Monadic Emotions, Dyadic Emotions, Triadic Emotions: The 1-2-3 Emotion Model (Peircean Kainopythagorean Phaneroscopic Model of Emotion) and the Fundamental Questions to the Emotion-Involved Processing Hypothesis

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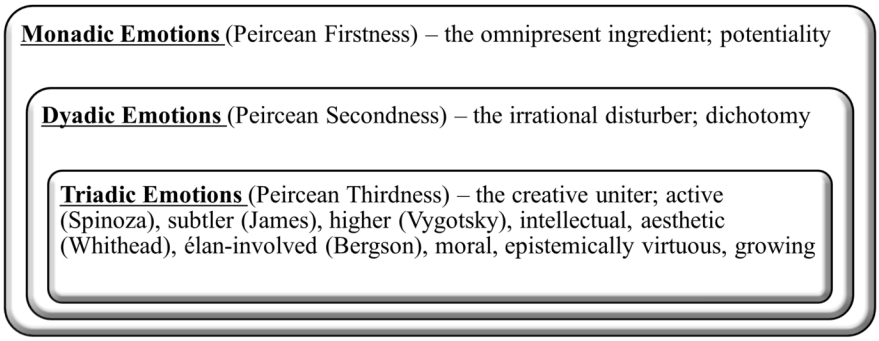
Abstract

In this paper, the author theoretically elaborated on the Emotion-Involved Processing Hypothesis (Kanazawa, 2021 in *Sage Open*) via three fundamental questions. Utilizing the undereappreciated phaneroscopic categories of Charles Sanders Peirce and via a plethora of previous findings in psychology, philosophy, and neuroscience, the author proposed a novel and promising conceptual framework of Monadic, Dyadic, and Triadic Emotions that has multiple advantages and significant potentiality for applying in different disciplinary investigations on emotion. The trans-disciplinary potentiality of the conceptual framework proposed in this manuscript will not only intrigue readers from diverse academic domains but also provide alternative analysis perspectives to help researchers delve deeper into conceptualizing emotions and giving rationales to research findings.



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Abstract

Commencing with addressing the three fundamental questions about Emotion-Involved Processing Hypothesis, this paper proposes a new conceptual framework of emotion based on the original adaptation of the legacy of Charles Sanders Perice's kainopythagorean phaneroscopic categories. Through a plethora of lines of facts in philosophy, psychology, and neuroscience, the validity and the pragmatic values of classifying emotion into three Peircean categories – Monadic Emotions (the Omnipresent Ingredient), Dyadic Emotions (the Irrational Disturber), and Triadic Emotions (the Creative Uniter) – are delineated. The proposed 1-2-3 Emotion Model (Peircean Kainopythagorean Phaneroscopic Model of Emotion) has multiple advantages that make it a promising conceptual framework for future emotion study in cross-disciplinarily fields.

Keywords: Emotion, Monad, Dyad, Triad, Firstness, Secondness, Thirdness, Peirce, Phaneroscopy, Category, Classification of Emotions, 1-2-3 Emotion Model, Conceptual Framework, Emotion-Involved Processing

Introduction

It is now widely accepted that cognition is intertwined with emotion. Learning is successful when cognitive processes are optimally facilitated by well-harnessed emotional processes. Echoing with the rising awareness of the importance of emotion in multidisciplinary academic domains (Dukes et al., 2021), Kanazawa (2020a) proposed Emotion-Involved Processing Hypothesis (EIPH) as an extension of the Levels of Processing model in cognitive psychology (Craik & Lockhart, 1972). Based on experimental verifications, the Levels of Processing model postulated that perceptual processing (e.g., thinking about the spelling of the target word) is *shallower* than semantic processing (e.g., thinking about the meaning of the target word), resulting in the formation of weaker memory traces. As a consequence of philosophical, psychological, and linguistic investigations, the EIPH added another – *deeper* – layer in the Levels of Processing model: Emotion-Involved Processing (e.g., thinking about the emotional meaning of the target word, relating it to your personal preference). Kanazawa (2021) empirically showed that Emotion-Involved Processing results in better long-term

retention than non-emotional semantic processing, supporting the EIPH. The EIPH along with its tripartite levels of processing was further extended by Kamenická's (2021) Apple Tree Model, dilating the didactic horizons of EIPH. Indeed, the implication and the potentiality of EIPH as a psycho-philosophical model goes beyond the domain-specific paradigm of vocabulary memory.

