

“CREATE METACOGNITIVE STRATEGIES TO UNLOCK POTENTIAL”

Research Paper

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“Abstract”

Human race is very fascinating because of the beautiful mosaic that we are made of. No two human beings are alike – not just in our physical attributes but also due to the differences in the way we think, feel, and behave. We have constantly evolved as a species by pushing capabilities of human brains beyond the realms of imagination. No algorithm or artificial intelligence, as of now can accurately and completely map or predict all of human being’s current feelings or future thinking.

The study of human brain has been an intriguing topic for researchers over centuries. The uniqueness of human mind has been established based on decades of neuroscience research. The act of thinking about one’s own mental processes is called Metacognition, in simpler terms referred as ‘Thinking about Thinking’. Research into Metacognition is a critical one, as it opens a whole new world that we only can imagine exists.

Understanding Metacognition and moving to an Epistemic Cognition state is a significant step for human race today in light of unprecedented changes being witnessed all around us on multiple fronts. Creating Metacognitive strategies would not only result in metamorphic benefits for the individual at a personal and professional level but also take human race to a totally new level and may well, even decide the sustenance of it.

Key words: ‘Metacognition Maturity Model’, ‘Epistemic Cognition’, ‘Metacognition’, ‘Thinking about Thinking’, Neuroscience, Phenomenology, Cognitive Diversity, Diversity & Inclusion, Cognitive Psychology, Diversity of thinking, Thriving, VUCA world, Fifth industrial revolution

1 Introduction

From time immemorial, many great scientists, psychologists and mystics world over have tried to understand the human mind and how it functions. In his famous treatise from 350 BC, Aristotle says “What thinks and what is being thought are identical” (Todd, 2014). More recently this whole concept of thinking about ‘thinking, feeling, behaving’ is called Metacognition. It is the act of thinking about own’s own mental processes (Bonds, Bonds and Peach, 2010).

Metacognition was first introduced in the 1970s by psychologists (Flavell, 1979), since then research has been done to understand various facets and the linkages to different psychological subdisciplines. For instance, numerous studies are undertaken in the field of education to better understand the science of learning and assimilation of knowledge among students. There is a lot of literature pertaining to application of Metacognition among children and specifically in the context of education. However, there is little research or materials around the impact of Metacognition among adults and specifically in the corporate environment.

1.1 Business need for metacognition

There is huge potential in Metacognition awareness and strategies in order to unlock potential among adults. It will have significant impact on individuals, at team level, at organization level and even at a

country level, thereby having implications on the economy. While analyzing the business need or the 'why' of Metacognition research, two factors come into our mind:

1.1.1 Future of work

The world is witnessing the fifth industrial revolution with changes on all fronts. There is unprecedented technological advancements, increasingly complex demographics and shrinking of boundaries leading to enhanced globalization (Beno, 2020, cited in Rajagopal and Provodnikova, 2023). The half-life of professional skills has reduced considerably, it is now reduced to around 5 years (LaPrade *et al.*, 2019). All of this requires humans to adopt a thrive mindset rather than a survival mindset in order to prepare for the future (Rajagopal and Provodnikova, 2023). One of the key factors in doing so is Cognition or deep understanding of one's self and one's own strengths. McKinsey study also mentions 'Understanding own emotions, triggers, own strengths as a key skill required for future of work (Dondi *et al.*, 2021).

1.1.2 Inclusion

Another buzzword in recent years is around the concept of Inclusion. Organizations have increasingly started to value this concept for its worth rather than a tick in the box. While many organizations and individuals continue to focus on visible aspects of diversity like gender, race, ethnicity, generation, the true differentiator is when there is a focus on both visible and invisible dimensions. A key dimension of invisible diversity is Cognitive diversity, which is the thinking, learning styles of individuals. In their research, Deloitte mention that high performing teams are cognitively diverse and that teams that have diversity in thinking are 20% more innovative and 30% lower on potential risk parameters (Juliet Bourke and Dillon, 2018).

