will bring an increased variance change in the Scientific type of Creativity with an F ratio (F = 77.56***). Here again in the results of this table the Interest (B = .603, β = .258) and Deprivation (B = .605, β = .274) Epistemic Curiosity are positive predictors of the Scientific type of Creativity of a person. As a result it can be confirmed that a one unit increase in the former will bring a similar change in the later, so here a 25 and 27 unit increase in the Interest and Deprivation Epistemic Curiosity respectively will bring a consistent increase of similar units in the Scientific Creativity of a person.

Table: 4.17

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Artistic Creativity (N=514)

	Artistic Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	1.07	.120	.462	8.91	.000	.83	1.30
Deprivation Epistemic Curiosity	-.04	.114	-.019	-.36	.718	-.26	.18
*R = .45, R²= .202, (F = 64.78***)*							

This table shows the relationship between the Interest and Deprivation Epistemic Curiosity and the Artistic Type Creativity of a person. The value of R^2 demonstrates that a 20% increase in the Interest Epistemic Curiosity and Deprivation Epistemic Curiosity will cause an increased variance in the Artistic Creativity of an individual with a significant F ratio (F = 64.78***). Moreover it is explained that Interest Epistemic Curiosity is a positive predictor (B = 1.07, β = .462) of the Artistic Creativity of a person, where one unit increase will cause a corresponding increase, so a 10 unit increase in the Interest Epistemic Curiosity of a person will cause an equivalent increase in the Artistic Creativity. Further it is added that Deprivation Epistemic Curiosity is a negative predictor (B = -.041, β = -.019) of the Artistic Creativity of a person, so a one unit decrease will cause a vice versa decrease, hence a 41 unit decrease will lead to a same amount of decrease in the Artistic Creativity of a person.

Table: 4.18

Multiple Regression Analysis on Interest and Deprivation Epistemic Curiosity, and Creativity Total (N=514)

	Creativity Total						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Interest Epistemic Curiosity	4.91	.420	.54	11.70	.000	4.08	5.73
Deprivation Epistemic Curiosity	.54	.397	.06	1.37	.170	-.23	1.32
*R = .59, R²= .349, (F = 136.94***)*							

This table shows the relationship of the Interest and Deprivation Epistemic Curiosity and the Creativity of a person. The value of R^2 shows that a 34% increased change in the Interest and Deprivation Epistemic Curiosity will bring a change in the variance of the total Creativity of a person with an F ratio (F = 136.94***). The table further reflects that both the Interest (B = 4.91, β = .547) and Deprivation (B = .54, β = .064) Epistemic Curiosity are positive predictors of the total Creativity of a person, so a one unit increase in the former will cause an equal change and increase in the later i.e. the Interest Epistemic Curiosity will increase a 49 unit increase whereas the Deprivation Epistemic Curiosity will increase 54 unit change in the Total Creativity of a person.

Table: 4.19

Simple linear Regression Analysis on Self-Regulation and Everyday Creativity (N=514)

	Everyday Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Self-Regulation	.22	.022	.417	10.40	.000	.18	.26
$R = .41$, $R^2 = .174$, ($F = 108.07$***)							

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This analysis is of simple regression between the Self-Regulation and the Everyday Creativity of a person. The value of R^2 displays that a 17% increased change in the Self-Regulation of a person can caused an increased variance in the Everyday Creativity of a person with a F ratio (F = 108.07***). Additionally it can also be concluded that Self-Regulation is a positive predictor (B = .225, β = .417) of the Everyday Creativity of a person, which adds up to that one unit increase in the Self-Regulation will cause a corresponding increase in the Everyday Creativity of a person so here a 22 unit increase will cause a similar change in the Everyday type of Creativity.

Table: 4.20

Simple linear Regression Analysis on Self-Regulation and Scholarly Creativity (N=514)

	Scholarly Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Self-Regulation	.202	.025	.335	8.04	.000	.153	.251
$R = .33$, $R^2 = .112$, ($F = 64.78$***)							

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This table of simple linear regression is between the Self-Regulation and the Scholarly Creativity of a person. The value of R^2 depicts that a 11% increase in the Self-Regulation will cause an increased variance change in the Scholarly Creativity of a person with a significant F ratio (F = 64.78***). Further it is concluded that Self-Regulation is a positive predictor (B = .202, β = .335) of the Scholarly Creativity of a person. Here a one unit increase in the former will cause a similar increase in the later, so a 20 unit increase in the Self-Regulation of a person will cause an equivalent change in the Scholarly Creativity of a person.

Table: 4.21

Simple linear Regression Analysis on Self-Regulation and Performance Creativity (N=514)

	Performance Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Self-Regulation	.097	.027	.158	3.62	.000	.044	.149
$R = .15$, $R^2 = .025$, ($F = 13.13$***)							

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This table depicts the influence of Self-Regulation on the Performance type of Creativity of an individual. The value of R^2 shows that a 25% increased change in the Self-Regulation will cause an increased variance in the Performance type of Creativity of a person with a significant F ratio (F = 13.13***). It is also concluded from the figures in the table that Self-Regulation is a positive predictor (B = .097, β = .158) of Performance Creativity, so 97 unit increase in the Self-Regulation will cause a resultant increase of units in the Performance Creativity of a person.

Table: 4.22

Simple linear Regression Analysis on Self-Regulation and Scientific Creativity (N=514)

	Scientific Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Self-Regulation	.155	.023	.284	6.70	.000	.110	.201
$R = .28$, $R^2 = .081$, ($F = 44.83$***)							

This table of simple linear regression is between the Self-Regulation and the Scientific Creativity of a person. The value of R^2 explains that 81% increase in the Self-Regulation will cause an increased variance change in the Scientific Creativity of a person with a significant F ratio (F = 44.83***). Likewise it is concluded that Self-Regulation is a positive predictor (B = .155, β = .284) of the Scientific Creativity of a person, so a 15 unit increase in the Self-Regulation will cause a similar increased unit change in the Scientific Creativity of a person.

Table: 4.23

Simple linear Regression Analysis on Self-Regulation and Artistic Creativity (N=514)

	Artistic Creativity						
						95% CI	
Variables	*B*	*SE B*	*β*	*T*	*p*	*LL*	*UL*
Self-Regulation	.180	.023	.332	7.97	.000	.13	.22
$R = .33$, $R^2 = .110$, ($F = 63.59$***)							

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This table shows the relationship between the Self-Regulation and the Artistic type of Creativity of a person. The value of R^2 shows that 11% increase in the Self-Regulation will cause an increased variance in the Artistic Creativity of an individual with a significant ratio (F = 63.59***). It is evident from the figures in the table that Self-Regulation is a positive predictor (B = .180, β = .332) of an Artistic Creativity of a person, also an 18 unit increase in the Self-Regulation of a person will cause a simultaneous increase in the Artistic Creativity of a person.

Table: 4.24

Simple linear Regression Analysis on Self-Regulation and Creativity Total (N=514)

	Creativity Total						
						95% CI	
Variables	*B*	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Self-Regulation	.820	.085	.391	9.60	.000	.652	.987
$R = .39$, $R^2 = .152$, ($F = 92.12$***)							

This table of simple linear regression is between the Self-Regulation and the Total Creativity of a person. The value of R^2 explains that 15% increase in the Self-Regulation will cause an increased variance change in the Total Creativity of a person with a significant F ratio (F = 92.12***). Likewise it is concluded that Self-Regulation is a positive predictor (B = .820, β = .391) of the Scientific Creativity of a person, so an 82 unit increase in the Self-Regulation will cause a similar increased unit change in the Total Creativity of a person.

4.4 Mediation Analysis

For mediation analysis process Macro 4.2 model was used. The Mediators are Self-Regulation, Epistemic Curiosity with its sub types Interest and Deprivation type. Mind wandering as predictor variable with 2 levels, Creativity as a dependent variable with 7 levels.

Table: 4.25

Deliberate Mind Wandering with Self-Regulation

	Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	125.32***	59.41***	42.78	76.04
Deliberate Mind Wandering	1.322***	.648***	.085	1.21
Short Self-Regulation		.765***	.59	.93
Indirect effect- DMW → Self-Regulation → Creativity		.67	.41	.96
R^2	.037	.16		
ΔR^2		0.12		
F	40.59***	48.99***		
ΔF		20.96		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

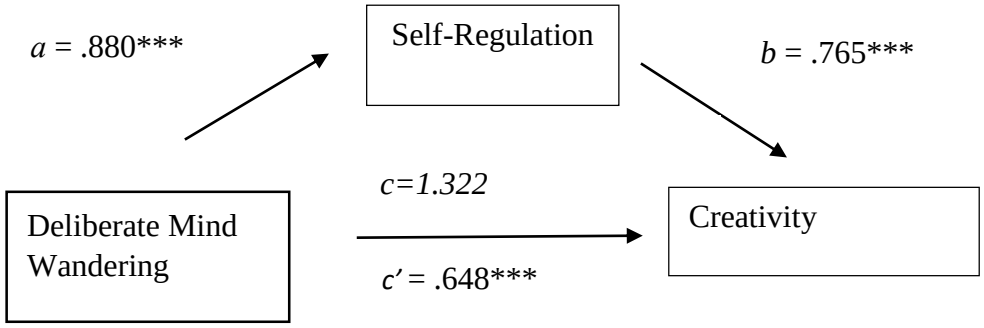

Figure: 4.1

Mediation of Deliberate Mind Wandering on the Total Creativity of an individual with Self-Regulation

The overhead table depicts the mediation analysis on Deliberate Mind Wandering and total Creativity of an individual by Self-Regulation. The total effect of mediation model was found to be significant where b= 1.32, t= 4.47, CI [.74, 1.90], p < .001. It can also be seen that direct effect is significant b= .648, t= 2.26, CI [.08, 1.21], p < .001. Further analysis also explained that the indirect effect is also significant b= .67, CI [.41, .96]. Therefore it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Total Creativity of a person.

Table 4.26

Deliberate Mind Wandering with Self-Regulation

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.78***	14.39***	10.17	18.61
Deliberate Mind Wandering	.320***	.132***	-.0102	.275
Short Self-Regulation		.21***	.169	.257
Indirect effect- DMW → Self-Regulation → Everyday Creativity		.188	.118	.27
R^2	.033	.179		
ΔR^2		.146		
F	40.59***	55.94***		
ΔF		15.35		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit;

DMW = Deliberate Mind Wandering.

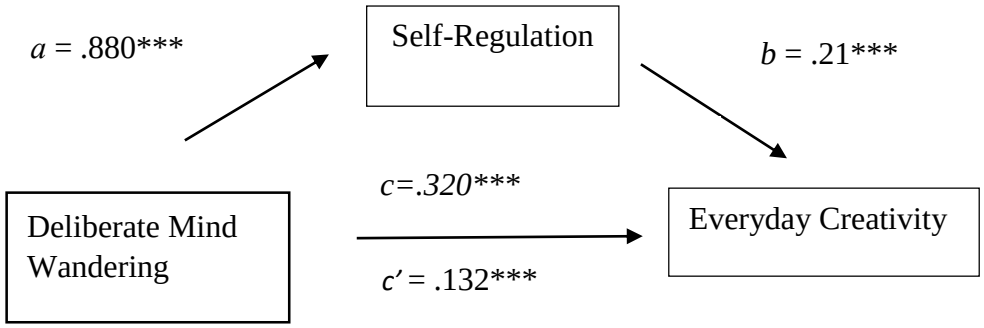

Figure: 4.2

Mediation of Deliberate Mind Wandering on the Everyday Creativity of an individual with Self-Regulation

The above mentioned table depicts the mediation analysis on Deliberate Mind Wandering and Everyday Creativity of a person with Self-Regulation. The total effect of mediation model was found to be significant where b= .320, t= 4.22, CI [.17, .46], $p < .001$. Further it can also be seen that direct effect is significant b= .132, t= 1.82, CI [-.010, .275], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .188, CI [.11, .27]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Everyday Creativity of an individual

Table 4.27

Deliberate Mind Wandering with Self-Regulation

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	30.32***	13.54***	8.63	18.45
Deliberate Mind Wandering	.258***	.087***	-.079	.253
Short Self-Regulation		.194***	.143	.246
Indirect effect- DMW → Self-Regulation → Scholarly Creativity		.171	.107	.248
R^2	.017	.114		
ΔR^2		.097		
F	9.10***	32.92***		
ΔF		23.82		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

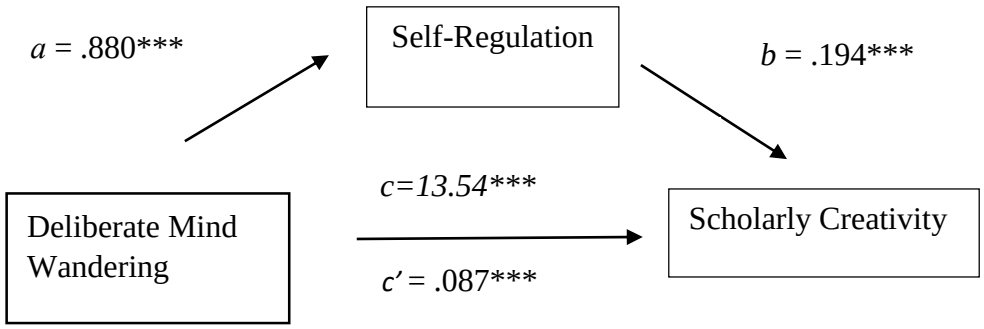

Figure: 4.3

Mediation of Deliberate Mind Wandering on the Scholarly Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Deliberate Mind Wandering and Scholarly Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .258, t= 3.01, CI [.090, .427], p < .001. Further it can also be seen that direct effect is significant b=.087, t= 1.03, CI [-.079, .253], p < .001. The results also explained that the indirect effect is also statistically significant b= .171, CI [.107, .248]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Scholarly Creativity of an individual.

Table 4.28

Deliberate Mind Wandering with Self-Regulation

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	20.61***	14.84***	9.70	19.98
Deliberate Mind Wandering	.413***	.354***	.180	.528
Short Self-Regulation		.067***	.013	.120
Indirect effect- DMW → Self-Regulation → Performance Creativity		.059	.013	.111
R^2	.043	.054		
ΔR^2		.011		
F	23.25***	14.75***		
ΔF		8.5		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

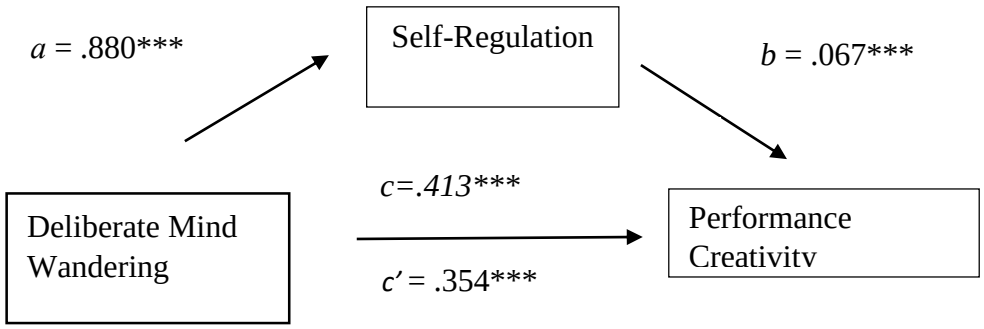

Figure: 4.4

Mediation of Deliberate Mind Wandering on the Performance Creativity of an individual with Self-Regulation

The overhead table figures mentions the mediation analysis on Deliberate Mind Wandering and Performance Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .413, t= 4.82, CI [.245, .581], p < .001. Further it can also be seen that direct effect is significant b=.354, t= 3.99, CI [.180, .528], p < .001. The results also explained that the indirect effect is also statistically significant b= .059, CI [.013, .111]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Performance Creativity of an individual

Table 4.29

Deliberate Mind Wandering with Self-Regulation

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.75***	10.21***	5.68	14.74
Deliberate Mind Wandering	.113***	-.025***	-.179	.128
Short Self-Regulation		.157***	.109	.204
Indirect effect- DMW → Self-Regulation → Scientific Creativity		.138	.083	.202
R^2	.004	.080		
ΔR^2		.076		
F	2.08***	22.42***		
ΔF		20.34		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

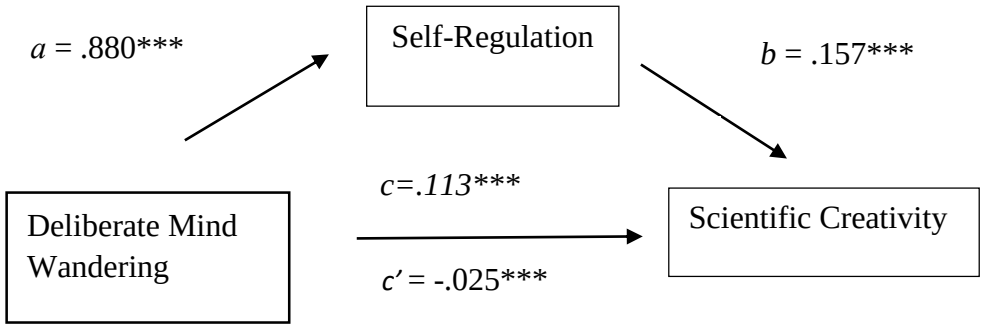

Figure: 4.5

Mediation of Deliberate Mind Wandering on the Scientific Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Deliberate Mind Wandering and Scientific Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .113, t= 1.44, CI [-.040, .266], p < .001. Further it can also be seen that direct effect is significant b=-.025, t= -.32, CI [-.17, .12], p < .001. The results also explained that the indirect effect is also statistically significant b= .138, CI [.083, .202]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Scientific Creativity of an individual.

Table 4.30

Deliberate Mind Wandering with Self-Regulation

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.32***	8.64***	4.22	13.06
Deliberate Mind Wandering	.269***	.119***	-.030	.269
Short Self-Regulation		.170***	.124	.216
Indirect effect- DMW → Self-Regulation → Artistic Creativity		.150	.093	.217
R^2	.023	.114		
ΔR^2		.091		
F	12.25***	33.11***		
ΔF		20.86		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

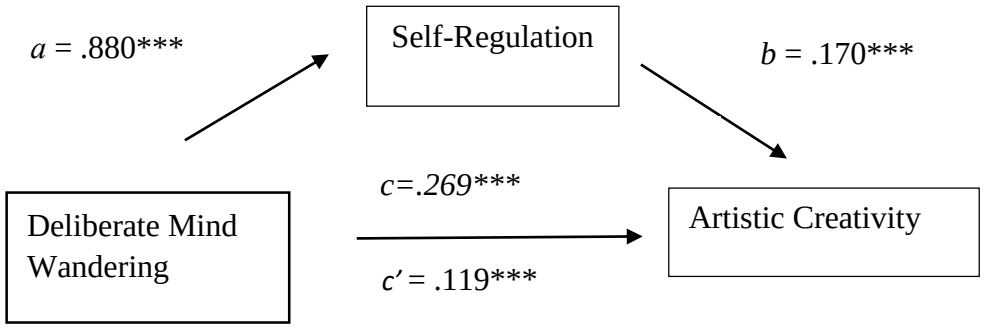

Figure: 4.6

Mediation of Deliberate Mind Wandering on the Artistic Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Deliberate Mind Wandering and Artistic Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .269, t= 3.50, CI [.118, .420], p < .001. Further it can also be seen that direct effect is significant b=.119, t= 1.56, CI [-.030, .269], p < .001. The results also explained that the indirect effect is also statistically significant b= .150, CI [.093, .217]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Deliberate Mind Wandering and Artistic Creativity of an individual.

Table 4.31

Spontaneous Mind Wandering with Self-Regulation

	Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	137.56***	63.37***	46.60	80.14
Spontaneous Mind Wandering	.377***	-.212***	-.778	.352
Short Self-Regulation		.833***	.661	1.005
Indirect effect- SMW → Self-Regulation → Creativity		.590	.341	.886
R^2	.003	.153		
ΔR^2		.15		
F	1.53***	46.29***		
ΔF		44.76		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

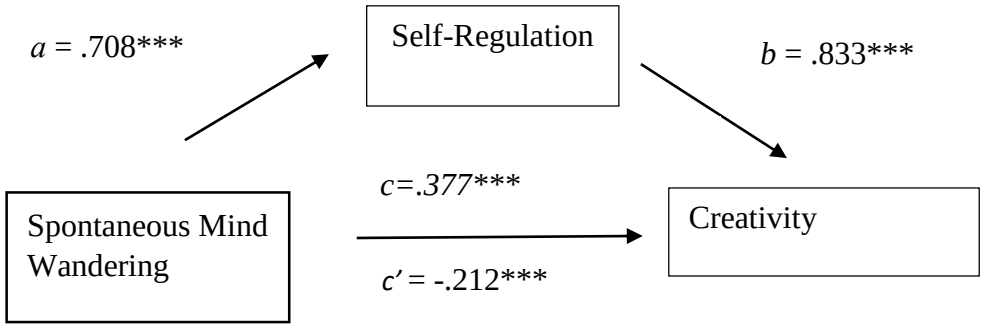

Figure: 4.7

Mediation of Spontaneous Mind Wandering on the Total Creativity (K-DOCS) of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Total Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .377, t= 1.24, CI [-.220, .976], p < .001. Further it can also be seen that direct effect is significant b=-.21, t= -.74, CI [-.778, .352], p < .001. The results also explained that the indirect effect is also statistically significant b= .590, CI [.341, .886]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Total Creativity of a person.

Table 4.32

Spontaneous Mind Wandering with Self-Regulation

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	36.99***	15.92***	11.70	20.14
Spontaneous Mind Wandering	-.016***	-.184***	-.326	-.042
Short Self-Regulation		.236***	.193	.280
Indirect effect- SMW → Self-Regulation → Everyday Creativity		.168	.096	.249
R^2	.0001	.184		
ΔR^2		.183		
F	.044***	57.85***		
ΔF		57.80		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

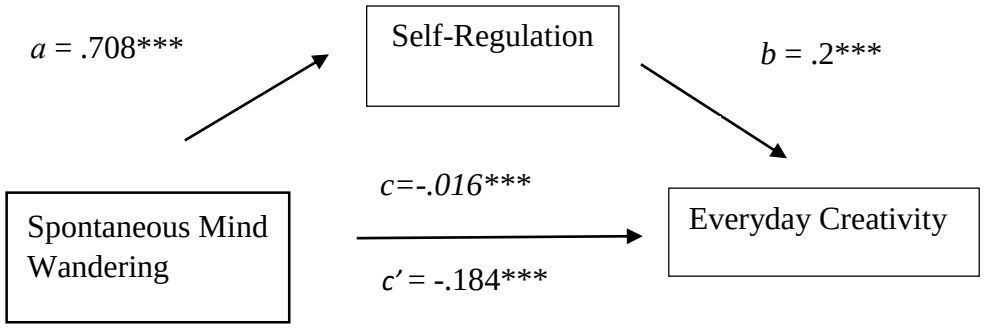

Figure: 4.8

Mediation of Spontaneous Mind Wandering on the Everyday Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Everyday Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= -.016, t= -.21, CI [-.170, .137], $p < .001$. Further it can also be seen that direct effect is significant b=-.184, t= -2.54, CI [-.326, -.042], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .167, CI [.096, .249]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Everyday Creativity of an individual.

Table 4.33

Spontaneous Mind Wandering with Self-Regulation

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.08***	14.009***	9.07	18.94
Spontaneous Mind Wandering	.129***	-.0148***	-.181	.151
Short Self-Regulation		.203***	.152	.253
Indirect effect- SMW → Self-Regulation → Scholarly Creativity		.143	.081	.216
R^2	.0042	.112		
ΔR^2		.107		
F	2.179***	32.34***		
ΔF		30.16		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

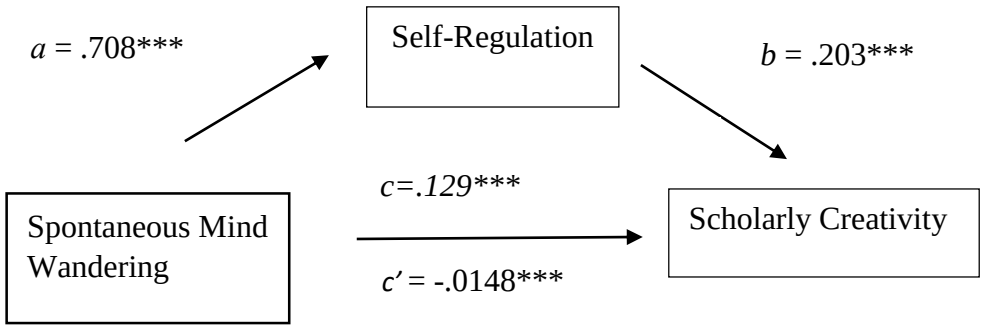

Figure: 4.9

Mediation of Spontaneous Mind Wandering on the Scholarly Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scholarly Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .129, t= 1.47, CI [-.042, .300], $p < .001$. Further it can also be seen that direct effect is significant b=-.014, t= -.17, CI [-.181, .151], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .143, CI [.081, .216]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Scholarly Creativity of an individual.

Table 4.34

Spontaneous Mind Wandering with Self-Regulation

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	22.57***	15.27***	10.06	20.48
Spontaneous Mind Wandering	.280***	.222***	.047	.398
Short Self-Regulation		.082***	.028	.135
Indirect effect- SMW → Self-Regulation → Performance Creativity		.058	.018	.106
R^2	.019	.036		
ΔR^2		.017		
F	10.19***	9.73***		
ΔF		.46		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

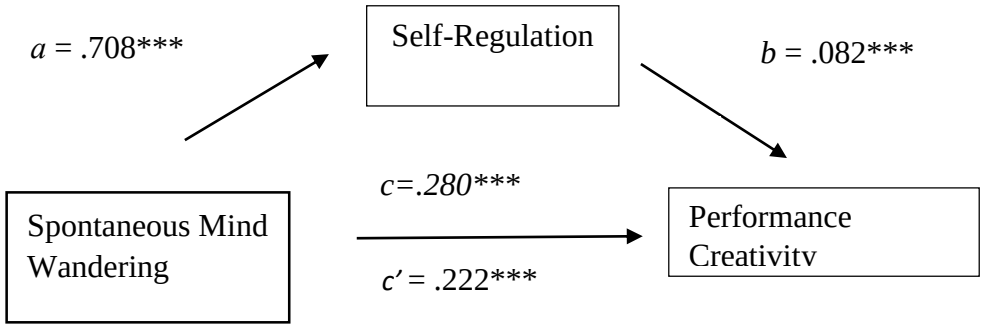

Figure: 4.10

Mediation of Spontaneous Mind Wandering on the Performance Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Performance Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .280, t= 3.19, CI [.108, .453], p < .001. Further it can also be seen that direct effect is significant b=.222, t= 2.49, CI [.047, .398], p < .001. The results also explained that the indirect effect is also statistically significant b= .058, CI [.018, .106]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Performance Creativity of an individual.