There are, however, several fundamental questions – or riddles – that could be posed about the EIPH, especially when trying to situate it in a wider perspective beyond lexical retention studies. Neuroscience connoisseurs may wonder whether cognitive processing could even be devoid of emotional processing from the first place. Pathologists may question the validity of taking the unnecessary – and potentially dangerous – trouble of involving emotion in cognitive processes instead of regulating emotions. Virtue epistemologists may be curious about what kind of emotion should be involved for the intellectually virtuous character traits. This paper is a theoretical attempt to answer these questions via elaborating on the concept of emotion, utilizing Peircean kainopythagorean phaneroscopical categories as the guiding light (Peirce, nd/1958).

Peircean Kainopythagorean Phaneroscopic Categories

Before proceeding to answering the fundamental riddles, the guiding theoretical framework is explained. Kainopythagorean phaneroscopic categories were proposed by Charles Sanders Peirce (1839-1914), an outstanding American polymath in science, mathematics, philosophy, and logics (Everett, 2019). Although he is widely known as the father of pragmatism and semiotics, he has also made significant contributions in phaneroscopy – Peircean terminology denoting phenomenology, the study on the collective total of all that is present to the mind (Peirce, 1904-1905/1931e, CP 1.284). Through a plethora of multidisciplinary evidence and deep phenomenological observation, he based his phaneroscopy on three distinct irreducible categories: Monad (Firstness), Dyad (Secondness), and Triad (Thirdness).

Monad (Firstness) is the protoplasmic feeling, "an instance of that sort of element of consciousness which is all that it is positively, in itself, regardless of anything else" (Peirce, 1894-1910/1931b, CP 1.306), "a state, which is in its entirety in every moment of time as long as it endures" (Peirce, 1894-1910/1931b, CP 1.307), something initiative, original, spontaneous, evanescent – "every description of it must be false to it" (Peirce, 1887-1888/1931a, CP 1.357). Furthermore, Monad is omnipresent – "Every operation of the mind, however complex, has its absolutely simple feeling, the emotion of the tout ensemble" (Peirce, 1894-1910/1931b, CP 1.311). Cognition cannot exist without Monad because it is Monadic feelings that "form the warp and woof of cognition" (Peirce, 1887-1888/1931a, CP 1.381).

Dyad (Secondness) is the element of struggle, the polar sense, the negating otherness, the act of brute force or arbitrary will in an individual fact where two different things are abruptly brought into oneness, causing resistance. The mutual action between the two things cause struggle, just like when

experience forces something we took for granted into the background and compels us to think quite differently (Peirce, 1894-1905/1931c, CP 1.322-328). Dyad is "the duality of [active] agent and [passive] patient, of effort and resistance, of active effort and inhibition, of acting on self and on external objects" (Peirce, 1894-1905/1931c, CP 1.332). Dyad cannot exist without Monad, because Dyad abuts on Monad, becoming other, negative, or incongruent in relation to it (Peirce, 1887-1888/1931a, CP 1.358). What is notable is that Dyad is not mediated by any reason nor generality, hence being the hic et nunc brute force, from which cognition suffers its irrational effect passively.

Triad (Thirdness) is the "uniter" (Peirce, c. 1896/1931d, CP 1.476) – "that which is what it is by virtue of imparting a quality to reactions in the future" (Peirce, 1875-1903/1931f, CP 1.343). Triad could phenomenologically be felt as "the desire in seeking to attach the one to the other" (Peirce, 1875-1903/1931f, CP 1.342), and it is the process whereby the accidental characters become fixed, the tendency to take habits, and the process of evolution via mediation (Peirce, 1891/1934, CP 6.32). Ideas of prominent Triad include generality, infinity, continuity, diffusion, growth, and intelligence (Peirce, 1875-1903/1931f, CP 1.340). Triad is what makes semiotic processes possible via synthesis and mediation, which "springs out of the plural consciousness or sense of learning" (Peirce, 1887-1888/1931a, CP 1.378). Triad is what unites Monad and Dyad. Interestingly, the distinctive character of Triad is a monadic element (Peirce, c. 1896/1931d, CP 1.471). In other words, the sui generis values of each Monad are preserved, appreciated, and sublated by Triad that mediates otherness in an intellectual manner driven actively in harmony with the rational cognition.

