Understanding student motivation through love, volition and neurotransmitters

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Abstract

All are motivated. Young or old, students or teachers/parents—we are all motivated to do things we love to do and not motivated to perform the tasks we dislike. Yet when goals are set, some tasks were timely completed and some were never done. This paper presents a taxonomy of human love and motivation. It suggests that student motivation may be understood from the perspectives of passion for self and others, volition and neurotransmitters of dopamine, serotonin and norepinephrine. The awareness of the sources of motivation would help the students to rethink the consequences of automatic behaviors and develop self-regulation.

Keywords: Motivation, volition, love, passion, neurotransmitters.

1. Introduction

All are motivated. Teachers and parents are often mistaken that underachieving or failing students are not motivated. It is a myth that failing and non-achieving students are not motivated. The reality is that each and every human being is motivated—not to do the things that others want the person to do but to do the tasks which the person’s inner being seriously craves to accomplish. Basically, human beings are more self-centred than selfless, more immature than mature, and easily give in to feelings of self gratification—most of the time. The reality is that it takes greater courage to be selfless, to be mature and to resist instantaneous gratification like adults, and less courage and energy to be self-centred and immature like how adolescents. Naturally, many human beings, without conscious knowledge and volition, take the paths of least resistance. They are not aware of the sources of their motivation and they do not understand the reason(s) for their love or passion for particular tasks as they are unaware of the functions of their neurotransmitters in relation to these cravings.

Diligent parents and teachers help students to set goals, or set the students goals to achieve when they have none. Many students, with the help of their parents and teachers, or on their own volition, do set themselves goals. These goals are sometimes achieved and sometimes never attained. For instance, a young student may wish to cut down the time spent on gaming on the computer. Yet, no matter how hard the student tries, he never seems to be able to help himself to cut down on gaming time. This paper proposes the root causes for such a phenomenon. This is quite a common fleet which many adults feel helpless with, not to mention children and youths. It happens in daily life, like wanting to organize one’s working table, one’s bedroom, one’s life or one’s time and it just never gets done! It also happens in unpleasant instances like cravings for particular foods like chocolates, curry, alcohol, cigarettes or drugs. In worse situations, the indulgences are in dangerous undertakings like gambling and sex. If only human beings could understand their natural inclinations associated with the various levels of their neurotransmitters, they could then consciously choose or volitionally intervene with their desires and cravings as they arise. They would not give in easily to their unwanted passions or desires as they consciously determine their behaviors.
2. Love—an Attractive Force: The Root of Motivation

Motivation is love: love to do something or to have something. It is a driving force to carry out actions a person likes or desires. When the love to perform an action is sufficiently strong, overcoming a volitional level of energy or volitional threshold, or “crossing the Rubicon” as mentioned in Heckhausen and Gollwitzer’s “Rubicon Model of Action Phases” (as cited in Gollwitzer, 1990); the desired goal then manifests itself in action. For example, a student may love to have good grades; he puts in effort and works hard and eventually achieve good academic results. Grades, in this case, are a form of external or extrinsic motivation. Another student may enjoy playing the piano so much that with frequent practice, she becomes an accomplished pianist. Here, she enjoys the process and pleases herself while playing the piano. She is said to be intrinsically motivated. In a third case, a student loves to help the poor among his classmates. He raises fund by collecting and selling recycled paper and contributes sales to the school’s pocket money fund. The process may be assiduous and he may not be rewarded monetarily. In this case, he is motivated to help others. It is a virtuous act and a lofty action in service of others. There is a reason for every action.

2.1. Love is motivation

Every effect has a cause. This is the law of causality, a law in physics. Every action has a motive, a reason, even if it arises out of unconditional love of say parents for their children. In this case, the parents love the children ‘unconditionally’ because they are related in a family though parents usually ask for no rewards from their children. When there is love between two persons, the two persons are “close” to each other. They probably care for each other, think alike and could understand each other well. Love is an attractive force. It is the root of human motivation for action.

2.1.1. Extrinsic motivation

When people love money, they are attracted to earn lots of material wealth. When people love success, they put in effort to attain it. When they love to have scintillating grades, they seek out many tuition teachers and study hard to achieve them. When people love names and status, they would strive to obtain them at the expense of their time and resources. When they love to have beautiful houses, they eventually proceed to acquire them after some time with plenty of effort. Some examples are: tycoons, politicians, entrepreneurs, students who love to have good grades and many others. The attainment of material outcomes and products is the result of extrinsic motivation of individuals who are goal-oriented. All plans and activities for these people are executed with the end or goal in mind. They will not take action if they are not interested in obtaining outstanding end goals. These individuals are most likely to thrive on conditional love. Unconditional love is alien to them. Such human beings have a great need for tangible physical or material or monetary possessions. They are most happy accumulating accolades, money, awards, branded goods, etc. They simply love outcomes, products, materialism and names.