Table 4.35

Spontaneous Mind Wandering with Self-Regulation

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.94***	11.05***	6.53	15.58
Spontaneous Mind Wandering	-.068***	-.186***	-.339	-.034
Short Self-Regulation		.167***	.120	.213
Indirect effect- SMW → Self-Regulation → Scientific Creativity		.118	.065	.179
R^2	.001	.090		
ΔR^2		.089		
F	.73***	25.51***		
ΔF		24.78		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

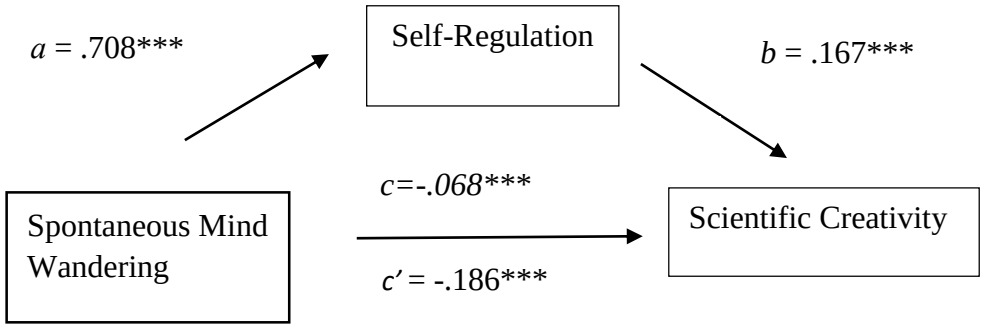

Figure: 4.11

Mediation of Spontaneous Mind Wandering on the Scientific Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scientific Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= -.068, t= -.856, CI [-.22, .088], p < .001. Further it can also be seen that direct effect is significant b=-.186, t= 1.03-2.40, CI [-.339, -.034], p < .001. The results also explained that the indirect effect is also statistically significant b= .118, CI [.065, .179]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Scientific Creativity of an individual.

Table 4.36

Spontaneous Mind Wandering with Self-Regulation

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.46***	9.27***	4.83	13.72
Spontaneous Mind Wandering	.108***	-.020***	-.170	.129
Short Self-Regulation		.181***	.136	.227
Indirect effect- SMW → Self-Regulation → Artistic Creativity		.128	.074	.192
R^2	.003	.110		
ΔR^2		.107		
F	1.89***	31.77***		
ΔF		29.88		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

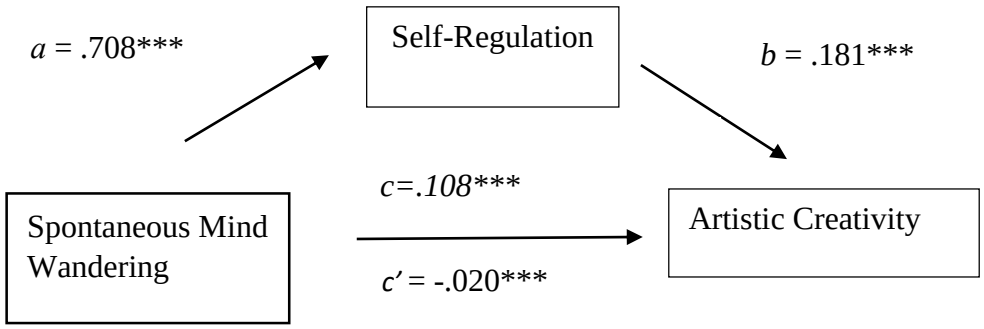

Figure: 4.12

Mediation of Spontaneous Mind Wandering on the Artistic Creativity of an individual with Self-Regulation

The above table displays the mediation analysis on Spontaneous Mind Wandering and Artistic Creativity of an individual with Self-Regulation. The total effect of mediation model was found to be significant where b= .108, t= 1.37, CI [-.046, .263], p < .001. Further it can also be seen that direct effect is significant b=-.020, t= -.26, CI [-.170, .129], p < .001. The results also explained that the indirect effect is also statistically significant b= .128, CI [.074, .192]. Hence, it can be concluded from the figures that Self-Regulation mediated the relationship between the Spontaneous Mind Wandering and Artistic Creativity of an individual.

Table 4.37

Deliberate Mind Wandering with Epistemic Curiosity Total

	Creativity Total			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	125.32***	60.59***	49.60	71.57
Deliberate Mind Wandering	1.32***	.765***	.270	1.26
Epistemic Curiosity Total		2.57***	2.22	2.91
Indirect effect- DMW → Epistemic Curiosity Total → Creativity Total		.557	.183	.949
R^2	.037	.317		
ΔR^2		.28		
F	20.03***	118.59***		
ΔF		98.56		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

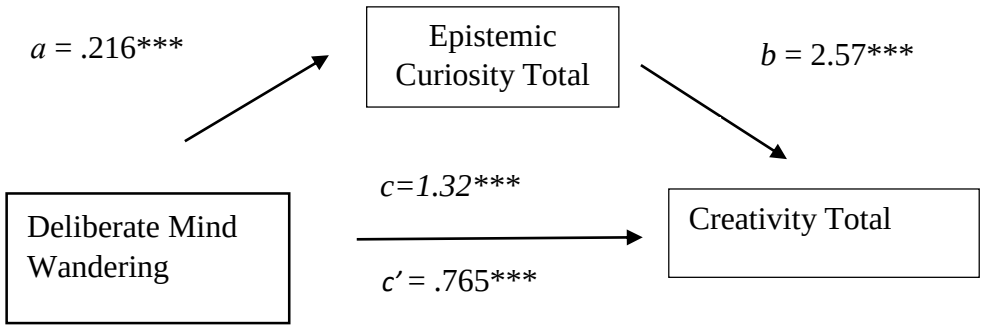

Figure: 4.13

Mediation of Deliberate Mind Wandering on the Total Creativity (K-DOCS) of an individual with their Total Epistemic Curiosity.

The above table displays the mediation analysis on Deliberate Mind Wandering and Total Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation model was found to be significant where b= 1.32, t= 4.47, CI [.742, 1.90], $p < .001$. Further it can also be seen that direct effect is significant b=.765, t= 3.03, CI [.270, 1.26], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .557, CI [.183, .949]. Hence, it can be concluded from the figures that Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Total Creativity of an individual

Table 4.38

Deliberate Mind Wandering with Epistemic Curiosity Total

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.78***	20.54***	17.46	23.61
Deliberate Mind Wandering	.320***	.215***	.076	.354
Epistemic Curiosity Total		.486***	.388	.583
Indirect effect- DMW → Epistemic Curiosity Total → Everyday Creativity		.105	.076	.354
R^2	.033	.185		
ΔR^2		.152		
F	17.84***	58.26***		
ΔF		40.42		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

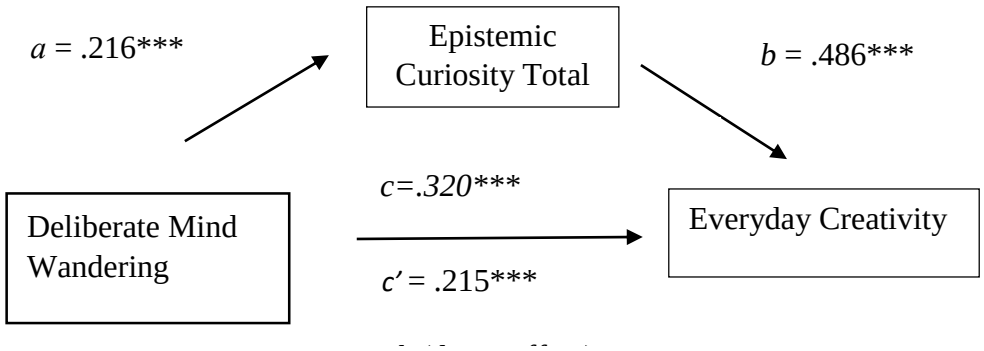

Figure: 4.14

Mediation of Deliberate Mind Wandering on the Everyday Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Everyday Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .320, t= 4.22, CI [.171, .469], $p < .001$. Further it can also be seen that direct effect is significant b=.215, t= 3.05, CI [.076, .354], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .105, CI [.033, .181]. Hence, it can be concluded from the figures that the Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Everyday Creativity of an individual.

Table 4.39

Deliberate Mind Wandering with Epistemic Curiosity Total

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	30.32***	11.68***	8.48	14.88
Deliberate Mind Wandering	.258***	.098***	-.045	.242
Epistemic Curiosity Total		.740***	.638	.841
Indirect effect- DMW → Epistemic Curiosity Total → Scholarly Creativity		.160	.049	.270
R^2	.017	.298		
ΔR^2		.281		
F	9.10***	108.47***		
ΔF		99.37		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

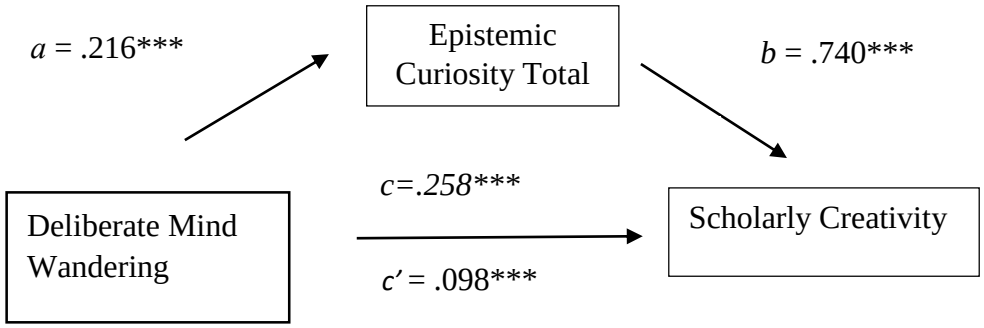

Figure: 4.15

Mediation of Deliberate Mind Wandering on the Scholarly Type of Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scholarly type of Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation on the model was found to be significant where b= .258, t= 3.01, CI [.090, .427], $p < .001$. Further it can also be seen that direct effect is significant b=.098, t= 1.34, CI [-.045, .242], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .160, CI [.049, .270]. Hence, it can be concluded from the figures that the Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scholarly type Creativity of an individual.

Table 4.40

Deliberate Mind Wandering with Epistemic Curiosity Total

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	20.61***	10.17***	6.56	13.78
Deliberate Mind Wandering	.413***	.323***	.160	.486
Epistemic Curiosity Total		.414***	.299	.529
Indirect effect- DMW → Epistemic Curiosity Total → Performance Creativity		.089	.027	.162
R^2	.043	.129		
ΔR^2		.086		
F	23.25***	37.93***		
ΔF		14.68		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

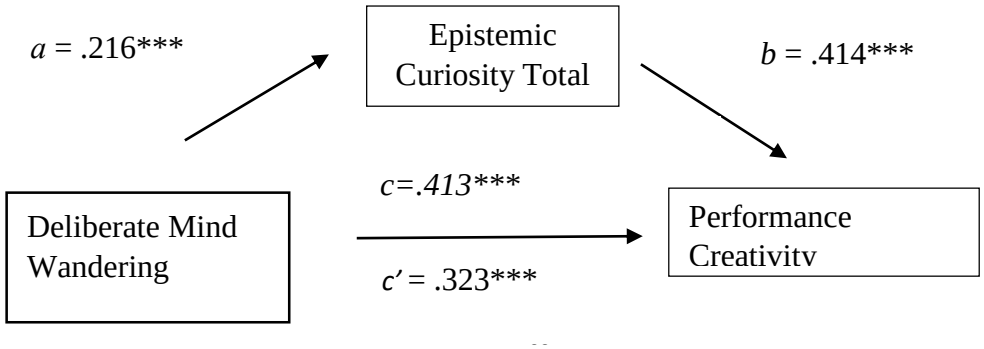

Figure: 4.16

Mediation of Deliberate Mind Wandering on the Performance Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Performance Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation on the model was found to be significant where b= .413, t= 4.82, CI [.245, .581], p < .001. Further it can also be seen that direct effect is significant b=.323, t= 3.90, CI [.160, .486], p < .001. The results also explained that the indirect effect is also statistically significant b= .089, CI [.027, .162]. Hence, it can be concluded from the figures that the Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Performance Creativity of an individual.

Table 4.41

Deliberate Mind Wandering with Epistemic Curiosity Total

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.75***	8.49***	5.45	11.52
Deliberate Mind Wandering	.113***	-.018***	-.155	.118
Epistemic Curiosity Total		.606***	.509	.702
Indirect effect- DMW → Epistemic Curiosity Total → Scientific Creativity		.131	.041	.224
R^2	.004	.233		
ΔR^2		.229		
F	2.08***	76.61***		
ΔF		74.53		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

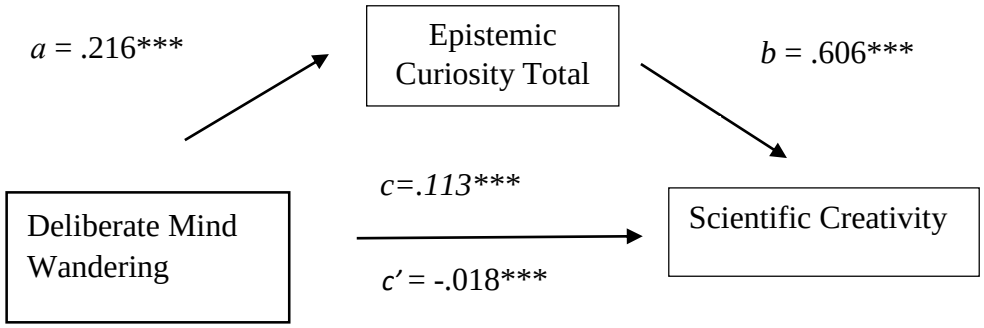

Figure: 4.17

Mediation of Deliberate Mind Wandering on the Scientific Type of Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scientific type Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .113, t= 1.44, CI [-.040, .266], p < .001. Further it can also be seen that direct effect is significant b=-.018, t= -.26, CI [-.155, .118], p < .001. The results also explained that the indirect effect is also statistically significant b= .131, CI [.041, .224]. Hence, it can be concluded from the figures that the Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scientific type of Creativity of an individual.

Table 4.42

Deliberate Mind Wandering with Epistemic Curiosity Total

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.32***	11.27***	8.14	14.41
Deliberate Mind Wandering	.269***	.165***	.024	.307
Epistemic Curiosity Total		.478***	.378	.578
Indirect effect- DMW → Epistemic Curiosity Total → Artistic Creativity		.103	.032	.176
R^2	.023	.167		
ΔR^2		.144		
F	12.25***	51.57***		
ΔF		39.32		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

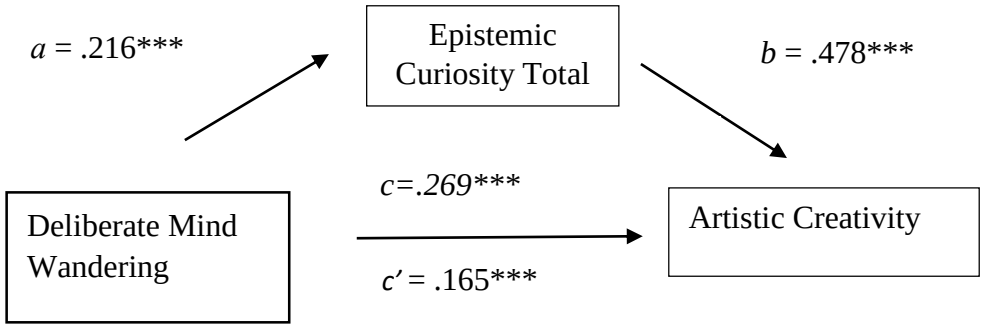

Figure: 4.18

Mediation of Deliberate Mind Wandering on the Artistic Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Artistic Creativity of an individual with their Total Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .269, t= 3.50, CI [.118, .420], $p < .001$. Further it can also be seen that direct effect is significant b=.165, t= 2.30, CI [.024, .307], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .103, CI [.032, .176]. Hence, it can be concluded from the figures that the Total Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Artistic Creativity of an individual.

Table 4.43

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	137.56***	70.22***	59.40	81.03
Spontaneous Mind Wandering	.377***	-.288***	-.795	.218
Epistemic Curiosity Total		2.68***	2.33	3.04
Indirect effect- SMW → Epistemic Curiosity Total → Creativity		.666	.272	1.09
R^2	.003	.306		
ΔR^2		.303		
F	1.53***	112.85***		
ΔF		111.32		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

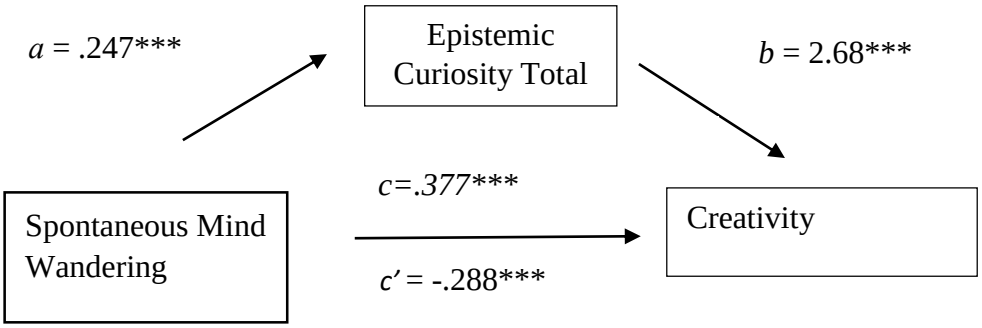

Figure: 4.19

Mediation of Spontaneous Mind Wandering on the Total Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Total Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .377, t= 1.24, CI -.220, .976], p < .001. Further it can also be seen that direct effect is significant b=-.288, t= -1.11, CI [-.795, .218], p < .001. The results also explained that the indirect effect is also statistically significant b= .666, CI [.272, 1.09]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Total Creativity of an individual.

Table 4.44

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	36.99***	23.78***	20.76	26.80
Spontaneous Mind Wandering	-.016***	-.147***	-.288	-.005
Epistemic Curiosity Total		.527***	.428	.625
Indirect effect- SMW → Epistemic Curiosity Total → Everyday Creativity		.130	.051	.220
R^2	.0001	.177		
ΔR^2				
F	.044***	55.16***		
ΔF				

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

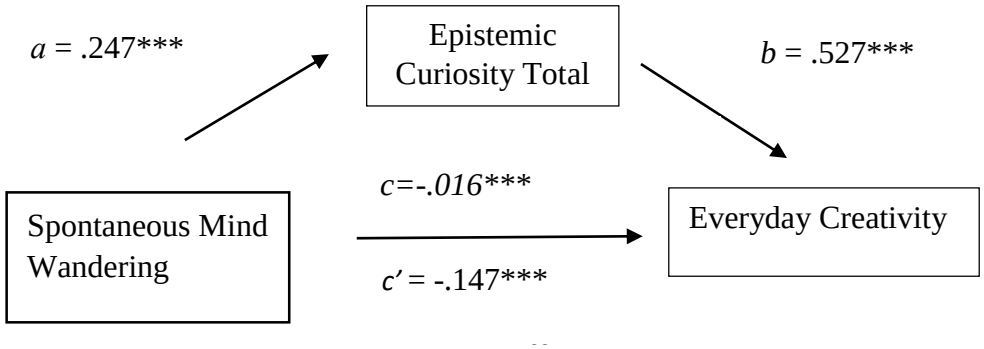

Figure: 4.20

Mediation of Spontaneous Mind Wandering on the Everyday Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Everyday Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.016, t= -.210, CI [-.170, .137], p < .001. Further it can also be seen that direct effect is significant b=-.147, t= -.204, CI [-.288, -.005], p < .001. The results also explained that the indirect effect is also statistically significant b= .130, CI [.051, .220]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Everyday Creativity of an individual.

Table 4.45

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.08***	13.09***	9.96	16.22
Spontaneous Mind Wandering	.129***	-.058***	-.205	.088
Epistemic Curiosity Total		.757***	.655	.859
Indirect effect- SMW → Epistemic Curiosity Total → Scholarly		.187	.071	.305
R^2	.004	.296		
ΔR^2		.292		
F	2.17***	107.64***		
ΔF		105.47		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

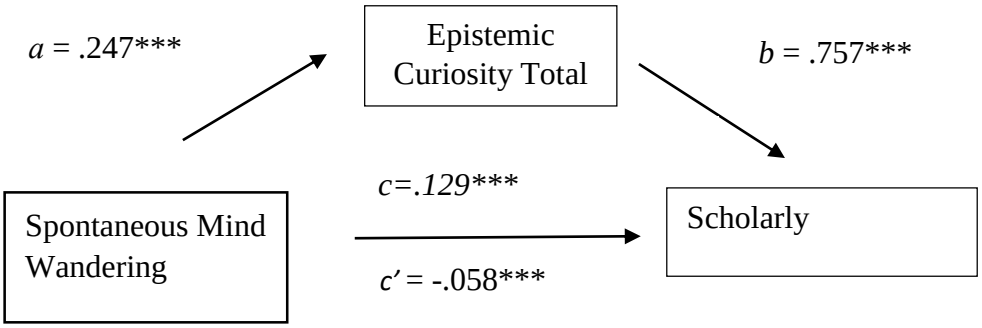

Figure: 4.21

Mediation of Spontaneous Mind Wandering on the Scholarly Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scholarly Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .129, t= 1.47, CI [-.042, .300], p < .001. Further it can also be seen that direct effect is significant b=-.058, t= -.785, CI [-.205, .088], p < .001. The results also explained that the indirect effect is also statistically significant b= .187, CI [.071, .305]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scholarly Creativity of an individual.

Table 4.46

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	22.57***	11.83***	8.27	15.39
Spontaneous Mind Wandering	.280***	.174***	.007	.341
Epistemic Curiosity Total		.428***	.312	.544
Indirect effect- SMW → Epistemic Curiosity Total → Performance		.106	.039	.185
R^2	.019	.110		
ΔR^2		.091		
F	10.19***	31.77***		
ΔF		21.58		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

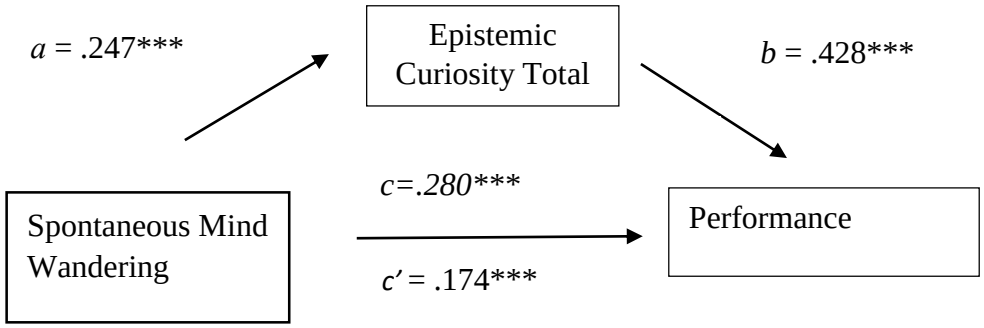

Figure: 4.22

Mediation of Spontaneous Mind Wandering on the Performance Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Performance Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .280, t= 3.19, CI [.108, .453], p < .001. Further it can also be seen that direct effect is significant b=.174, t= 2.05, CI [.007, .341], p < .001. The results also explained that the indirect effect is also statistically significant b= .106, CI [.039, .185]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Performance Creativity of an individual.

Table 4.47

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.94***	10.13***	7.20	13.07
Spontaneous Mind Wandering	-.068***	-.224***	-.361	-.086
Epistemic Curiosity Total		.630***	.535	.726
Indirect effect- SMW → Epistemic Curiosity Total → Scientific Creativity		.156	.062	.258
R^2	.001	.248		
ΔR^2		.247		
F	.733***	84.26***		
ΔF		83.52		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

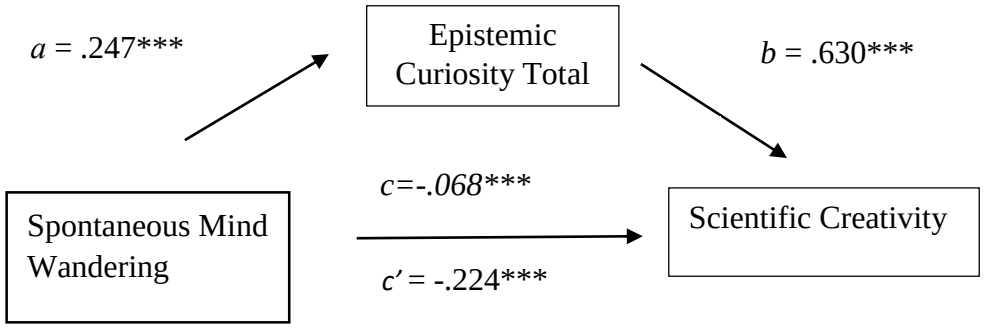

Figure: 4.23

Mediation of Spontaneous Mind Wandering on the Scientific Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scientific Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.068, t= -.85, CI [-.224, .088], p < .001. Further it can also be seen that direct effect is significant b=-.224, t= -3.20, CI [-.361, -.086], p < .001. The results also explained that the indirect effect is also statistically significant b= .156, CI [.062, .258]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scientific Creativity of an individual.