The tripartite phaneroscipic categories have been applied to varieties of phenomena in different academic disciplines – including mathematical logics, metaphysics, physiology, biology, physics, and psychology (Peirce, 1887-1888/1931a). When applied to psychology in general, emotion/feeling was simply classified as Monad, perception of external fact as Dyad, and thought as Triad. This application, however, misses the fundamentality and granularity of emotions as well as the complex variety among different functions of different kinds of emotions. This paper is an attempt to apply the phaneroscopic categoties to explain the intra-diversity among emotions – delving deeper than the level of psychology in general.

Monadic Emotions – the Omnipresent Ingredient

Study in neuroscience has revealed that emotion is not only intertwined with cognition, but also constituting the building blocks of cognition. MacLean's (1990) evolutionary account of the triune brain depicts how neocortical higher cognition is built upon and based on the inner layers of the brain which precede neocortex ontogenetically and phylogenetically: the emotional limbic system and the instinctive reptilian cortex. Damasio (1994) investigated the cases of brain lesions, finding the basic human cognition in social life such as daily decision making is significantly damaged when the lesion extended to the ventromedial prefrontal cortex – which plays a central role in emotional associations

via somatic markers. Prinz's (2004) embodied appraisal theory eloquently argues emotion, which could notably be unconscious, plays pivotal roles in perceiving bodily states, allowing an agent to adapt to the situation. Barrett's (2014) conceptual act theory argues emotion is cognitive as well as perceptual, constructed within the brain's domain-general functional architecture for creating situated conceptualizations. LeDoux and Brown (2017) proposed that it is not qualitatively different lower-order processes of subcortical circuits but higher-order representations of cortically based general networks of cognition that is involved in emotions, reaching the conclusion that emotions are in fact cognitive states. Duncan and Barrett (2007) succinctly stated that the emotion–cognition distinction is more phenomenological than ontological. The primitive form of thought is the conjunction of senses with emotions (Bohm, 1980). The background feelings (Damasio, 2010) and the ancestral emotional systems underlie human personality structures and intelligence (Montag & Panksepp, 2017) seem to be omnipresent – no matter simple or complex the engaged cognitive processes are, the primordial emotional processes are at work as long as you are alive and awake, consciously or unconsciously supporting – enabling – cognition (Ciompi, 1997). These lines of facts lead to the following question: *Can any cognitive processing be devoid of emotional processing from the first place?* If it all kinds of conscious processing were emotional as well as cognitive, the ode to Emotion-Involved Processing would end up being a tautology.

These fundamental omnipresent types of emotion are similar to what Alfred North Whitehead calls emotion-involved actual entities (Whitehead, 1929/1978), and are harmonious to the emotional ingredients that form the warp and woof of cognition (Peirce, 1887-1888/1931a, CP 1.381). Here it becomes clear that by emotions or feelings what has been discussed by the scientists above has the characteristics of Peircean Monad – the omnipresent protoplasmic feeling that is involved in all types of mental operations. Let us call this fundamental omnipresent type of emotions Monadic Emotions. Therefore, the answer to the first question would be: *Cognitive processing cannot be devoid of Monadic emotional processing, but there are more in emotion than Monadic Emotions.* The scope of Emotion-Involved Processing is not to involve Monadic Emotions per se – they already are – but to involve something beyond.

Dyadic Emotions – the Irrational Disturber

Emotion has traditionally been conceptualized as the archenemy of the rational intellect. Ancient Stoic philosophers aimed at reaching the state of mind not disturbed by emotions - ἀπάθεια (*apatheia*). To borrow from the Pax Romana Emperor Marcus Aurelius Antoninus, ελεύθερα παθών διάνοια (*eleuthera pathon dianoia*) – a mind free from passions – is a fortress more secure than any other places (161-180/2002, Book VIII, Article 48). According to René Descartes' seminal theorization, emotions were identified as the passion of the soul – the intellect is passively affected by emotions, which were aroused by the body, transmitted by way of the pineal gland (Descartes, 1649/1989).

Although the Cartesian radical mind-body dualism as well as the theory of animal spirits are negated by the modern science, the dichotomous view of human psyche still lives on. One of the most flourishing topics of emotion studies – emotion regulation – is in a sense a modern descendant of the dichotomous view. Emotion regulation is defined as "the processes by which we influence which emotions we have, when we have them, and how we experience and express them" (Gross, 2002). This could be achieved by a number of regulation strategies, such as cognitive reappraisal of negative situations (antecedent-focused) and suppression of negative emotions (response-focused). Obviously, what is connoted by "*we"* in the definition is the rational beings capable of cognitive strategies unyielding to the disturbing effects of emotions. Emotion regulation has pathological and clinical significance, too. Cognitive behavioral therapy, for example, has been shown effective in improving patients' mental health by regulating emotions to detach from dysphoria-invoking negativity (Moyal et al., 2014). These lines of facts lead to the following question: *Why do you take the risk of unnecessarily involving emotion in cognitive processes – which could result in devastating pathological effects – instead of regulating emotions, protecting yourself from their disturbing impacts?* If emotion was a disturbing force, actively trying to involve emotions in otherwise nonemotional cognitive operations would be seen as playing with fire – an act of stupidity.

