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## Multifarious Replicas in Phenomenology: Metacognition and Mindfulness

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### *Abstract*

*Pedagogy has been seminally influenced by the studies on cognitive psychology in recent decades, leading research towards metacognitive approaches. Metacognition and mindfulness have been concepts used in cognitive pedagogical approaches with identical interpretations. Metacognition, a concept aligned with western scientific approach received grander recognition, while mindfulness being a Buddhist philosophical approach to mind that interacts less in research. This conceptual paper attempts to materialize a taxonomy for the Buddhist philosophical concept known as mindfulness and to contrast it with the taxonomy of metacognition thereby investigating the replicas of the two.*

*Taxonomy of metacognition is constructed upon two categories: metacognitive knowledge and metacognitive skills. Metacognitive knowledge is a construct of three super categories: declarative, procedural, and conditional metacognitive knowledge. Metacognitive skills category consists of: regulation of cognition and executive functioning/metacognitive experiences. Mindfulness in contrast condenses three category levels: remembering and recollecting (*sati*), alertness (*sampajañña*), and ardency/compunction (*atappa/ottappa*). Remembering and recollecting category consists frames of references: body, feelings, mind and mental qualities at super-category level. Alertness category lies between the mind and the physical conduct of the body which has three super-categories. Ardency/compunction includes the desire/perseverance of mind to avoid unbeneficial coupled with desire to stimulate beneficial. These taxonomies at category, super-category and subcategory levels remain the material for the semantic analysis.*

*The quintessence of both taxonomies remains identical thus paving category level replicas in reflection or remembering. The sub-category, super-category and category levels remain sensibly identical with distinctly agreed semantics. The semantics of two taxonomies display replicas in sub-category, super-category and category levels. Studies oriented towards calibration of such combined taxonomy for applied concerns in to the fields such as education, learning, cognitive psychology, pedagogy, psychopathology are prescribed.*

**Keywords:** Metacognition, Mindfulness, Phenomenology, Replicas, Taxonomy

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## **Introduction**

Pedagogy has been immensely influenced by the studies on cognitive psychology in recent decades paving the way for the educationists to embark on cognitive and metacognitive approaches for teaching learning processes. The concept of metacognition and such strategies attributed with metacognition have now accepted widely in pedagogy even creating impacts on educational objective planning and assessment criterions (Krathwohl, 2010, pp. 214-16). One's ability to be watchful about the own mind and feelings which will lead to mindfulness by achieving the skill of orchestrating the process of mind is mindfulness which is referred as metacognition in cognitive psychology.

Metacognitive approach to learning can help students to learn to take control of their own learning by defining goals, and monitoring their progress in achieving them (Bransford, Brown & Cocking, 2000, p.18). Such principle for learning has been the matter of concern in many studies focused on metacognition in learning domains. Having affirmed by studies that there exist ample benefits of cognitive process understanding in learning, the direction of the metacognitive research is turned towards imparting such skills to students on selecting cognitive strategies that make impact on learning. A handful of literature suggests that the metacognitive skills may improve the academic performance when such strategies are explicitly taught within disciplines (Bransford, Brown, & Cocking, 2000, p.18; Pintrich, 2002, p. 221; Pintrich & De Groot, 1990, p.37) thus making students able to transfer such strategies from one contexts to another.

This being the status of pedagogical applications of metacognition in Western part of the world, this conceptual paper invites the attention of Sri Lankan pedagogical practitioners to embark on approaches to espouse metacognitive aspects in education. Sri Lanka having a context wherein Buddhist Philosophy reserves a great impact on educational sphere, the cognitive functions of learning process and reflection process relevant to learning can better be orchestrated and implemented with the models of Buddhist phenomenology. Having observed that the concept of metacognition and the Buddhist concept of Mindfulness schematized in Satipattanasuttas being either identical or replicative, a contrast between the two concepts is considered.

**Rationale**

Despite being insubstantial, scholarly discourse on phenomenology admits that Buddha's exposition of mind is pertinent. Mindfulness in that sense in Buddhism considers the 'heart' of the Buddha's teachings (Hanh, 1998, p.8). Apart from the association towards conceptualization of mindfulness, Buddha's teachings have been amalgamated in applied domains of mindfulness research in areas such as: Mindfulness-Based Interventions (MBI) which was originally Mindfulness-based Stress Reduction [MBSR], Kabat-Zinn, 1990; and Mindfulness-Based Cognitive Therapy [MBCT] Segal, Williams and Teasdale, 2002.

