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ABSTRACT

Violent behavior is initiated intentionally or impulsively. Awareness of intention or need to act is different from awareness of action. We consider that all actions and responses have origin in the brain without awareness. The neural origin of the intended acts may take place seconds before the neural activity for the initiation of respective motor act starts in the motor cortex. However, individual can become aware of a need state and even build the drive to act. The paper presents a review of the findings of processes related to the origin of actions within the brain, proposes a model explaining initiation of action, and discusses the need to have greater understanding of the drive to act, and most importantly the need to learn to control the drive, which initiates actions. The model proposes that actions are initiated when the drive reaches certain critical level of potentiating (CLP). The only way to master control over initiation of actions is by learning to control the drive within. Socialization is a process that trains one in learning either to take the drive to critical levels, so that the linked actions are initiated, or to inhibit the drive so that the action is not initiated. This conditioning process takes place during the neurodevelopmental stages of a child, if such control processes are present in the society, and the child is provided with opportunity to be trained. Emotional arousal is the fuel within each person that provides the individual with the drive to live, by acting and responding. Drive control and associated 'response inhibition' ability are important outcome of socialization processes that take place during the neural development of the brain of a growing child.

Keywords: *Violent behavior, intention, impulsiveness, awareness, unconscious origin of actions, drive to act, socialization, social conditioning of drive*

Violence is an expression of hostility and destruction of life and property, carried out intentionally or in the absence of self-controls on drives. World Health Organization (Krug et al. 2002) defined violence as "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation." Acts of physical violence are often reported as rape, domestic violence, sexual abuse, child abuse, violence in dating relationship, eve teasing, rash driving, lack of traffic sense leading to accidents and traffic nuisance, workplace violence, cyber bullying, etc. Young and adults who have demonstrated tendency for violence become high-risk individuals in a society. Individuals in group and alone carry out violent acts intentionally and impulsively. Violent acts carried out against society and its infrastructures have different implications and significance today, compared with violent acts carried out by individuals against other members of the society because of inadequate social conditioning, anger and aggression, or mental disorders. Society's response to the latter type violence is indeed different as the individuals concerned may be members of the society, who need rehabilitative support and treatment. Punishment is sought as these individuals are considered to have acted voluntarily and resorted to violence intentionally, which could have physically hurt and damaged the integrity and peace of mind of other innocent persons.

WILL AND INTENTION

We consider 'will' a philosophical and psychological concept, reflecting an attribute of the mind to speak, think, or act intentionally. Intention is the presence of knowledge or awareness of wanting to act, think, or experience refer to intention, and it refers to initiating the act with that knowledge of self-approval or need. Awareness of wanting to act must occur before it is executed, for it to become intentional for the concerned person. A verbal transcoding of the need must occur for a verbal awareness to take place. Otherwise, it is only a proprioceptive recognition of the need or the urge that one can have. A willful action has therefore, self-approval, as its verbal awareness helps to understand, critically evaluate the need, if necessary, and approve the state of wanting or the need to act/respond. The individual has the option to consider the positive and negative effects of the action considered for execution. Therefore, own decision or the self is held responsible for the action initiated and executed. The

individual has the moral responsibility for the execution of the act. Such free will is proposed to provide one with important capability to execute rationally and ethically correct actions. In most religions, man is held responsible for all his actions and has to suffer or receive punishment for all the wrong actions executed. Man claims to have the freedom to choose decisions, which he may consider right, but wrong by others, or choose a wrong decision intentionally, and the freedom to choose any of these therefore, is considered to support the use of free will. Knowledge of religious teachings was considered important for the choice and practice of right actions in life. These actions executed with free will are called voluntary actions as opposed to involuntary responses. Free will has been always considered a fallacy and opposite to 'determinism', which explains changes in the universe according to predetermined physical principles (James1896; Franklin 1968; Clark 1999; Freeman2000, Shariffet al. 2008; Doyle 2011; Caruso 2012). Since actions are often made at the end of thinking and planning, and not as reflex responses, the process is identified as outcome of freethinking and free will. The latter occurs as reflex responses, without conscious efforts. Several renowned thinkers of all times have written about the free will, which reflect the significant functional capability in the life of each individual in deciding various social practices of life. The incompatibility between free will and determinism has been always the focus of discussions. Voluntarily executed violent actions have been always identified as criminal acts and the individuals involved in such actions have been always punished with penalties ranging from death to imprisonment. Religious beliefs indicate that one has to pay for such actions even after death. On the other hand, we consider actions executed impulsively a reflection of a state of mental disorder and the affected individual may be sent for treatment and rehabilitation.