Table 4.48

Spontaneous Mind Wandering with Epistemic Curiosity Total

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.46***	12.98***	9.90	16.06
Spontaneous Mind Wandering	.108***	-.015***	-.159	.129
Epistemic Curiosity Total		.498***	.397	.598
Indirect effect- SMW → Epistemic Curiosity Total → Artistic Creativity		.123	.047	.208
R^2	.003	.159		
ΔR^2		.156		
F	1.89***	48.44***		
ΔF		46.55		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

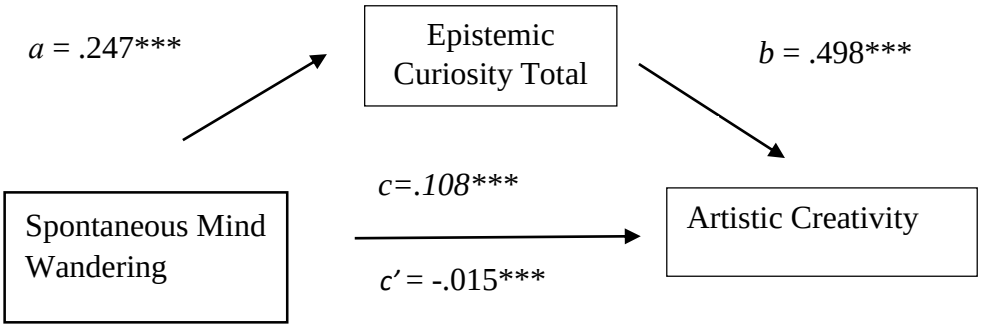

Figure: 4.24

Mediation of Spontaneous Mind Wandering on the Artistic Creativity of an individual with their Epistemic Curiosity Total Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Artistic Creativity of an individual with their Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .108, t= 1.37, CI [-.046, .263], p < .001. Further it can also be seen that direct effect is significant b= -.015, t= -.205, CI [-.159, .129], p < .001. The results also explained that the indirect effect is also statistically significant b= .123, CI [.047, .208]. Hence, it can be concluded from the figures that Total Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Artistic Creativity of an individual.

Table 4.49

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	125.32***	84.17***	73.43	94.92
Deliberate Mind Wandering	1.32***	1.018***	.484	1.55
Deprivation Epistemic Curiosity		3.40***	2.73	4.06
Indirect effect- DMW → Deprivation Epistemic Curiosity → Creativity		.303	.015	.597
R^2	.037	.196		
ΔR^2		.159		
F	20.03***	62.57***		
ΔF		42.54		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Spontaneous Mind Wandering.

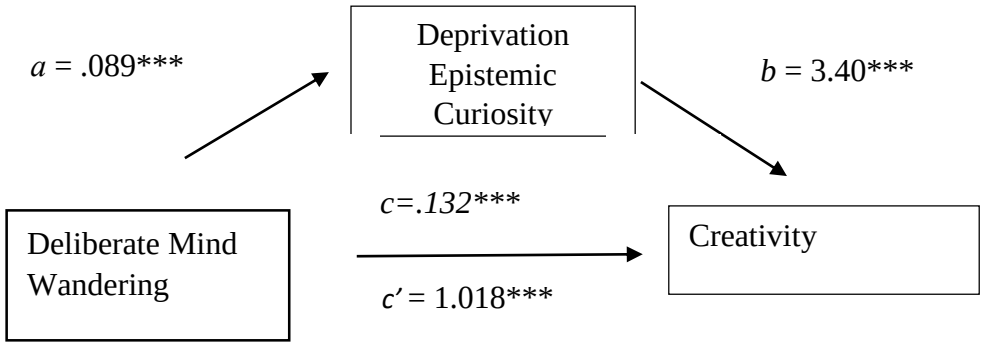

Figure: 4.25

Mediation of Deliberate Mind Wandering on the Total Creativity (K-DOCS) of an individual with their Deprivation Epistemic Curiosity.

The above table displays the mediation analysis on Deliberate Mind Wandering and Total Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= 1.32, t= 4.47, CI [.742, 1.90], $p < .001$. Further it can also be seen that direct effect is significant b=1.018, t= 3.74, CI [.484, 1.55], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .303, CI [.015, .597]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Total Creativity of an individual.

Table 4.50

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.78***	26.55***	23.61	29.48
Deliberate Mind Wandering	.320***	.274***	.128	.420
Deprivation Epistemic Curiosity		.515***	.334	.696
Indirect effect- DMW → Deprivation Epistemic Curiosity → Everyday Creativity		.046	.003	.096
R^2	.033	.089		
ΔR^2		.056		
F	17.84***	25.02***		
ΔF		7.18		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

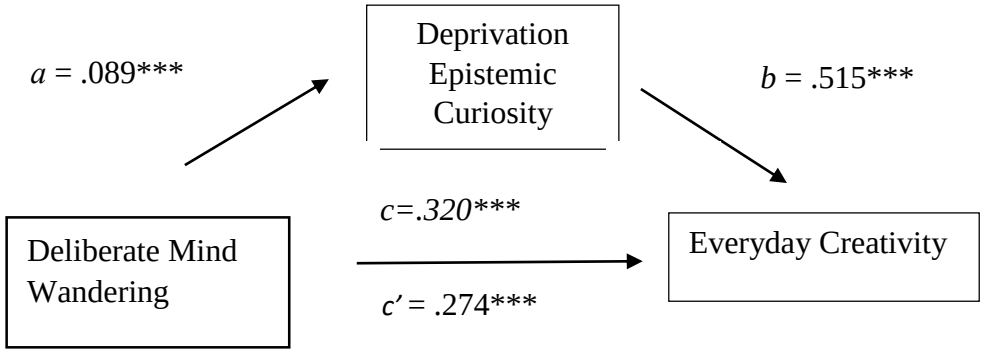

Figure: 4.26

Mediation of Deliberate Mind Wandering on the Everyday Creativity of an individual with their Deprivation Epistemic Curiosity's Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Everyday Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .320, t= 4.22, CI [.171, .469], p < .001. Further it can also be seen that direct effect is significant b=.274, t= 3.70, CI [.128, .420], p < .001. The results also explained that the indirect effect is also statistically significant b= .046, CI [.003, .096]. Hence, it can be concluded from the figures that the Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Everyday Creativity of an individual.

Table 4.51

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	30.32***	19.52***	16.34	22.69
Deliberate Mind Wandering	.258***	.179***	.021	.336
Deprivation Epistemic Curiosity		.892***	.696	1.08
Indirect effect- DMW → Deprivation Epistemic Curiosity → Scholarly Creativity		.079	.003	.157
R^2	.017	.150		
ΔR^2		.133		
F	9.10***	45.14***		
ΔF		36.04		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

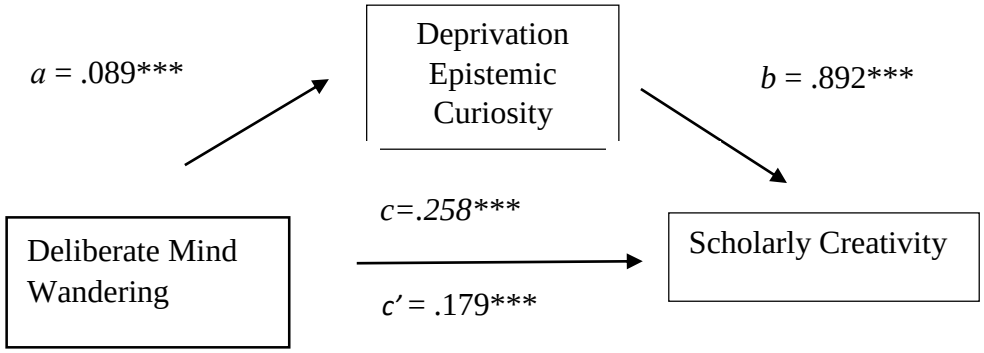

Figure: 4.27

Mediation of Deliberate Mind Wandering on the Scholarly Creativity of an individual with their Deprivation Epistemic Curiosity's Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scholarly type of Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .258, t= 3.01, CI [.090, .427], p < .001. Further it can also be seen that direct effect is significant b=.179, t= 2.22, CI [.021, .336], p < .001. The results also explained that the indirect effect is also statistically significant b= .079, CI [.003, .157]. Hence, it can be concluded from the figures that the Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scholarly Creativity of an individual.

Table 4.52

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	20.61***	12.96***	9.66	16.25
Deliberate Mind Wandering	.413***	.357***	.193	.520
Deprivation Epistemic Curiosity		.632***	.429	.836
Indirect effect- DMW → Deprivation Epistemic Curiosity → Performance Creativity		.056	.004	.116
R^2	.043	.108		
ΔR^2		.065		
F	23.25***	31.06***		
ΔF		7.81		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

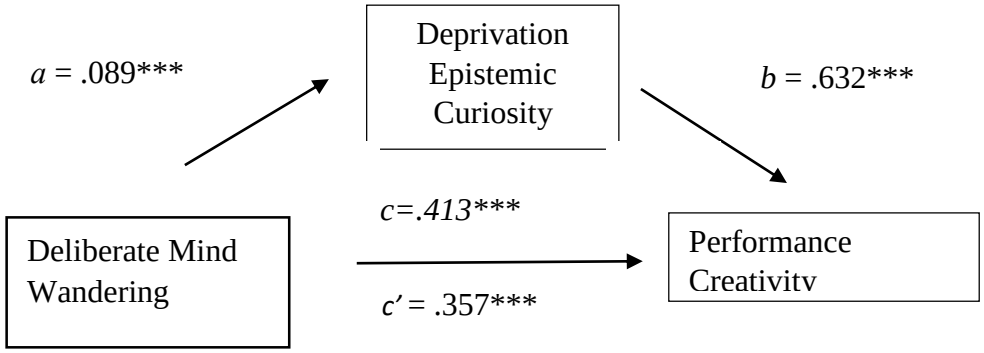

Figure: 4.28

Mediation of Deliberate Mind Wandering on the Performance Creativity of an individual with their Deprivation Epistemic Curiosity's Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Performance Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .413, t= 4.82, CI [.245, .581], p < .001. Further it can also be seen that direct effect is significant b= .357, t= 4.28, CI [.193, .354.520], p < .001. The results also explained that the indirect effect is also statistically significant b= .056, CI [.004, .116]. Hence, it can be concluded from the figures that the Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Performance Creativity of an individual.

Table 4.53

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.75***	12.03***	9.22	14.83
Deliberate Mind Wandering	.113***	.026***	-.112	.165
Deprivation Epistemic Curiosity		.969***	.795	1.142
Indirect effect- DMW → Deprivation Epistemic Curiosity → Scientific Creativity		.086	.005	.169
R^2	.0041	.194		
ΔR^2		.189		
F	2.08***	61.63***		
ΔF		59.55		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

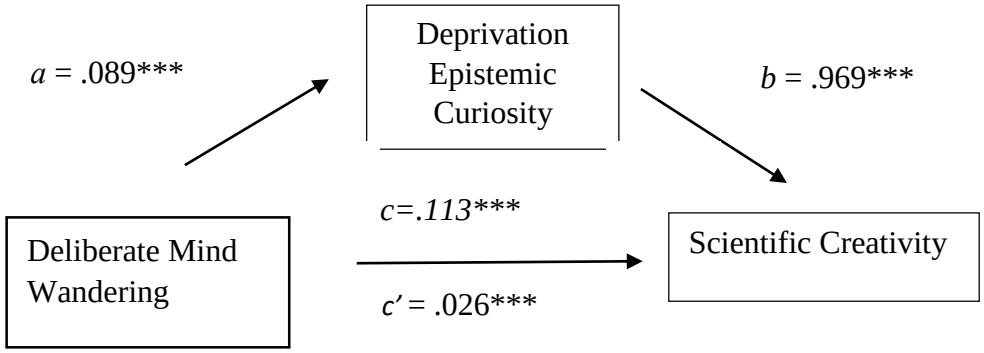

Figure: 4.29

Mediation of Deliberate Mind Wandering on the Scientific Creativity of an individual with their Deprivation Epistemic Curiosity's Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scientific Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .113, t= 1.44, CI [-.040, .266], p < .001. Further it can also be seen that direct effect is significant b=.026, t= .372, CI [-.112, .165], p < .001. The results also explained that the indirect effect is also statistically significant b= .086, CI [.005, .169]. Hence, it can be concluded from the figures that the Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scientific Creativity of an individual.

Table 4.54

Deliberate Mind Wandering with Deprivation Epistemic Curiosity

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.32***	16.27***	13.31	19.22
Deliberate Mind Wandering	.269***	.217***	.070	.364
Deprivation Epistemic Curiosity		.583***	.400	.765
Indirect effect- DMW → Deprivation Epistemic Curiosity → Artistic Creativity		.052	.002	.105
R^2	.023	.093		
ΔR^2		.907		
F	12.25***	26.26***		
ΔF		14.01		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

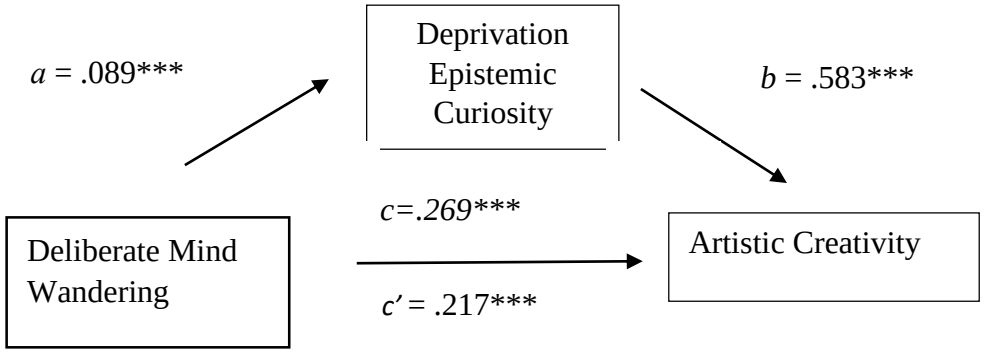

Figure: 4.30

Mediation of Deliberate Mind Wandering on the Artistic Creativity of an individual with their Deprivation Epistemic Curiosity's Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Artistic Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .269, t= 3.50, CI [.118, .420], p < .001. Further it can also be seen that direct effect is significant b=.217, t= 2.90, CI [.070, .364], p < .001. The results also explained that the indirect effect is also statistically significant b= .052, CI [.002, .105]. Hence, it can be concluded from the figures that the Deprivation Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Artistic Creativity of an individual.

Table 4.55

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Creativity Total			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	137.56***	96.34***	85.97	106.71
Spontaneous Mind Wandering	.377***	-.148***	-.701	.405
Deprivation Epistemic Curiosity		3.57***	2.89	4.25
Indirect effect- SMW → Deprivation Epistemic Curiosity → Creativity		.525	.217	.881
R^2	.003	.175		
ΔR^2		.172		
F	1.53***	54.23***		
ΔF		52.7		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

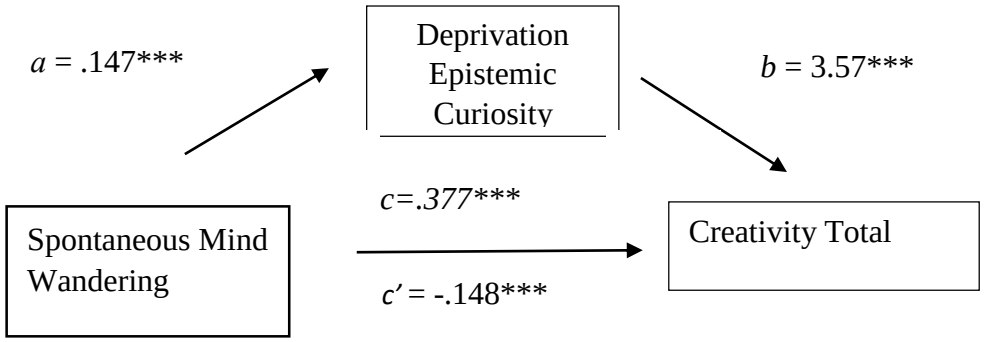

Figure: 4.31

Mediation of Spontaneous Mind Wandering on the Total Creativity K-DOCS of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Total Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .377, t= 1.24, CI -.220, .976], p < .001. Further it can also be seen that direct effect is significant b=-.148, t= -.525, CI [-.701, .405], p < .001. The results also explained that the indirect effect is also statistically significant b= .525, CI [.217, .881]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Total Creativity of an individual.

Table 4.56

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	36.99***	30.35***	27.53	33.18
Spontaneous Mind Wandering	-.016***	-.101***	-.252	.049
Deprivation Epistemic Curiosity		.575***	.390	.761
Indirect effect- SMW → Deprivation Epistemic Curiosity → Everyday Creativity		.084	.031	.149
R^2	.0001	.068		
ΔR^2		.067		
F	.044***	18.63***		
ΔF		18.58		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

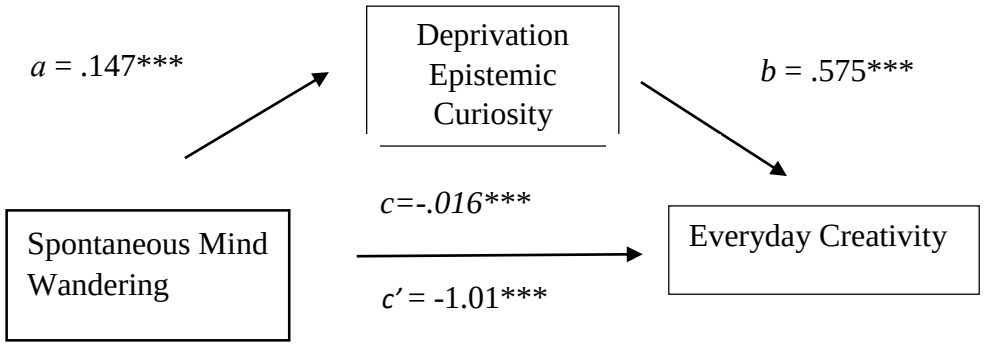

Figure: 4.32

Mediation of Spontaneous Mind Wandering on the Everyday Creativity of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Everyday Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.016, t= -.210, CI [-.170, .137], p < .001. Further it can also be seen that direct effect is significant b=-.101, t= -.1.31, CI [-.252, .049], p < .001. The results also explained that the indirect effect is also statistically significant b= .084, CI [.031, .149]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Everyday Creativity of an individual.

Table 4.57

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.08***	21.49***	18.45	24.52
Spontaneous Mind Wandering	.129***	-.006***	-.168	.156
Deprivation Epistemic Curiosity		.918***	.719	1.11
Indirect effect- SMW → Deprivation Epistemic Curiosity → Scholarly Creativity		.135	.054	.226
R^2	.004	.141		
ΔR^2		.137		
F	2.17***	42.25***		
ΔF		40.08		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

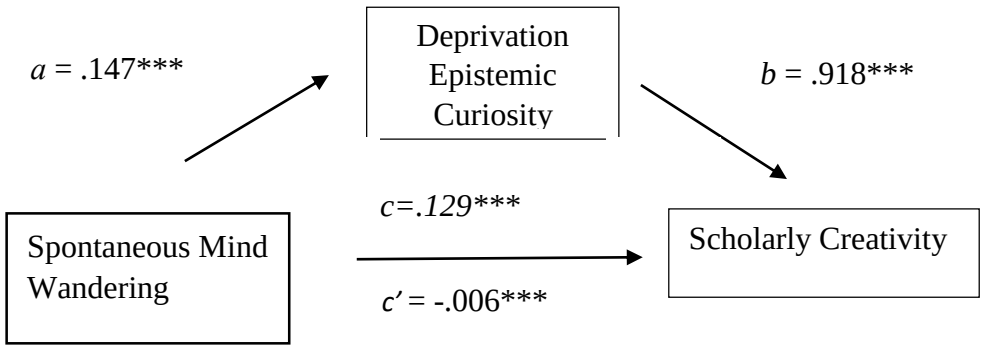

Figure: 4.33

Mediation of Spontaneous Mind Wandering on the Scholarly Creativity of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scholarly Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .129, t= 1.47, CI [-.042, .300], p < .001. Further it can also be seen that direct effect is significant b=-.006, t= -.072, CI [-.168, .156], p < .001. The results also explained that the indirect effect is also statistically significant b= .135, CI [.054, .226]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scholarly Creativity of an individual.

Table 4.58

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	22.57***	15.18***	12.01	19.36
Spontaneous Mind Wandering	.280***	.186***	.016	.356
Deprivation Epistemic Curiosity		.640***	.432	.849
Indirect effect- SMW → Deprivation Epistemic Curiosity → Performance Creativity		.094	.033	.170
R^2	.019	.084		
ΔR^2		.065		
F	10.19***	23.65***		
ΔF		13.46		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

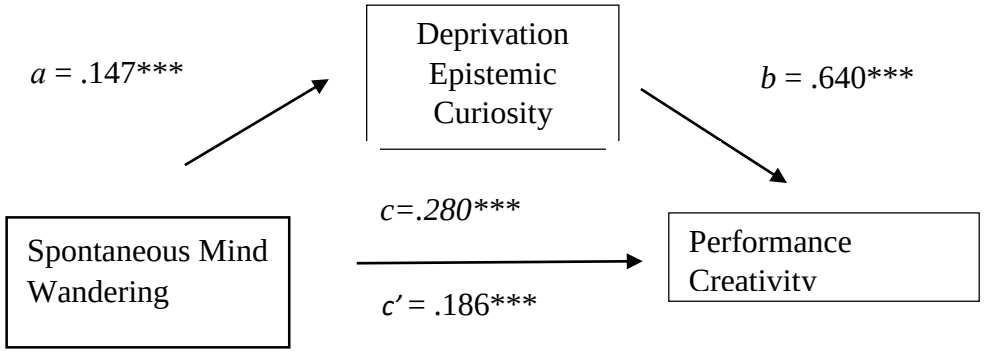

Figure: 4.34

Mediation of Spontaneous Mind Wandering on the Performance Creativity of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Performance Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .280, t= 3.19, CI [.108, .453], p < .001. Further it can also be seen that direct effect is significant b= .186, t= 2.15, CI [.016, .356], p < .001. The results also explained that the indirect effect is also statistically significant b= .094, CI [.033, .170]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Performance Creativity of an individual.

Table 4.59

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.94***	14.17***	11.53	16.82
Spontaneous Mind Wandering	-.068***	-.218***	-.359	-.076
Deprivation Epistemic Curiosity		1.02***	.847	1.19
Indirect effect- SMW → Deprivation Epistemic Curiosity → Scientific Creativity		.150	.060	.243
R^2	.001	.208		
ΔR^2		.207		
F	.733***	67.26***		
ΔF		66.52		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

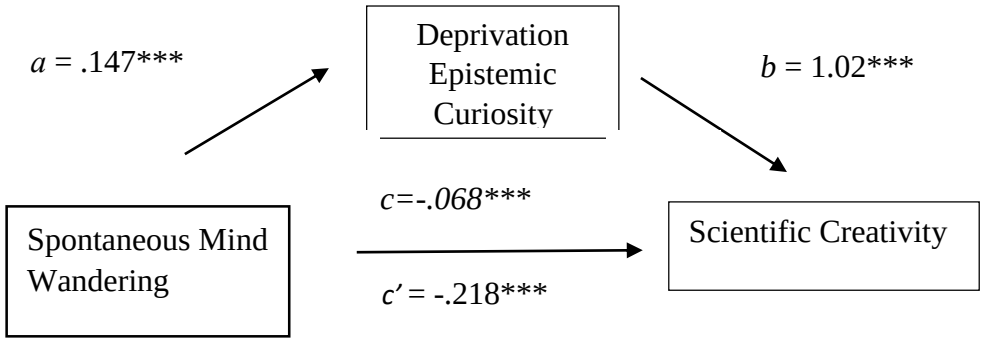

Figure: 4.35

Mediation of Spontaneous Mind Wandering on the Scientific Creativity of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scientific Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.068, t= -.856, CI [-.224, .088], p < .001. Further it can also be seen that direct effect is significant b=-.218, t= -3.03, CI [-.359, -.076], p < .001. The results also explained that the indirect effect is also statistically significant b= .150 CI [.060, .243]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scientific Creativity of an individual.

Table 4.60

Spontaneous Mind Wandering with Deprivation Epistemic Curiosity

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.46***	18.43***	15.60	21.27
Spontaneous Mind Wandering	.108***	.018***	-.132	.170
Deprivation Epistemic Curiosity		.609***	.423	.795
Indirect effect- SMW → Deprivation Epistemic Curiosity → Artistic Creativity		.089	.032	.157
R^2	.003	.078		
ΔR^2		.075		
F	1.89***	21.70***		
ΔF		19.81		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

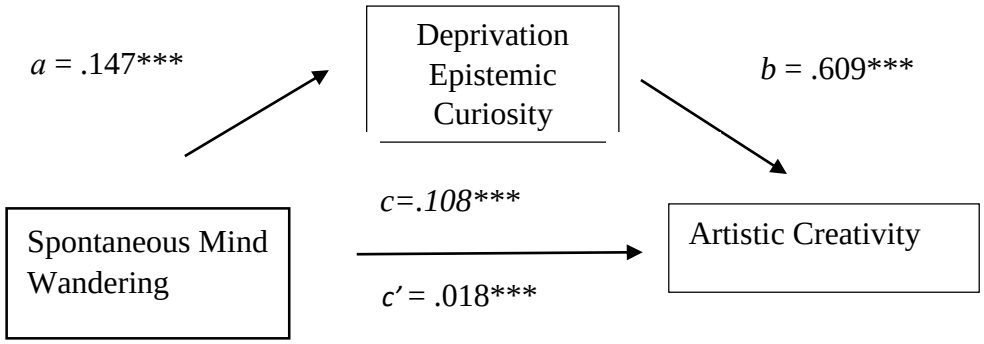

Figure: 4.36

Mediation of Spontaneous Mind Wandering on the Artistic Creativity of an individual with their Deprivation Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Artistic Creativity of an individual with their Deprivation Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .108, t= 1.37, CI [-.046, .263], p < .001. Further it can also be seen that direct effect is significant b= .018, t= -.243, CI [-.132, .170], p < .001. The results also explained that the indirect effect is also statistically significant b= .089, CI [.032, .157]. Hence, it can be concluded from the figures that Deprivation Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Artistic Creativity of an individual.

Table 4.61

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Creativity Total			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	125.32***	58.06***	47.57	68.55
Deliberate Mind Wandering	1.32***	.668***	.185	1.15
Interest Epistemic Curiosity		5.13***	4.50	5.77
Indirect effect- DMW → Interest Epistemic Curiosity → Creativity Total		.654	.284	1.04
R^2	.037	.355		
ΔR^2				
F	20.03***	141.16***		
ΔF				

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

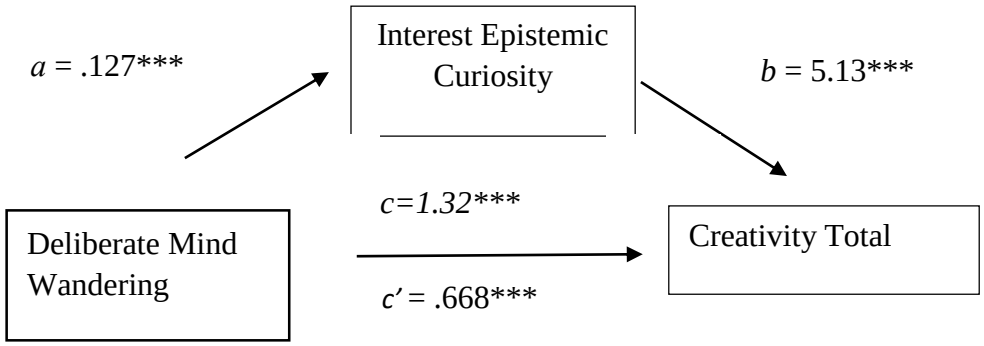

Figure: 4.37

Mediation of Deliberate Mind Wandering on the Total Creativity of an individual with their Interest Epistemic Curiosity.