In sum, while Metacognition as a concept has been in existence for about half a century, research on Metacognition is limited and predominantly among children and young adults, mostly around concept of learning. There are immense business benefits in embarking on Metacognition research in the work environment.

2 Literature Review

2.1 Historical studies related to metacognition

Earliest mention of the concept of metacognition dates back to the time of Socrates. There are references to this concept in Greek mythology, Indian mythology and also in Chinese Philosophy. Prochaska et al (2015) indicate the practice followed in early Greece where a four-pronged model was used to indicate human behavior tendencies by measuring body fluids: yellow bile as Choleric, blood as Sanguine, phlegm as Slow Thinking and black bile as being Melancholic. Analogously Indian mythology has three types of broad personalities – Sattva, Tamas and Rajas. It is called the Triguna theory of personality and is propagated by the Samkhya philosophy as one among six systems of Indian philosophy (Kumar and Thomas, 2013). Likewise, Xin is said to play a pivotal role in multiple fields of Chinese philosophy, ethics, epistemology and metaphysics (Wong, 2023). Xin is credited with thinking Si, understanding Ming, knowing Zhi, intention Zhi, felt moods and emotions Qung and desire Vu. These insights into understanding the human mind was furthered by great thinkers like Rene Descartes (1596 to 1650) around 17th century.

Metacognition in the twentieth century saw the emergence of methodology that helped assess human behavior by way of psychometric assessments, that became increasingly reliable, valid and robust Cripps (2017). Notable contributions are by Hungarian psychiatrist Leopold Szondi and Hermann Rorschach, a Swiss Freudian psychiatrist and psychoanalyst who was instrumental in developing an inkblot which assesses clients' perceptions of a series of patterned smudges (Wood, Nezworski, Lilienfeld and Garb, 2003, cited in Cripps, 2017).

Today, a wide array of psychometric tests are available to help assess the human personality with reliable results. Some of these are widely used tools like DiSC[®], Myers-Briggs Type Indicator (MBTI), Hogan, Saville Consulting Wave, CliftonStrengths just to name a few. Among these, CliftonStrengths has been in existence for over six decades and is steeped in research. CliftonStrengths helps subjects discover ‘Talents’, Talent is defined as natural way of thinking, feeling or behaving. CliftonStrengths research also helps develop subjects greatest ‘Talents’ into ‘Strengths’ by using personalized results and reports to maximize potential. These CliftonStrengths are very unique for every individual (Buckingham and Clifton, 2001; Rath, 2007).

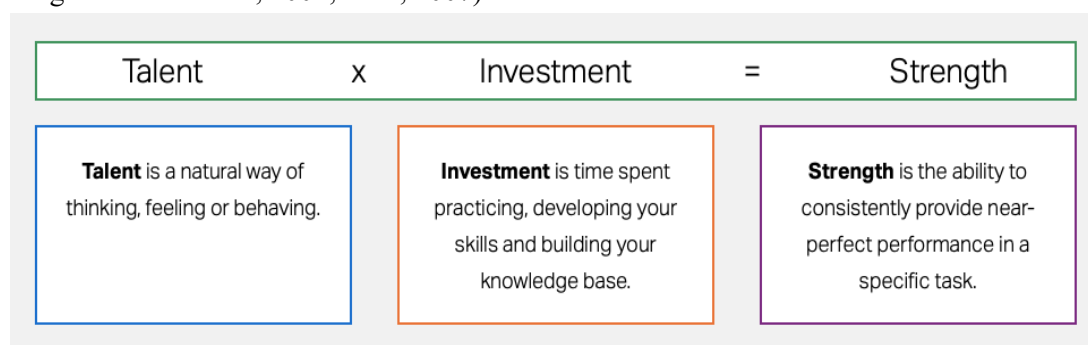


Figure 2.1
CliftonStrengths (Buckingham and Clifton, 2001; Rath, 2007)