The dissimilarity between the western scientists and the Buddhist scholars on the definition of mindfulness (Baer, 2011; Dreyfus, 2008, June; Gethin 1998; Grossman 2008) has been a concern that lays the way for the present discussion in this paper. Grossman and Van Dam concludes their review on Sati and mindfulness prescribing the need of delineating semantics of the lexis used in Buddhist phenomenology. They state that "one viable option for preserving the integrity and richness of the Buddhist understanding of mindfulness might be to call those various qualities now purporting to be mindfulness by names much closer to what they actually represent" (Grossman and Van Dam, 2011, p.234).

In this view, the semantic analysis presented in this paper endeavors to propose a taxonomy for practice and process of mindfulness given in the Satipattanasuttas (*Satipatṭhāna Sutta* and *Mahāsatipatṭhānasutta* are vital Buddhist discourses on mindfulness). Such taxonomy of inventive nature is envisioned to provide material for semantic contrastive analysis leading to investigate the replicas of constituents and concepts of the two taxonomies: Mindfulness and Metacognition.

**Defining the Key terms and Material****Taxonomy**

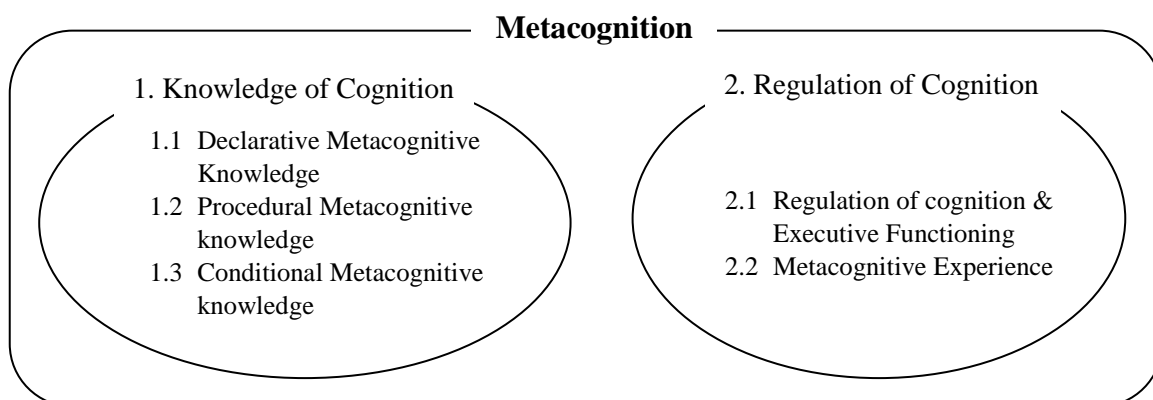
The theoretical study of classification, including its bases, principles, procedures and rules (Simpson, 1961, p.11) is regarded a taxonomy. Taxonomies serve a greater deal in understanding linear material into more holistic comprehensive material thus easing the comprehension of complex phenomena. Having taxonomies for each construct under concern in a conceptual discussion of this nature that contrasts two constructs of phenomenology, serves a great deal of flexibility and exclusivity for the essayist. Thus the first effort of the essay will be to formulate a taxonomy for the construct: mindfulness as explored in Buddhist phenomenology.

### **Taxonomy of metacognition**

“Cognition about cognitive phenomena” had been the initial definition of metacognition coined by Flavell in 1970s which can be paraphrased as “thinking about thinking” (Flavell, 1970). Flavell in 1976 exemplified the concepts as given below.

*I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as fact; if it occurs to me that I had better scrutinize each and every alternative in any multiple-choice type task situation before deciding which is the best one; if I become aware that I had better make a note of D because I may forget it; if I think to ask someone about E to see if I have it right (Flavell, 1976, pp.232).*

The limits, constituents, quintessence and such applications of the concept of metacognition have been extensively researched until it is functionally defined in 2011 by the taxonomy of metacognition by Tarricone (Tarricone, 2011). Tarricone in her taxonomy summarizes metacognition to be a construct of two constituent categories of aptitudes: metacognitive knowledge and metacognitive skills. (See **Figure 01.** below) The knowledge of cognition category is built upon super categories namely: *declarative, procedural, and conditional metacognitive knowledge*. Metacognitive skills are built upon the aptitudes of *Regulation of cognition with executive functioning and metacognitive experiences*.