The above table displays the mediation analysis on Deliberate Mind Wandering and Total Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= 1.32, t= 4.47, CI [.742, 1.90], $p < .001$. Further it can also be seen that direct effect is significant b=.668, t= 2.72, CI [.185, 1.15], $p < .001$. The results also explained that the indirect effect is also statistically significant b= .654, CI [.284, 1.04]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Total Creativity of an individual.

Table 4.62

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.78***	18.15***	15.27	21.02
Deliberate Mind Wandering	.320***	.178***	.046	.310
Interest Epistemic Curiosity		1.11***	.943	1.29
Indirect effect- DMW → Interest Epistemic Curiosity → Everyday Creativity		.142	.058	.232
R^2	.033	.262		
ΔR^2		.229		
F	17.84***	91.06***		
ΔF		73.22		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW= Deliberate Mind Wandering.

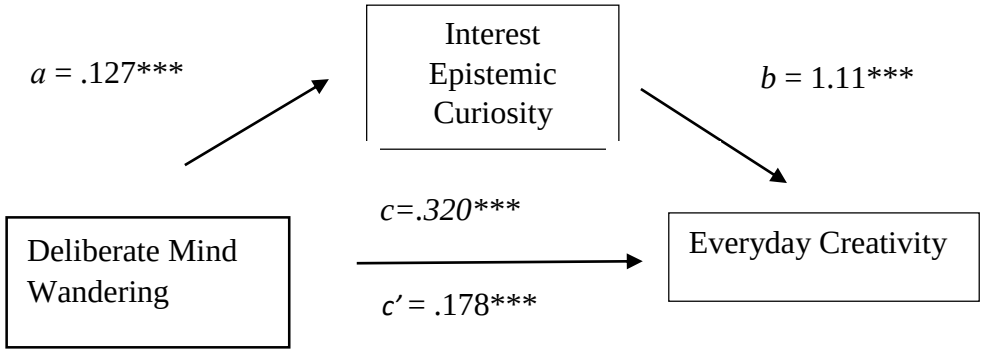

Figure: 4.38

Mediation of Deliberate Mind Wandering on the Everyday Creativity of an individual with their Interest Curiosity Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Everyday Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .320, t= 4.22, CI [.171, .469], p < .001. Further it can also be seen that direct effect is significant b=.178, t= 2.64, CI [.046, .310], p < .001. The results also explained that the indirect effect is also statistically significant b= .142, CI [.058, .232]. Hence, it can be concluded from the figures that the Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Everyday Creativity of an individual.

Table 4.63

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	30.32***	9.65***	6.70	12.61
Deliberate Mind Wandering	.258***	.057***	-.078	.193
Interest Epistemic Curiosity		1.57***	1.39	1.75
Indirect effect- DMW → Interest Epistemic Curiosity → Scholarly Creativity		.201	.084	.320
R^2	.017	.381		
ΔR^2		.364		
F	9.10***	157.44***		
ΔF		148.34		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

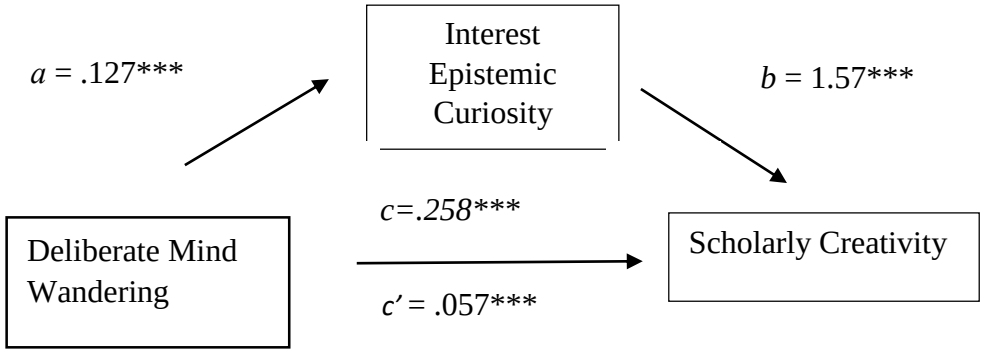

Figure: 4.39

Mediation of Deliberate Mind Wandering on the Scholarly Creativity of an individual with their Interest Curiosity Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scholarly Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .258, t= 3.01, CI [.090, .427], p < .001. Further it can also be seen that direct effect is significant b=.057, t= .836, CI [-.078, .193], p < .001. The results also explained that the indirect effect is also statistically significant b= .201, CI [.084, .320]. Hence, it can be concluded from the figures that the Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scholarly Creativity of an individual.

Table 4.64

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	20.61***	11.01***	7.44	14.58
Deliberate Mind Wandering	.413***	.320***	.156	.484
Interest Epistemic Curiosity		.733***	.517	.949
Indirect effect- DMW → Interest Epistemic Curiosity → Performance Creativity		.413	.245	.581
R^2	.043	.120		
ΔR^2		.077		
F	23.25***	34.83***		
ΔF		11.58		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

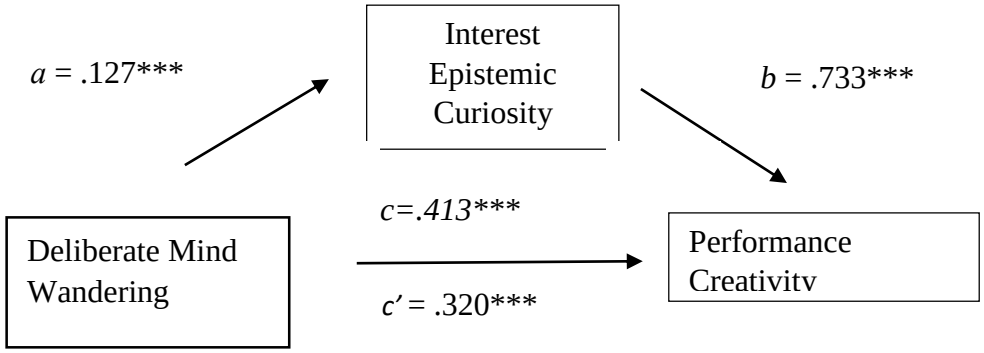

Figure: 4.40

Mediation of Deliberate Mind Wandering on the Performance Creativity of an individual with their Interest Curiosity Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Performance Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .413, t= 4.82, CI [.245, .581], p < .001. Further it can also be seen that direct effect is significant b=.320, t= 3.83, CI [.156, .484], p < .001. The results also explained that the indirect effect is also statistically significant b= .093, CI [.036, .158]. Hence, it can be concluded from the figures that the Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Performance Creativity of an individual.

Table 4.65

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.75***	10.38***	7.32	13.45
Deliberate Mind Wandering	.113***	-.017***	-.158	.123
Interest Epistemic Curiosity		1.02***	.835	1.20
Indirect effect- DMW → Interest Epistemic Curiosity → Scientific Creativity		.130	.052	.2085
R^2	.004	.189		
ΔR^2		.185		
F	2.08***	59.65***		
ΔF		57.57		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

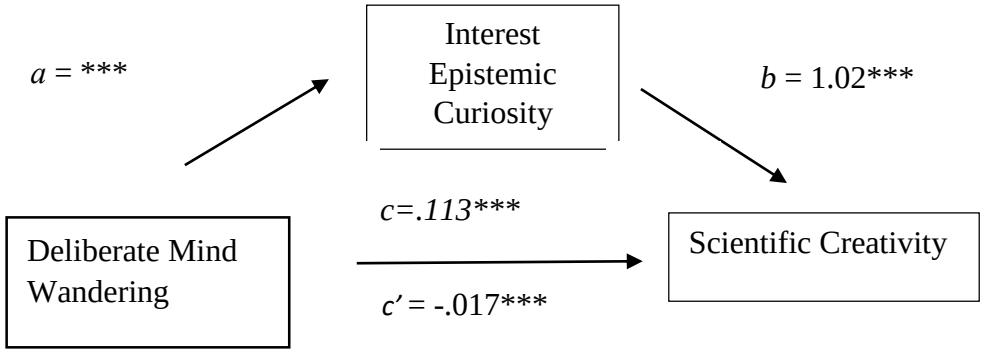

Figure: 4.41

Mediation of Deliberate Mind Wandering on the Scientific Creativity of an individual with their Interest Curiosity Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Scientific Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .113, t= 1.44, CI [-.040, .266], p < .001. Further it can also be seen that direct effect is significant b=-.017, t= -.23, CI [-.158, .123], p < .001. The results also explained that the indirect effect is also statistically significant b= .130, CI [.052, .208]. Hence, it can be concluded from the figures that the Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Scientific Creativity of an individual.

Table 4.66

Deliberate Mind Wandering with Interest Epistemic Curiosity

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	23.32***	10.06***	7.05	13.07
Deliberate Mind Wandering	.269***	.140***	.002	.027
Interest Epistemic Curiosity		1.01***	.830	1.19
Indirect effect- DMW → Interest Epistemic Curiosity → Artistic Creativity		.129	.051	.211
R^2	.023	.208		
ΔR^2		.185		
F	12.25***	67.20***		
ΔF		54.95		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; DMW = Deliberate Mind Wandering.

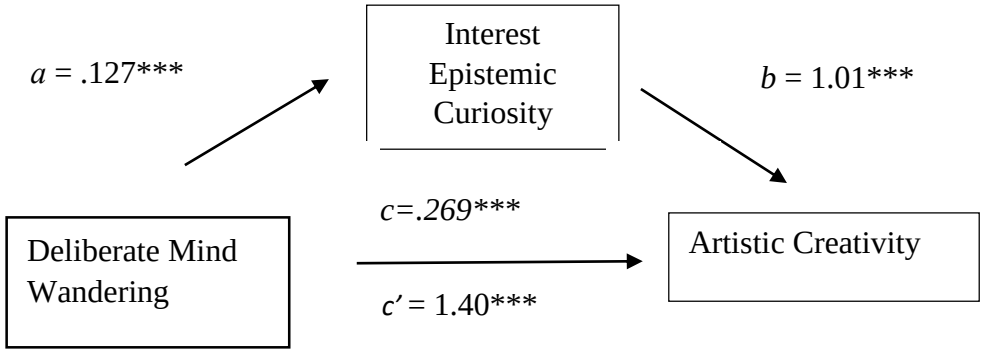

Figure: 4.42

Mediation of Deliberate Mind Wandering on the Artistic Creativity of an individual with their Interest Curiosity Effect.

The above table displays the mediation analysis on Deliberate Mind Wandering and Artistic Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .269, t= 3.50, CI [.118, .420], p < .001. Further it can also be seen that direct effect is significant b=.140, t= 1.99, CI [.002, .278], p < .001. The results also explained that the indirect effect is also statistically significant b= .129, CI [.051, .211]. Hence, it can be concluded from the figures that the Interest Epistemic Curiosity of a person mediated the relationship between the Deliberate Mind Wandering and Artistic Creativity of an individual.

Table 4.67

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Creativity Total			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	137.56***	65.67***	55.16	76.18
Spontaneous Mind Wandering	.377***	-.157***	-.646	.331
Interest Epistemic Curiosity		5.31***	4.67	5.94
Indirect effect- SMW → Interest Epistemic Curiosity → Creativity Total		.535	.131	.970
R^2	.003	.347		
ΔR^2		.344		
F	1.53***	135.80***		
ΔF		134.27		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

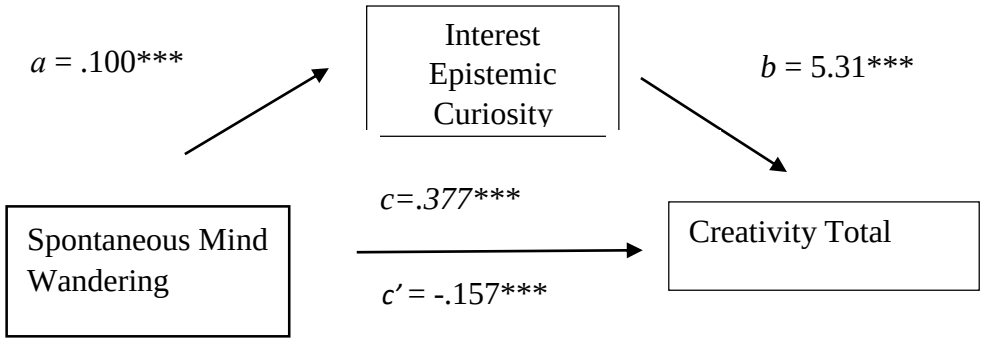

Figure: 4.43

Mediation of Spontaneous Mind Wandering on the Total Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Total Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .377, t= 1.24, CI [-.220, .976], p < .001. Further it can also be seen that direct effect is significant b=-.157, t= -.634, CI [-.646, .331], p < .001. The results also explained that the indirect effect is also statistically significant b= .535, CI [.131, .970]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Total Creativity of an individual.

Table 4.68

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Everyday Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	36.99***	21.02***	18.15	23.89
Spontaneous Mind Wandering	-.016***	-.135***	-.269	-.001
Interest Epistemic Curiosity		1.18***	1.006	1.35
Indirect effect- SMW → Interest Epistemic Curiosity → Everyday Creativity		.119	.027	.217
R^2	.0001	.258		
ΔR^2		.257		
F	.044***	89.03***		
ΔF		88.98		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

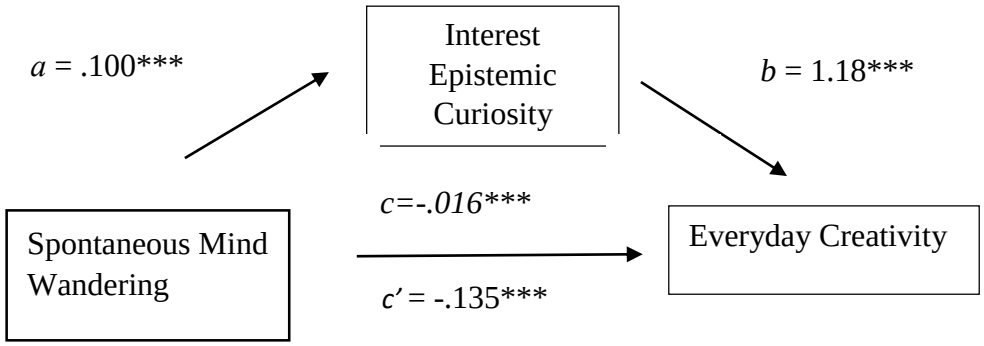

Figure: 4.44

Mediation of Spontaneous Mind Wandering on the Everyday Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Everyday Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.016, t= -.210, CI [-.170, .137], p < .001. Further it can also be seen that direct effect is significant b=-.135, t= -1.99, CI [-.269, -.001], p < .001. The results also explained that the indirect effect is also statistically significant b= .119, CI [.027, .217]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Everyday Creativity of an individual.

Table 4.69

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Scholarly Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	32.08***	10.47***	7.53	13.42
Spontaneous Mind Wandering	.129***	-.031***	-.168	.104
Interest Epistemic Curiosity		1.59***	1.41	1.77
Indirect effect- SMW → Interest Epistemic Curiosity → Scholarly Creativity		.161	.039	.283
R^2	.004	.380		
ΔR^2		.376		
F	2.17***	157.04***		
ΔF		157.87		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

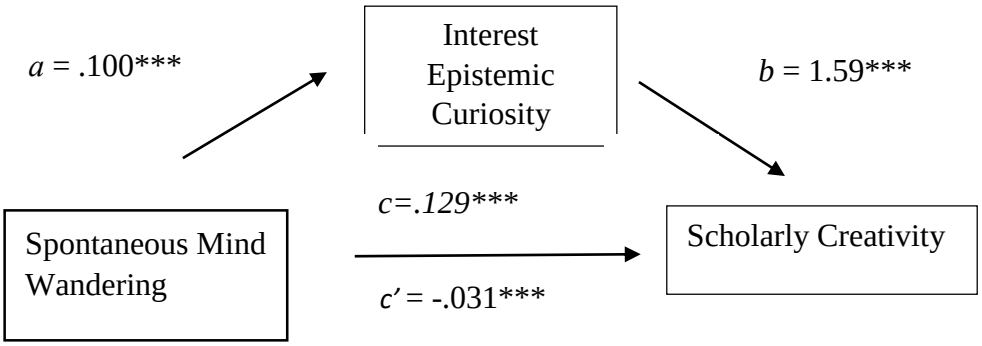

Figure: 4.45

Mediation of Spontaneous Mind Wandering on the Scholarly Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scholarly Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .129 t= 1.47, CI [-.042, .300], p < .001. Further it can also be seen that direct effect is significant b=-.031, t= -.457, CI [-.168, .104], p < .001. The results also explained that the indirect effect is also statistically significant b= .161, CI [.039, .283]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scholarly Creativity of an individual.

Table 4.70

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Performance Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	22.57***	12.16***	8.58	15.74
Spontaneous Mind Wandering	.280***	.203***	.036	.369
Interest Epistemic Curiosity		.769***	.552	.986
Indirect effect- SMW → Interest Epistemic Curiosity → Performance Creativity		.077	.017	.147
R^2	.019	.104		
ΔR^2		.085		
F	10.19***	29.88***		
ΔF		19.69		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

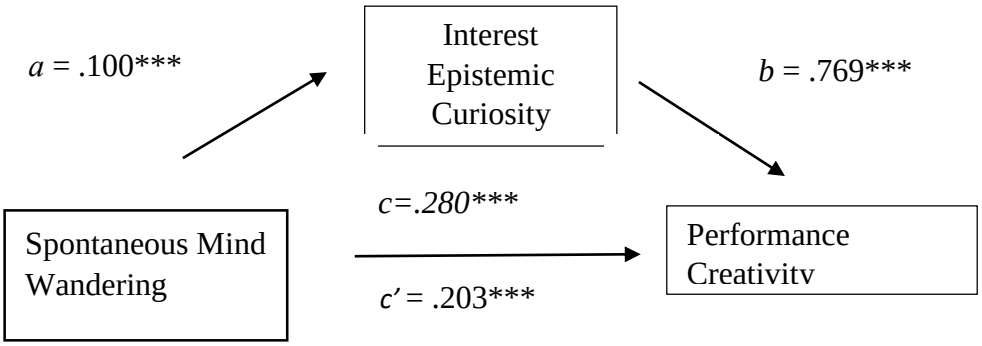

Figure: 4.46

Mediation of Spontaneous Mind Wandering on the Performance Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Performance Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .280, t= 3.19, CI [.108, .453], p < .001. Further it can also be seen that direct effect is significant b= .203, t= 2.39, CI [.036, .369], p < .001. The results also explained that the indirect effect is also statistically significant b= .077, CI [.017, .147]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Performance Creativity of an individual.

Table 4.71

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Scientific Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.94***	11.78***	8.75	14.81
Spontaneous Mind Wandering	-.068***	-.173***	-.314	-.032
Interest Epistemic Curiosity		1.04***	.863	1.23
Indirect effect- SMW → Interest Epistemic Curiosity → Scientific Creativity		.105	.027	.191
R^2	.001	.198		
ΔR^2		.197		
F	.733***	63.22***		
ΔF		62.48		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

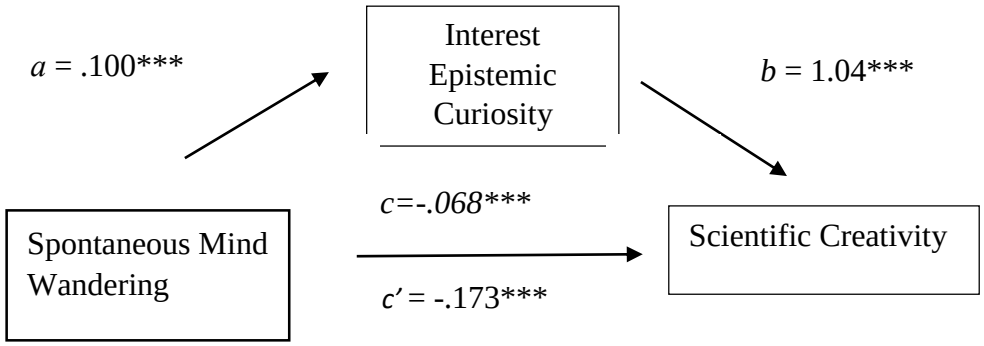

Figure: 4.47

Mediation of Spontaneous Mind Wandering on the Scientific Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Scientific Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= -.068, t= -.856, CI [-.224, .088], p < .001. Further it can also be seen that direct effect is significant b=-.173, t= -2.41, CI [-.314, -.032], p < .001. The results also explained that the indirect effect is also statistically significant b= .105, CI [.027, .191]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Scientific Creativity of an individual.

Table 4.72

Spontaneous Mind Wandering with Interest Epistemic Curiosity

	Artistic Creativity			
Predictors	Model 1	Model 2	*95% CL*	
	B	B	*LL*	*UL*
Constant	25.46***	11.33***	8.33	14.34
Spontaneous Mind Wandering	.108***	.003***	-.136	.143
Interest Epistemic Curiosity		1.04***	.861	1.22
Indirect effect- SMW → Interest Epistemic Curiosity → Artistic Creativity		.105	.027	.187
R^2	.003	.202		
ΔR^2		.199		
F	1.89***	64.70***		
ΔF		62.81		

****p<.001*

Note: B= Unstandardized coefficients; LL = Lower Limit; UL = Upper Limit; SMW = Spontaneous Mind Wandering.

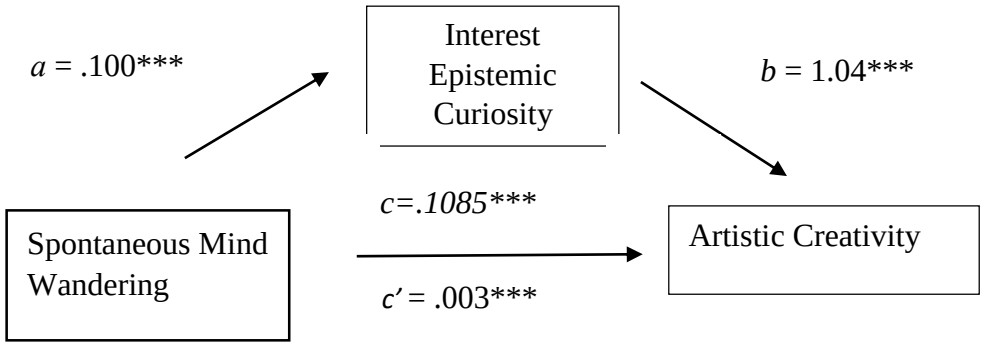

Figure: 4.48

Mediation of Spontaneous Mind Wandering on the Artistic Creativity of an individual with their Interest Epistemic Curiosity Effect.

The above table displays the mediation analysis on Spontaneous Mind Wandering and Artistic Creativity of an individual with their Interest Epistemic Curiosity. The total effect of mediation model was found to be significant where b= .1078, t= 1.37, CI [-.046, .263], p < .001. Further it can also be seen that direct effect is significant b= .003, t= .044, CI [-.136, .143], p < .001. The results also explained that the indirect effect is also statistically significant b= .105, CI [.027, .187]. Hence, it can be concluded from the figures that Interest Epistemic Curiosity mediated the relationship between the Spontaneous Mind Wandering and Artistic Creativity of an individual.

4.3 Mean Differences on Study Variables

The below table 4.25 describes the mean differences of males and females scores on the Deliberate Mind Wandering, Spontaneous Mind Wandering, Total Score of Creativity Total and its subscales (Everyday, Scholarly, Performance, Scientific, Artistic Creativity), Epistemic Curiosity and its subscales (Interest and Deprivation Epistemic Curiosity), and Self-Regulation Questionnaire. The table figures depicts no significant differences in the mean of scores of males and females. Both males and females have scored somewhat similar on all these above mentioned scales but there is a minor significant difference on the total Creativity of a person and all its subscales of Creativity for the male and female scores.