2.2 Definition of metacognition

The term ‘Metacognition’ was originally introduced in the ‘70s by psychologists (Flavell, 1979) and refers to the concept of ‘thinking about thinking’. Some other researchers have attempted to define Metacognition along similar lines as Flavell does. Meltzer, Pollica and Barzillai 2007 (cited in Cakici, 2018) also state that Metacognition refers to individuals’ awareness of and control over the way they process information. Gertrude and Gertrude Hennessey 1999 (cited in Lai, 2011) say Metacognition is awareness of one’s own thinking, awareness of content of one’s conception, an active monitoring of one’s cognitive processes and an application of a set of heuristics as an effective device for helping people organize their methods of attack on problems in general.

It has been half a century since the original concept of Metacognition was proposed, this topic has gathered so much interest and research that it is said Metacognition is one of the top 100 topics in cognitive psychology and development (Plude, Nelson and Scholnick, 1998). There are three main areas in research that Metacognition has a prominent role (Efklides, 2008).

- Developmental psychology, with emphasis on theory of mind.
- Experimental and Cognitive psychology, focusing mainly on metamemory and
- Educational psychology with focus on self-regulated learning.

Further there has been research done in the area of neuroscience and neuropsychology connecting Metacognition to executive functions (Fernandez-Duque et al., 2000, cited in Efklides, 2008) and pre-frontal brain areas (Shimamura, 2000, cited in Efklides, 2008). Koriat (2007) mentions how study of metacognition can shed light on some fundamental issues about consciousness and its role in behaviour.

Because of its study around the awareness of human thinking, behaviour, it is amply evident that study of metacognition has far reaching implications and is interwoven into many more branches like Psychology, Neuroscience, Philosophy, Ontology, Metaphysics, Epistemology, Anthropology and even Spirituality.

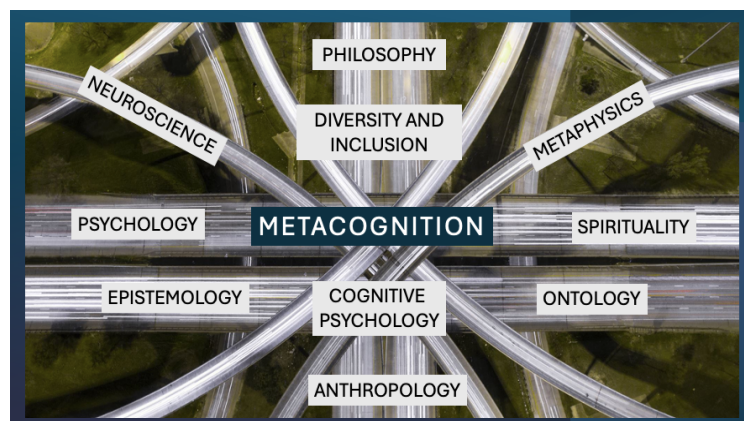


Figure 2.2
Metacognition intersectionality (authors' own representation)

2.2.1 Elements of metacognition

There are two different ways in which researchers describe the elements of Metacognition. One set of researchers see this as a two-step approach and the other as a three staged approach:

1. Two-stage approach: Knowledge about Cognition and monitoring of Cognition (Flavell, 1979; Schraw, Crippen and Hartley, 2006, cited in Lai, 2011)
2. Three stage approach: Metacognitive knowledge, Metacognitive Experience and Metacognitive Strategies or Metacognitive Skills (Efklides, 2008; Kitchener, 1983).

Whichever way one approaches Metacognition, it is obvious that there is a stage beyond merely creating Metacognitive awareness, we need to go beyond that. Kitchener (1983) also says this - first level that is, Metacognitive knowledge alone will not suffice and calls formulation of Metacognition strategy as 'meta-meta cognitive level' of monitoring or epistemic cognition a combination of Epistemology and Cognitive psychology.