2.1.2. Intrinsic motivation

The next group of human beings are process-oriented. They take pleasure in the things they do. They take pride in their job or endeavours and they enjoy the processes involved. They may or may not be interested in obtaining outstanding end goals but they surely love the emotional and flow experiences entailed while accomplishing the tasks. These are artists, painters, actors, singers, choreographers and those students who enjoy the process of learning, just to name a few. These people are intrinsically motivated. They enjoyed the processes and themselves. They are committed to the task or action for the love of self and process.

2.1.3. Spiritual motivation
The last group of people are motivated to do things for other people. They do it joyfully even if they have to suffer in the course of the action. They are service-oriented beings. They love others a lot and are willing to sacrifice their time, energy and resources for the benefit of other people. Parents who have unconditional love for their children are an example. Other examples include philanthropists, blood donors, kidney donors, Krishna, Moses, Zoroaster, Buddha, Jesus, Mohammad, Bab, Baha’u’llah, etc. Such people simply act out of infinite or unconditional love for others. They do not desire rewards or outcomes, and the processes they undergo do not give them a boost in their ego or a “high” in their spirit or a name to be publicised.

Figure 1 below gives a summary of the three types of motivation performed out of love.

| Motivation            | (I) Extrinsic: Goal-oriented | (II) Intrinsic: Process-oriented | (III) Spiritual: Service-oriented |
|-----------------------|------------------------------|---------------------------------|---------------------------------|
| Result/Outcome/Product/Material/Money-centred | e.g. grades, tycoons, politicians, etc. | e.g. artists, actors, singers, etc. | e.g. parents, philanthropists, blood donors, etc. |
| Pleasure-centred “enjoy” self | Love self | Love other people |

Figure 1. A Taxonomy of Human Love and Motivation (©CTTEO, 2010)

Everyone has a right to love, be it a love of materials, self or others. Depending on a person’s love orientation, the person will choose to make progress in that direction of his or her greatest love. The person may have one, two or all three types of motivation and different weightage or emphasis for each type of motivation. Each person is entitled to all the goodness in life and holds responsibility for his/her choices. Those without any form of motivation or love for anything/anyone would probably be purposeless, helpless, non-active and non-achieving just like people with the “PAP syndrome” or “athymhormic syndrome” in which “a loss of psychic autoactivation” or a “loss of mental self activation” occurs (as cited in Verstichel and Larrouy, 2005, p. 39). Adults and children need to know where their love and passion lie before they could initiate life goals. In addition, it would be helpful if they know their preferences which are influenced by their neurotransmitters.

3. Neurotransmitters: Cloninger’s Theory

Neurotransmitters serve as a biological basis of personality among many others like physiques, hormones and brain structures (Ashton, 2007). These are biochemicals like dopamine, serotonin and norepinephrine. They speed up or slow down the transmission of signals or communication of messages from one neuron to the next neuron across the synaptic gap between the two neurons. All three neurotransmitters dopamine, serotonin and norepinephrine are main constituents of the monoamine neurotransmitter group (Ellis-Christensen, 2010). The relationships between personality and neurotransmitters are depicted by Robert Cloninger (Cloninger, 1987;
Cloninger, Svrakic, & Przybeck, 1993). He proposed that dopamine promotes novelty-seeking, serotonin inhibits harm-avoidance, and norepinephrine inhibits reward dependence.

3.1. Dopamine and Novelty/Excitement/Risk Seeking

Dopamine is a neurotransmitter that facilitates the transmission of signals of reward. That is, it will help neurons send messages related to the person’s response to pleasure and excitement (Ashton, 2007). Individuals with very active dopamine system, according to Cloninger (as cited in Ashton, 2007), will have personality attributes of novelty-seeking and its related attributes of excitability, impulsiveness, extravagance and disorderliness. Whenever dopamine is released from the nerve endings or axon terminal of the neuron, it induces feelings of pleasure, want, craving, motivation, willfulness and accomplishment. People or pupils with active dopamine system will be motivated to find fun, newness and variety. They are probably creative and divergent.

