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UNDERSTANDING OVEREXCITABILITIES OF PEOPLE WITH EXCEPTIONAL ABILITIES WITHIN THE FRAMEWORK OF COGNITION-CONATION-AFFECT-AND-SENSATION

Kok Hwee Chia[1i],
Boon Hock Lim[2]
[1]EdD, Special Needs Consultant, Singapore
[2]PhD, Special Education Consultant, Malacca, Malaysia

Abstract:
People, young and old, with exceptional abilities, be they gifted, talented or savant, often manifest overexcitabilities (OEs) – innate intensities, heightened sensitivity and response to stimuli – that can impact positively or negatively or both on the developmental potential of an individual. The term *potential* refers to the human behavior (i.e., behavioral potential) that can be expressed in terms of thoughts (**C**ognition), actions (**C**onation), feelings (**A**ffect) and senses (**S**ensation), also known as CCAS model. This paper examines the concept of OEs which are stemmed from Kazimierz Dabrowski's (b.1902-d.1980) theory of positive disintegration (also known as a theory of personality development, emotional development and moral development) within the CCAS framework, where the authors have attempted to show the association between the behavioral potentials (BPs) of CCAS and the concept of the five OEs. As a result, a new model emerges to provide us a better understanding how OEs can help to better understand as well as enhance the development of human potential via BPs.

Keywords: affect, behavioral potential (BP), cognition, conation, human potential, overexcitability (OE), sensation

Introduction

People with exceptional abilities are often considered academically gifted and/or talented with an expected high level of intelligence or an IQ score of more than 130 (or

[i] Correspondence: email azagape@yahoo.com

in the 98th percentile range). The term *exceptional ability* is frequently used to refer to that capability of an individual who can achieve at a significant level of capacity ahead of his/her peer group.

However, from our experience as educational therapists working with all kinds of students with a diverse range of special educational needs, this is not always the true case. We do encounter several of those with very low intellectual capacity but they display remarkable abilities or extraordinary skills, especially in areas like drawing, calendar calculation, lightning computation, musical performance and visuo-spatial tasks, that are not normally manifested by most people. Then there are also others, whether they possess high, average or low IQs, whose exceptional abilities are found in non-academic areas (e.g., the arts including sculpturing and painting, drama and dance). In other words, exceptional abilities as well as intellectual capacities are best described as a continuum (see Figure 1 below) spreading across from the low end on one side consisting of those with low IQ but possess savant skills to the opposite high end consisting of those who are either exceptionally or profoundly gifted. However, low IQ is not necessarily the factor that accompanies those with savant abilities, since in some savant cases, IQ has been reported to be superior, too (Treffert, 2014). Hidden behind or beneath the savant skills not known to anyone is a sub-category of what is known as crypto-savant skills (see Rimland, 1990). These crypto-savant skills are not visibly known because the individuals with these hidden skills are nonverbal (or verbally impaired) and also severely intellectually challenged. It is extremely difficult to educate or train them, but there are a very small percentage of them who possess such hidden talents mainly the visuo-spatial skills.

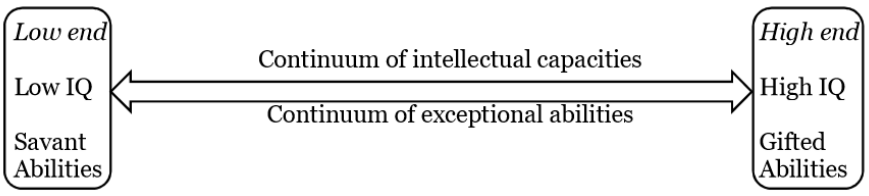


Figure 1: Continuum of exceptional abilities/intellectual capacities

Many, if not all, of these individuals, savant or gifted, with low or high cognitive capacities, do possess an inherent inclination to respond more intensely to specific different sensory stimuli, especially if these stimuli are related to their interest, found within their immediate environment and hence, fuel their inner excitement so strongly that, in turn, amplify their overall conative and affective responses. For example, an autistic savant artist can stay focused on his drawing so intensely because he is overly excited about doing something which greatly interests such that he forgets to eat and

drink or to take a toilet break. Another example is an intellectually gifted child with a strong streak of perfectionism that he is not satisfied with what he has done for his school project on dinosaurs and insists on re-doing it until he feels it is perfectly good. Dabrowski (1972) coined the term *overexcitability* (OE) to describe this inherent inclination.

1. Overexcitabilities (OEs): What are They?

The term *overexcitabilities* ("super-stimulatabilities") stems from Dabrowski's (1964) theory of positive disintegration, which is also known as a theory of personality development, emotional development and moral development (Bailey, 2010) (see Figure 2). The term *positive disintegration* is defined by Bailey (2010) as "*a process during which previously held personality structure must come apart in order to be replaced by higher-level personality structures*" (p.3). According to the online Psychology Dictionary (n.d.), personality structure refers to "*the ordering of the personality with regard to its basic elements and their union with one another*" (para.1). "The personality structure of one individual can be alike to or vastly different from another person, regardless of their relation to one another" (Psychology Dictionary, n.d., para.2).