2.2.2 Metacognition imperatives

It is evident that there are opportunities in the field of Metacognition research. This can be categorized into three buckets as given below:

Defining the concept - Metacognition has myriad definitions. Desoete and Ozsoy (2009) make a very interesting point that while many researchers agree that there is a concept called Metacognition, no one agrees as to what exactly Metacognition is about. Therefore, there is significant opportunity for us to define what Metacognition is. The whole concept needs to be defined in way and manner that is palatable for users to understand and absorb and not be kept as an esoteric subject. Post simplification, the concept needs to be propagated and discussed openly about its application.

Expanding the horizon – there is significant amount of research in learning styles of children and the effect Metacognition has on them. Metacognition is concerned with guiding the learning process itself (Harris, 2003, cited in Cakici, 2018) and the ability to reflect on, understand, and control one's learning (Schraw and Dennison, 1994, cited in Cakici, 2018). There is huge opportunity to expand the horizon with respect to Metacognition research and absorption. Research needs to expand to include those working in corporates so that the whole benefit to individuals at adult stage, impact to organizations and team constructs can be fathomed.

Chalking the strategy – Researchers explain the dichotomy in cognitive psychology between procedural knowing (knowing how) and declarative knowing that is, knowing what (Kuhn and Dean David, 2004).

However, one aspect that is not coming out clearly is the ‘How part’ viz. understanding that the person has about themselves – their own thinking, behaving or learning style which would have a profound impact on the declarative or procedural knowledge or anything else for that matter (Kuhn and Dean David, 2004). Epistemological meta-knowing that is knowledge and knowing in general whether it pertains to one’s own knowing or applicable to anyone’s knowing needs further research.

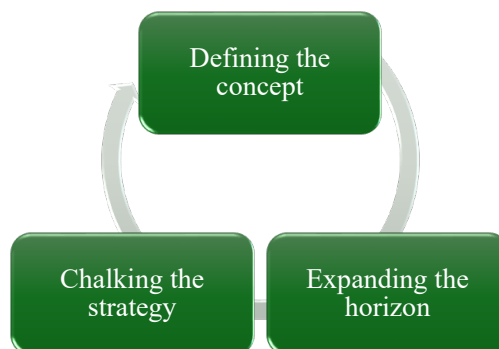


Figure 2.3
Opportunities in Metacognition research (Authors’ own representation)

3 Problem statement

From the Literature Review, it can be inferred that study on Metacognitive awareness is extremely limited among adults and its impact on individuals, units and organizations is not well known from the literature review.

There are compelling reasons for embarking on Metacognition research as it has far reaching implications on ‘Thriving’ in the future of work. While understanding Metacognition is an important step, it is important to transcend to the next step which is creating Metacognitive strategies

While there are many tools available to aid in creation of Metacognitive strategies, CliftonStrengths could be a powerful craft towards creating Metacognition awareness and can be instrumental in proposing strategies. It needs to be looked at a holistic level and combined with multiple other factors as human brain functions at a very complex level. Reviewing the Literature leads us to following Research Questions:

- What does Metacognition mean, specifically from thinking, decision making and learning style point of view
- How can we transcend from a state of Metacognition to Epistemic Cognition in order to unlock potential through lens of Strengths psychology. What are the specific tools and techniques that one can use to improve Metacognition in day-to-day life

It is important to develop an innovative research methodology that studies the emotions, feelings and thinking behind the actions of subjects in various situations.

4. Approach

To study this, a Qualitative research was conducted with Senior and Mid-level executives who have gone through the CliftonStrengths assessment. The study was based on Phenomenology Research Method.

Aspects focused on in the study are as follows: ‘Assessing awareness and consciousness of Cognition specifically thinking and learning styles’, ‘Understanding of CliftonStrengths’, ‘Current and future usage of CliftonStrengths’ and ‘Metacognitive Strategies’.

5. Results

Following key highlights emerged from the study:

5.1 Awareness of metacognition

With respect to Thinking styles, awareness was quite high, however the same cannot be said about the consciousness. With respect to learning styles, both awareness and consciousness was high. Learning style evoked more positive emotions like ‘Happiness, joy’, ‘Elation’, ‘Curiosity’ and ‘Excitement’. However, problem solving evoked mixed emotions like ‘Anxiety’, ‘Worry’ at one end and ‘Excitement’, ‘Intrigue’ and ‘Calm, relaxed emotions’ on the other hand.