**Figure 01. Constituents of metacognition as per the Tarricone’s Taxonomy of Metacognition (2011)**

**Taxonomy of mindfulness**

The Satipatthāna Sutta appeared in Majjhimanikāya (MN 10: The Discourse on the Establishing of Mindfulness) and the Mahāsatipatthānasutta appeared in Dīghanikaya (DN22: The Great Discourse on the Establishing of Mindfulness) are two of the most important and widely studied discourses in the Pāli Canon of Theravada Buddhism, acting as the foundation for mindfulness meditational practice (Wikipedia). As mentioned in Satipatthānasutta and Mahāsatipatthānasutta, mindfulness is not merely a mental function or trait, but a practice or process involving four distinct phases, ranging from mindfulness of bodily sensations to awareness of more expansive mental content and processes, such as emotion and altered view of self (Nanamoli & Bodhi, 2000).

The Buddhist phenomenology explored in the two discourses (Satipatthānasutta and Mahāsatipatthānasutta) mindfulness is explicated as a product of three stages of development of mind: remembering and recollecting (*sati*), alertness (*sampajañña*), and ardency/compunction (*atappa/ottappa*). These three stages of establishing mindfulness are considered in the prospective taxonomy of mindfulness at category level.

Remembering and recollecting (*sati*) is achieved with contemplative meditation within the four frames of references: body, feelings, mind and mental qualities. These frames of references are recognized as the super category level of prospective taxonomy of mindfulness.

Alertness/clear comprehension (*sampajañña*) is the correlative mental status exists between the mind and activities in the body as they are happening. Being alert is of threefold dimensions: Knowing the physical functions, knowing the thoughts and Knowing the perceptions. These remain the focus of alertness considered at super category level.

Ardency/compunction is built upon the desire to avoid unbeneficial coupled with desire to stimulate beneficial. They are located in super category level of the prospective taxonomy of mindfulness.

The attempt here in focusses Buddha's discourse of establishment of mindfulness with the view to form the taxonomy of mindfulness with an explication of such constituents for the reference of cognitive pedagogic practitioners.

### Deciphering the terminology in taxonomy of mindfulness

In the view of defining the terminology in category level of the prospective taxonomy of mindfulness, exploratory attempts made by several authors and the descriptions in the Pali canon are considered. The table 01 given below extracted from Wikipedia provides the basis for the semantic discernment of the terminology used.

<i>English</i>	<i>Pali</i>
<i>mindfulness/awareness</i>	<i>sati</i>
<i>clear comprehension</i>	<i>sampajañña</i>
<i>vigilance/heedfulness</i>	<i>appamada</i>
<i>ardency</i>	<i>atappa</i>
<i>attention/engagement</i>	<i>manasikāra</i>
<i>foundation of mindfulness</i>	<i>satipaṭṭhāna</i>

**Table 01. Terminology in Pali and English translations** (Sati Buddhism, 2018)

Though the lexical items in our concern can be grasped as easy as it is given in the table, clear delineation of the three terms is a pre-requisite for us to precisely locate them in the taxonomy as constituents of mindfulness. In this view, the three concepts will be evaluated henceforth for their semantic expositions as appeared in the selected explanatory texts.

Explaining the Pali canon in English Thanissaro (2012) considers *sati* as one of the three mental factors to be accompanied in the process towards mindfulness. The other two mental factors include alertness (*sampajañña*) and ardency (*atappa*) paired with compunction (*ottappa*). According to the explanation, *sati* remains the ability to remember which is firmly established upon continuous practice of contemplation. “The Canon defines alertness (*sampajañña*) as knowing both events in the mind and activities of the body as they are happening. This means that for *sati* to be properly established, it must not only remember far into the past, but also be coupled with a clear awareness of what’s going on in the present. Ardency (*atappa*) is the desire to avoid what is unbeneficial which is often paired with compunction (*ottappa*), fear of the consequences of doing evil (Thanissaro, 2012).

Soma (2013) explores the conceptive *sati* as follows:

Sati as memory is indicated by such terms: as *annussati* = calling to mind; *patissati* = remembrance; [*parama satinepakka*] = the highest wisdom of mindfulness; [*Ariya Magga pariyāpanna Sati*] = Mindfulness that is included in the Real Way; [*Sati Maggaṅga*] = the Way Factor of Mindfulness; and [*Sati Sambojjhaṅga*] = the Enlightenment Factor of Mindfulness thus convincing the aspect of that sati remain a mental state that develops from remembrance to mindfulness. The pinnacle achievement of *sati* in that sense is *samma sati* which he refers as Right Mindfulness in the full sense of the term = [*Sammāsati*].