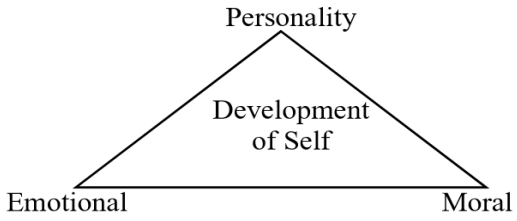


Figure 2: Theory of Personality, Emotional & Moral Developments

Briefly, the theory of positive disintegration grew out of Dabrowski's experiences during the two world wars, first while still a child and later when he was an adult. In his work as a psychologist later on, Dabrowski (1964) described examples of the worst inhuman behavior as well as acts of the highest human character he had witnessed (see Mendaglio, 2008, for easy and better understanding of Dabrowski's theory). The past experiences provided Dabrowski food for serious thought and certainly enriched fodder for developing his theory which, later, his colleague, Piechowski (2003), adapted to create the continuum of five developmental levels in personality structure: primary integration, unilevel disintegration, multilevel disintegration, directed multilevel disintegration, and secondary integration. It is not within the scope of this paper to delve into this issue but interested readers can read up Bailey (2010) for more detail.

Dabrowski's theory concerns the personality development of an individual as s/he "*moves from an egocentric approach to life to an altruistic one*" (Rinn et al., 2010, p.4). The personality growth hinges on developmental potential that includes three components: (1) special talents and abilities, including savant skills; (2) motivation; and (3) a physiological measure of neural reactivity in response to external stimuli that have been termed as overexcitabilities (OEs) (Mendaglio & Pyryt, 2004).

Developmental potential is an important factor determining the course of personality growth. OEs "*are influential to the acquisition of developmental potential*" and "*may lead to a series of developmental crises (positive disintegrations) and challenges that culminate in the emerging autonomous self-crafted personality, marked by altruistic life goals and self-acceptance*" (Rinn et al., 2010, p.4). We see this eventual level of personality development as having attained sensibility, sensitivity and sense-ability which will be elaborated later in this paper.

Dabrowski (1972) defined OEs as "*higher than average responsiveness of the nervous system to stimuli manifested by either psychomotor, sensual, emotional, imaginational, or intellectual excitability*" (p.303; words in italic are authors' addition). In other words, OEs are inborn intensities, heightened sensitivity and response to stimuli. They cannot be unlearned but can be managed. Individuals who manifest OEs are often gifted, talented or savant. Most, if not all, of them are visual spatial learners who are subject to OEs. Anyone of them can possess two or more OEs.

Mika (2002) explained that when we attach the prefix *over-* to the word *excitability*, the term has changes its meaning to indicate that "*the reactions of excitation are over and above average in intensity, duration and frequency*" (para.44). Moreover, "*[T]here is another essential feature characteristic for reactions of overexcitability, namely, that the response is specific for that type of overexcitability which is dominant in a given individual*" (Mika, 2002, para.44). Lee and Chia (2017) have elaborated further to stress that there are differences among overexcitation, hyperexcitation and hypoexcitation. In overexcitation, an individual has a clear target goal to achieve by intensifying his/her focus on a specific task to be done. In hyperexcitation, an individual is hyperactivated that s/he loses his/her focus on a given task such that the target goal is not met. In hypoexcitation, an individual lacks the will or motivation to complete a given task such that the target goal is never achieved.

When these excitabilities – psychomotor, sensual, emotional, imaginational and/or intellectual – are heightened intensely, individuals can become very sensitive because of the increased awareness (or mindfulness). We can safely say that OEs have taken over. Abundant psychomotor, sensual, intellectual, imaginational and/or

emotional energy can result in creative endeavors and advanced emotional and ethical development in adulthood (John Curtin College of the Arts, n.d.).

OEs provide a multifaceted lens to view the intensities of our experiences and responses to the world in order to see "*reality in a different, stronger and more multisided manner … for such … individual ceases to be indifferent but affects him/her deeply and leaves long-lasting impressions*" (Dabrowski, 1972, p.7). Hence, the enhanced excitability becomes a means for individuals to have more frequent interactions with the world from different perspectives and a wider range of experiences "*with qualitative differences including intensities, sensitivities, idealism, perceptiveness, overexcitabilities, asynchrony, complexity, introversion, perfectionism, and moral concern*" (Silverman, 2006) observed in gifted individuals. It is, therefore, not surprising that the concept of OEs has been introduced in the educational field of giftedness (Alias et al., 2013).

Dabrowski (1972) identified five types of OEs (see Figure 3) and, according to him, any individual may possess one or more of these. As already mentioned earlier, "*[O]ne who manifests several forms of overexcitability, sees reality in a different, stronger and more multisided manner*" (Dabrowski, 1972, p.7).

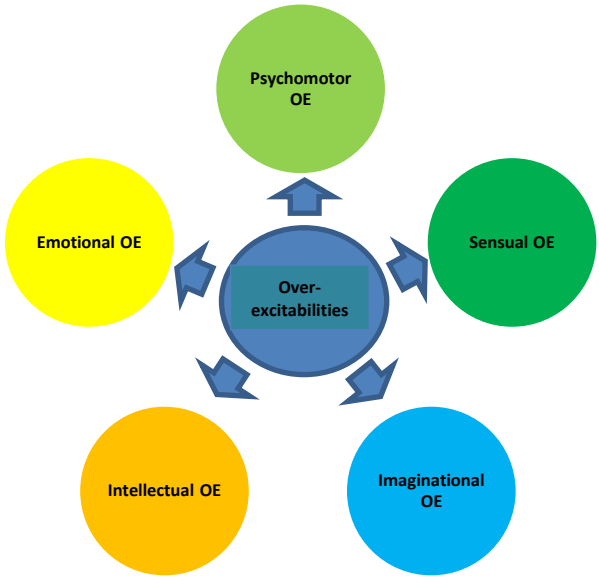


Figure 3: Dabrowski's (1964) concept of overexcitabilities

1.1 Psychomotor overexcitability (PMOE)

This OE is a heightened excitability of the neuromuscular system which includes a *"capacity for being active and energetic"* (Piechowski, 1991, p.287). It can also be characterized by an oversupply of energy as seen in psychomotor expression of emotional tension (Piechowski, 2006). Some of its manifestations include impulsive actions, talkativeness, tics, keen competitiveness, restlessness and/or fidgety. Children