Respondents were asked on the subjects’ association to automobile with respect to their thinking and learning styles. The responses were fascinating – it threw up a myriad range of automobiles for variety of reasons, therefore portraying the uniqueness of respondents.

Respondents were also asked to come up with taglines based on their top CliftonStrengths. The taglines mentioned by respondents were very interesting and wide ranging. This showed the uniqueness of the subjects in terms of their CliftonStrengths and their personalities and their ability to introspect on themselves and their Strengths.

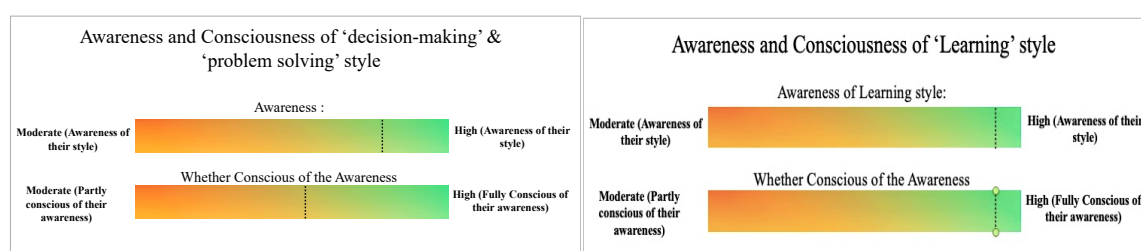


Figure 5.1
Awareness and consciousness of ‘thinking’ and learning styles (authors’ own representation)

5.2 Metacognitive strategies

While Awareness of CliftonStrengths was high among most respondents, it was a mixed bag with respect to current usage. Similarly, future usage of the tool was distributed.

With respect to Metacognitive strategies, some devised their own strategies to increase Cognition. While some of them indicated simple techniques, some others indicated complex ones like perspective reframing and self-introspection techniques.

In sum, while it is heartening to note that there is a fair degree of awareness with respect to one’s own thinking and learning style, it is also obvious that we have a lot of ground to cover in terms of devising Metacognition strategies to reach the stage of Epistemic cognition.

6. Recommendation

From the summary above, it is apparent that Metacognition awareness is fairly high, but the subjects need to be more conscious in order to create effective Metacognition strategies. This requires a structured, mature and sustained approach necessitating creation of a Maturity Model for Metacognition.

6.1 Metacognition maturity model

The whole Metacognition awareness and strategy can be seen as a mountain climbing exercise. Unpacking the Metacognition Maturity Model yields three levels: At the Base camp is whole piece about 'Recognize', Mid Camp is about 'Reflect' and the Summit is really about 'Realize'