Table 4.73

Mean, Standard Deviations and t-values for Males and Females on Study Variables (N=514)

	Males (n = 284)		Females (n = 230)				95% C1		Cohen's d
Variables	*M*	*S.D*	*M*	*S.D*	*t(512)*	*p*	*LL*	*UL*	
Deliberate Mind Wandering	12.36	5.01	12.74	4.71	-.89	.37	-1.239	.463	--
Spontaneous Mind Wandering	11.43	4.84	11.53	4.80	-.24	.80	-1.233	.457	--
Everyday Creativity	37.12	8.79	36.42	8.19	.92	.35	-.945	.735	--
Scholarly Creativity	33.92	9.41	33.13	9.73	.93	.35	-1.795	1.360	--
Performance Creativity	26.08	9.76	25.44	9.59	.75	.45	-1.789	1.353	--
Scientific Creativity	26.38	8.74	23.67	8.35	3.5	.00	-.784	2.189	.31
Artistic Creativity	25.38	8.59	28.34	8.35	-3.9	.00	-.774	2.178	.34
Creativity Total	142.64	34.06	140.99	32.30	.56	.57	-.873	2.459	--
Interest Epistemic Curiosity	14.80	3.69	14.56	3.72	.71	.47	-.879	2.465	--
Deprivation Epistemic Curiosity	13.55	3.95	12.80	3.86	2.1	.02	-1.043	2.333	.19
Epistemic Curiosity Total	28.35	6.96	27.36	6.85	1.61	.10	-1.040	2.330	--
Self-Regulation Total	97.20	15.92	97.06	15.79	.10	.91	1.213	4.199	--

Note: CI=Confidence Interval; UL=Upper Limit; LL=Lower Limit

Table 4.74

Mean, Standard Deviations and t-values for Family Types on Study Variables (N=514)

	Nuclear (n = 283)		Joint (n = 231)				95% C1		Cohen's d
Variables	*M*	*S.D*	*M*	*S.D*	*t(512)*	*p*	*LL*	*UL*	
Deliberate Mind Wandering	12.64	4.82	12.40	4.97	.55	.58	2.209	3.823	--
Spontaneous Mind Wandering	11.50	4.86	11.45	4.79	.11	.91	2.201	3.831	--
Everyday Creativity	36.77	8.38	36.85	8.73	-.11	.91	1.844	3.466	--
Scholarly Creativity	34.30	9.24	32.66	9.88	1.93	.05	1.831	4.918	.17
Performance Creativity	26.01	9.53	25.53	9.88	.56	.57	1.817	4.932	--
Scientific Creativity	24.83	8.34	25.58	9.04	-.97	.33	-1.441	1.523	--
Artistic Creativity	27.46	8.63	25.78	8.50	2.21	.02	-1.430	1.512	.19
Creativity Total	143.04	32.27	140.50	34.46	.86	.38	-1.028	2.291	--
Interest Epistemic Curiosity	14.87	3.54	14.48	3.89	1.18	.23	-1.028	2.291	--
Deprivation Epistemic Curiosity	13.15	3.75	13.29	4.13	-.39	.69	.724	4.063	--
Epistemic Curiosity Total	28.02	6.50	27.77	7.42	.40	.68	.724	4.063	--
Self-Regulation Total	96.59	16.14	97.81	15.49	-.86	.38	-1.733	1.278	--

Note: CI=Confidence Interval; UL=Upper Limit; LL=Lower Limit

The above table 4.26 describes the mean differences of family types scores i.e. nuclear and joint family types scores on the Deliberate Mind Wandering, Spontaneous Mind Wandering, Total Score of Creativity Scale (K-DCOS) and its subscales (Everyday, Scholarly, Performance, Scientific, Artistic Creativity), Epistemic Curiosity and its subscales (Interest and Deprivation Epistemic Curiosity), and Short Self-Regulation Questionnaire. The table figures depicts no significant differences in the mean scores of nuclear and joint family type. But there is a slight significant difference in the score on all the subscale of Creativity and also on the total Creativity score of a person

Table 4.75

Mean, Standard Deviations and t-values for Working and Non-Working status on Study Variables (N=514)

	Working (n = 338)		Non-Working (n = 176)				95% C1		Cohen's d
Variables	*M*	*S.D*	*M*	*S.D*	*t(512)*	*p*	*LL*	*UL*	
Deliberate Mind Wandering	12.45	4.82	12.69	4.99	-.53	.59	-1.133	.651	--
Spontaneous Mind Wandering	11.12	4.73	12.15	4.91	-2.30	.02	-1.144	.662	.21
Everyday Creativity	38.24	8.01	34.05	8.83	5.27	.00	-1.917	-.141	.49
Scholarly Creativity	34.75	9.13	31.28	9.96	3.96	.00	-4.708	-1.445	.36
Performance Creativity	25.81	10.02	25.77	9.01	.05	.96	-4.760	-1.393	--
Scientific Creativity	25.77	8.84	24.01	8.21	2.19	.02	2.681	5.713	.20
Artistic Creativity	27.01	8.48	26.13	8.84	1.10	.27	2.631	5.763	--
Creativity Total	145.30	32.64	135.38	33.57	3.23	.001	1.755	5.197	.29
Interest Epistemic Curiosity	15.09	3.52	13.92	3.93	3.43	.001	1.705	5.247	.31
Deprivation Epistemic Curiosity	13.34	3.79	12.98	4.16	.987	.32	-1.726	1.814	--
Epistemic Curiosity Total	28.43	6.58	26.90	7.45	2.39	.01	-1.669	1.756	.21
Self-Regulation Total	99.35	14.34	92.89	17.68	4.46	.00	.184	3.337	.40

Note: CI=Confidence Interval; UL=Upper Limit; LL=Lower Limit

The above table 4.27 describes the mean differences of Working and Non-Working status of a person's scores on the Deliberate Mind Wandering, Spontaneous Mind Wandering, Total Score of Creativity Scale (K-DCOS) and its subscales (Everyday, Scholarly, Performance, Scientific, Artistic Creativity), Epistemic Curiosity and its subscales (Interest and Deprivation Epistemic Curiosity), and Short Self-Regulation Questionnaire. The table figures depicts significant differences in the mean scores of Working and Non-Working Individuals for all the scales mentioned above except the Performance Creativity and the Deprivation Epistemic Curiosity

Table 4.76

Mean, Standard Deviations and t-values for Day Dreaming status on Study Variables (N=514)

	Yes (n = 243)		No (n = 271)				95% C1		Cohen's d
Variables	*M*	*S.D*	*M*	*S.D*	*t(512)*	*p*	*LL*	*UL*	
Deliberate Mind Wandering	14.12	5.07	11.10	4.22	7.27	.00	-1.133	.651	.64
Spontaneous Mind Wandering	12.88	4.96	10.22	4.32	6.43	.00	-1.144	.662	.57
Everyday Creativity	36.83	7.90	36.79	9.07	.05	.95	-1.917	-.141	--
Scholarly Creativity	33.90	9.54	33.27	9.57	.74	.45	-4.708	-1.445	--
Performance Creativity	27.06	9.63	24.66	9.60	2.81	.005	-4.760	-1.393	.24
Scientific Creativity	25.05	8.78	25.28	8.57	-.29	.76	2.681	5.713	--
Artistic Creativity	27.52	8.72	25.97	8.45	2.04	.04	2.631	5.763	.18
Creativity Total	144.05	32.44	139.97	33.92	1.38	.16	1.755	5.197	--
Interest Epistemic Curiosity	14.84	3.75	14.55	3.66	.88	.37	1.705	5.247	--
Deprivation Epistemic Curiosity	13.17	3.96	13.25	3.89	-.24	.80	-1.726	1.814	--
Epistemic Curiosity Total	28.01	7.07	27.81	6.79	.33	.73	-1.669	1.756	--
Self-Regulation Total	99.50	15.13	95.02	16.20	3.23	.001	.184	3.337	.28

Note: CI=Confidence Interval; UL=Upper Limit; LL=Lower Limit

The above table describes the mean differences of Day Dreaming scores on the Deliberate Mind Wandering, Spontaneous Mind Wandering, Total Score of Creativity Scale and its subscales (Everyday, Scholarly, Performance, Scientific, Artistic Creativity), Epistemic Curiosity and its subscales (Interest and Deprivation Epistemic Curiosity), and Short Self-Regulation Questionnaire. The table figures depicts significant differences in the mean scores of yes and no for Day Dreaming for Performance and Artistic Creativity along with the Total Creativity of an individual, Deliberate Mind Wandering, Spontaneous Mind Wandering, and the Self-Regulation scores of a person. But there is a no significant difference in the score on all other mentioned scales.

Table 4.77

Mean, Standard Deviations and t-values for Preference Spending Time on Social Media on Study Variables (N=514)

	Yes (n = 395)		No (n = 119)				95% C1		Cohen's d
Variables	*M*	*S.D*	*M*	*S.D*	*t(512)*	*p*	*LL*	*UL*	
Deliberate Mind Wandering	12.98	4.96	11.03	4.26	3.88	.00	.968	2.946	.42
Spontaneous Mind Wandering	11.81	4.92	10.38	4.29	2.85	.004	1.043	2.871	.30
Everyday Creativity	36.92	8.48	36.43	8.68	.54	.58	.512	2.346	--
Scholarly Creativity	33.87	9.80	32.54	8.66	1.33	.18	.506	4.203	--
Performance Creativity	25.99	9.87	25.13	9.00	.85	.39	.695	4.014	--
Scientific Creativity	25.12	8.80	25.33	8.22	-.22	.82	-1.263	2.244	--
Artistic Creativity	26.85	8.73	26.23	8.18	.69	.49	-1.292	2.273	--
Creativity Total	142.53	33.55	139.81	32.34	.78	.43	-.626	3.298	--
Interest Epistemic Curiosity	14.72	3.77	14.60	3.46	.31	.75	-.507	3.178	--
Deprivation Epistemic Curiosity	13.20	3.97	13.27	3.78	-.17	.86	-1.129	2.850	--
Epistemic Curiosity Total	27.92	7.04	27.87	6.53	.07	.94	-1.039	2.760	--
Self-Regulation Total	98.06	15.43	94.08	16.87	2.41	.01	-1.988	1.575	.24

Note: CI=Confidence Interval; UL=Upper Limit; LL=Lower Limit

The above table describes the mean differences of a person's preference to either spend time on social media or not on the Deliberate Mind Wandering, Spontaneous Mind Wandering, Total Score of Creativity Scale (K-DCOS) and its subscales (Everyday, Scholarly, Performance, Scientific, Artistic Creativity), Epistemic Curiosity and its subscales (Interest and Deprivation Epistemic Curiosity), and Short Self-Regulation Questionnaire. The table figures shows significant differences in the mean scores of yes and no response preference for social media for the Deliberate Mind Wandering, Spontaneous Mind Wandering, Scholarly type of Creativity, Total Creativity Score, and the Self-Regulation Scores. But there is no significant differences in the score on all the other mentioned scales

Table 4.78

Difference among different groups of Age Categories on the Deliberate and Spontaneous Mind Wandering ((N= 514)

Variables	Emerging (n=202)		Establish (n=197)		Middle (n=115)		F	p	ηp^2	Post hoc
	M	SD	M	SD	M	SD				
Mind Wandering										
Deliberate	12.73	4.54	12.40	5.06	12.39	5.16	.289	.749	.001	
Spontaneous	11.80	4.64	10.71	4.57	12.23	5.36	4.43	.012	.017	1>2, 2<3

df =2, 512

Note: ηp^2 =Partial eta squared values are suggestive of significant effect size. Cohen (1969) classified effect of 0.2 as small, 0.5 as medium, and 0.8 or higher as large.

Table 4.79

Difference among different groups of Age Categories on Creativity and its sub domains ((N= 514)

Variables	Emerging (n=202)		Establish (n=197)		Middle (n=115)		F	p	ηp^2	Post hoc
	M	SD	M	SD	M	SD				
Creativity	144.90	32.23	140.46	33.99	139.10	33.64	1.41	.244	.006	
Everyday	36.40	8.10	38.00	8.56	35.48	8.99	3.59	.028	.014	
Scholarly	33.52	8.89	32.99	9.56	34.61	10.60	1.03	.355	.004	
Performance	27.38	9.18	24.52	9.70	25.21	9.68	4.68	.010	.018	
Scientific	26.10	8.30	24.52	8.91	24.65	8.76	1.93	.146	.008	
Artistic	27.69	8.25	26.37	8.81	25.56	8.74	2.51	.082	.010	1>2, 2<3

df =2, 512

Note: ηp^2 =Partial eta squared values are suggestive of significant effect size. Cohen (1969) classified effect of 0.2 as small, 0.5 as medium, and 0.8 or higher as large.

Table 4.80

Difference among different groups of Age Categories on the Epistemic Curiosity Scale and its Sub types ((N= 514)

Variables	Emerging (n=202)		Establish (n=197)		Middle (n=115)		F	p	ηp^2	Post hoc
	M	SD	M	SD	M	SD				
Epistemic Curiosity	28.42	6.36	26.86	7.15	28.79	7.28	1.05	.349	.004	
Interest Type	14.92	3.40	14.40	3.94	14.79	3.77	6.53	.002	.025	-
Deprivation Type	13.50	3.55	12.47	3.89	14.00	4.37	3.76	.024	.015	1>2, 2<3

df =2, 512

Note: ηp^2 =Partial eta squared values are suggestive of significant effect size. Cohen (1969) classified effect of 0.2 as small, 0.5 as medium, and 0.8 or higher as large.

Table 4.81

Difference among different groups of Age Categories on the Self-Regulation ((N= 514)

Variables	Emerging (n=202)		Establish (n=197)		Middle (n=115)		F	p	ηp^2	Post hoc
	M	SD	M	SD	M	SD				
Self-Regulation	97.22	17.19	98.43	13.74	94.78	16.60	1.93	.145	.008	1>2, 2<3

df =2, 512

Note: ηp^2 =Partial eta squared values are suggestive of significant effect size. Cohen (1969) classified effect of 0.2 as small, 0.5 as medium, and 0.8 or higher as large.

Chapter 5

Summary, Discussions, Conclusions, and Suggestions

5.1 Summary

The purpose of this current study is to investigate the effect of mind-wandering on creativity, with self-regulation and epistemic curiosity as mediators. It aims to find out whether mind wandering helps or hinders performance and the roles of self-regulation and epistemic curiosity in this. Furthermore, in light of the demographic characteristics, including age, employment status, and/or gender, into how these mechanisms work and in what ways if at all they are related, the study offers a rich consideration of mind wandering and creativity as interrelated phenomena.

5.2 Discussions

This study was conducted to explore and understand the interplay and relationship of epistemic curiosity and self-regulation, their mediating role solely together and separately on the mind wandering and creativity of adults specifically in the Asian Pakistani culture. The important distinction in this research was created with respect to three different classes of adults i.e. emerging adults, establishing adults, and middle adults. The rationale for this study was narrowed down from existing literature that these specific variables in this combination were not studied in this culture, along with the division of adult groups. Further this research describes the mediating roles of self-regulation and epistemic curiosity. Moreover, this study will also focus on the gender type, different adult groups, and employment status.

In the current study the assessment tools that were used to collect the relevant data are Spontaneous and Deliberate Mind Wandering Scales (SDMWS) (Carriere et al., 2103), Kaufman Domains of Creativity Scale (K-DCOS) (Kaufman, 2012), Epistemic Curiosity Scale (ECS) (Litman et al., 2003), and Short Self-Regulation Questionnaire (SSRQ) (Brown et al., 1999). Furthermore, a demographic sheet was also used along with the assessment tools to gather the participant's information relevant to this study. The Cronbach's Alpha reliabilities of all the assessment tools used in this study were substantial and in standard ranges. The scores obtained from all the scales and their subscales were computed and converted to get the mean scores and standard deviations. For this purpose, descriptive statistics regarding their mean age, gender, employment status, birth order, and marital status were used to compute for the further analytical analyses. For further exploration and examination of the mediating effects of epistemic curiosity and self-regulation on the mind wandering and creativity of adults, multiple hypotheses were postulated which will be dealt in detail one by one.

5.2.1 Relationship of Deliberate Mind Wandering and Creativity

The current research intended to investigate the correlation between mind wandering and different facets of creativity with the effects of mediation by self-regulation and epistemic curiosity. Especially in the light of recent theoretical advances exploring the role of both: spontaneous and deliberate mind wandering in creativity research, the present study aimed at investigating the potential of mind wandering–a frequently observed yet poorly understood phenomenon–for creativity in daily life. In particular, the study predicted that deliberate mind wandering would relate to every day creativity, performance creativity, scholarly creativity, science

creativity, art creativity, as well as the total sample of creativity. The results were compared with the hypotheses presented in the literature to identify which of them was supported or refined, as well as to identify the factors that underlie the given type of creative thought.

The research conducted by Baird, Smallwood, & Schooler, 2011 also established that mind-wandering particularly when in the process of autobiographical planning, enhances creative problem solving and idea generation. Further, the authors Sio and Ormerod, 2009 talk about how certain types of unconscious processing, such as mind wandering, can be beneficial when it comes to creativity and this is another indication of possible positive effects of mind wandering on creativity (H1). They further highlighted that everyday creative tasks can also benefit from durations of incubations that mostly involve the mind wandering (H1a). Since it is also understood that deliberate mind wandering is promoting the creativeness of individuals in their everyday tasks. Ellami et al., 2012 has also supported this hypotheses that deliberate mind wandering does enhance the everyday creativity of adults, and not only this it can also pave the way for further new associations and insights into the creativity of individuals (H1a).

Studies have further suggested that the deliberate mind wandering can also positively enhance the performance creativity and also the problem solving strategies and planning related to it (Baird et al. 2011). Moreover the performance creativity can also be improved by the essence, nature, theme and content of the mind wandering (Klinger, & Cox, 1987) (H1b). Further the hypotheses of the present study is that there is a positive correlation between the deliberate mind wandering and the scholarly creativity, the results lead to accept the hypotheses of this study and further

supported by the researches. Nakamura, & Csikszentmihalyi (2002) has investigated on this and added that the flow state which can be defined as the state of creativity, one might achieve it with the help of mind wandering, particularly when it comes to scholarly work that demands deep thinking. This hypotheses is further supported by the research of Kounios and Beeman, 2009, that the idea notions derived from mind wandering are useful in scholarly creativity since the ideas that emerge in the course of such thinking processes are mostly unexpected (H1c).

The hypotheses of the current study also postulated that the deliberate mind wandering supports the scientific type of creativity. This hypotheses is supported by the researchers that concluded that mind-wandering in a relaxed state promotes scientific creativity through insight (Beemna & Kounios, 2007), whereas Mason et.al, 2007 also added that there are possible negative implications of mind-wandering, but it also recognizes its importance in creating new scientific concept (H1d). To carry this positive correlation further on to the next hypotheses with the artistic creativity Martindale, 1999 concluded that often this creativity can get benefits from these process like mind wandering, so the imagination in art is enhanced when a person has minimized the executive control. Other researchers like Goncalo & Staw, 2006 has also supported this hypotheses that potential creativity can be elevated using mind wandering, this leads to the creation of unique and new imaginative ideas (H1e). The final hypotheses of this category is also supported by multiple researches that suggests that the deliberate mind wandering thought helps in both “big-C” and “little-c” creative processes and therefore there is an increase in total creativity (Kaufman & Beghetto, 2009). Smallwood & Schooler, 2015 gave a review that also promotes various ways that mind wandering improves perspectives on different aspects of

creativity – leading to a generally positive correlation between total creativity and mind wandering (H1f).

5.2.2 Relationship between Spontaneous Mind Wandering and Creativity

This study also focused on the relationship of mind wandering in general and specifically spontaneous mind wandering and creativity, as Wallas, 1926 posited that whenever the mind wanders off track, it mostly stumble across new and novel ideas. So in continuation of this as for spontaneous thoughts, the sources of spontaneous mind wandering and the effect of surprise on the perception of creativity could shed more light into the mind wandering–creativity relationship. Concerning thinking off-task, the assumed thought process of producing a creative idea is usually expected little of. Therefore, when an idea is triggered when the mind is wandering without intention, this idea is more likely to be experienced as something like a 'light bulb moment' (Atef et al., 2024). One of the hypotheses of this study was that there is a positive relationship between spontaneous mind wandering and creativity, and in the light of above mentioned literature this hypotheses is accepted (H2), previous research has shown consistent results that regression coefficients between mind wandering and creativity are statistically significant.(Agnoli et al., 2018; Yamaoka & Yukawa, 2020).

The next hypotheses for this category is that there exist a positive relationship between spontaneous mind wandering and every day creativity type but this hypotheses is rejected in the results which is also supported by the existing body of literature that states that spontaneous mind wandering is, in fact, maladaptive for everyday creativity, specifically when it results in the interference with goal-directed cognition. For instance, in unserious conditions, too much daydreaming might

interfere with the implementation of creativity (McMillan e al., 2013). Moreover, Smallwood & Schooler in 2006 also concluded that one might hit upon a mind-wandering inspired solution, but there is also the dark side of mind-wandering, which results in decreased focus on the task and thus limited use of creativity in solving problems in real life (2a).

It is further postulated that there also exists a positive correlation between the spontaneous mind wandering and performance creativity but the results statistically depicted that there exist no correlation between the above mentioned two variables. This work of Kam & Handy, 2013 explains how mind-wandering causes sensory-motor decoupling thus waning down the efficiency of performance tasks that demand attention. One idea, therefore, is that mind wandering does not help or enhance performance creativity because the lack of sensory-motor alignment that accompanies mind-wandering. Further, in an experience-sampling study the results showed how mind wandering influenced working memory and cost of executive control during the daily life. It does not himself address performance creativity but it suggests that maybe spontaneous 'freewheeling' will not improve tasks that involve high levels of executive control which is important in many brands of performance creativity (Kane et al., 2007). In another article, the author summarizes the existing data regarding sustained attention and proposed that the mind-wandering might interfere with skills that demand constant concentration. The conclusions are that for performance creativity, which tends to require focused attention, spontaneous mind wandering cannot have a significant or positive association, which means no correlation (Thomson et al., 2015) (H2b).

The next hypotheses of this section is that there is a positive correlation between the spontaneous mind wandering and the scholarly creativity, and the results also supported the hypotheses and it is accepted. Meanwhile it is also concluded that spontaneous mind wandering could help scholarly creativity as a way of coming up with out of the box thinking for their academic research. In this type of creativity, one is creative in the paradigm concerning research, writing, and theoretical advancement (Mooneyham, & Schooler, 2013). In another work it was investigated that how working memory capacity affects mind wandering and its effect on performance. The authors argues that spontaneous mind wandering may not always enhance on tasks that requires sustained effort, including scholarly creativity, if it is not strategically fruitful to the activities needed for the task at hand. This indicates that episodic spontaneous mind wandering may have a net role that is non-beneficial, or even detrimental for scholarly creativity in particular contexts depending on the direction of the wandering thoughts (Robison, & Unsworth, 2018). These references and studies imply that there is a possibility of the positive connection between spontaneous mind wandering and scholarly creativity to be qualified by a more nuanced context. (H2c).

The next hypotheses is postulated as there is a positive correlation between the spontaneous mind wandering and the scientific creativity but the results showed that there is no correlation between the two, so the hypotheses is rejected. The rejection of this hypotheses is further supported by the evidence in the literature suggesting that scientific creativity, which involves a good deal of systematic, logical thinking may not be enhanced by allowing oneself to wander aimlessly. Since mind wandering implies distractibility, the themes of precision that pervade scientific thinking may be threatened by pervasive distractibility (Christoff et al., 2009). While employing

creativity in science, there are usual problem solving activities and logical thinking. Free roaming can bring in irrelevant information and or thoughts which may disrupt the elaborate thinking sequences demanded in science (Baird et al., 2011) (H2d).

The next hypotheses is that there exist a positive correlation between the spontaneous mind wandering and the artistic creativity but the hypotheses got rejected from the results, and depicted no correlation between the two variables. Further this rejection is supported by the existing body of literature that says while mind wandering is associated with artistic creativity, certain theories state that fragmented mind wandering means that an individual's work becomes fragmented as well. If the artist's thoughts are analytically too fragmentary this can have a negative effect on creativity and potentially the product (Kam, & Handy, 2014). It is, therefore, essential to observe some level of mind wandering, but at the same time, coherence is lost when there is too much of it. The use of this approach may lead to a fragmented work or a work that is not as polished or refined as it could be (Mooneyham, & Schooler, 2013). (H2e)

The last hypotheses of the current category is that there is a positive relationship between the spontaneous mind wandering and the total overall creativity, but the results showed that there is no correlation that exist between them hence rejecting the current hypotheses. There are researches that addresses this work, the issue of mind wandering and explains that in particular, spontaneous mind wandering is a predictor of ''aha'' moments; however, not all mind wandering is good for creativity. When mind wandering occurs in an unrelated and goal incongruent manner, the effect on creativity is either neutral or negative, as has been argued for in the study In other words, spontaneous mind wandering is sometimes found to be

disruptive to the creative process (Zedelius, & Schooler, 2016). In another instant, a paper presents a detailed analysis of the different research on mind wandering and creativity, and the conclusion is made that a direct association between spontaneous mind wandering and creativity cannot be indicated. But it implies that mind-wandering is sometimes positive for creativity in other cases, it is negative for creativity, especially when the wandering occurs at a wrong time or is unmotivated; therefore, the result is a negative or zero correlation between mind-wandering and total creativity (Smeekens et al., 2021). Lastly, it is established that out of control mind wandering was found to have negative effects on simple, goal directed activities that needed attention and creativity. The authors' provide evidence that opposed to the hypothesis that states that there is a positive correlation between spontaneous mind wandering and total creativity, mind wandering may at times be beneficial and may at other times hinder an individual's ability to perform a particular task or think creatively (Mrazek et al., 2013). (H2f). Hence, from these references and researches it is suggested that the association between spontaneous mind wandering and total creativity may not always be straightforward and could involve both positive and negative correlations as a function of the task demands and the kind of creative endeavor.

5.2.3 Relationship between Deliberate Mind Wandering and Epistemic Curiosity

As predicted, the findings of this study support the main research hypothesis that deliberate mind wandering is positively related to epistemic curiosity in general. From this it can be inferred that when persons intentionally daydream—consciously selecting targets of thought that are not oriented toward concrete future goals of action—there is greater felt interest in gaining knowledge and in understanding

reality. These findings can be readily discussed in term of the voluntary mind-wandering, which is a type of sanctioning, when people consciously focus on their thoughts and, as a result, initiate the process of thinking about the unresolved questions or coming up with something new. One may achieve more open-mindedness during intentional mind-wandering, as when people come across certain ideas or subjects which they learn they do not know about and experience a desire to learn about them. As per the case made by Golman and Loewenstein (2018), curiosity is strongly tied to the process of seeking to close knowledge gaps. They found out that those people who deliberately let their mind wander may experience such gaps more often, which in return help them to raise their level of epistemic curiosity. This concurs with the notion that WM induced thought is a strategy that every person engages in due to curiosity. Zedelius and Schooler (2016) have also established that it is possible to promote a purposeful mind-wandering that may lead to creative thinking – a construct that is inherently linked to epistemic curiosity. In their research, they also showed that getting into a controlled state of mind wandering lead to having micro insights and makes the person curious to pursue this idea further (H3).

Consequently, the results of the study conform to Hypothesis H3a that there is a positive relationship between deliberate mind wandering and interest-type epistemic curiosity. Interest-type epistemic curiosity is defined as curiosity motivated by interest in the information that the curiosity seeks to find. When people purposively self-generated thoughts, most of the time, people come across interesting ideas or themes which create the desire in them to search for the answer. The procedure of intentional mind meandering might enable touching upon a large number of topics, certain of which might become exciting and fascinating for a person. This matchup between the content of mind wandering with personal interests can result in a heightened need for

information, thus increasing interest-type epistemic curiosity (Kang et.al., 2009; Golman et.al., 2021; Smallwood & Schooler, 2015). Litman (2005) distinguish between interest-type curiosity and deprivation type: the latter is related to the interest-type curiosity, to which the former is inherent. This form of curiosity should be boosted by deliberate mind wandering since one is probably to come across ideas that draws his/her curiosity. Similarly, Barron et al. (2021) have learned that people who report engaging more in deliberate mind wandering are more satisfied with learning, as a process. Happiness is one aspect of the interest-type epistemic curiosity, and hence substantiates the positive association of deliberate mind-wandering with this type of curiosity (H3a).