who exhibit PMOE are often misdiagnosed for attention deficit hyperactivity disorder (ADHD). They are more kinesthetic-tactile learners and learn best by doing or participating in activities. An example of a known figure with PMOE is Colonel Percy Harrison Fawcett (b.1867-d.925), a legendary British explorer, whose obsession was to find the lost city codenamed Z, supposedly El Dorado, in the thick Amazonian jungles in Brazil. Even when his critics dismissed the city of Z as non-existent, Colonel Fawcett refused to accept it. He insisted on leading another expedition to the Amazonian jungles to find it and he did, but he was never to be seen again and presumed to have died of some jungle diseases or been killed by the hostile native tribes. Such was his strong obsession that "*many people thought Fawcett had become a trifle unbalanced. Some called him a scientific manic*" (Grann, 2009, p.184).

1.2 Sensual overexcitability (SOE)

This OE is a heightened sensory experience emanating from hearing, sight, smell, taste and touch (Piechowski, 1991). For example, a person who possesses a SOE for smell and taste would probably make a good chef if s/he can cook. The sensual experience can be either a pleasure or displeasure. As such, there are individuals who always seek certain sensory stimuli such as perfume (smell), strawberry ice-cream (taste) and silk (touch), while others would avoid certain unpleasant stimuli such as darkness (sight) and loud noise (hearing). Autistic savants are known to display different challenging sensory issues and hence, no two savants are the same. In Singapore, for instance, two supermarkets and a major toy store have instituted a quiet hour to make their environments more conducive for people with autism to enjoy shopping since they can be hypersensitive to lights and sounds in stores (Goy, 2017). For example, the Toys 'R' Us store at VivoCity, Singapore, opens earlier at 9am, dims its lights and switches off the public announcement system to create a more conducive environment for children with autism to shop for their toys with their parents. In this way, the needs of these individuals with SOE are being met or catered to. One good example of a person with SOE is an English writer, essayist, and translator called Daniel Tammet (b.1979-), also an autistic savant, who has been diagnosed with Asperger syndrome and synesthesia. Being a synesthete, Tammet manifests a neurological condition in which stimulating one sensory or cognitive pathway can lead to automatic, involuntary experiences in a second sensory or cognitive pathway. For instance, in Tammet's mind, he can see each positive integer up to ten thousand and each with its own unique shape, color, texture and feel. According to the semantic vacuum hypothesis (Mroczko-Wąsowicz & Nikolić, 2014), it is during childhood when a child is so intensively engaged with abstract concepts for the first time that synesthesia develops. This probably explains why the

most common forms of synesthesia involve grapheme-color, spatial sequence and numerals.

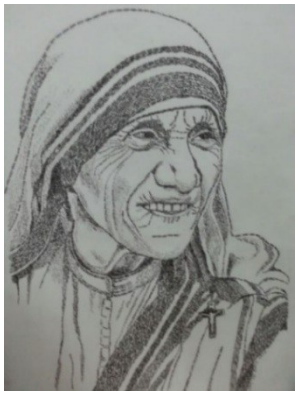
1.3 Intellectual overexcitability (InOE)

This OE is a superior activity of the mind with a strong passion "*to seek understanding and truth, to gain knowledge, and to analyze and synthesize*" (Lind, n.d., para.7). Individuals with InOE are often avid readers, inquisitive questioners, tensely curious and keen observers and they are often mistaken for being a nerdy bookworm, smart Alec and/or busybody. Many of them can be overly perfectionistic such that they are often unable to complete their projects or submitting their assignments on time. These are the individuals whom we often labelled them as Einstein. They possess a good capacity for intense concentration and enjoy theoretical thinking and preoccupation with theoretical problems that can last for weeks, months or even years! Some good examples of people with InOE include Alan Mathison Turing (b.1912-d.1954), a Cambridge University mathematician; Stephen William Hawking (b.1942-), a Lucasian Professor of Mathematics at the Cambridge University; and Srinivasa Iyengar Ramanujan (b.1887-d.1920), an Indian mathematician who had made substantial contributions to mathematical analysis, number theory, infinite series, and continued fractions.