What is notable for these types of emotion is that they are usually negatively valenced. In other words, what needs to be regulated and managed are usually such negative emotions as fear, fright, and anger. These emotions are exactly what William James (1890) classifies as the *coarser* emotions, which correspond to Lev Vygotsky's (1931-1933/1999) *lower* emotions. These coarser/lower emotions are phenomenologically felt as the act of brute force, where the active irrational emotional spur attacks your cognition abruptly and irrationally. The struggle between the emotional agent and the passive cognition may end up either in the victory of cognition – successful emotion regulation, or the victory of emotion – emotion regulation failure. Here it becomes clear that this type of potentially pathological emotional force that entails agent-patient duality has the characteristics of Peircean Dyad – the irrational disturber that needs to be well regulated. Let us call this type of emotions Dyadic Emotions. Therefore, the answer to the second question would be: *Indeed, the Dyadic emotional spur should be regulated wisely, but there are more in emotion than Dyadic Emotions*. The scope of Emotion-Involved Processing is not to involve Dyadic Emotions per se – it could do more harm than good – but to involve something beyond.

Triadic Emotions – the Creative Uniter

One of the most prominent contemporary movements in philosophy is virtue epistemology – one major approach interested especially in the roles and nourishing of intellectual character virtues, such as curiosity, attentiveness, open-mindedness, and epistemic courage (Baehr, 2016a). As is shown by the fact that the affective dimension is an important constituent of intellectual virtues (Baehr,

2016b), emotion is highly relevant to educating for intellectual virtue. The intellectual virtues spread beyond intelligent abilities per se, including non-cognitive skills such as integrity, compassion, and creativity. Non-cognitive skill development is what is now called for in education (Kassenboehmer et al., 2018), echoing with the rising movement of social-emotional learning (SEL; Immordino-Yang et al., 2019). Being mindful of these state-of-the-art concerns in epistemic development and education, the following question could be posed: *What kind of emotion should be involved for better learning?* We have seen that they are not Monadic emotions because they already are the constituent of all kinds of cognitive processes, regardless of our conscious attention to them. We have also seen that they are not Dyadic emotions because they are the target of emotion regulation. What emotions, then, are to be involved for deeper and higher learning?

The shift from Dyadic emotions toward something beyond was implied by Benedict de Spinoza, who insightfully noted that a passive emotion (i.e., Dyadic Emotions) ceases to be passive as soon as we form a clear and distinct idea thereof, thus becoming more under our control (Spinoza, 1677/1833, Part V, Proposition III). The brute force is now known, mindfully prehended by the intellectual consciousness and deep self-reflection. This higher-order cognitive processes are capable of changing the quality of the once-passive emotion to an active emotion harmonious to intellectual deliberation. The negatively valenced emotional spur is calmed while the positively valenced emotional haecceity is mindfully captured, defying its evanescent destiny via intellectual generalization. Henri Bergson provides further insights. He distinguishes two kind of emotions – l'infra-intellectuel and le supra-intellectuel – and argues that the latter type of emotions does not only beget thought but also incites the intelligence to undertake ventures and inventions. It is emotion that creation signifies, and such creative emotions have been the source of the great creations of art, of literature, of science, and of civilization in general (Bergson, 1932/1935, pp. 31-33). In other words, some special types of emotions are harmonious to cognition, or further, they elevate cognition to intellectual adventure and growth, manifesting themselves as the genesis of intuition in intelligence. They are creative emotions, the direct projection of the Bergsonian metaphysical élan vital (Deleuze, 1966/1991). These emotions could take the form of moral or religious emotions – élan d'amour – seen in dynamic religions (Bergson, 1932/1935). They could also take the form of intellectual feelings (Whitehead, 1929/1978) or aesthetic emotions that provide us with vivid apprehensions of value, by which teachers can put organic life into education instead of pouring inert knowledge into students' heads (Whitehead, 1929). Furthermore, "[j]oy is the normal healthy spur for the élan vital" (Whitehead, 1929, p. 49), indicating the positively-valenced creativity of this type of emotions.