The term *sampajañña* has been illustrated by such terms: *sampajañña*= "Clearly comprehending" endowed with knowledge called circumspection; [*catu sampajañña*] = the four kinds of clear comprehension (four kinds of comprehension: clear comprehension of purpose [*satthaka sampajañña*], of suitability [*sappaya sampajañña*], of resort [*gocara sampajañña*], and of non-delusion [*asammoha sampajañña*]); *sampajānakārī* = "Practicing clear comprehension"; [*sampajaññaena sabba kicca kari*] = Doing without fail all actions with clear comprehension, clearing the meaning of the term to be alertness or *doing without fail all actions with clear comprehension* thus paving the correlation between mind and the body between past and present (Soma, 2013).

Wikipedia provides explications to these terms as paraphrased below.

In the Satipaṭṭhānasutta the term *sati* means to remember the wholesome. With mindfulness (*sati*) and clear comprehension (*sampajañña*) one establishes *sammāsati*, the Right Mindfulness.

Such uses of Pali terms such as: *sampajañña* or *samprajanya* referring to clear comprehension, discrimination, full awareness at a time and *sampajañña* or *samprajanya* as alertness, presence of mind, full awareness, clear comprehension with antonym of *sati* as *asati* together with *asatiasampajañña* with meanings such as nonrestraint, unmindful without comprehension as opposed to *satisampajañña*, the clear comprehension provides further witnesses for our discussion on the meaning of terms in our concern.

To quote from Wikipedia:

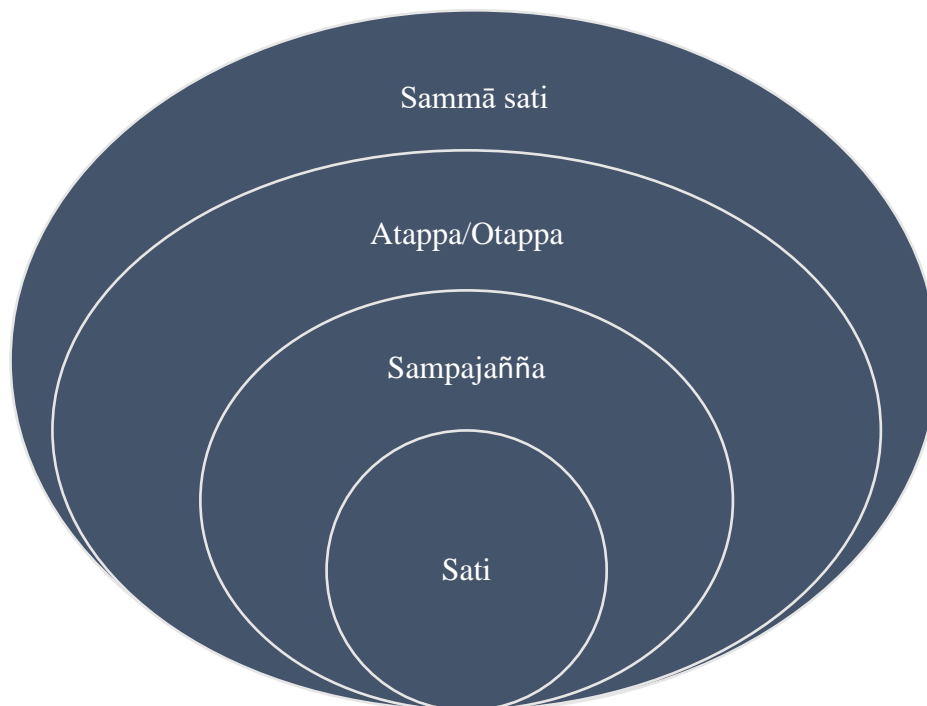
"In Buddhist practice, "mindfulness" also includes *samprajañña*, meaning "clear comprehension" and *apramāda* meaning "vigilance". All three



terms are sometimes (confusingly) translated as "mindfulness", but they all have specific shades of meaning. (Wikipedia).

The pathway for establishing mindfulness included in Buddha's discourse resides in *Satipaṭṭhānasuttas* can be paraphrased thus as 'sati': the faculty of mind that enables reflection is the quintessence described in Buddha discourse for the establishment of mindfulness while regulation of mind and mind functions can be recognized as *sampajañña* which leads to the third state self-manipulation of mind functions termed as *Atappa/Otappa* or ardency coupled with compunction.