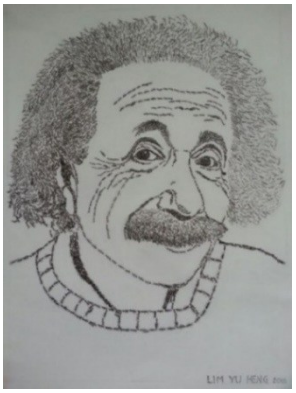
1.4 Imaginational overexcitability (ImOE)

This OE is a heightened play of the imagination "*with rich association of images and impressions, frequent use of image and metaphor, facility for invention and fantasy, detailed visualization, and elaborate dreams*" (Lind, n.d., para.9) or "*seen in spontaneous imagery as an expression of emotional tension*" (Sampson, 2013, p.6). "*Fueled by creativity, a love of stories and drawings, and fictional worlds, students with this overexcitability might daydream, doodle, or otherwise occupy their minds while a dull teacher drones on*" (Byrd, 2017, para.8). An example of a well-known author who certainly displayed ImOE is John Ronald Reuel Tolkien (b.1892-d.1973), the creator of a fictive world called Middle-earth in the widely read literary works and movies of the same titles, *The Lord of the Rings* trilogy and *The Hobbit*. Another example of a person with ImOE is Michelangelo di Lodovico Buonarroti Simoni (b.1475-d.1564), an Italian sculptor, painter, architect, and poet of the High Renaissance. Two of his best known sculptures are the *Pietà* and *David*, which he completed before the age of thirty. Michelangelo also created two well-known frescoes in the history of Western art: the first one depicts the scenes from Genesis on the ceiling of the Sistine Chapel in Rome; and the second one is *The Last Judgment* painted on its altar wall.

We have worked with individuals with strong ImOE. One is an autistic savant artist YH who would work continuously for hours drawing thousands and thousands, if not millions or more, of tiny ants to create remarkable portraits of well-known personalities (see Pictures 1 and 2 for portraits of Mother Teresa of Calcutta and Albert Einstein, respectively) (Lim & Chia, 2017a).

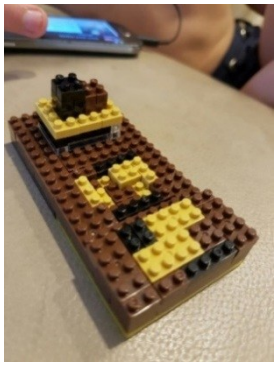


Picture 1: A Portrait of Mother Teresa



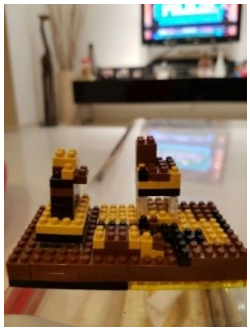
Picture 2: A Portrait of Albert Einstein

Another case (Lim & Chia, 2017b) involves an autistic crypto-savant, YY, defined by Rimland (1990) as an autistic individual "*who, because of inability to communicate, or unwillingness to communicate, has savant skills which are hidden, or secret, and unknown to those around them, including their parents and teachers*" (p.3). In other words, YY has been diagnosed with non-verbal low-functioning autism. Unlike YH, YY enjoys creating things with Lego bricks and likes to transform things he has already created into many other different things. For example, he created an aircraft carrier (Picture 3) and later transformed it into a tugboat (Picture 5).



Picture 3: YY's creation of an aircraft carrier

Picture 4: An aircraft carrier



Picture 6: A tugboat

Picture 7: A tugboat

1.5 Emotional overexcitability (EOE)

This last OE is a heightened excitability that reflects the intense feelings and extremes of complex emotions, empathy, compassion and sensitivity, often with strong emotional attachments to persons, animals, places and things (Piechowski, 1991). According to Byrd (2017), "*tragedies, injustice, and reminders of mortality might trigger an unexpectedly emotional response from these individuals with emotional overexcitability… Their sensitivity could show up as strong compassion, empathy, and concern for others*" (para.12). Individuals with EOE have been observed to be self-critical perfectionists who worry over small faults. They often show so much concern with death, existential dread or depression (Piechowski, 1979) that they manifest psychosomatic symptoms like headache, emotional stress and sweaty palms. They might be misdiagnosed for having emotional disturbance. An example of a person with EOE is probably Siddhārtha Gautama (b. c.563 BCE-d. c.483 BCE), also known as Gautama Buddha, who became disillusioned with his life in the palace. He left the place to see the world outside. During his first three trips, he saw sickness, old age and death. He felt so much for these people that he asked himself how he could enjoy a life of pleasure when everyone was suffering. During his fourth trip, he saw a wandering monk who had given up everything he owned to seek an end to suffering. In this regard, we felt there should be a sixth OE: the *spiritual overexcitability*, which may be associated with the bicameral mentality, supposedly to be the normal and ubiquitous state of the human mind as recently as 3000 years ago (Jaynes, 1976), but that will be an interesting topic for a separate paper.

As mentioned earlier, an individual can possess two or more OEs. Perhaps the most interesting figure to possess all the five OEs is Yeshua ben Yosef (b.4BC-d.30AD), also known as Jesus, son of Joseph, as depicted in the Bible (Lim, 2017). Table 1 below provides a summary of selected examples of Jesus' intensified excitabilities taken from the four canonical gospels.

Table 1: Examples of OEs manifested by Yeshua ben Yosof

OEs	Examples of Heightened Excitabilities
PMOE	Throughout His three years of ministry, Jesus worked diligently praying for the people and preaching to the crowds wherever He travelled. At times, He went away quietly from the crowds to spend His time alone in meditation.
SOE	Jesus' first miracle of turning water into wine recorded in the canonical gospel of Saint John provides a good example of SOE on taste. He also possessed a good sense of awareness of His environment (e.g., when he was travelling in a boat with His disciples in the Sea of Galilee when a tempest broke out) and knew how to manage it well.
InOE	While visiting a temple as a 12-year-old boy, Jesus amazed all the elders and teachers with His questions and showed His deep understanding and wisdom that had impressed them. When He was in His thirties, He often debated with the Pharisees and answered difficult questions that were posed by them.
ImOE	Jesus possessed a keen sense of imagination and was able to reach out to His disciples as well as the commoners through the parables He told. Another example is when His disciples asked Him how they would know the end times were near, He told them to look out for the signs, e.g., appearance of false prophets, rumors of wars, famine and pestilence.
EOE	Jesus showed a strong empathy for all: those who were anxious about their daily living needs, the blind, the crippled, the lepers, the demon-possessed, the tax-collectors, the prostitutes as well as the Gentiles. He grieved, too, when His friend Lazarus died. He preached the message of love and forgiveness to all: everyone should love one another, not only their loved ones and friends, but also, their enemies. This is agape love.