BIOLOGICAL ORIGINS OF RESPONSES AND ACTIONS

Functional capabilities related to defining purposes for actions, creation of action plans, goal setting, and execution of action have been at the focus of neuroscience research. Clinical brain lesion studies have extensively supported the frontal cortical origin of the executive capabilities, which initiate and propel voluntary actions. Three behaviorally relevant functional systems, which stem from the frontal cortex initiate and propel voluntary actions, drive and regulate behavior to specific goals, and directly control the execution of the movements. They are identified to origin from the anterior cingulated gyrus, the orbit frontal cortex, and the dorsal

prefrontal cortex (Alexander et al. 19180, 1986, 1990; Cummings 1993, 1995). Of these, the anterior cingulated gyrus with its limbic inputs provides the emotional arousal or power, needed to initiate all actions and responses from the system. Emotion is an experience of psycho physiological force from within, which propels the brain to engage in sensory-motor and cognitive processing. It may in turn, involve utilization of physical energy for body movements. Emotion serves as the driving force to engage the brain in various activities, and the presence of emotion in the brain is referred as emotional arousal. Emotional arousal takes place when there is a need to know, perceive, think, speak, mentally and physically search, and carry out cognitive and behavioral tasks. These responses and actions serve to fulfill or satiate the biological and psychological need states. The emotional arousal serves as the drive, which makes these tasks happen within and from the brain.

Emotional arousal has sub cortical origin in the mesencephalon, diencephalon, and epencephalon. The main structures in these brain areas are the hypothalamus, hippocampus and par hippocampus, amygdala, cingulate gyrus and dentate gyrus, mammillary body, fornix, olfactory bulb, etc. (Kandel et al. 1991; LeDoux 2003), which also participate in several other related brain functions. Higher regulation of emotional arousal takes place in the frontal cortex. The Anterior Cingulated Cortex and the Orbit frontal Cortex make use of the emotional arousal for driving and regulating different aspects of actions. Anterior Cingulate Gyrus lesions are known to produce absence of drive for actions (Cummings1995; Bush et al. 2000; Gehring et al. 2000; Allman et al. 2001; Decety & Jackson 2004; Luu & Pederson 2004; Jackson et al. 2006; Hayden & Platt 2010), which may include even self-preserving ones like eating food and drinking water in hunger and thirst, absence of emotions including pain, absence of speech, initiative, and failure of response inhibition.

The Orbit frontal Cortex is endowed with the functions of initiation of actions and their long time regulation by defining purpose, goals, and action plans, loss of controls on emotions, whereas the dorsal prefrontal cortex sequentially executes the activities according to the action plans and by monitoring the anticipated and actual effects of actions and responses (Sperry 1950, 1952, Cummings 1995; Lezak et al. 2004; Alvarez, et al. 2006; Rolls et al. 2008). These structures are found associated with the supply and utilization of emotional arousal to the system, which are cognitively defined to have purposeswith defined goals. The arousal is appraised and

experienced as motivation by the individual. Initiations of actions have their early origin in the drive invested or aroused, which lead to the production of motor effects of the consequent actions. One may have several plans of actions, but only those, in which one invests drive, become active with motor outputs. Emotional arousal is experienced as psychological and physiological changes, which provide the force/fuel required for responses and actions to take place. Individual can enrich the experience of emotional arousal by reinforcements, and use the drive to reach those goals and achieve the results, even if it takes decades of continuous or interrupted efforts. Experience based cognitive appraisals interpret the psychological and physiological changes as positive and negative, and transcending of those experiences and their further semantic interpretations created during encoding cover the expanses of their origin - causes, and consequences as experienced and interpreted by the individual.

EMOTIONAL EXPERIENCE AND DESIRE

Cognitive appraisal of an experience consists of the interpretations of the sensory-motor events using personally acceptable/relevant meanings with or without critical evaluation of their significance. Ability for critical evaluation needs to be consciously developed and applied, without which one readily accepts the suggestions that come along with the sensory inputs, and interprets the meanings accordingly (Mukundan et al. 1998, 2013). One may choose extreme positions or midways for interpretations, when experience is analyzed and understood by using known meanings and personally applied critical evaluations. When affective components related to survival needs are present, they may generally take the path of polyvagal emotions of aggression, fear, agitation, restlessness, helplessness, etc. Increased emotional arousal may be accompanied by restlessness and hyperactivity. Physiological activities, including body movements are generally the direct effects of the presence of drive deployment in the system, when they are necessitated by the sensory inputs, biological survival needs, and action plans. There is need for deploying drive for every movement, whether it is the movement of a finger, the legor that of the whole body, when it is not elicited as a conditioned response. Human life has extensive domains of activities outside conditioned reflexes, where one has choices to select and act, and execute every action intentionally and with positive and negative feedback effects. The need for adequate physiological activity and arousal levels for optimum performance has been

explained in the classical inverted U relationship of arousal levels and performance/learning abilities by Yerkes-Dodson (1908).