We also find support for H3b where we established that there is a significant positive relationship between deliberate mind wandering and the deprivation-type epistemic curiosity. For the purpose of this paper, the first type of epistemic curiosity: deprivation-type called for by the desire to refill a lack of knowledge. Whenever people consciously let their thoughts wander, it is quite possible to come across thoughts that emphasize a certain lack of knowledge or experience in some area, which evokes a powerful urge to fix this problem (Litman, 2005; Smallwood, McSpadden, & Schooler, 2008). Such curiosity is most useful in the context of the problem-solution and decision-making, undefined questions bring up discomfort. A special driver of deprivation-type epistemic curiosity could be deliberate mind wandering, which may lead individuals to notice such gaps and feel forced to seek answers (Golaman & Loewenstein, 2018; Voss & Litman, 2013). Golman and Loewenstein (2018) have further explained that deprivation-type curiosity is particularly related to need for closure and need to resolve uncertainty. Self-generated thought, as in the process of working through unresolved mind contents, can increase

this need and result in elevated levels of deprivation-type epistemic curiosity. With regard to deprivation-type curiosity, Kashdan et al. (2013) have proposed that people with such profiles intentionally use their minds to look for solutions to erase their doubts. Using their findings, their study underlines the way deliberate cognitive operations can contribute to this type of curiosity (H3b).

Lastly, in support of Hypothesis H3c, we establish that deliberate mind wandering is positively associated with total epistemic curiosity. The total measure of epistemic curiosity therefore includes both interest-type and deprivation-type curiosity; this implies that the process of deliberate mind-wandering facilitates curiosity in both the sub-types. Through intentional mind drifting, people will experience a variety of thoughts, which are either fascinating or prompt real issues. Together, it engenders a highly inclusive form of curiosity that propels people in their quest for knowledge and the resolution of all forms of doubt (Barron et al., 2011). These are also in line with the studies mentioned above specifically the work done by Golman & Loewenstein (2018) and Zedelius & Schooler (2016) that provide evidence that the deliberate mind-wandering on both interest type and deprivation type curiosity is beneficial to a balanced curiosity. Moreover, the following research by Preiss et al., 2010 aims to establish whether Mental Imagery – a sub-type of deliberate mind-wandering- is related to curiosity. On the basis of the results, it can be stated that mental imagery use and promotes extrinsic curiosity as it enables people to consider both interesting concepts and unsolved issues. Hagtvedt, & Vohs, 2017, their research focuses on how curiosity-perusing experiences are interest mixed with a motivation to fill a gap. The authors underline that, for instance, mind-wandering may help improve general epistemic curiosity as a type of interest alongside the desire for finalizing aspects of uncertainty (H3c).

5.2.4 Relationship of Spontaneous Mind Wandering and Epistemic Curiosity

As we go further deep in the discussion of the hypotheses, it was hypothesized that there exist a positive correlation between the spontaneous mind wandering and the epistemic curiosity. According to the results, the hypothesis of the study is positive (H4), which leads to accept the hypotheses. Kane et al. 2007 in their study, investigated the connection between mind wandering and a range of cognitive by products, of which curiosity is a part. They learned that mind wandering that occurs non-volitionally, can give rise to pauses which create possibilities for positive psychological outcomes by encouraging attention towards the content of a person's thoughts. This association leads to the conclusion that when one is mind-wandering, there is a likelihood of processing the information that is especially relevant to the person or new information that can create epistemic curiosity. Smallwood and Schooler (2006) were of the view that mind wandering involves internal exploration. Individuals who indulge in spontaneous mind wandering are entertaining self-generated thoughts, and when these self-generated thoughts are curiosity evoking, it has been found that they are usually related to questions that the individual does not have answers to or to knowledge that the individual may personally lack. This connection is particularly important for the knowledge and understanding motivation, or epistemic curiosity (H4).

Next in line is the positive correlation between the spontaneous mind wandering and the interest type epistemic curiosity. Litman (2008) differentiates between two types of epistemic curiosity: dependent on two variables namely interest-type and deprivation-type. Epistemic curiosity of interest type is embraced by the fun of gaining knowledge. It is further proposed that self-generated thinking can and

frequently does result in the generation of new ideas or concepts which the individual finds interesting, which provides grounding for interest-type epistemic curiosity. More specifically, Fisher and Frye (2022) established that some mind-wandering is voluntary and is associated with the contents of the thoughts. If individuals automatically can activate knowledge, that has them coming up with thoughts or ideas that they find fascinating, this gives them the impetus to desire more knowledge, thus increasing interest-type epistemic curiosity (H4a).

On the basis of the next hypotheses it would be discussed that there is exist a positive association between the spontaneous mind wandering and the deprivation type of epistemic curiosity. Litman (2005) talks of deprivation type of epistemic curiosity which is driven by a desire to remove a certain uncertainty. Spontaneous mind wandering may sometimes focus an individual on issues that are left unanswered or uncertain, thus serving to enhance that person's interest in finding the answers to those questions. Golchert et al. (2017) demonstrated that mind wandering most of the time, is associated with an ongoing goal or a partially completed task. Such connection points to the fact that spontaneous mind wandering may often engage deprivation-type curiosity, because the individual becomes aware of the lack of information and a need to address it (H4b).

The last hypothesis of this section is that there is a positive correlation between the spontaneous mind wandering and the total of epistemic curiosity, and the results showed that the hypotheses is accepted. Seli et al. (2018) postulated that there are constructive features of mind wandering and it could be suggested that spontaneous mind wandering can be mobilized as a tool for cognitive self-searching. It also proposed that there is a positive cumulative effect of total epistemic curiosity

accurately obtained by summing up the interest and deprivation curiosity sub-scales identified in this process. In the study by Barron et al. (2011), the authors demonstrated that people who often mind wander spontaneously endorsed interest-type and deprivation-type epistemic curiosity to a greater extent. This finding suggests that spontaneous mind wandering might assist in the regulation of overall epistemic curiosity where both types of curiosity can be elicited all at once (H4c).

5.2.5 Relationship between Interest Type Epistemic Curiosity and Creativity

This current section will be related to the discussion of the relationship of interest type of epistemic curiosity and creativity. All the hypotheses in the current section will be discussed individually, supporting it from relevant literature and conclude with appropriate and suitable references. Interest type of curiosity or what is known as IEC is defined as curiosity that is derived from an interest in stimuli that is novel and complexity. It is linked to a pursuit of knowledge and want to discover, and thus it may be important for creativity in all kinds of fields (Litman, 2008). Creativity is not just about inspiration but it is conceptualized into several aspects of daily creativity, performing creativity, scientific creativity and art creativity (Kaufman & Bheghetto, 2009). The following hypothesis looks at the various possibilities of the link between interest type epistemic curiosity and different types of creativity. Based on this hypothesis (H5), it can be suggested that the subjects' interest type epistemic curiosity predicts higher degrees of creativity in a range of domains. The rationale for following such interests is inspiration that results from the curiosity is that one is likely to come across different ideas, which are critical in creativity (Kashdan & Finchman, 2004; Litman & Silvia, 2006). Studies have shown that curiosity is one of the most significant motives of creativity. For instance, in a study by Kashdan et al.,

(2018) it was revealed that curiosity allows people to accommodate distinctive pieces of information and come up with unique ideas. Further, interest type epistemic curiosity has been associated with cognitive abilities that are crucial in creativity have for instance divergent thinking that attempts to establish a spectrum of solutions for a particular task that is accorded (Von Stumm & Ackerman, 2013) (H5).

Everyday creativity refers to the creative activities or the creative approaches used in the day-to-day life, in relation to, for instance, the problems solved, the interpersonal brief improvisations, and the ways of expressing oneself in the daily tasks (Kaufman, 2008). This hypothesis postulates the possibility of positive relationship with interest type epistemic curiosity and people's creativity in role activities. According to Von Stumm and colleagues (2011) people with high interest type epistemic curiosity tries to find new stimuli and new problems in daily life and this is supposed to promote enhanced every day creativity. Likewise, Silvia et al. (2014) showed that curiosity has positive connection with every day creative behaviors given that curious people are most likely to engage in attempts at creativity in their daily lives (H5a).

As had been indicated, performance creativity is the skill of creating in some prescribed performance domain in a given environment, be it an academic or even a corporate environment Kashdan et al., 2018). According to this hypothesis, the complexity of information processing increases is positively related to performance creativity. Research done on this area demonstrates that curiosity has a correlation with improved performance in functions involving creative thinking (Hagtvedt et al., 2019). For instance, those who are primarily motivated by interest type curiosity strategies are likely to be more open in their mindset and more willing to consider

multiple options with regard to the manner in which an activity is going to be conducted, and therefore, are likely to outperform their counterparts in situations that call for creativity in undertaking a task (Litman, 2008) (H5b).

Research creativity has been defined as the capacity to generate ideas that are effective in an academic or technical field, and which may produce academic or interest commodities like research papers, theories or educational material. In this hypothesis, it is posited that higher levels of interest type epistemic curiosity are allied with more significant creative output in scholarly work (Kaufman et al., 2018). Academic creativity is linked with detailed considerations of some body of knowledge and conceptual dissection or invention. Motivated by curiosity scholars are those who develop new research problems but also make changes to the existing paradigmatic frames and patterns, having knowledge for synthesizing it in a new way (Simonton, 2004). Furthermore, Karwowski and Kaufman (2017) in their study establish that curiosity, particularly IEC, is an important predictor of productivity in academics because it motivates individuals to seek new knowledge and the willingness to tackle demanding issues (H5c).

Scientific creativity can be described as a process of imagining new hypothesis, coming up with solutions to technical challenges or new ways of approaching the conduct of research or indeed designing new methods or theories for various scientific endeavors (Kashdan et al., 2018). According to this hypothesis, interest type epistemic curiosity is one of the best predictors of scientific creativity. Past studies related to students' learning indicated the curiosity factor of science educations enhances scientific creativity. For example, in a study by Jirout and Klahr (2012), the author discovered that curiosity-based exploration is essential when it

comes to developing creative scientific thinking. In the same way, DeYoung (2014) has pointed out that curiosity leads to the improvement of the cognitive flexibility that enables the development of scientific innovations (H5d).

Artistic creativity is the extent to which one can create artistic work that is unique and artistic, expressively; this hypothesis assumes that a higher Interest type epistemic curiosity correlates positively with artistic creativity. Discover interest has been defined as one of the facets that characterize artist or anyone who is involved in any type of arts (Carson, 2010). Imagination in art is a process of generating new forms, ideas, experimenting with new tools, materials, and representing multi-leveled feelings or intellect, which is directed by motivation that may be referred to as curiosity (Sternberg, 2018) (H5e).

Generally creativity is a construct which includes elements of creation in the different aspects of life, daily, performance, scientific, academic, and art. It postulates that at best, there might be no systematic relationship between interest type of epistemic curiosity and creativity; at worst, there might be a negative relationship (Kuafman, 2018). In the case of curiosity, different patterns have previously been found for curiosity and creativity across different domains, and summing all forms of creativity into one 'total measure' may mask or attenuate the effects of interest type of epistemic curiosity. For example, although interest type of epistemic curiosity can exert a very positive impact on scholarship or scientific innovative or creative output, it could have no or negative impact on artistic innovation/creativity as proposed in the previous hypotheses (Kashdan et al., 2018). Feist (1998) and Fayn et al. (2015) point out that while curiosity might help creativity in thinking and problem solving tasks, it may hinder or be detrimental in 'feel' and 'touch' specific tasks. In addition, in the

prior research on creativity, the processes are distinguished in terms of motivations and cognitive profiles where the creative processes differ significantly (Hennessey & Amabile, 2010). It is also important to tie down the potential mutual interaction that may exist between the various creative forms, a perspective that seems plausible given the interest engagement which interest type of epistemic curiosity is likely to encourage but which may not necessarily be profitable across all creative forms, thus more so when aggregated in a comprehensive total measure. This hypothesis provides a somewhat complex picture of the impact of interest type of epistemic curiosity on creativity; even though interest type of epistemic curiosity was reported to increase specific kinds of creativity, this effect was not observed across all the mentioned domains of creativity, and it could be slightly negative instead. This also illustrates one of the main concepts when it comes to creativity research which is the fact that one ought to consider domain specificity (H5f).

5.2.6 Relationship between Deprivation type Epistemic Curiosity and Creativity

Deprivation type of epistemic curiosity (D-EC) is defined as the motivation to find out information, when there is a sensed absence of knowledge. This type of curiosity encourages people to alleviate uncertainty or ambiguity, and which could be associated with creativity, as this is a valued basis for acts of creativity that entail devising original methods to arrive at solutions to problems, and linking concepts that at first glance seem to have no common factor (Litman & Jimmerson, 2004). The following hypotheses will elucidate the interconnection between deprivation epistemic curiosity and various types of creativity. Prior literature offers evidence linking deprivation epistemic curiosity with creativity through the argument that curiosity induces the pursuit of acquiring new knowledge, hence creativity.

Deprivation epistemic curiosity results in driving people to perform cognitive task that makes them deal with ambiguity, which in turn may help to warm up the cognitive flexibility that is required for creativity (Kashdan & Steger, 2007). Litman claimed in a paper in 2008 that deprivation epistemic curiosity, which is a result of an aversive state of feeling deprived of information, results to exploration and problem solving, which equates to effort or drive towards creativity. (H6).

In the context of everyday creativity, one considers idea generation and solution finding applicable to day to day life. Deprivation epistemic curiosity's main feature of constant demand to fill the information gaps may force people to look for solutions to common problems. This hypothesis corresponds with evidence that curiosity causes production of creative processes in mechanical activities to enhance the environment or their undertakings (Silvia et al., 2014) (H6a).

Performance creativity therefore encompasses the creativity in the field of performance such as music, dancing and drama performances where the creator performs the idea. The drive to reduce cognitive disparities could lead to more developing of performance concepts in deprivation epistemic curiosity because performers may look for new ways and new interpretations to deal with abstraction. Scientific literature has indicated that curiosity may represent a very potent source of motivation for the acquisition of expert knowledge as well as the generation of creative performances in performance domains (Kashdan et al., 2018) (H6b).

Academic innovation can thus be described as the creation of new knowledge or the coming up with new solutions within an academic setting. Deprivation epistemic curiosity, which motivates the further acquisition of knowledge in order to eliminate deficiencies, may be especially useful in this context. Having indicated that scholars motivated by deprivation epistemic curiosity may be more inclined to

explore their fields further, it might be possible for them to develop more refined research questions, methods of analysis or theories. Such speculation is backed by studies establishing curiosity as the key antecedent of academic performance and productivity in academic context (Karwowski et al., 2020) (H6c).

Scientific creativity may be defined as the capacity to come up with new knowledge as ideas, hypotheses or experiments that are work related within the scientific domain. Corrections of the informational gaps which are intrinsic to deprivation type epistemic curiosity might make some scientists ask new questions and try new approaches, which are typical for scientific innovative thinking. Data shows that people with high level of curiosity are in turn likely to engage in science advancements and innovations (Von Stumm et al., 2011) (H6d).

Artistic creativity therefore is coming up with new and expressive pieces in arts, music, writing and so on. For such reasons, deprivation type epistemic curiosity may force artists to look for new ideas, or how to execute on ideas, or different ways of expressing ideas, in order to reduce psychological inconsistency or lack of knowledge. In particular, it has been found that curiosity can boost motivation in searching for information and ideas as well as inquiring and testing – both of which are essential in creativity (Kashdan & Fincham, 2004) (H6e).

In its broadest sense, total creativity refers to creativity in all its manifestations in the different kinds of domains. Since the same mechanism that deprivation type epistemic curiosity pushes to fill gaps in one's knowledge seems to encompass general exploratory behavior that would lead to creativity in various forms, it might not be appropriate to confine the creativity type based on domain. The above notion concurs with the research that established that D-EC had a combined effect on total

creativity since curiosities is an interest trait and the latter affects cognitive flexibility that is vital for creative thinking, as postulated by Silvia (2008) (H6f).

5.2.7 Relationship between Epistemic Curiosity and Creativity

The interaction of epistemic curiosity and creativity is of significant importance and interest in the psychological research to understand the human behaviors and actions. The following hypotheses of the relationship between these variables will be discussed briefly highlighting the fact that all the hypotheses under this category are accepted from the results of this research and are also supported by the literature. This hypothesis assumes a positive correlation between epistemic curiosity and creativity, in general. It has also been demonstrated that those with high level of epistemic curiosity are more likely to explore new ideas and to go out in search for new information which is an important feature in creativity (Litman, 2005; Silvia, 2008). This type of curiosity makes people go out in search of things they know little or nothing about since epistemic curiosity enhances divergent thinking which is an attribute of creativity (Kashdan & Steger, 2007). Hence, it would be expected that epistemic curiosity will enhance general creativity. (H7).

Every day creativity as seen in day to day life, or as the ability to problem-solve and innovate where one finds themselves. The relationship between epistemic curiosity and everyday creativity can be well understood by the fact that curiosity makes people look for new ways and ideas in their everyday activities. This inclination leads to the generation of unique approach to resolving various issues within the society (Silvia et al., 2009). Self interest in knowledge encourages an individual to discover something new, which can be used to formulate a new perspective and idea in everyday work (H7a).

Performance creativity is creativity within the context of the performing arts, and encompasses performance arts like music, dancing or acting. Epistemic curiosity can be expected to boost performance creativity since it directs people to search for new ways of working, approaches, and methods of performing in their preferred area of performance. The elements of knowledge and mastery influence creativity, because they motivate people to experiment and innovate essential for creative performance (Kashdan et al., 2004) (H7b).

Scholarly creativity therefore entails innovation as well as discovery of creative knowledge and ideas, in academic and interest realms. There is a desire to gain knowledge on specific subjects of interest, to analyze what is already known and to avoid the existing paradigms in order to start looking for new hypotheses, and it is an important factor that as rather a part of scholarly creation. Studies also showed that ecologically epistemically curious people, engage in behaviors that promotes interest gain and creative scholarship including reading, research and academic discourse, which promotes scholarly creativity (Von Stumm et al., 2011) (H7c).

Science is creative in terms of the ways of expressing ideas, and generating new hypotheses, formulas, experiments as well as theories. Since epistemic curiosity involves a pursuit of new knowledge, it is highly instrumental in fostering scientific creativity by encouraging people to venture to the unknown, challenge the existing paradigms, and persevere through the process (Gruber & Wallace, 1999). Intrinsic motivation based on curiosity and the just desire for knowledge are some of the most important forces that have led humanity to the scientific advancements (H7d).

Creativity being an artistic skill hence means the ability to create art works that are unique in as much as it maybe visual, written or music. Epistemic curiosity elicits artistic creativity by proving a motive for testing out new media, methods and

ideas about work. Personal relative interest in various artistic styles and cultural motives fosters creative baggage and will help in achieving distinct new artistic productions (Silvia, 2006) (H7e).

Totality of creative output can also be defined as totality of creative actions, from those which are unprofessional, experimental, occasional, and with particular emphasis on academic and research creativity, as well as art creativity. Since epistemic curiosity has been found to have a positive correlation with each of these domains, one would anticipate that there would be some correlation with total creativity as well. People motivated by curiosity engage in all sorts of activities, which can be usefully multiplied by all gained knowledge to overall creative potential (Plucker et al., 2004) (H7f).

5.2.8 Relationship between the Deliberate Mind Wandering and Self-Regulation

Freewheeling allows the subject's mind to wander deliberately away from the focus in order to address other concerns. This kind of mind wandering has been associated with increased self-regulation because most of the time it involves goal directed thinking. Seli et al. (2016) claim that it is voluntary mind wandering enables people to think about the future – which is a type of cognitive self-regulation. The fact that conscious thinking about how one can focus on goal-related tasks or activities while not actually doing the task is also indicative of a high level of s self-regulatory capability. In their study, Wang et al. (2018) also established that people who do deliberate mind wandering are usually more effective on how to deal with distractions and how to go back to their objectives. One of the many desirable elements of self-regulation is the capacity to shift focus from bystander interest and return to work. Deliberate mind wandering, by definition, requires one to intentionally focus their

attention on something that is not the primary object of attention, therefore, requires self-regulation. Thus, there is also empirical support for the positive relationship suggested in H8, and evidence shows that people can deliberately employ their cognitive resources in ways that make them better at managing thoughts and actions.

5.2.9 Relationship between Spontaneous Mind Wandering and Self-Regulation

Self-generated thoughts are those that are not actively compelled by the individual; they are not planned and can therefore be more interfering. Nevertheless, what concerns self-regulation, their association might not be fully direct and can be dependent on the context and certain personal characteristics. Christoff et al., (2016) also explain that spontaneous mind wandering may be a cop and can at the same time generate distractions. Hence while it is true that emotional regulation serve as a mechanism that indirectly sustains self-regulation for some people, it is also equally true that the very mechanism has a stress relieving, and hence indirectly beneficial effect on the process of self-regulation for the same population samples. Smallwood and Schooler (2015) note that spontaneous mind wandering is a product of self-generated thoughts that may represent goals and concerns. In this sense, spontaneous mind-wandering, then, might recruit such self-regulatory mechanisms in order to regulate the emergent thoughts and feelings afforded by the default network (H9).

It is important to clarify that there is a difference between deliberate and spontaneous mind wandering mainly because although mind wandering is seen at times as a lack of attention to the current activity, its connection to self-regulation could be more so. It may promote the self-regulation in situations where via such spontaneous shifts cognitive processes address the goals or emotional needs of the

individual. This, however, may not be as strong or positive as the one observed with deliberate mind-wandering since the process is less controlled.

5.2.10 Relationship between Self-Regulation and Creativity

Proceeding with the hypotheses further, let's look into them deeply which have been formulated with regard to the self-regulation concerning various forms of creativity. Self-regulation which is also commonly understood as the capacity to regulate one's affective, cognitive, and volitional processes in order to achieve personal objectives is one of the most important factors that contribute to creativity. Perhaps, every mode of creativity – routine activities, performance, academics, scientific, and artistry, and its total might have its own relations to self-regulation. Here, these hypotheses will be explained one by one, along with the supporting literature. It has been postulated that self-regulation is correlated with creativity because self-regulation promotes the determination, concentration as well as resolve found in creative activities. The self-regulation is found to enhance creativity, since people, who have a high self-regulation capacity, can rise above challenges and remain at it on creative pursuits. It was postulated that self-regulation increases the efficiency of regulation of cognitive resources, and, therefore, allows to develop more profound creative activity. Vohs, Baumeister, & Schmeichel, conducted a study in 2012 sheds some light on the ability to self-regulate, and preserve attention as well as cognitive resources that are crucial in creativity. Tangney et al., 2004, explained that high self -control predicts good adjustment in the face of unwanted thoughts, and its linkage to neural systems that implement self -control. According to them, self-regulation is related with positive consequences, for instance, improved problem solving and innovation (H10).

The concept of everyday creativity is therefore the innovative and utilitarian problem solving which takes place in everyday lives of people. The effectiveness in personal organization, in time and energy control, which is another aspect of self-regulation, might be very beneficial in terms of the way daily creativity is manifested. Matthew and Jaeger (2012) suggested that creativity involves a blend of cognitive versatility and conscientiousness, which enables people to keep handling daily trials creatively. This self-regulation is one of the elements of structure of intellect described in his classical works on use of adaptive and creative thinking in everyday life (Guilford, J. P, 1967) (H10a).

Performance creativity refers to the type of creativity that is applied where there is coordination, training, and management of emotions, and techniques such as music, dancing, and acting. By regulating themselves, performers can adjust their stress and practice more, and keep their attention during shows and concerts, which improves creativity. In particular, Ericsson and his colleagues (1993) they derived the concept of deliberate practice and point at self-regulation as the key to reach the comparably high level of creative performance exemplified by music or athletic activities. Self-regulation skills of the performer were seen to positively correlate with the effectiveness of implementation of the performance creativity; this was established by this study (Lindsey & Brown, 2010) (H10b).

Academic and interest innovation refers to the provision of creative work in such fields as literature, philosophy, science, and other academic disciplines. Self-regulation can therefore facilitate scholarly creativity by improving the ability of a person to stay on task or to avoid procrastination as well as to motivate him or her to work on a given project for long time. Scholarly creativity and its relation with self-regulation of the creative mind have been discussed by Boden (2004), who pointed

out that self-regulation supports intense interest work and critical reflection. Bandura, in 1991 has given a focus in his studies about self-regulation that in academic contexts the role of self-regulated learning strategies play, in creative problem solving in interest and academic works. (H10c).

Scientific creativity relates to the creation of more and germane ideas, formulation of new testable hypotheses and idea, articulation of ideas into experiments and also problem solving ability. Self-regulation could enhance scientific creativity by allowing an individual to get through numerous experiments, sustaining attention during the course of research as well as following proper scientific research. Meta-analysis done by Feist (1998) indicates that self-regulation plays a very important role in the level of scientific creativity thanks to the fact that such self-regulation enables the scientists to deal with the uncertainty and the levels of persistence which are intrinsic to scientific endeavors. Simonton, (2004) in his studies to some extent focus on self-regulation applied to scientific works, especially as to motivation in extended investigations. (H10d).

Artistic creativity can be defined as the generation of creative artworks in areas of visual and performing arts, writing, and graphic designing. Self-regulation might help artists regulate their feelings, stay on track with their artistic direction and work through the periods of creative stagnation. Csikszentmihalyi, (1996) in his study of creative people, Csikszentmihalyi pays much attention to self-organization which is critical for a state of flow – an essential condition for artistic creativity. Kaufman, & Baer, in 2004 they also talk about how self-regulation contributes to artists to continue to work and create more products in future, and how this contributes to quality art work. (H10e).

Total creativity is defined as the sum of all possible creative abilities inherent

in a person in different spheres of his activity. Self- regulation can thus raise total creativity by supplying the cognitive and emotional assets required for creativity sustainment across all the types. Hirsh et al. in 2012 they correlate it with broad creative assets but based on this study, one is in a position to unleash his or her creative abilities in various fields they desire due to self-regulation. Karwowski, in 2014 also provides the basis for the argument that self-regulation is an integral part of comprehensive creative skill, because they allow the person to deal with problems that are inevitable in creative sphere. (H10f).