Table 2 below provides a summary of the five OEs with examples to provide a clear explanation for each of the sub-sections.

Table 2: A Summary of OEs with Examples

OEs (Abbreviations)	Psychomotor (PMOE)	Sensual (SOE)	Imaginational (ImOE)	Intellectual (InOE)	Emotional (EOE)
Examples of possible origins of respective OEs	• Genetic (brain dysfunction) • Prenatal & neonatal trauma • Severe childhood illness	• Genetic • Illness • Sexual trauma	• Insecure attachment • Co-existing diseases • Being the only child	• Mixed introversion and/or extraversion • Schizoid & introverted • One-sided development of specific abilities	• Hereditary • Past & present illnesses • Improper parenting
Main functions of	Expending of surplus of	Experiencing of sensory or	Visualization of events	Intensified activity of the	Experiencing of emotional

respective OEs	energy	aesthetic pleasure		mind	relationships
Examples of manifestations of respective OEs	• Impulsive actions • Fidgeting or restlessness • Rapid speech or compulsive talking	• Need to touch or be touched • Overeating • Sensitive to sensory stimuli (e.g., tags, lights, noises)	• Inventiveness • Intuitive or heightened consciousness • Intense living in the world of fantasy	• Persistent questioning • Hunger for knowledge • Keen observation & analytical abilities	• Strong attachment to persons, animals, things or places • Inhibition • Need for security
Suggested strategies for managing OEs	• Plan ahead for activity • Teach & show relaxation techniques • Introduce timeout choice (not punishment)	• Provide environments with limited offensive stimuli • Comfortable & appropriate clothing • Appropriate art, music, etc. to enhance learning	• Provide creative outlets • Use of imaginative ideas in problem solving • Scaffolding to help structure tasks	• Appropriate reading & study texts • Interact with other intellectual peers • Allow time & opportunity to develop & pursue	• Develop feeling vocabulary to help understand personality traits • Learn listening & responding skills • Avoid power struggles

2. The CCAS Framework and Overexcitabilities

2.1 Poland's Model of Behavioral Potentials (BPs)

According to Poland (1974), there are three classical behavioral potentials (BPs) for development and they are typically present at birth. They are thinking, action and feeling (see Figure 4). They will be discussed briefly below.

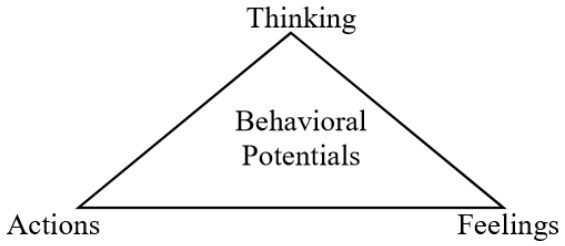


Figure 4: Poland's Model of Behavioral Potentials

- **Thinking**

"*This at-birth potential is often referred to as cognitive behavior*" (Poland, 1974, p.13). Cognition has to do with intellect, i.e., the use of the mind (conscious, subconscious and unconscious), whether logical or illogical. Thinking is not directly observable, but an individual may experience within him/herself what is called thinking. Thinking has been recognized and categorized under three levels: (1) low order thinking skills (LOTS), which consist of remembering, understanding and application; (2) middle order thinking skills (MOTS), which consist of analysis, synthesis and evaluation; and (3) higher order thinking skills (HOTS) consist of creation, disruptive innovation and imagination (Chia & Lim, in press). Such thinking can be taught and learnt. Hence, learning also constitutes a part of the thinking process. Without thinking, there is no actual learning.

- **Action**

The potential for action is constitutional (genetic). That is to say our "bodies are able to move, awkwardly and ineptly at first, but with a growing and developing smoothness and skill as the years pass" (Poland, 1974, p.13). Actions are observable behaviors (e.g., climbing, eating, jogging, singing, talking, or writing) and Poland (1974) referred to them as conative behaviors, which also include a great variety of automatic behaviors (e.g., walking) and habits (e.g., spitting on the floor or shaking the right leg while sitting on a stool).

- **Feeling**

This genetically based potential is sometimes known as affective behavior, and "*it has to do with a wide variety of behavior ranging from sadness and depression through happiness and ecstatic joy*" (Poland, 1974, p.13). Feelings are covert and so they are not directly observable, although they often may be expressed through action.

2.2 The CCAS Model

Although Poland's (1974) model of BPs resembles the CCAS model (see Figure 5) in some ways, the main difference is the omission of sensation in Poland's model. Figure 5 illustrates the triangulation of cognition, conation and affect. However, the model would have been incomplete without sensation or sensory component, which links all the other three components together. The CCAS model, whose focus is on the human potential, covers the four behavioral potentials and it consists of (1) cognition (Bloom et al., 1956); (2) conation (Riggs & Gholar, 2009); (3) affect (Krathwohl et al., 1964); and (4) sensation (Chia et al, 2010). Each of these four components is briefly discussed below.