The summary of this discussion of the terminology leads us to the following conceptual map given in the figure 2 below.



**Figure 02. Constituents of mindfulness as per the schemata of *Satipattana suttas***

### **Materials and Methods**

Having recognized that the taxonomy of metacognition is a construct of many research, the taxonomy of metacognition by Tarricone (2011) is considered to be one text to compare with the constituents of mindfulness explored in *Satipattanasutta*. From among many texts explain the *Satipaṭṭhāna* discourses a purposively selected sample of Explanatory

researches and discourses of Satipaṭṭhānasutta translated to English have been chosen as base for developing the prospective taxonomy for mindfulness.

The two taxonomies: the taxonomy of metacognition by Terricone (2011) and the prospective taxonomy of mindfulness developed based on Satipaṭṭhānasutta remain the material for semantic contrast in the exploration of replicas and contradictions while the same being kernel of contrast of the analysis of replicas. The approach for the prospective taxonomy is a semantic conceptualization of sub categories, super categories and categories. The semantic analysis of replicas of the two taxonomies is constructed upon the constituents of mindfulness with the constituents of metacognition exemplified in taxonomies. The material for analysis is thus the taxonomies in category, super category and sub category levels. A tabulated flow chart of the taxonomy paved the way for recognition of such replicas in multifarious terminology of the two taxonomies concerned.

### **Results and Discussion**

The semantics of the two taxonomy items in category, super category and sub category levels are tabulated as given in the two tables (table 02 & 03) below. The contrast is thus arrived at explaining the evidences achieved in analyzing semantics of the two tables.

The faculty of mind which Satipaṭṭhānasutta describes is the mental faculty: remembering (*sati*) to be established upon practicing in four frames of references: body (the object), feelings, mind and mental qualities. *Sati* practiced in the four frames of reference brings one's mind to *right sati* which means the ability to recollect exactly the practiced contemplations, then the practice of right sati brings the mind towards *alertness*. In the state of alertness, one must deal with the presently physically performing actions simultaneously with the events in the mind so as bringing memories from the past to bear on a clear alertness of events in the present. The alertness brings forth the third mental factor called *ardency* coupled with compunction. A practitioner of such greater sati is ardently analyzing the four frames of references with a desire to avoid what is unbeneficial happening in the body, feelings, mind and mental qualities planning future of his mental state.

<b>Sammā sati: (right) Mindfulness</b>	<b>Category</b>	<b>Super category</b>	<b>Subcategories</b>	
	<p>1. Sati [Memory]  (remembering and remaining focused on particular experience as the frame of reference in the midst of all awareness of sensory experiences)</p>	<p>1.1 Sati on the body (The physical body of things)</p>	<p>1.1.1 Remaining Focused on: a particular topic in the midst of other experiences of the body (physical experience)</p>	
			<p>1.1.2 Remaining Focused on: a particular quality in experience as they arise. The inconsistency of the body</p>	
		<p>1.2 Sati on the feelings</p>	<p>1.2.1 Remaining Focused on: the feelings</p>	
			<p>1.2.2 Remaining Focused on: inconsistency of feelings</p>	
		<p>1.3 Sati on the mind (how the mind relates to the object of its focus)</p>	<p>1.3.1 Remaining Focused on: the mind</p>	
			<p>1.3.2 Remaining Focused on: inconsistency of mind</p>	
		<p>1.4 Sati on the mental qualities</p>	<p>1.4.1 Remaining Focused on: the mental qualities</p>	
			<p>1.4.2 Remaining Focused on: inconsistency of mental qualities</p>	
		<p>2. Sampajañña [Alertness]  Knowing both events in the mind activities of the (physical) body as they are functioning.  Correlation between past and the present experience</p>	<p>2.1 knowing the physical functions while possessing clear awareness of what is happening at present</p>	<p>2.1.1 knowing Physical function as they arise</p>
				<p>2.1.2 knowing Physical function as they become established</p>
	<p>2.1.3 knowing Physical function as they subside</p>			
	<p>2.2 knowing the thoughts while possessing a clear awareness of what is happening at present</p>		<p>2.2.1 knowing the thoughts as they arise</p>	
			<p>2.2.2 knowing the thoughts as they become established</p>	
<p>2.2.3 knowing the thoughts as they subside</p>				