These emotions are exactly what James (1890) classifies as the subtler emotions, which correspond to Vygotsky's (1931-1933/1999) higher emotions. The subtler/higher emotions are embedded within an active state of consciousness, making it harmonious to the intellect, or further, they transcend the dichotomy of emotion-cognition and active-passive. Under the intuitive guidance

of the higher emotions, emotion and cognition are organically and harmoniously united into oneness. The virtuous moment and its pure Monadic quality are protected from the Dyadic brute force, now being fixed via new mindful conceptualizations and habituations – the grounding process supported by emotion-involved cognition = cognition-involved emotion. Here it becomes clear that this type of creative emotional élan vital that harmoniously involves cognition, transcending the dichotomy, has the characteristics of Peircean Triad – the future-oriented uniter that makes growth and learning possible via intelligence-involved mediation. Peirce himself acknowledges that the highest kind of synthesis is the Triadic kind, which is accomplished via intuition – the regarding of the abstract in a concrete form by the realistic hypostatization of relations – and that in its conduct a poet or a novelist is not so utterly different from a scientist (Peirce, 1887-1888/1931a, CP 1.383). Let us call this type of emotions Triadic Emotions. Triadic Emotions exist based on Monadic Emotions and Dyadic Emotions, harnessing both well not by inert cognition but by rational emotion-involved conducts. Therefore, the answer to the third question would be: *Triadic Emotions are to be actively involved for deeper and higher learning. Furthermore, under the conduct of Triadic Emotions, Monadic Emotions, Dyadic Emotions, and cognition are orchestrated optimally.* In other words, the scope of Emotion-Involved Processing lies in trying to involve Triadic Emotions that are active, subtler, higher, intellectual, aesthetic, élan-involved, moral, epistemically virtuous, and ever-growing.

Discussion, Future Prospects, and Conclusion

Commencing with the three fundamental questions about Emotion-Involved Processing Hypothesis, a plethora of philosophical, psychological, and scientific lines of facts have led us to a new theoretical prospect to discern the different types of emotions in a parsimonious manner. Figure 1 is the succinct depiction of the discussion above, which could be named Peircean Kainopythagorean Phaneroscopic Model of Emotion (1-2-3 Emotion Model). This model is architectural (or pyramidical): Monadic Emotions are the ground on which the foundational Dyadic Emotions are laid, on both of which the sophisticated Triadic Emotions could be built.

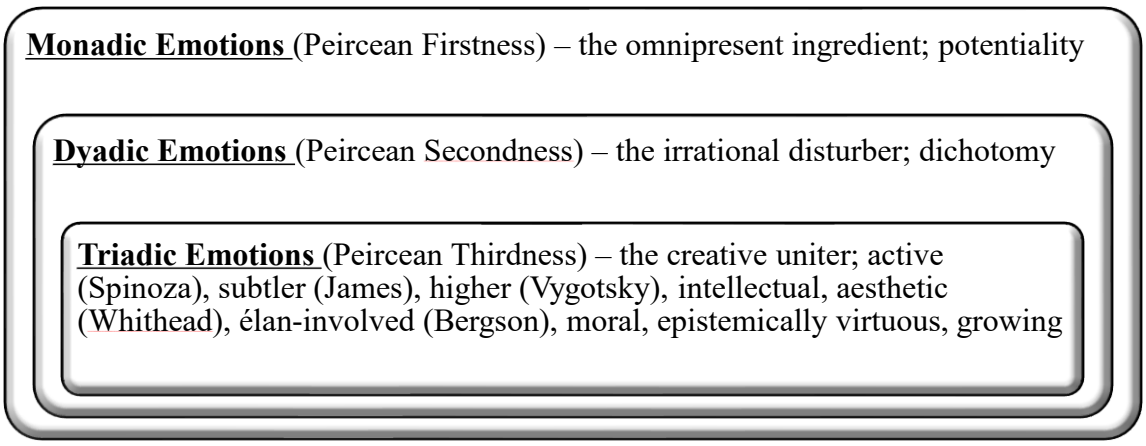

Figure 1. Peircean Kainopythagorean Phaneroscopic Model of Emotion (1-2-3 Emotion Model)

The 1-2-3 Emotion Model has multiple advantages that make it a promising conceptual framework for future emotion study in cross-disciplinarily fields. First, the model is harmonious to modern scientific findings. For example, Fukuda (2008; 2014) proposed the Hierarchical Hypothesis of Emotions Based on Evolution, in which he classified emotions according to the fundamentally different qualities with different phylogenetical origins, brain structures, and brain functions. The hypothalamic first-person intra-individual primitive emotions concerned with homeostasis, the limbic second-person inter-individual basic emotions concerned with survival, and the neocortical third-person inter-/intra- group social/intellectual emotions/feelings bear stark resemblance to Monad, Dyad, and Triad Emotions in the 1-2-3 Emotion Model, respectively.