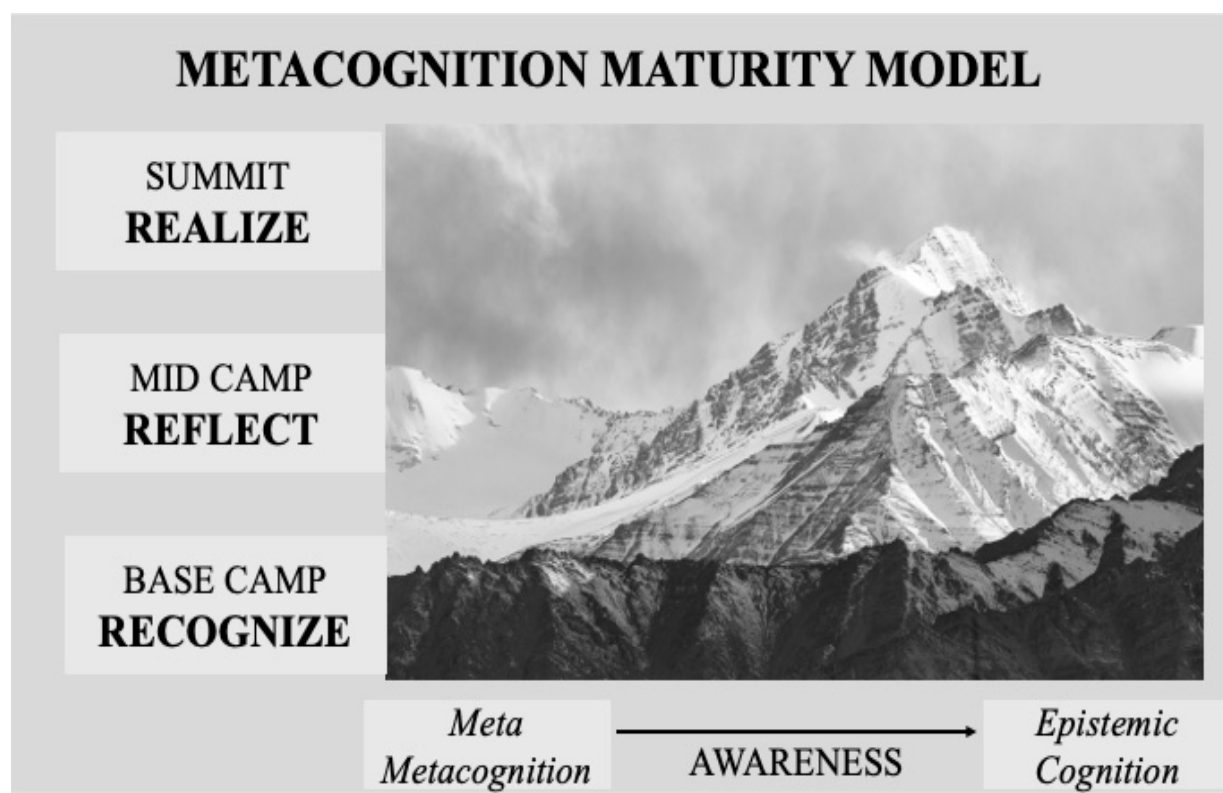


Figure 6.1
Metacognition Maturity Model (authors' own representation)

6.1.1 Base camp – 'Recognize'

At the very base is 'Recognition' of Metacognition. Even realizing that a concept called Metacognition exists, is a starting point. Some of the characteristics are:

- This can be a 'Defining' moment, a time when the subject gets an epiphany or 'aha' moment.
- Subjects would begin understanding self's style mostly with the help of a structured assessment or tool. There could be peaks and troughs in the journey leading to inconsistencies in the approach to assimilate and absorb learnings.
- Those initiating the journey could exhibit anxiety at the starting point of the journey. This could have a profound effect if there is no psychological safety in the ecosystem.

Tips to improve Metacognitive Strategies in the 'Base camp – Recognize':

- Recognizing the simple truth that subjects need to understand more about themselves. This calls for a mature mindset shift and is a critical step in the journey.
- Devising simple methods that work for subjects to improve their cognitive diversity.
- Investing in a tool and understanding the report in entirety and the nuances associated with it. Formulating strategy around the recommendations from the report.

- Initiating discussions on the report with people who matter, this could include family, friends, colleagues. Doing so, will reveal the blind spots and areas that are unknown to themselves.

6.1.2 Mid camp – ‘Reflect’

The next logical progression in the journey is to cover substantial ground to get to Mid Camp which is about Reflection point of the journey. This is characterized by the following:

- This is the ‘evolving’ point of the journey and a pivotal one at that. There is a keen interest in knowing and progressing on subject’s metacognition and there is intent to strategize.
- The interest transcends beyond mere dependency on assessment report and involves gaining active insights through discussions with others.
- At this stage, subjects would be aware how the social intelligence impacts cognitive style and is able to embrace their emotional, physical and mental state into the cognitive style.
- The emotion exhibited by subjects at this point is being ‘Intrigued’. Subjects may be able to relate to impact that deep science may have on one’s own cognitive ability.