To see the gender differences and its effect on age categories, factorial analysis were conducted but no significant interaction effects were found. So the factorial analysis was not further discussed/reported. But with respect to individual analysis mind wandering and the three main age categories does show a difference depicting that emerging adults have higher interaction effect as compared to the middle and establishing adults. This is supporting our hypothesis and main aim of the study that individuals who are settled in life and has achieved their goals are less curious and motivated as compared to the emerging adults. As a marker, their age depicts their interest and curiosity to experience new adventures in life and innovative thinking strategies. Same results were found with other scales of creativity, epistemic curiosity, and self-regulation.

5.3 Conclusion

This research was therefore conducted to examine the interdependency of mind wandering, creativity, epistemic curiosity and self-regulation in a sample of adults with ages ranging between 19 years and 60 years. We wanted to find out how these psychological constructs relate and co affect each other in the context of

Kaufmans broad classification of creativity employing cross sectional survey design with convenience sample of 514 participants.

These data indicated positive relations between spontaneous mind wandering and forms of epistemic curiosity – more specifically interest-type curiosity indicating that spontaneous cognitive activity may promote curiosity and interest. Furthermore, the findings of the study showed that both deliberate and spontaneous mind wandering are positively related to self-regulation, meaning that the capacity to govern one's thoughts and behavior could be linked to the ability to mind wander, but in different manner. The results also predicted a positive relationship between creativity and epistemic curiosity, and was supported the relevant hypothesis, that there would be a positive relationship between creativity and self-regulation in all domains of creativity: everyday, scholarly, and artistic. These results strongly argue for epistemic curiosity as a source of creativity and indicate that self-regulation may provide the mechanism through which people are able to manage their curiosity and day dreaming into the positive creative outcomes.

The result of this study posits knowledge that is relevant to manned control of cognition and motivation antecedents of creative outcomes. In showing how epistemic curiosity and self-regulation can mediate the relationship between mind wandering and creative performance, this research offers important information on the potential of mind wandering as a resource for increasing the creative capacity. Moreover, the arguments help to expand the literature which underlines that creativity is not only about cognition, but also it is a product of interaction between motivation and cognition.

In sum, it is crucial to encourage people to embrace mind wandering, which should not be regarded only as a failure to focus but as a creative process and a basis for cognition that if used with curiosity and self-regulation can be beneficial. Findings from the current study can be used by education and occupational authorities in advising the general population about ways through which creativity in different fields can be promoted through curiosity self-regulation.

5.4 Limitations and Suggestions

1. Due to the design characteristics, the cross sectional design of the study weakens the possibility of making a clear causal relationship among the variables. While the associations were established, but the direction of these relationships cannot be determined clearly.

2. One of the limitations include, the convenience sampling which may reduce the chances of generalizing the results. The sample collected from Islamabad and Rawalpindi does not include the people from all over Pakistan, and therefore there may be a prejudiced sample on the basis of culture and socio-economic status.

3. The limitation in using self-administered questionnaires is that respondents are prone to response bias such as social desirable response bias or inaccurate self-estimations, hence the validity of the results may be in question.

4. The research was done within a certain geographical location, and so the results could not be generalized to other culture or region.

5. It should be noted that the current study did not match participants for other characteristics such as education level, mental health, or personality traits that may affect the mind wandering, creativity, epistemic curiosity and self-regulation.
6. The scales employed to measure mind wandering, creativity, epistemic curiosity and self-regulation were shown to be valid but the instruments are not without limitations hence may not reveal the richness of the given constructs nor their interplay.

5.5 Future Implications of present study

This study aims to broaden our understanding about the interaction between mind wandering and creativity across various cultural settings. The results can be utilized in environments to develop curriculums that tap into student's creative abilities through mind wandering exercises. Likewise businesses can also adopt methods to balance spontaneous mind wandering to enhance employee creativity and efficiency. At professional level, educators and employers can create environments to nurture the effects of mind wandering resulting in creative outcomes. Moreover, this will lead to interventions that support health and overall wellbeing of adults. This process will ultimately help in adapting theories to align with the context ensuring that interventions and educational initiatives that are culturally appropriate and impactful and to influence policymakers to formulate strategies to enhance creativity and innovation for progressive society.

At advance stages, this research may provide a groundwork for cross-cultural studies by comparing observations from diverse cultures and geographic boundaries to explore both universal and culture specific aspects of mind wandering and creativity.

5.5.1 Potential Implications in Pakistani context

The outcomes of this study will help in shaping overall learning process by highlighting the significance of nurturing creativity through exploration of wandering thoughts and curiosity. Businesses in Pakistan have the opportunity to adapt new and innovative discoveries to establish better working environments essential for a healthy market competition.

At National level, this research will serve as a foundation for developing productive health programs to address challenges related to boredom and Self-Regulation and promoting over-all well-being and efficiency at both organizational as well personal level.

Keeping in view the Pakistan’s unique cultural diversity, this study will encourage more inclusive approach in psychological research and implications. Further, cultural dynamics discussed in this study has the potential to create a strong impact for more culturally sensitive and holistic insights, into mind wandering, creativity and their associated concepts.

References

Agnoli, S., Vanucci, M., Pelagatti, C., & Corazza, G. E. (2018). Exploring the link between mind wandering, mindfulness, and creativity: A multidimensional approach. *Creativity Research Journal*, *30*(1), 41-53.

Å½upaniÄ, M. (2021). Translation and validation of the Kaufman domains of creativity scale on a Croatian sample of early childhood and preschool education students. *Center for Educational Policy Studies Journal*, *11*(3), 163-179.

Anjum, R., & Suneel, I. (2021). The Role of Incubation in Creative Problem Solving: Within a Collectivistic Cultural Context. *Abasyn University Journal of Social Sciences*, *14*(1).

Arabacı, G., & Parris, B. A. (2018). Probe-caught spontaneous and deliberate mind wandering in relation to self-reported inattentive, hyperactive and impulsive traits in adults. *Scientific reports*, *8*(1), 4113.

Baer, J., & Kaufman, J. C. (2008). Gender differences in creativity. *The Journal of Creative Behavior*, *42*(2), 75-105.

Baer, J. (2012). Domain specificity of creativity: Theory, research, and practice. *TEXT*, *16*(Special 13), 1-12.

Baird, B., Smallwood, J., & Schooler, J. W. (2011). Back to the future: Autobiographical planning and the functionality of mind-wandering. *Consciousness and cognition*, *20*(4), 1604-1611.

Baird, B., Smallwood, J., Mrazek, M. D., Kam, J. W., Franklin, M. S., & Schooler, J. W. (2012). Inspired by distraction: Mind wandering facilitates creative incubation. *Psychological science*, *23*(10), 1117-1122.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes*, *50*(2), 248-287.

Barnett, P. J., & Kaufman, J. C. (2020). Mind wandering: Framework of a lexicon and musings on creativity. In *Creativity and the wandering mind* (pp. 3-23). Academic Press.

Barron, E., Riby, L. M., Greer, J., & Smallwood, J. (2011). Absorbed in thought: The effect of mind wandering on the processing of relevant and irrelevant events. *Psychological science*, *22*(5), 596-601.

Baumeister, R. F. (2014). Self-regulation, ego depletion, and inhibition. *Neuropsychologia*, *65*, 313-319.

Baumeister, R. F., & Vohs, K. D. (2007). Self-Regulation, ego depletion, and motivation. *Social and personality psychology compass*, *1*(1), 115-128.

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current directions in psychological science*, *16*(6), 351-355.

Beaty, R. E. (2020, January). The creative brain. In *Cerebrum: The Dana forum on brain science* (Vol. 2020). Dana Foundation.

Beghetto, R. A., & Kaufman, J. C. (2014). Classroom contexts for creativity. *High ability studies*, *25*(1), 53-69.

Beghetto, R. A., Kaufman, J. C., & Baer, J. (2014). *Teaching for creativity in the common core classroom*. Teachers College Press.

Beghetto, R. A., & Kaufman, J. C. (2022). Theories of creativity. In *Creativity and Innovation* (pp. 23-36). Routledge.

Berlyne, D. E. (1954). A theory of human curiosity.

Boden, M. A. (2004). The creative mind: Myths and mechanisms.

Brusso, R. C., & Orvis, K. A. (2013). The impeding role of initial unrealistic goal-setting on videogame-based training performance: Identifying underpinning processes and a solution. *Computers in Human Behavior*, *29*(4), 1686-1694.

Buri, J. R., Gunty, A., Seel, N. M., Dukas, R., Even, R., Scheuer, O., … Schmidt-Kassow, M. (2012). Epistemic Curiosity. Encyclopedia of the Sciences of Learning, 1162–1165. doi:10.1007/978-1-4419-1428-6_1645

Carciofo, R., & Jiang, P. (2021). Deliberate and spontaneous mind wandering in Chinese students: Associations with mindfulness, affect, personality, and life satisfaction. *Personality and Individual Differences*, *180*, 110982.

Carriere, J. S., Seli, P., & Smilek, D. (2013). Wandering in both mind and body: individual differences in mind wandering and inattention predict fidgeting. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale*, *67*(1), 19.

Carson, S. (2012). *Your creative brain: Seven steps to maximize imagination, productivity, and innovation in your life* (Vol. 4). John Wiley & Sons.

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality–social, clinical, and health psychology. *Psychological bulletin*, *92*(1), 111.

Carver, C. S. (2004). Self-Regulation of Action and Affect. *Handbook of Self-Regulation: Research, Theory, and Applications*, *1*.

Charles, S. T., & Carstensen, L. L. (2010). Social and emotional aging. *Annual review of psychology*, *61*(1), 383-409.

Chen, P., Chavez, O., Ong, D. C., & Gunderson, B. (2017). Strategic resource use for learning: A self-administered intervention that guides self-reflection on effective resource use enhances academic performance. *Psychological Science*, *28*(6), 774-785.

Chiorri, C., & Vannucci, M. (2017). Replicability of the psychometric properties of trait-levels measures of spontaneous and deliberate mind wandering. *European Journal of Psychological Assessment*.

Christoff, K., Gordon, A. M., Smallwood, J., Smith, R., & Schooler, J. W. (2009). Experience sampling during fMRI reveals default network and executive system contributions to mind wandering. *Proceedings of the National Academy of Sciences*, *106*(21), 8719-8724.

Christoff, K., Irving, Z. C., Fox, K. C., Spreng, R. N., & Andrews-Hanna, J. R. (2016). Mind-wandering as spontaneous thought: a dynamic framework. *Nature reviews neuroscience*, *17*(11), 718-731.

Costa Jr, P. T., & McCrae, R. R. (2000). *Neo Personality Inventory*. American Psychological Association.

Csikszentmihalyi, M. (1997). Flow and the psychology of discovery and invention. *HarperPerennial, New York, 39*, 1-16.

Dane, E. (2010). Reconsidering the trade-off between expertise and flexibility: A cognitive entrenchment perspective. *Academy of management review*, *35*(4), 579-603.

Day, H. I. (1970). *The measurement of specific curiosity*. Ontario Institute for Studies in Education.

Day, H. I. (1971). Intrinsic Motivation: A New Direction in Education.

Davis, T. What Is Emotion Regulation?(Emotion Regulation Definition).

De Dreu, C. K., Baas, M., & Nijstad, B. A. (2008). Hedonic tone and activation level in the mood-creativity link: toward a dual pathway to creativity model. *Journal of personality and social psychology*, *94*(5), 739.

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, *11*(4), 227-268.

De Rooij, A., Atef, A., & Faber, M. (2024). A wandering mind is not always a creative mind: How thought dynamics explain the relationship between mind wandering and creativity. *The Journal of Creative Behavior*, *58*(1), 151-170.

DeYoung, C. G. (2020). Intelligence and personality.

Diamond, A. (2013). Executive functions. *Annual review of psychology*, *64*(1), 135-168.

Disabato, D., Goodman, F., & Kashdan, T. B. (2019). A hierarchical framework for the measurement of well-being.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology*, *92*(6), 1087.

Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional emotionality and regulation: their role in predicting quality of social functioning. *Journal of personality and social psychology*, *78*(1), 136.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological review*, *100*(3), 363.

Ertmer, P. A., & Newby, T. J. (1996). The expert learner: Strategic, self-regulated, and reflective. *Instructional science*, *24*(1), 1-24.

Fatima, S., Ali, M., & Saad, M. I. (2022). The effect of students' conceptions of feedback on academic self-efficacy and self-regulation: evidence from higher education in Pakistan. *Journal of Applied Research in Higher Education*, *14*(1), 180-199.

Fatima, S., Mehmood, N., & Shakil, M. (2022). Mediated associations between religious coping, self-regulation, and psychological distress vary for young

Muslim men and women in Lahore, Pakistan. *Journal of religion and health*, 1-16.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*, *41*(4), 1149-1160.

Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and social psychology review*, *2*(4), 290-309.

Feng, Q., Weng, L., Geng, L., & Qiu, J. (2024). How Freely Moving Mind Wandering Relates to Creativity: Behavioral and Neural Evidence. *Behavioral Sciences, 14*(11). doi:10.3390/brainsci14111122

Fisherl, C. D. (1993). Boredom at work: A neglected concept. *Human relations*, *46*(3), 395-417.

Fox, K. C., & Beaty, R. E. (2019). Mind-wandering as creative thinking: Neural, psychological, and theoretical considerations. *Current opinion in behavioral sciences*, *27*, 123-130.

Fox, K. C., & Christoff, K. (Eds.). (2018). *The Oxford handbook of spontaneous thought: mind-wandering, creativity, and dreaming*. Oxford University Press.

Fox, K. C., Spreng, R. N., Ellamil, M., Andrews-Hanna, J. R., & Christoff, K. (2015). The wandering brain: Meta-analysis of functional neuroimaging studies of mind-wandering and related spontaneous thought processes. *Neuroimage, 111*, 611-621.

Gable, S. L., Hopper, E. A., & Schooler, J. W. (2019). When the muses strike: Creative ideas of physicists and writers routinely occur during mind wandering. *Psychological science, 30*(3), 396-404.

Giambra, L. M. (1993). The influence of aging on spontaneous shifts of attention from external stimuli to the contents of consciousness. *Experimental gerontology*, *28*(4-5), 485-492.

Girardeau, J. C., Sperduti, M., Blondé, P., & Piolino, P. (2022). Where is my mind…? The link between mind wandering and prospective memory. *Brain sciences*, *12*(9), 1139.

Golchert, J., Smallwood, J., Jefferies, E., Seli, P., Huntenburg, J. M., Liem, F., ... & Margulies, D. S. (2017). Individual variation in intentionality in the mind-wandering state is reflected in the integration of the default-mode, fronto-parietal, and limbic networks. *Neuroimage*, *146*, 226-235.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, *39*(3), 281-291.

Golman, R., & Loewenstein, G. (2015). Curiosity, information gaps, and the utility of knowledge. *Information Gaps, and the Utility of Knowledge (April 16, 2015)*, 96-135.

Golman, R., & Loewenstein, G. (2018). Information gaps: A theory of preferences regarding the presence and absence of information. *Decision*, *5*(3), 143.

Golman, R., Loewenstein, G., Molnar, A., & Saccardo, S. (2022). The demand for, and avoidance of, information. *Management Science*, *68*(9), 6454-6476.

Grossnickle, E. M. (2016). Disentangling curiosity: Dimensionality, definitions, and distinctions from interest in educational contexts. *Educational Psychology Review*, *28*(1), 23-60.

Guilford, J. P. (1967). The nature of human intelligence. *New York: Macgraw Hill*.

Hagtvedt, L. P., Dossinger, K., Harrison, S. H., & Huang, L. (2019). Curiosity made the cat more creative: Specific curiosity as a driver of creativity. *Organizational Behavior and Human Decision Processes*, *150*, 1-13.

Hassan, M. M., Bashir, S., & Mussel, P. (2015). Personality, learning, and the mediating role of epistemic curiosity: A case of continuing education in medical physicians. *Learning and Individual Differences*, *42*, 83-89.

Hassan, M. M., Bashir, S., Raja, U., Mussel, P., & Khattak, S. A. (2021). Personality and balanced psychological contracts: The mediating roles of epistemic curiosity and rule-following behavior. *Business Ethics, the Environment & Responsibility*, *30*(1), 102-115.

Hardy III, J. H., Ness, A. M., & Mecca, J. (2017). Outside the box: Epistemic curiosity as a predictor of creative problem solving and creative performance. *Personality and Individual Differences*, *104*, 230-237.

Harris, K. R. (1990). Developing self-regulated learners: The role of private speech and self-instructions. *Educational psychologist*, *25*(1), 35-49.

Hennessey, B. A. A., Amabile, TM (2010). Creativity. *Annual Review of Psychology*, *61*(1).

Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: a framework for understanding uncertainty-related anxiety. *Psychological review*, *119*(2), 304.

Houmanfar, R., Fryling, M., & Alavosius, M. P. (2015). Applied behavior Science in organizations. *Program Content*.

Ionescu, T. (2012). Exploring the nature of cognitive flexibility. *New ideas in psychology*, *30*(2), 190-200.

Jabeen, A. (2020). Impact of openness to experience on innovative behavior in projects with mediating role of epistemic curiosity and moderation role of project culture. *Unpublished Master Thesis). Capital Unıversity, Islamabad*.

Jackson, J. D., & Balota, D. A. (2012). Mind-wandering in younger and older adults: converging evidence from the Sustained Attention to Response Task and reading for comprehension. *Psychology and aging*, *27*(1), 106.

Jirout, J., & Klahr, D. (2012). Children's scientific curiosity: In search of an operational definition of an elusive concept. *Developmental review*, *32*(2), 125-160.

Jo, M. Y. (2022). Theories of adolescent development: Newman & Newman. 2020 Elsevier Inc.

Kam, J. W., & Handy, T. C. (2013). The neurocognitive consequences of the wandering mind: a mechanistic account of sensory-motor decoupling. *Frontiers in psychology*, *4*, 725.

Kane, M. J., Brown, L. H., McVay, J. C., Silvia, P. J., Myin-Germeys, I., & Kwapil, T. R. (2007). For whom the mind wanders, and when: An experience-sampling study of working memory and executive control in daily life. *Psychological science*, *18*(7), 614-621.

Kanfer, R., & Ackerman, P. L. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of applied psychology*, *74*(4), 657.

Kang, M. J., Hsu, M., Krajbich, I. M., Loewenstein, G., McClure, S. M., Wang, J. T. Y., & Camerer, C. F. (2009). The wick in the candle of learning: Epistemic curiosity activates reward circuitry and enhances memory. *Psychological science*, *20*(8), 963-973.

Kapoor, H., Reiter-Palmon, R., & Kaufman, J. C. (2021). Norming the muses: Establishing the psychometric properties of the Kaufman Domains of Creativity Scale. *Journal of psychoeducational assessment*, *39*(6), 680-693.

Kashdan, T. B., Disabato, D. J., Goodman, F. R., Doorley, J. D., & McKnight, P. E. (2020). Understanding psychological flexibility: A multimethod exploration of pursuing valued goals despite the presence of distress. *Psychological assessment*, *32*(9), 829.

Kashdan, T. B., & Fincham, F. D. (2004). Facilitating curiosity: A social and self-regulatory perspective for scientifically based interventions. *Positive psychology in practice*, 482-503.

Kashdan, T. B., & Silvia, P. J. (2009). Curiosity and interest: The benefits of thriving on novelty and challenge. *Oxford handbook of positive psychology*, *2*, 367-374.

Kashdan, T. B., & Steger, M. F. (2007). Curiosity and pathways to well-being and meaning in life: Traits, states, and everyday behaviors. *Motivation and Emotion*, *31*, 159-173.

Kashdan, T. B., Rose, P., & Fincham, F. D. (2004). Curiosity and exploration: Facilitating positive subjective experiences and personal growth opportunities. *Journal of personality assessment*, *82*(3), 291-305.

Kashdan, T. B., Stiksma, M. C., Disabato, D. J., McKnight, P. E., Bekier, J., Kaji, J., & Lazarus, R. (2018). The five-dimensional curiosity scale: Capturing the bandwidth of curiosity and identifying four unique subgroups of curious people. *Journal of Research in Personality*, *73*, 130-149.

Karwowski, M. (2014). Creative mindsets: Measurement, correlates, consequences. *Psychology of Aesthetics, Creativity, and the Arts*, *8*(1), 62.

Karwowski, M. (2015). Development of the creative self-concept. *Creativity. Theories–Research-Applications*, *2*(2), 165-179.

Kaufman, J. C., & Baer, J. (2004). The amusement park theoretical (APT) model of creativity. *Korean Journal of Thinking and Problem Solving*, *14*(2), 15-26.

Kaufman, J. C. (2005). *Creativity across domains: Faces of the muse*. Lawrence Erlbaum Associates.

Kaufman, J. C. (2012). Counting the muses: development of the Kaufman domains of creativity scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts, 6*(4), 298.

Kaufman, J. C. (2016). *Creativity 101*. Springer publishing company.

Kelley, W. M., Wagner, D. D., & Heatherton, T. F. (2015). In search of a human self-regulation system. *Annual review of neuroscience*, *38*(1), 389-411.

Kerr, B. (2024, September 17). creativity. Encyclopedia Britannica. https://www.britannica.com/topic/creativity

Kiran, I., Ahsan, S., & Zonash, R. (2020). Self-generated thoughts as predictors of depressive symptoms among university students. *Pakistan Journal of Physiology*, *16*(1), 52-55.

Lachman, M. E., Teshale, S., & Agrigoroaei, S. (2015). Midlife as a pivotal period in the life course: Balancing growth and decline at the crossroads of youth and old age. *International journal of behavioral development*, *39*(1), 20-31.

Lauriola, M., Litman, J. A., Mussel, P., Santis , R. D., Crowson, H. M., & Hoffman, R. R. (2015). Epistemic curiosity and self-regulation. *Personality and Individual Differences*, 202-207.

Lebedeva, N., Schwartz, S. H., Van De Vijver, F. J., Plucker, J., & Bushina, E. (2019). Domains of everyday creativity and personal values. *Frontiers in Psychology*, *9*, 2681.

Litman, J. A., Crowson, H. M., & Kolinski, K. (2010). Validity of the interest-and deprivation-type epistemic curiosity distinction in non-students. *Personality and individual differences*, *49*(5), 531-536.

Litman, J., Hutchins, T., & Russon, R. (2005). Epistemic curiosity, feeling-of-knowing, and exploratory behaviour. *Cognition & Emotion*, *19*(4), 559-582.

Litman, J. A., & Jimerson, T. L. (2004). The measurement of curiosity as a feeling of deprivation. *Journal of personality assessment*, *82*(2), 147-157

Litman, J. A., & Spielberger, C. D. (2003). Measuring epistemic curiosity and its deprivation and specific components. *Journal of personality assessment*, *80*(1), 75-86.

Litman, J. (2005). Curiosity and the pleasures of learning: Wanting and liking new information. *Cognition and emotion*, *19*(6), 793-814.

Litman, J. A. (2009). Curiosity and metacognition. *Metacognition: New research developments*, *105*, 116.

Litman, J. A. (2008). Interest and deprivation factors of epistemic curiosity. *Personality and individual differences*, *44*(7), 1585-1595.

Li, Y., Emin, M., Zhou, Q., Zhang, J., & Hu, W. (2023). The relationship between epistemic curiosity and creativity: Research status and educational implications. *Future in Educational Research*, 1-14.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Prentice-Hall, Inc.

Locke, E. A. (1990). A theory of goal setting and task performance. *Engles Cliffs/Printice-Hall*.

Loewenstein, G. (1994). The psychology of curiosity: A review and reinterpretation. *Psychological bulletin*, *116*(1), 75.

Maillet, D., Beaty, R. E., Jordano, M., Touron, D. R., Adnan, A., Silvia, P. J., . . . Kane, M. J. (2018). Age-Related Differences in Mind-Wandering in Daily Life. *Psychology and Aging*, *33*(4). doi:10.1037/pag0000260

Marcusson-Clavertz, D., & Kjell, O. N. (2018). Psychometric properties of the spontaneous and deliberate mind wandering scales. *European Journal of Psychological Assessment*.

Martinona,, L. M., Smallwood, J., Hamilton, C., & Riby, L. M. (2019). Frogs' Legs Versus Roast Beef: How Culture Can Influence Mind-Wandering Episodes Across the Lifespan. *Europe's Journal of Psychology*, *15*(2), 211-239. doi:10.5964/ejop.v15i2.1597

McVay, J. C., & Kane, M. J. (2010). Does mind wandering reflect executive function or executive failure? Comment on Smallwood and Schooler (2006) and Watkins (2008).

Metcalfe, J., Schwartz, B. L., & Eich, T. S. (2020). Epistemic curiosity and the region of proximal learning. *Current opinion in behavioral sciences*, *35*, 40-47.

Miller, G. A., Galanter, E., & Pribram, K. H. (1960). *Plans and the structure of behavior*. Holt, Rinehart and Winston

Mooneyham, B. W., & Schooler, J. W. (2013). The costs and benefits of mind-wandering: a review. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale*, *67*(1), 11.

Moran, S. (2010). The roles of creativity in society. *Handbook of Creativity*, 74-90.

Mrazek, M. D., Franklin, M. S., Phillips, D. T., Baird, B., & Schooler, J. W. (2013). Mindfulness training improves working memory capacity and GRE performance while reducing mind wandering. *Psychological science*, *24*(5), 776-781.

Mrazek, M. D., Phillips, D. T., Franklin, M. S., Broadway, J. M., & Schooler, J. W. (2013). Young and restless: validation of the Mind-Wandering Questionnaire (MWQ) reveals disruptive impact of mind-wandering for youth. *Frontiers in psychology*, *4*, 560.

Mugon, J., Boylan, J., & Danckert, J. (2020). Boredom proneness and self-control as unique risk factors in achievement settings. *International journal of environmental research and public health*, *17*(23), 9116.

Murray, S., Liang, N., Brosowsky, N., & Seli, P. (2021). What are the benefits of mind wandering to creativity? Psychology of Creativity, Esthetics, and the Arts. Advance online publication.

Murray, S., Liang, N., Brosowsky, N., & Seli, P. (2024). What are the benefits of mind wandering to creativity?. *Psychology of Aesthetics, Creativity, and the Arts*, *18*(3), 403.

Mussel, P. (2010). Epistemic curiosity and related constructs: Lacking evidence of discriminant validity. *Personality and Individual Differences, 49*(5), 506-510.

Mussel, P. (2013). Introducing the construct curiosity for predicting job performance. *Journal of Organizational Behavior*, *34*(4), 453-472.