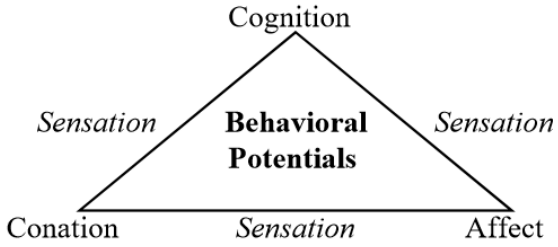


Figure 5: The CCAS Model of Behavioral Potentials

- **Cognition**

According to Huitt and Cain (2005), cognition refers to "*the process of coming to know and understand; of encoding, perceiving, storing, processing, and retrieving information*" (p.1). It is associated with Episteme which asks the question of "what." In the component of cognition, which, according to Poland (1974) "*has to do with intellect, the 'use of the mind,' whether it is logical or illogical*" (p.13), Bloom et al. (1956) have identified six levels of mental skills beginning with the lowest level: knowledge → understanding → application → analysis → synthesis → evaluation, and more recently, Anderson et al. (2001) have revised the model of cognitive domain to include remembering → understanding → applying → analyzing → evaluating → creating. (For more detail, read Bloom et al, 1956, and Anderson et al., 2001). The goal of developing cognitive BP is to attain sensibility – i.e., "" (Oxford Learner's Dictionaries, 2017).

- **Conation**

Conation - the second component in the CCAS model - refers to "*the connection of knowledge and affect to behavior and is associated with the issue of 'why'*" (Huitt & Cain, 2005, p.1). According to McDougall (1926), this is an old term used in classical psychology referring to willingness, desire or a striving towards achieving goals. Today the term *conation* is hardly being used and has been totally ignored by most educators in

academe (Reeves, 2006; Snow et al., 1996). Conation has also been confused with psycho-motion, which is concerned with the physical skills to perform a given task (Chia & Kee, 2013). Unlike psycho-motion, conation concerns whether an individual possesses the will, desire, drive, level of effort, mental energy, intention, striving, and self-determination to actually perform to his/her very best (Reeves, 2006).

According to Riggs and Giholar (2009), there are six attributes in the fundamental framework of conation beginning with the lowest level: belief → courage → energy → commitment → conviction → change. Parkison (2010) has simplified the framework into four levels of mental skills (since conation creates changes from within) beginning with the lowest level: personal discovery → transition → transformation → transcendency. (For more detail, read Riggs & Giholar, 2009, and Parkison, 2010). The goal of developing conative BP is to attain sense-ability – i.e., the ability to observe one's thoughts, feelings, and behavior, and how one's thinking will create many feelings and how the thoughts and feelings influence behavior as well as becoming aware of others and providing real-time feedback as to how one's feelings and behavior affect others, and may result in either inhibiting or inviting closeness, empathy, tolerance, emotional intimacy, interconnectedness, and oneness (Helmering, 2001).

- **Affect**

Affect refers to "*the emotional interpretation of perceptions, information, or knowledge*" (Huitt & Cain, 2005, p.1). Generally, affect is associated with an individual's attachment (positive or negative) to people, objects, ideas, and others and often ask the question of "How do I feel?" Krathwohl et al. (1964) provides an excellent description of affect: It is ordered according to the principle of internalization, which refers to "*the process whereby a person's affect toward an object passes from a general awareness level to a point where the affect is internalized and consistently guides or controls the person's behavior*" (Seels & Glasgow, 1990, p.28). Krathwohl et al. (1964) have listed five levels of affective attributes beginning with the lowest level: receiving → responding → valuing → organization → characterization by value. (For more detail, read Krathwohl et al., 1964). The goal of developing affective BP is to attain sensitivity.

- **Sensation**

Sensation is the fourth component in the CCAS model (Chia & Kee, 2013). It involves the functioning of the sensory systems and is defined as "*immediate and basic experiences generated by isolated, simple stimuli*" (Foley & Matlin, 2010, p.412). Sensation plays an important role in establishing perception, which interprets those sensations involved in

order to give them meaning and organization. It consists of two systems: interoceptive and exteroceptive senses (Chia et al., 2010).

Briefly, the interoceptive sensory system is made up of vestibule and proprioception that can impact on the exteroceptive sensory system which consists of five sensory organs: eyes (visual/see), ears (auditory/hearing), skin (haptic/touch), nose (olfactory/smell) and tongue (gustatory/taste). How sensation goes about processing and making sense or comprehending sensory inputs and thus, its impact on the motor coordination and motor outputs (i.e., motions and movements) depends on its involvement with cognition, conation and affect as follows (Chia et al., 2010): (1) the sensation between affect and conation involves self-awareness and self-regulation respectively; (2) the sensation between cognition and conation involves self-learning and self-regulation respectively; and (3) the sensation between affect and cognition concerns self-awareness and self-learning respectively.