Tips to improve Metacognitive Strategies in the ‘Mid camp - Reflect’:

- Continued Reflection of themselves in their own eyes and in the eyes of key stakeholders is important. Reflection should include the fact that there is still ground to cover.
- Subjects could embark on evolved conversations with trusted advisors, key stakeholders around their Metacognition style.
- They identify mentors or coaches who will give expert advice and share wisdom and goodness based on their lived experience and based on the context.

6.1.3 Summit – ‘Realize’ (Epistemic Metacognition)

This is the pinnacle in the Metacognition journey – Epistemic Metacognition point. For some it may take the work of a lifetime, however for some it may happen with sustained rigor and discipline to reach the summit stage. The points of journey will be different for each one due to our unique and differing styles. Key characteristics highlighted here:

- Subjects at this stage will be at a ‘transformational point’ in their life journey, they will have highly evolved understanding of Metacognition and exhibit deep commitment to their metacognitive strategies.
- There is strong and consistent evidence of Metacognitive awareness, and it is embedded in everything they think or do, and it happens even at superconscious state.
- Subjects at this state are constantly looking for ways to work on Metacognitive strategies, so much so, it is part of the core, their habits. One respondent interviewed as part of the study spoke of it as a chore like brushing the teeth every day, it is so much ingrained into the everyday, it is habit forming.

Tips to improve Metacognitive Strategies in the ‘Summit – Realize’:

- Since the subjects have traversed the basic and Mid Camp states to reach this stage, the nudges are of advanced hyper personalized nature factoring in various dimensions of the subject.

- In addition there is a lot of Self-realization on the past events so learning from the past and from mistakes is an integral part of the event itself and is not a stand-alone.

7 Significance of the study

This study has wide reaching significance as topics like Metacognition, Neuroscience and Cognitive psychology gain more and more prominence in today's complex world. Our race has evolved by utilizing and pushing the boundaries of our capability consistently over the millennia. The first and foremost way to evolve our human brain is to understand the thinking about thinking or metacognition.

- Understanding the thinking about thinking or metacognition and creating metacognitive strategies has profound impact on Future of work and concept of Intersectionality.
- Study focused on understanding the process of Metacognition among subjects by going into the process along with the emotions and associations related to the same. Specific focus was on the emotions associated which will make it more real and relatable and something that can be understood and replicated widely.
- Anchoring on Metacognition Maturity Model, helps understand the Metacognitive journey better and helps subjects self-realize where they stand and how they can move further in the journey. This serves as a checklist for subjects in a psychologically safe environment.

8 Recommendations for future research

This study barely scratches the surface of a vast and nuanced topic like Metacognition. Metacognition stands at the intersection of many fields of study which makes it extremely fascinating as a research topic.

Further research is required to deeply forge the concept of Neuroscience to help create Metacognitive strategies. There is a lot of research happening in the field of Neuroscience and measurement of brain activity which is highly beneficial to our race in furthering the capabilities.

Another research opportunity would be to assess the impact of Metacognition in a team construct. Metacognition has a significant impact on Cognitive Diversity, it will be important to understand how the complementarity of Strengths in a team will have a bearing on team construct and therefore on the hardcore business outcomes.

9 Conclusion

The fundamental premise of this study is to equip and enable humans to be more aware of themselves and appreciate the value they bring so as to help them thrive in the future world. With the world getting more complex due to changes in technological advancements and the increased nuance of a diverse world order, it is imperative for humans to push their boundaries in a way that has not even been imagined previously.

In closing it can be said that journey of Metacognition has just begun, there are still many more milestones left to be conquered in this journey. In the midst of all of the change and uncertainty, there is hope in our heart for the future. A future made possible through understanding and appreciation of the beautiful mosaic that humans are made of. A future made possible by embracing the concept of Metacognition and creating strategies that help us thrive in the new world order as the sustenance of human race may well, depend on it.

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