Second, the 1-2-3 Emotion Model is topological: it is based on the classification according to the form/structure of the elements (εἶδος) rather than according to their matter (ὕλη), making it more applicable to various domains of study (Peirce, c. 1908/1931g, CP 1.142). In contrast, Fukuda's (2008; 2014) hypothesis is an example of the classification according to the matter, and the labeling of phanerons based on the quality matter (e.g., primitive, basic, social, intellectual) would inevitably attach certain semantic and pragmatic connotations to each category, explicitly and implicitly limiting – and potentially skewing – the scope of each category. Monad, Dyad, and Triad, on the other hand, are contamination-free mathematical terms, making it easier to abstract similarities and differences between phenomena with no undesirable connotations, beyond seeming differences and similarities caused by language.

Third, the 1-2-3 Emotion Model extends C. S. Peirce's underappreciated legacy with immense potentiality and applicability. The American polymath gave rise to new fruitful academic domains and topics such as semiotics, pragmatism, and abductive reasoning. Compared to these hot topics, the phaneroscopy as well as its tripartite phanerons, however, has been underinvestigated by later scholars despite its academic value and the profound ontological as well as epistemological scopes. Fourth, the

1-2-3 Emotion Model gives insights and rationales to various issues in emotion study. For example, the difference between hedonism and eudaimonia in positive psychology (Seligman, 2002; Kanazawa, 2019) could be explained as the involvement of positively-valenced Triadic Emotions in the latter while the lack of it in the former. The involvement of Triadic Emotions rather than Dyadic Emotions could also explain the role of mind wandering (default mode network) in creative processes (Yamaoka & Yukawa, 2020), which is one of the latest topics of interest in neuroscience. The Deep Positivity Hypotheses postulates the positivity effect for deep/semantic processing while the negativity effect for shallow/perceptual processing (Kanazawa, 2020b), which would also be compensated with the phaneroscipic ideas: Dyadic Emotions are usually negatively-valenced and concerned with non-intellectual and survival processes while Triadic Emotions are usually positively-valenced and concerned with intellectual and creative processes. The fundamental difference between coping with Dyadic Emotions and involving Triadic Emotions may well be taken into account more explicitly when analyzing self-regulatory emotion control strategies (Tseng et al., 2006), emotional intelligence (Petrides, 2010), affective structures (Sharwood Smith, 2017), affective enhancement (Truscott, 2015), and affective engagement (Cook et al., 2020) – all are relevant in the latest education study. The notion of Triadic Emotions would also pave the way for theorizing sophisticated emotions that have been proposed and investigated independently – such as the intellectual emotions (Goldie, 2012), academic emotions (Pekrun & Reinhard, 2012), and epistemic emotions (Morton, 2010) – by giving them relational logical background as well as situating them in a larger picture of the synechistic Monad-Dyad-Triad developmental continuum of the emotional architecture.

As a final note, the 1-2-3 Emotion Model is not designed to replace the existing models of emotions nor to reduce the whole complex emotional phenomena into only three categories. There are further questions to be investigated in the 1-2-3 Emotion Model. How can diverse epistemic emotions be explained (Vogl et al., 2020)? How can virtuous Triadic Emotions be fostered? How can diversity in each emotional category be theorized? Is Peircean reduction thesis valid, or could there be Quadradic Emotions (Fourthness)? One promising future direction to answer these questions would lie in delving deeper into the Peircean genuine vs. degenerate forms of Dyad and Triad, which is beyond the scope of this paper that proposes the parsimonious trichotomous model for future investigation with higher and wider applicability. It can nevertheless be concluded that the parsimonious topological account of emotion proposed in this paper – Monadic Emotions, Dyadic Emotions, and Triadic Emotions – would serve as a useful cross-disciplinarily applicable alternative research strategy that could lead to new findings and insights that would have been unattained in the traditional frameworks or conventional matter-based classifications.

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