Siegel (2007) has categorized senses into eight levels, which Chia and Chua (2014) have re-categorized into four levels (i.e., exteroceptive, interoceptive, mindsight, and relational senses): The first five levels consist of five exteroceptive senses, i.e., visual, auditory, haptic, olfactory and gustatory, which "*bring in information from the outside world, enabling us to sense this physical domain of reality*" (Siegel, 2007, p.122). The sixth level concerns interoceptive senses, (i.e., vestibular and proprioceptive senses) that include the sensations we experience in our limbs as well as the movements associated with the limbs, the muscular tension or relaxation, what Siegel (2007) has described as "*the state of our internal milieu, including our organs ... We use the process of interoception to perceive these important sixth sense inputs, bringing them into our sensorimotor awareness*" (p.122). The seventh level concerns the sensory ability to perceive the mind (i.e., thoughts, feelings, intentions, attitudes, concepts, images, beliefs, hopes, dreams) known as mindsight, which enables one to gain deep insight and empathy. It enables aspects of mind of oneself or other selves to be brought into the focus of attention. The eighth and last level is relational sense, which is also known as sense ability (Helmering, 1999). This relational sense allows us to attune with other people and become aware of feelings felt by others and, in turn, it enables us to feel a part of the larger whole or community.

In this paper, we have also adapted from Gabbard (2012) to create our own framework for sensation and want to recommend for a further study to find out if it is a suitable concept (beginning from the first level): stimulation → sensory input → neural translation (reception) → neuro-cortical reaction → perception (monitoring and interpretation) from different modalities, and the interpretation given to the information received is based on past experience (memory) and cognitive analysis

(judgment) of the information → discrimination of information (i.e., similarities or differences, arrangements, and organization) → integration of information received from different perceptual modalities (see Gabbard, 2012, for more detail).

It is interesting to note that when conation and affect come together, they constitute what is known as *orexis* (a Greek word that refers to the conative-affective character of mental activity as opposed to the cognitive aspect). It is "*the appetitive aspect of an act in order to satisfy some psycho-somatic desire (e.g., love and sex)*" (Chia & Kee, 2013, p.35). However, it is not within the scope of this paper to delve into detail on this topic. (For more detail, read Chia & Kee, 2013).

2.3 The CCAS-OE Model

When the five OEs are incorporated into the CCAS model, a different perspective emerges from the new framework (see Figure 6). The SOE covers wide areas: (1) between Cognition and Conation (purple) involving moral maturation (Hannah, Avolio, & May, 2011); (2) between Cognition and Affect (green) involving social cognition (Slovic et al., 2007); and (3) between Conation and Affect (red) involving psycho-affective resilience (Ellenhorn, 2014). The white arrow (as seen in Figure 6), for example, pointing from Cognition BP to the Intellectual OE shows the processing of the cognitive BP passes through the sensual area (involving sensory BP that may trigger Sensual OE) in order to interpret the sensations that trigger the thinking process to bring about a meaningful organization of experience from an interaction between cognition and perception (Foley & Matlin, 2010). If the experience is of high intensity level, it will activate the Intellectual OE and intensify the individual's sensitivity as well as super-stimulate his/her awareness to engage the activity or task that is of great interest to him/her.

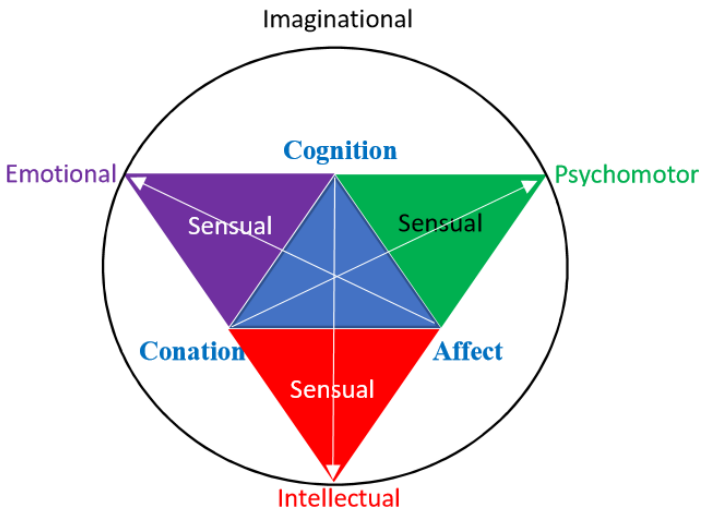


Figure 6: The CCAS-OE Model

It is important to take note that the sensual areas involving SOE are very different from each other. For example, a child sees his pet goldfish struggling in its swim with its belly upward; this visual sensation (sensory BP) triggers the child's feeling in the affective BP. If the child manifests emotional stress due to his strong compassion for the dying goldfish, and attempts to set the goldfish upright in its swim but it dies in the end, what happens in the process here involves a heightened awareness of dying and death – a form of SOE (a sense of empathy) – leading to EOE when the emotionally sensitive child cries, feels depressed or keeps asking the parent what happens to the goldfish when it dies.

In another example, a student watches and listen (sensory BP) to a sci-fi movie *Avatar*, this visuo-auditory sensation impresses on him/her so much that s/he begins questioning the teachers about exo-planets and the possibility of life like ours in those places until s/he gets satisfactory explanation. or goes to the library to search for more information. What happens in the process this time involves a heightened awareness of the origin, evolution, distribution and future of life in the universe – another form of SOE (i.e., a sense of curiosity) – leading to InOE, e.g., visit a library to search for more information, or ImOE, e.g., use imagination to write about what is to be a habitable planet.

In combining both the CCAS model and the OE model as one, there is some kind of a clear association between the four BPs and four of the five OEs, except ImOE (see Table 3).