Teachers often plan fun lessons to stimulate pupils and encourage them to seek further learning through exploration and discovery. Such lessons activate the dormant dopamine systems in pupils. When dopamine is used for learning purposes, it appears to serve teachers and pupils well. In other circumstances, dopamine activation becomes a source of harm. For example, eating is a greatly pleasurable activity. Wright (2008) calls it brain hunger when the dopamine system is activated in people who are not hungry. According to Wright (2008), the brain-hungry system motivates and rewards eating by creating sensations, impulses and cravings for food even when the person’s stomach is not hungry. She warns that this “desire” can easily get out of hand, and that the dopamine reward system is implicated in compulsive gambling, drug abuse, eating and sex (Wright, 2008, p. 100). When activated, dopamine is also known to be associated with a reduction of pain (“Love really is like a drug,” 2010). For pupils, the dopamine system is at work when they are fully emerged in learning, gaming or working on their Facebook.

3.2. Serotonin and Harm Avoidance

Serotonin inhibits the transmission of signals of punishment as a neurotransmitter. It prevents neurons from sending messages in response to harmful and unpleasant feelings (Ashton, 2007). People with very active serotonin system would have successfully blocked out signals of punishment and as a result they may not be wary of pain or anxiety and would not be keen to avoid them. That is, people with high levels of serotonin are associated with low levels of harm avoidance; while people with low levels of the neurotransmitter are associated with high levels of harm avoidance. In other words, those with high levels of serotonin are calm like surgeons; while those with low levels would worry, be fearful, be shy and even be depressed. Pupils with low levels of serotonin learn better with safe, peaceful and pleasant stimuli as they are more risk or harm adverse. Pupils with high serotonin levels would probably be better at risk taking, dissecting little animals in the biology laboratory and designing learning involving outdoor camps.

Serotonin is known to be related to mood swings. Excess serotonin, like a three-fold increase in the nervous system of locusts which are normally shy, turns solitary anti-social locusts into monstrous and devastating swarms (Chang, 2009). Too little serotonin causes people to have keep worrying, have negative moods and be depressed. It appears that a healthy amount of serotonin is one of moderate level. While each person is born with a certain level of serotonin, drugs containing serotonin, like Prozac and Paxil (as cited in Ashton, 2007) may be taken to overcome depression. Schools today only teach technological, scientific and artistic education. If only teachers would highlight the functions of the neurotransmitters, students would gain human knowledge related to the self and would be able to self-regulate—develop their strengths and be mindful of their weaknesses—more consciously.

3.3. Norepinephrine and Reward Dependence

Norepinephrine or noradrenaline is a neurotransmitter that inhibits the transmission of signals of conditioned reward (Ashton, 2007). Basically, it inhibits response to stimuli that have previously been associated with pleasure. People with high levels of this neurotransmitter or a very active system of norepinephrine will be quite detached from memories of previous enjoyment or pleasure and would be less sentimental or reward dependent. People with very
inactive norepinephrine systems would be high in “reward dependence” or a tendency to develop strong sentimental attachments, warm communication and dependence.

Norepinephrine is both a hormone and a neurotransmitter (Purse, 2009). As a hormone, it works along with epinephrine/adrenaline to give the body sudden energy in times of stress as in the “fight or flight” response. Norepinephrine is thus known as a stress hormone which increases heartbeat and feelings of excitement. As a neurotransmitter, it transmits signals or nerve impulses from one neuron to the next. In fact, all three neurotransmitters are somewhat related. Like serotonin, norepinephrine is a monoamine used in mood regulation. Furthermore, dopamine and norepinephrine have a special relationship with each other: a high level of dopamine implies the existence of a high level of norepinephrine; and low levels of dopamine tend to suggest low levels of norepinephrine (Ellis-Christensen, 2010). Pupils with low levels of norepinephrine would probably work well with teachers who tend to use external motivation of rewards and tokens. Pupils who have high levels of norepinephrine and dopamine would probably thrive on the excitement of learning.

4. Volition

Every human being is endowed with volition or will or choice or decision. When we are young, we accept the choices made for us by our parents. As we grow to learn more things in school, we listen and obey the teachers. As we reach puberty, we begin to realize that we have a “will” or “volition” of our own and we begin to test the results of using this unique human faculty. Consciously or not, we often get our way. We do what we “love” to do, or what we desire to do deep down in our consciousness. When we have great passion or love for someone or some things or tasks or outcomes, we put all our time and energy into it. When we are not interested or motivated, we would be rather detached and leave the person or task alone. This is why Gosline (2008) in her study of boredom found a link between attentiveness and boredom: that people who are attentive are not bored. In the same article, it was also reported that people are bored ‘when they must not do what they want to do, or must do what they do not want to do’ (as cited in Gosline, 2008, p. 22). Simply stated, it means that people are bored when they do things against their will or volition.