Newman, B. M., & Newman, P. R. (2022). *Theories of human development*. Routledge.

Nijstad, B. A., De Dreu, C. K., Rietzschel, E. F., & Baas, M. (2010). The dual pathway to creativity model: Creative ideation as a function of flexibility and persistence. *European review of social psychology*, *21*(1), 34-77.

Nojavanasghari, B., Baltrusaitis, T., Hughes, C. E., & Morency, L. P. (2016). The Future Belongs to the Curious: Towards Automatic Understanding and Recognition of Curiosity in Children. In *WOCCI* (pp. 16-22).

Nolen-Hoeksema, S., & Aldao, A. (2011). Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality and individual differences*, *51*(6), 704-708.

Orwig, W., Diez, I., Bueichekú, E., Kelly, C. A., Sepulcre, J., & Schacter, D. L. (2023). Intentionality of self-generated thought: Contributions of mind wandering to creativity. *Creativity research journal*, *35*(3), 471-480.

Palmiero, M., Nori, R., Aloisi, V., Ferrara, M., & Piccardi, L. (2015). Domain-specificity of creativity: A study on the relationship between visual creativity and visual mental imagery. *Frontiers in Psychology*, *6*, 1870.

Papies, E. K., & Aarts, H. (2011). Nonconscious self-regulation or the automatic pilot of human behavior. *Handbook of self-regulation: Research, theory, and applications*, *2*, 125-142.

Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into practice*, *41*(4), 219-225.

Plucker, J. A., Beghetto, R. A., & Dow, G. T. (2004). Why isn't creativity more important to educational psychologists? Potentials, pitfalls, and future directions in creativity research. *Educational psychologist*, *39*(2), 83-96.

Preiss, D. D., Cosmelli, D., & Kaufman, J. C. (Eds.). (2020). *Creativity and the wandering mind: Spontaneous and controlled cognition*. Academic Press.

Racy, F., & Morin, A. (2024). Relationships between Self-Talk, Inner Speech, Mind Wandering, Mindfulness, Self-Concept Clarity, and Self-Regulation in University Students. *Behavioral Sciences, 14*(1). doi:10.3390/bs14010055

Robison, M. K., & Unsworth, N. (2018). Cognitive and contextual correlates of spontaneous and deliberate mind-wandering. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *44*(1), 85.

Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. *Creativity research journal*, *24*(1), 92-96.

Scheibe, S., & Blanchard-Fields, F. (2009). Effects of regulating emotions on cognitive performance: what is costly for young adults is not so costly for older adults. *Psychology and aging*, *24*(1), 217.

Schooler, J. W., Smallwood, J., Christoff, K., Handy, T. C., Reichle, E. D., & Sayette, M. A. (2011). Meta-awareness, perceptual decoupling and the wandering mind. *Trends in cognitive sciences*, *15*(7), 319-326.

Seel, N. M. (Ed.). (2011). *Encyclopedia of the Sciences of Learning*. Springer Science & Business Media.

Seel, N. M., Buri, J. R., Gunty, A., Dukas, R., Even, R., Scheuer, O., ... & Schmidt-Kassow, M. (2012). Experimental and quasi-experimental designs for research on learning. *Encyclopedia of the sciences of learning*, 1223-1229.

Seli, P., Cheyne, J. A., Xu, M., Purdon, C., & Smilek, D. (2015). Motivation, intentionality, and mind wandering: Implications for assessments of task-unrelated thought. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *41*(5), 1417.

Seli, P., Risko, E. F., & Smilek, D. (2016). On the necessity of distinguishing between unintentional and intentional mind wandering. *Psychological science*, *27*(5), 685-691.

Seli, P., Risko, E. F., Smilek, D., & Schacter, D. L. (2016). Mind-wandering with and without intention. *Trends in cognitive sciences*, *20*(8), 605-617.

Sekiguchi, T. (2023). Curiosity makes your mind wander: Effects of epistemic curiosity and trait anxiety on mind wandering. *Personality and Individual Differences*, *204*, 112069.

Shepherd, J. (2019). Why does the mind wander?. *Neuroscience of Consciousness*, *2019*(1), niz014.

Silvia, P. J. (2006). Exploring the psychology of interest.

Silvia, P. J. (2008). Interest—The curious emotion. *Current directions in psychological science*, *17*(1), 57-60.

Silvia, P. J. (2012). Curiosity and motivation. *The Oxford handbook of human motivation*, 157-166.

Silvia, P. J., Beaty, R. E., Nusbaum, E. C., Eddington, K. M., Levin-Aspenson, H., & Kwapil, T. R. (2014). Everyday creativity in daily life: An experience-sampling study of "little c" creativity. *Psychology of Aesthetics, Creativity, and the Arts*, *8*(2), 183.

Silvia, P. J., Wigert, B., Reiter-Palmon, R., & Kaufman, J. C. (2012). Assessing creativity with self-report scales: a review and empirical evaluation. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(1), 19.

Simonton, D. K. (2004). *Creativity in science: Chance, logic, genius, and zeitgeist*. Cambridge university press.

Sio, U. N., & Ormerod, T. C. (2009). Does incubation enhance problem solving? A meta-analytic review. *Psychological bulletin*, *135*(1), 94.

Smallwood, J., & Schooler, J. W. (2013). The restless mind.

Smallwood, J., & Schooler, J. W. (2015). The science of mind wandering: Empirically navigating the stream of consciousness. *Annual review of psychology*, *66*(1), 487-518.

Smallwood, J., McSpadden, M., & Schooler, J. W. (2008). When attention matters: The curious incident of the wandering mind. *Memory & cognition*, *36*, 1144-1150.

Smeekens, B. A., & Kane, M. J. (2016). Working memory capacity, mind wandering, and creative cognition: An individual-differences investigation into the benefits of controlled versus spontaneous thought. *Psychology of Aesthetics, Creativity, and the Arts*, *10*(4), 389.

Smith, E. E., & Kosslyn, S. M. (2007). Cognitive psychology: Mind and brain. *(No Title)*.

Staff, T. L. L., Series, T. S., Days, T., a Course, D., Generative, A. I., & Learn, H. P. Supporting Student Learning Through Metacognitive and Motivational Strategies.

Stawarczyk, D., Majerus, S., Maj, M., Van der Linden, M., & D'Argembeau, A. (2011). Mind-wandering: Phenomenology and function as assessed with a novel experience sampling method. *Acta psychologica*, *136*(3), 370-381.

Sternberg, R. J. (1999). Handbook of creativity. *Cambridge UniversityPress*.

Sternberg, R. J. (2006). The nature of creativity. *Creativity research journal*, *18*(1), 87.

Sternberg, R. J., & Lubart, T. I. (2001). The concept of creativity: Prospects and paradigms. In R. J. Sternberg (Ed.), *Handbook of Creativity* (pp. 3-15). Cambridge University Press

Sullivan, Y., & Davis, F. (2020). Self-regulation, mind wandering, and cognitive absorption during technology use.

Tangney, J. P., Boone, A. L., & Baumeister, R. F. (2018). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. In *Self-regulation and self-control* (pp. 173-212). Routledge.

Tanveer, M., & Hassan, S. (2020). The role of new and creative ideas in developing industries of education, software and manufacturing in Pakistan. *Journal of Entrepreneurship Education*, *23*(3), 1-11.

Thomson, D. R., Besner, D., & Smilek, D. (2015). A resource-control account of sustained attention: Evidence from mind-wandering and vigilance paradigms. *Perspectives on psychological science*, *10*(1), 82-96.

Tosi, H. L. (1991). A theory of goal setting and task performance.

Unsworth, N., McMillan, B. D., Brewer, G. A., & Spillers, G. J. (2012). Everyday attention failures: an individual differences investigation. *Journal of experimental psychology: learning, memory, and cognition*, *38*(6), 1765.

Vannucci, M., Chiorri, C., Nocentini, A., & Menesini, E. (2020). Distinguishing spontaneous from deliberate mind wandering in adolescents: The role of attentional control and depressive symptoms. *British Journal of Developmental Psychology*, *38*(3), 434-441.

Vohs, K. D. (2004). Understanding self-regulation. *Handbook of self-regulation: Research, theory, and applications/Guilford*.

Vohs, K. D., & Baumeister, R. F. (Eds.). (2016). *Handbook of self-regulation: Research, theory, and applications*. Guilford Publications.

Vohs, K. D., Baumeister, R. F., & Schmeichel, B. J. (2012). Motivation, personal beliefs, and limited resources all contribute to self-control. *Journal of experimental social psychology*, *48*(4), 943-947.

Von Stumm, S., Hell, B., & Chamorro-Premuzic, T. (2011). The hungry mind: Interest curiosity is the third pillar of academic performance. *Perspectives on Psychological Science*, *6*(6), 574-588.

Von Stumm, S., & Ackerman, P. L. (2013). Investment and intellect: a review and meta-analysis. *Psychological bulletin*, *139*(4), 841.

Wadhwani, A. (2017). Mind Wandering and Creativity.

Wilson, M., Sosa-Hernandez, L., & Henderson, H. A. (2022). Mind wandering and executive dysfunction predict children's performance in the metronome response task. *Journal of Experimental Child Psychology*, *213*, 105257.

Woolley, J. D., Bunce, L., & Boerger, E. A. (2020). Relations between imagination and creativity. In *Creativity and the wandering mind* (pp. 181-203). Academic Press.

Yamaoka, A., & Yukawa, S. (2020). Mind wandering in creative problem-solving: Relationships with divergent thinking and mental health. *PLoS One*, *15*(4), e0231946.

Zada, M., Khan, J., Saeed, I., Zada, S., & Jun, Z. Y. (2023). Curiosity may have killed the cat but it has the power to improve employee creativity. *Current Psychology*, *42*(36), 32299-32313.

Zafar, s. (2017). Examining the role of support for creativity in determining creativity; mediating role of epistemic curiosity and moderating role of trust in leadership. *Jinnah Business Review*, *5*(1), 55-63.

Zedelius, C. M., & Schooler, J. W. (2015). Mind wandering "Ahas" versus mindful reasoning: Alternative routes to creative solutions. *Frontiers in psychology*, *6*, 834.

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational psychologist*, *25*(1), 3-17.

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice*, *41*(2), 64-70.

Zimmerman, B. J. (2013). Theories of self-regulated learning and academic achievement: An overview and analysis. *Self-regulated learning and academic achievement*, 1-36.

APPENDICES

اسلام علیکم!

میں نمل یونیورسٹی اسلام آباد سے منسلک ایم فل کی طالبہ ہوں۔ میرا تعلق شعبہء نفسیات سے ہے۔ ایم فل کی ڈگری کی مطابقت سے میں ایک ریسرچ (research) منعقد کرنے جا رہی ہوں۔ اس تحقیق (research) کا مقصد سماجی، معاشرتی اور نفسیاتی رجحان کے اثرات کا مطالعہ کرنا ہے جو بالغوں کی روزمرہ زندگی کے کاموں میں اہم کردار ادا کر سکتے ہیں۔ اس ریسرچ (research) میں آپ کی شرکت رضا کارانہ ہے۔ اس بات کو یقینی بنایا جائے گا کہ آپ کی جانب سے حاصل کردہ معلومات راز دارنہ انداز میں محظ ریسرچ کے لیے استعمال کیا جائے گا۔ مزید یہ کہ کسی بھی قسم کی ہچکچاہٹ، بوریت یا ناگوارہ کی صورت میں آپ اس سرگرمی کو چھوڑ سکتے ہیں۔ آپ کی شرکت کو سراہا جائے گا۔

تعاون کا شکریہ۔

ذاتی کوائف

جنس: (1) مرد (2) عورت

عمر: _____ تعلیم: _____ ترتیب پیدائش: _____

خاندانی نظام: (1) مشترکہ خاندانی نظام (2) انفرادی خاندانی نظام

ازواجی حیثیت: (1) غیر شادی شدہ (2) شادی شدہ (3) بیوہ (4) طلاق یافتہ

اگر شادی شدہ: (1) عرصہ شادی _____ (2) بچوں کی تعداد _____

ملازمت: (1) ملازمت پیشہ (2) گھریلو فرد/عورت

پیشہ: (1) طالب علم/طالبہ (2) کچھ اور _____

فارغ اوقات میں کیا کرنا پسند کرتے ہیں؟ _____

کیا آپ جاگتی آنکھوں سے خواب دیکھتے ہیں؟ (1) جی ہاں (2) جی نہیں

کیا آپ سوشل میڈیا پر وقت گزارنہ پسند کرتے ہیں؟ (1) جی ہاں (2) جی نہیں

اگر ہاں: (1) ایک دن میں کتنی دیر (گھنٹے)؟ _____

(2) کس قسم کے ویڈیوز، پوسٹ وغیرہ دیکھنا پسند کرتے ہیں؟ _____

سوال نامہ نمبر 1

نمبر شمار	سوالات	بالکل بھی نہیں	کبھی کبھار	کچھ اوقات	اکثر اوقات	زیادہ تر	بالکل سچ	ہمیشہ سچ
1	میں مصلحتاً اپنے خیالات کو بھٹکنے دیتا ہوں۔							
2	مجھے مزا آتا ہے جب میرا ذہن اِدھر اُدھر بھٹک جاتا ہے۔							
3	میرے نزدیک ذہن کا بھٹکنا، بوریت سے نمٹنے کا اچھا طریقہ ہے۔							
4	میں اپنے آپ کو خوشگوار تصورات میں مشغول ہونے دیتا ہوں۔							
5	میں اپنے خیالات کو بے ساختہ اِدھر اُدھر بھٹکتے (بکھرتے) ہوئے پاتا ہوں۔							
6	جب میرا ذہن اِدھر اُدھر بھٹکتا ہے تو میرے خیالات ایک موضوع سے دوسرے موضوع پر منتقل ہو جاتے ہیں۔							
7	مجھے ایسا محسوس ہوتا کہ جب میرا ذہن بھٹکتا ہے تو میرا خود پر سے اختیار ختم ہو جاتا ہے۔							
8	میرا اُس وقت بھی ذہن بھٹکتا ہے جب مجھے اصل میں کچھ اور کرنا چاہئے۔							
9	میں اکثر اپنے آپ کو بیکار سمجھتا ہوں، سمجھ نہیں پاتا کہ کیا کروں۔							
10	مجھے اپنے لیے تفریح تلاش کرنا مشکل لگتا ہے۔							
11	زیادہ تر جو کام میں کرتا ہوں وہ بار بار دہرائے ہوئے اور غیر دلچسپ ہیں۔							
12	عموماً عام لوگوں کی نسبت مجھے آگے بڑھنے کے لیے زیادہ محرک ہونے کی ضرورت محسوس ہوتی ہے۔							
13	میں زیادہ تر جو کام کرتا ہوں اُن سے حوصلہ افزا محسوس نہیں کر پاتا۔							
14	زیادہ تر صورتحال میں ایسا چیز تلاش کرنا یاد رکھنا میرے لئے مشکل ہے جو میری دلچسپی تو برقرار رکھے۔							
15	زیادہ تر اوقات میں بیٹھا رہتا ہوں اور کچھ کرتا نہیں ہوں۔							
16	جب تک میں کوئی دلچسپ یا خطرناک کام نہ کر رہا ہوں تو مجھے اپنا آپ نیم مردہ اور سُست محسوس ہوتا ہے۔							

سوال نامہ نمبر 2

نمبر شمار	سوالات	بہت کم تخلیقی	کم تخلیقی	نہ کم نہ زیادہ	زیادہ تخلیقی	بہت زیادہ تخلیقی
1	جب میرے پاس پیسے نہ ہوں تو کچھ تفریحی تلاش کرنا۔					
2	دوسرے لوگوں کو مشکل صورتحال سے نمٹنے میں مدد کرنا۔					
3	کسی کو کچھ کرنے کا طریقہ سکھانا					
4	اپنے کام اور اپنی ذاتی زندگی کے درمیان اچھا توازن برقرار رکھنا۔					
5	اپنے آپ کو خوش رکھنے کا طریقہ سمجھنا۔					
6	اپنے ذاتی مسائل کو بااحسن طریقہ حل کرنے کے قابل ہونا۔					
7	لوگوں کی مدد کرنے کے نت نئے طریقے سوچنا۔					

نمبر شمار	سوالات	بہت کم تخلیقی	کم تخلیقی	نہ کم نہ زیادہ	زیادہ تخلیقی	بہت زیادہ تخلیقی
8	کسی مسئلے کا بہترین حل منتخب کرنا۔					
9	دوستوں کے ساتھ یا کسی پروگرام کی منصوبہ بندی کرنا جو ہر کسی کی ضرورت کو پورا کرے۔					
10	دو دوستوں کے درمیان تنازعے باعث میں ثالثی کرنا۔					
11	لوگوں کو آرام دہ اور پرسکون ماحول مہیا کرنا۔					
12	اخبار، نیوز لیٹر یا میگزین کے لئے غیر افسانوی مضمون لکھنا۔					
13	ایڈیٹر کے نام خط لکھنا۔					
14	مختلف اقسام کے پوشیدہ ذرائع سے کسی موضوع پر تحقیق کرنا۔					
15	اپنے نقطہ نظر سے امتیازی موضوع پر بحث کرنا۔					
16	سیاق وسباق کے مطابق مناسب طریقے سے کسی مسئلے کا جواب دینا۔					
17	کسی خاص نقطہ نظر کی تائید کے لئے مضامین یا پیپرز کی بہترین ممکنہ درجہ بندی کو جمع کرنا۔					
18	بحث میں ایک فریق کی تائید کرنا جس سے میں ذاتی طور پر متفق نہیں۔					
19	ایک اچھی کتاب میں مختلف موضوعات کا تجزیہ کرنا۔					
20	کسی کام پر نظر ثانی کرتے وقت تنقید اور تجاویز کو یکجا کرنے کا طریقہ معلوم کرنا۔					
21	کسی پیپر کو پڑھنے کی بنیاد پر تعمیری آراء پیش کرنے کے قابل ہونا۔					
22	ایک پرانی بحث کے بارے میں سوچنے کا نیا زاویہ اپنانا۔					
23	نظم لکھنا۔					
24	ایک مزاحیہ گانے کے بول بنانا۔					
25	نظمیں بنانا۔					
26	ایک نیا گانا کمپوز کرنا۔					
27	موسیقی کا آلہ بجانا سیکھنا۔					
28	یوٹیوب پر نشر کرنے کے لئے ایک تفریحی ویڈیو بنانا۔					
29	ہم آہنگی میں گانا۔					
30	بے ساختہ ایک ریپ (Rap) گانے کے بول بنانا۔					

31	عوام الناس میں کھڑے ہو کر موسیقی بجانا۔					
32	ڈرامے میں اداکاری کرنا۔					
33	لکڑی یا اسی طرح کے مواد سے کچھ تراشنا۔					
34	خراب یا منجمد زندہ کمپیوٹر کو ٹھیک کرنے کا طریقہ معلوم کرنا۔					
35	ایک کمپیوٹر پروگرام لکھنا (بنانا)۔					
36	ریاضی کے سوالات حل کرنا۔					
37	مشینوں کے پرزے علیحدہ کر کے یہ جاننا کہ وہ کیسے کام کرتی ہیں۔					
38	روبوٹ کی طرح کچھ میکینیکل بنانا۔					
39	سائنسی تجربے کرنا یا اُن کو ڈیزائن دینے میں مدد کرنا۔					
40	الجبرا یا جیومیٹری کے سوال حل کرنا۔					

نمبر شمار	سوالات	بہت کم تخلیقی	کم تخلیقی	نہ کم نہ زیادہ	زیادہ تخلیقی	بہت زیادہ تخلیقی
41	دھات، پتھر یا اسی طرح کے مواد سے کچھ بنانا۔					
42	کسی ایسی چیز کی تصویر بنانا جو میں نے حقیقت میں کبھی نہیں دیکھی۔					
43	کسی شخص یا چیز کا خاکہ بنانا۔					
44	ڈوڈلنگ (آڑے ترچھے خاکے)/ڈرائنگ یا جیومیٹرک خاکے بنانا۔					
45	اپنی تصویروں سے ایک سکریپ بک کا صفحہ بنانا۔					
46	ایک دلچسپ زاویے کا استعمال کرتے ہوئے اچھی تصویر لینا۔					
47	مجسمہ یا مٹی کے برتن بنانا۔					
48	ایک خوبصورت پینٹنگ کی تعریف کرنا۔					
49	آرٹ کے کلاسک کام کو اپنے نظریے سے سمجھنا۔					
50	آرٹ میوزیم میں لطف اندوز ہونا۔					

سوال نامہ نمبر 3

نمبر شمار	سوالات	تقریباً کبھی نہیں	کبھی کبھی	اکثر	تقریباً ہمیشہ
1	نت نئے خیالات کی کھوج میں مجھے مزا آتا ہے۔				
2	مشکل تصوراتی مسائل کے حل کی سوچ بچار مجھے ساری رات جگائے رکھتی ہے۔				
3	غیر مانوس موضوعات کو سیکھنے میں لطف آتا ہے۔				
4	کسی مسئلے کا حل نہ ملنے کی بے چینی مجھے گھنٹوں اُس کا جواب جاننے کی جستجو میں لگا سکتا ہے۔				
5	نئی معلومات کے بارے میں جاننا میری لئے بہت پرکشش ہے۔				
6	اگر مجھے مسئلے کا حل نہ مل سکے تو میں مایوسی محسوس کرتا ہوں، اس لئے میں اس کے حل کے لئے زیادہ محنت کرتا ہوں۔				
7	میں جب کوئی نئی چیز سیکھتا ہوں تو اس کے بارے میں زیادہ جاننا چاہتا ہوں۔				
8	میں کسی بنیادی مسئلے کے حل کی تلاش میں دیر تک سوچ و بچار میں غرق رہتا ہوں۔				
9	خیالی (abstract) تصورات پر بحث سے لطف اندوز ہوتا ہوں۔				
10	میں کسی خبطی کی طرح مسائل کے پیچھے پڑ جاتا ہوں جنہیں میں سمجھتا ہوں کہ وہ حل ہو سکتے ہیں۔				

سوال نامہ نمبر 4

نمبر شمار	سوالات	بالکل غیر متفق	غیر متفق	کوئی رائے نہیں	متفق	بالکل متفق
1	میں عموماً اپنے اہداف (goal) کی طرف اپنی پیش قدمی پر نظر رکھتا ہوں۔					
2	مجھے چیزوں کے بارے میں اپنی ذہن سازی میں وقت ہوتی ہے۔					
3	اپنے منصوبوں سے میری توجہ آسانی سے بھٹک جاتی ہے۔					
4	میں اپنے اعمال کے اثرات پر توجہ نہیں دیتا یہاں تک کے بہت دیر ہو جاتی ہے۔					

نمبر شمار	سوالات	بالکل غیر متفق	غیر متفق	کوئی رائے نہیں	متفق	بالکل متفق
5	میں اپنے لئے خود متعین کردہ اہداف حاصل کرنے کی صلاحیت رکھتا ہوں۔					
6	میں فیصلے کرنے میں نال مٹول کرتا رہتا ہوں۔					
7	میرے لئے یہ جاننا (محسوس کرنا) مشکل ہے کہ کتنا (کوئی چیز) میرے لئے کافی ہے (ihad enough) مثلاً (کھانا نکالنا، بیٹھا کھانا وغیرہ)					
8	مجھے اعتماد ہے کہ جب میں بدلنا چاہوں تو بدل سکتا ہوں۔					
9	تبدیلی کے حوالے سے فیصلہ کرتے وقت میں محسوس کرتا ہوں کہ میں پسندیدگیوں کے انتخاب کی دستیابی کے انبار تلے دب گیا ہوں۔					
10	کچھ کرنے کے بارے میں اپنا ذہن بنانے کے بعد مجھے چیزوں کو مکمل کرنے میں مشکل ہوتی ہے۔					
11	مجھے لگتا ہے کہ میں اپنی غلطیوں سے نہیں سیکھتا۔					
12	میں ایک کارآمد منصوبے پر قائم رہ سکتا ہوں۔					
13	مجھ سے کبھی کبھی غلطی ہو جاتی ہے تا کہ اس سے سیکھ لوں میں عموماً ایک بار ہی غلطی کر کے سیکھ لیتا ہوں					
14	میرے ذاتی معیارات ہیں اور ان کے مطابق زندگی گزارنے کی کوشش کرتا ہوں۔					
15	کسی مسئلے یا مشکل کے پیش آتے ہی میں اس کے ممکنہ حل کی تلاش شروع کر دیتا ہوں۔					
16	میرے لئے مشکل وقت ہوتا ہے جب اپنے اہداف متعین کرتا ہوں۔					
17	میں قوت ارادی سے بھرپور ہوں۔					
18	کچھ بدلنے کی کوشش کے دوران میں، میں اس بات پر بہت زیادہ متوجہ رہتا ہوں کہ میں کیسے یہ عمل کر رہا ہوں۔					
19	اپنے اہداف کے حصول میں، مجھے طریقہ کار وضع کرتے ہوئے مشکل ہوتی ہے۔					
20	میں اکتاہٹ کو روک سکتا ہوں۔					
21	میں اپنے اہداف مقرر کرتا ہوں اور اپنی کارکردگی کے بارے میں باخبر رہتا ہوں۔					
22	زیادہ تر میری توجہ اس پر نہیں ہوتی جو میں کر رہا ہوں۔					
23	کارآمد نہ ہونے کے باوجود میں ایک ہی عمل کو بار بار دہراتا رہتا ہوں۔					
24	جب میں کچھ تبدیل کرنا چاہتا ہوں تو عموماً کئی ممکنہ حل تک پہنچ سکتا ہوں۔					
25	ایک بار جب میں ہدف (goal) متعین کر لوں میرے پاس اس کے حصول کے لئے طریقہ ہوتا ہے۔					
26	میں کچھ بدلنے کے بارے میں پختہ ارادہ کر لوں تو بھرپور توجہ دیتا ہوں کہ میں کیا کر رہا ہوں۔					
27	اکثر میں یہ نوٹس نہیں کرتا کہ میں کیا کر رہا ہوں یہاں تک کے دوسرے مجھے متوجہ کریں۔					
28	میں عموماً عمل سے پہلے سوچتا ہوں۔					
29	میں اپنی غلطیوں سے سیکھتا ہوں۔					
30	میں جانتا ہوں میں کیا بننا چاہتا ہوں۔					
31	میں جلدی ہمت ہار دیتا ہوں۔					