Table 3: A Comparison between CCAS and OE Models

CCAS Model	**OE Model**
Behavioral Potentials (BPs)	***Overexcitabilities (OEs)***
Cognition	Intellectual OE (InOE)
Conation	Psychomotor OE (PMOE)
Affect	Emotional OE (EOE)
Sensation	Sensual OE (SOE)
Not equivalent	Imaginational OE (ImOE)

In this new model, ImOE becomes the OE that encompasses all the other four OEs that are associated with the four BPs respectively. While currently there is no BP equivalent of ImOE, it is probably not necessary to look for or create one. We reason that both models are looking at the same thing or issue of human potential from two different perspectives. In the CCAS model, the developmental BPs (e.g., Bloom et al, 1956, and Anderson et al., 2001, for cognition; Riggs & Giholar, 2009, and Parkison, 2010, for conation; Krathwohl et al., 1964, for affect; Chia et al., 2010) we are looking at are what

constitute the human potential that will be essential for personal development. Therefore, personal development, in this regard, refers to the process of striving to be the best that a person can manage in order to attain and realize his/her full potential. It is a journey of self-discovery, self-improvement and self-realization (adapted from Hereford, n.d.). The main goal of this new model is to provide us a better understanding how OEs can help to enhance and develop human potential through the four BPs.

3. An Example of Application of CCAS-OE Model

Let us illustrate with an example how we can use the CCAS-OE model to help us understand better as well as to maximize an individual's human potential as a learner (or student in class). Let us use the cognitive BP and InOE in this example.

Generally, cognition "*involves acquisition, storage, retrieval and use of knowledge*" (Foley & Matlin, 2010, p.2). The boundary between cognition and perception is always unclear. Perception, according to Foley and Matlin (2010), "*involves the interpretation of those sensations, giving them meaning and organization*" (p.2).

In other words, to understand if the cognitive BP is working fine or if there is any weakness or problem, we also need to know what or which sensations are involved or being affected, especially if there are any possible sensory inhibitions or excitations impacting on the cognitive BP. It is, therefore, important to measure an individual's sensory functioning by administering the Sensory Profile (Dunn, 1999) to determine his/her neurological threshold (high or low sensory responsivity) and behavioural responses/self-regulations (active or passive reaction) in terms of his/her sensory sensitivity, sensory seeking, low sensory registration and sensory avoidance in relations to processing taste/smell, movement, visual, touch, activity and auditory. As for the cognitive BP, it can be measured by means of administration of an IQ test such as Wechsler or Stanford-Binet intelligence scale.

The results obtained from these standardized measures (e.g., Sensory Profile and an IQ test) can provide us a better idea (and hence, understanding) on the cognitive as well as sensory BP of the person concerned. Relating the results to the relevant OEs, in this example illustrated here, we have to look at the two OEs: InOE and SOE. More importantly, we need to know the strength of each of the two OEs and how it is going to affect the quality of the individual's experience, as what Piechowski (1991) rightly said, "*… the intensity must be understood as a qualitatively distinct characteristic*" (p.2).

If we take SOE, for example, the key question to ask is "*What are the manifestations of SOE?"* The Sensory Profile (Dunn, 1999) protocol should provide us a clear picture of the student's sensory BP as we relate the results to his/her SOE manifestations (e.g., sensitivity to sensory stimuli such as noises, lights, smell) reported by his/her parents, teachers or significant others whether there is a clear indication of SOE observed in the student's behaviour (e.g., highly sensitive to many things in the classroom – fluorescent lights, noises made by classmates, the teacher's loud voice) in a given context (e.g., classroom).

Similarly, for InOE, the student may be noted for some of the following intellectual manifestations, e.g., being persistent in asking probing questions during a lesson on physics lesson, avidity for knowledge related to physics, a display of keen observation and analytical abilities with theoretical thinking and preoccupation with theoretical problems concerning physics. We are very certain that such traits should be picked up by an IQ test such as WISC-IV (e.g., high Verbal Comprehension Index with superior scaled scores in subtests such as Similarities, Vocabulary and Information) in support of his/her remarkable cognitive BP.

The next step, in this same case, is to decide on the appropriate follow-up action to help to maximize the sensory and cognitive BPs of the student who displays SOE and InOE. First, for SOE, in the context of a classroom, teachers can help by taking the first step to identify those things (e.g., lighting, noise, temperature) that may cause the student with SOE to refuse or resist entering the room, for instance. Or, in another instance, why the student dislikes sitting at a desk because the chair s/he sits has no cushion which s/he is already used to at home. This also means that it is advisable for teachers to consult an educational or occupational therapist concerning an appropriate sensory diet for the student with SOE so as to better manage his/her sensory BP. A sensory diet – coined by Wilbarger (1995) – is a properly designed individualized activity plan that provides the sensory input a person requires in order to stay focused, organized and regulated throughout the day.

Next, for InOE, if the student is a voracious learner who cannot ever get enough of what is being taught in class, teachers may have to plan ahead more exciting worksheets and activities to engage that student or allow him/her to develop and pursue own projects relevant to the topics taught in class. This means that to develop the student's cognitive BP to match with his/her InOE, higher order thinking skills (i.e., creation, disruptive innovation, and imagination) will have to be introduced in the lesson.

4. Conclusion

More research is needed to study how best we can improve and develop further in our understanding of BPs and OEs working together. Perhaps we ought to pay more serious attention on the collaborative application of the four BPs and the five OEs to develop the "whole" person by tapping on his/her OEs in order to maximize his/her BPs.

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