The role of teachers is to help pupils to become interested in learning, to learn well, and perhaps become a producer of knowledge some day. Yet, the routine of daily lessons may cause some pupils to become bored. Learning the fundamental principles of a discipline may be boring unless the teacher is able to bring to the attention of the pupils the link between theory and real life applications or practices. Some pupils are result-or outcome-oriented and they love to acquire good grades. These are extrinsically motivated. Some enjoy the process of learning. These are intrinsically motivated. Some wish to learn enough to serve others, like becoming doctors (see Figure 1). These are service oriented or morally or spiritually motivated. Everyone has a right to choose to do what s/he likes. The teacher or parent must not force it upon the child or teen. It is not right for adults to overpower the child or youth by setting learning goals or demanding certain grades. Pupils are not animals. When we use behavior modification techniques on animals, they work. When we crack the whip, the monkey behaves. When we use it on children and teenagers, they may or may not work, for human beings are basically volitional and in fact, most of them have strong will (Dobson, 2004).

When the adult decides for the helpless teen, the adolescent’s volitional development is stifled and he does not mature quickly as he could not make his own decisions. Many Asian adolescents suffer this fate. Worse still for the adolescent whose volition has been frequently overruled by the adult’s will: curiosity, passion and motivation to take initiatives in life diminish as time passes. Outwardly the adolescent may appear to be rather obedient but inwardly he is not happy as he is not autonomous or self-deterministic. He does not get to choose to engage in activities for his personal interest or enjoyment. Secretly, he becomes rebellious and would do the things he prefers at his own time, things which he is truly interested in and not what the adults are interested in. The adults—if not thoughtful—might then be mistaken by his “disinterested” behaviours as manifestations of an “unmotivated” attitude. Adolescents with high levels of dopamine, serotonin and norepinephrine, are risk-takers and novelty seekers who have low levels of harm avoidance and are looking for instantaneous rewards of their behaviours. It is natural to find unruly and even violent behaviours a common phenomenon among “unmotivated” adolescents.

All are motivated, young and old. Human minds are forever thinking. As long as these ideas are put into actions, they become actions—desired or otherwise, beneficial or not. We are the captains of our own ships and the pilots of
our own planes. We decide what we want to do with our energy and time consciously or subconsciously and we translate them into actions. Others may influence our decisions to some extent, or even overpower our will at times. We learn in the process as we regret the outcomes of our choices under particular conditions. If we remember the lessons learnt, we make better choices the next time. It is through conscious knowledge that improvements are made. It is through self-knowledge of one’s natural tendencies like preferences related to a higher level of a certain neurotransmitter that we can intervene or determine our actions. We need to be clear of our feelings of “want” or “desire”, and our “ought”. We need to predict the outcomes of our choices before making the decision. We must have courage to face the consequences if we wish to take risks in our decision-making. Teens need to be guided in these aspects of their passion and neurotransmitter levels, and volitional development. Adults like parents and teachers need to consult with the teens on the consequences of their choices and actions.

5. Conclusion

This paper posits that all human beings are motivated to choose to accomplish that which is the desire of their heart, consciously or subconsciously. Many a times, we have natural inclinations for the achievement of certain goals due to the promptings of our neurotransmitters dopamine, serotonin and norepinephrine. As a result, we must be more conscious and cautious of our choices of goals and motivation. Young adolescent pupils who tend to be easily affected by the neurotransmitter dopamine need to be taught not to give in to we “feel so good right now”, or instantaneous gratification. For the proper development of volition, adults like parents must not tell the youths what to do or overwhelm the teen with adult authority by forcing the youths to do what the adults want them to achieve. They should not make decisions for the youths all the time. They need to educate or empower the youths with knowledge of their preferred inclinations and passions, as well as the functions of the neurotransmitters so that the youths could take into account their personal likes and dislikes and thus become autonomous and responsible decision-makers.

It needs be noted that the motivation to learn and discover requires a curious and keen attitude and having a high level of activated dopamine helps. Teachers may inspire pupils to experience the joy of learning as this is an intrinsic form of motivation. An activated level of dopamine also implies an accompanying high level of norepinephrine which is symbolic of a non reward dependent, and thus a non-externally motivated attitude. For serotonin, it is essential that a moderate level be present to enable the pupils to be able to withstand hardships and to overcome difficulties in learning. For the adolescents to be self-deterministic (Deci & Ryan, 1985; 2000), they have to ensure that their choices are not a result of “automatic” thoughts but their choices. For other than under the influence of neurotransmitters, human beings—young and old—have a natural tendency to be attracted to a whole load of unmortified passions like being lazy and selfish. When thoughts are consciously processed and volitionally determined, youths are more likely to grow into more selfless and mature adults capable of utilizing their gifts and talents in service of their fellow beings.

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