		2.3 Knowing the perceptions while possessing a clear awareness of what is happening at present	2.2.1 knowing the perceptions as they arise
			2.2.2 knowing the perceptions as they become established
			2.2.3 knowing the perceptions as they subside
	3. Otappa /Atappa Ardency and compunction	3.1 Desire to avoid unbeneficial mental qualities	3.1.1 Desire to avoid unbeneficial qualities already arisen
			3.1.2 desire to avoid unbeneficial qualities yet to arise
		3.2 Desire to stimulate beneficial mental qualities	3.2.1 Desire to awaken beneficial qualities already arisen
3.2.2 Desire to awaken beneficial qualities yet to arise			

**Table 02. Tabulated semantic values of the prospective taxonomy items of Mindfulness**

Reflection in metacognition taxonomy is the quintessence that establishes knowledge of cognition which is described further in three levels: declarative, procedural and conditional knowledge. The taxonomy of metacognition brings the next level of phenomena as regulation of cognition which entails two dimensions namely: metacognitive skill & executive functioning preceded towards metacognitive feelings and judgements. The process of executive functioning includes monitoring and control of cognitive phenomena followed by regulation gained upon executive functioning.

	Category	Super category	Subcategories
Metacognition	1. Knowledge of cognition metacognitive knowledge meta-knowing: person, task & strategy	1.1 Declarative metacognitive Knowledge (knowing that)	1.1.1. knowledge of self & others
			1.1.2. knowledge of task & context
			1.1.3. Knowledge of strategy

		1.2 Procedural metacognitive knowledge (Knowing How)	1.2.1 knowledge of self & others  1.2.2. knowledge of task & context  1.2.3. Knowledge of strategy
		1.3 Conditional metacognitive knowledge (knowing when, where, why)	1.3.1. knowledge of self & others  1.3.2. knowledge of task & context  1.3.3. Knowledge of strategy
	2. Regulation of cognition/Metacognitive skills	2.1. Regulation of cognition  Metacognitive skills & Executive Functioning	2.1.1. Monitoring & control  2.1.2. Self-regulation
		2.2. Metacognitive Experiences	2.2.1. Metacognitive Feelings  2.2.2. Metacognitive Judgments

**Table 03. Tabulated semantic values of the taxonomy items of Metacognition**

- Based on the (Tarricone, 2011) *Taxonomy of metacognition, Tarricone (2011)*

Mindfulness = Remembering and Recollecting + Alertness + Ardency and Compunction

Metacognition = Knowledge of cognition + Regulation of cognition

The quintessence of metacognition is reflection and in mindfulness of the Buddha's discourse, remembering and remaining focused is the faculty within mind that is the cornerstone for establishing mindfulness. The semantics of the cornerstones of two taxonomies remain thus aligned and identical one another. The category levels of the taxonomies in contrast share common features. Mindfulness in Satipatthānasutta establishes

the fact that upon completion of the right establishment of alertness, the next ordain of mind is attained. That includes compunction and ardency. That is the desire to avoid unbeneficial and desire to stimulate beneficial mental qualities. This level of mind process is likely to that of metacognitive experience interpreted in taxonomy of metacognition, which is about metacognitive feelings and judgments that arouse because of completing the rest. The mindfulness taxonomy considers the level: alertness which is *sampajañña* which encapsulates knowing both events in the mind and activities of the (physical) body as they are functioning. This also synonyms with executive functioning or monitoring and regulation. Here, the alertness is practiced in three knowing: on body, thoughts and functions while possessing a clear awareness of what is happening at present. The super categories of the two taxonomies remain reasonably identical in terms of semantics. Thus, the semantics of the two taxonomies remain exact about their alignment in sub category, super category and category levels that functions in a sequence constructing the output either metacognition or mindfulness. The replicas of semantics in two taxonomies are thereby found to be abundant.

### **Conclusions**

The taxonomy of metacognition remains an attempt to conceptualize the metacognitive construct with special reference to its constituents and the limits of each category. The taxonomy of mindfulness encapsulates the pathway for orchestrating mind towards mindfulness. The two taxonomies have shown replicas in each: category, super category and sub category levels with multifarious degrees. The quintessence of the two taxonomies that establishes mindfulness or metacognition remains identical in terms of semantics. Despite the difference in object of the contemplation in each taxonomy, most of the categorical level constituents of both taxonomies remain identical.

Among the further research, studies oriented for calibration of such taxonomy for applied concerns in to the fields such as education, learning, cognitive psychology, pedagogy, psychopathology etc. are included.

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