Emotional experiences have extensive personal and social contexts of expressions and attainments, beyond survival needs of life. They are experienced in personal contexts and shape up with positive and negative valences. The contextual values one assigns to experiences influence their verbal and nonverbal expressions and communications. Emotions of love and compassion have immense social contexts and variances. Desire is the word used across ages, to refer to the formidable force of emotional arousal accompanying specific need states of human beings. Desire is an experiential state of wanting to possess or experience a physical reality or their attributes. Desire therefore, serves as the propelling force for responses and actions. Desire propels the system into activity, which in turn reinforces and facilitates such experience of its acquisition and possession. Desire may be consciously experienced or may propel responses without awareness. At a primary level, desire may reflect biological survival needs or sexual arousal and need for sexual gratification. They are seen in animals and human beings, though their presence in human beings become complex as they learn to desire for acquisition and possession of entities and values required beyond their survival needs. Human beings learn to desire to achieve such mental states and possessions, which stem from their mental capacity to create new ideas, positions, and entities. Quenching desire may involve actions directly satisfying the need or steps of actions, which would finally take individual to a destined or planned goal, which will result in partial or total satiation of the need and subsequent emotional satisfaction. The biological need and associated emotional arousal are indeed different, though individuals may generally fail to differentiate them. Through practice or mental exercises, an individual may learn to keep the biological need without emotional arousal and take care of it. One the one hand, desire denotes the most fundamental experiential acknowledgement of wanting, and on the other hand, it may denote the presence of a force and strength within, for propelling to achieve the results which will satiate wanting. As desire is often acknowledged as the basic driving force, which propels man into actions, all religions have considered and discussed desire extensively, as it can make one carry out socially or religiously acceptable and non-acceptable deeds, and the desire may remain unquenched and ever increasing.

DRIVE AND AROUSAL

The words drive and arousal have been used as equivalents of desire and are considered prerequisite for learning and performance(Yerkes, Dodson 1908; Wolpe 1950; Hull 1952; Hovland 1952; Brown 1955; Freud 1961;Zajonc 1965; Friedman, Schustack 1999; Schacteret al. 2011). Drive implies the energy available for driving a system, whereas arousal means being awake and alert for processing sensory and motor events that occur in the interaction with the external world. Though the two are frequently used within the same context, they do not indeed refer to the same states of the system, especially when arousal is used to refer to alertness or being awake. Increased alertness maybe a prerequisite for processing complex inputs into the brain, which is achieved by the heightened arousal level, whereas intensely heightened drive may reduce this ability of the system to attend and process efficiently multiple inputs. Arousal is needed in the brain to get it into working state for facilitating its processing abilities, which includes the curiosity to know. Drive means the psychic energy one deploys for utilizing the physical resources of the system. The two may therefore be considered to refer to the application of the same brain resource in adjunct manner, though the two requirements may be simultaneously present. When a need state occurs, it may automatically initiate responses for the need satiation, or one may learn over time to initiate the responses voluntarily according to convenience. Thus needs in conditions of hunger, thirst, and sexual excitement initiate responses, which would readily gratify the respective needs. On the other hand, need to know and accompanying curiosity may need deployment of continuous and high levels of drive, for finding solutions, consistently over prolonged periods. This may in turn enhance or multiply curiosity and create new possibilities to look for, and problems for solutions, with the need to work harder for their achievements.

It is important to know that an action can be initiated only if there is certain level of arousal or drive in the individual. A thought that one should carry out an act or mere wish to act is not enough for the execution of the action to take place. One may become aware of the thoughts and the wish to act, which alone will not initiate the act. Action is initiated only when the drive to act reaches certain critical level. The drive is experienced and one can indeed transpose it and could have a verbal awareness (Mukundan 1998, 1999) of the same. The urge (Libet 1985) to act may grow and become intense and one may be able to experience the urge as

a characteristic or idiosyncratic physiological change. One may come to know of the need to act, as it may have been already transcended semantically or symbolically. However, action itself may be initiated only if the drive is adequately strong. Mere knowledge of a need and knowing the need to act are not enough for the initiation of the act. Knowledge of need to act and wanting to act may be defined as intention to act, and one may be aware of the presence of the need or drive to act. It is well known that one cannot point with a finger, or fold a finger only by knowing its need, without making efforts. The issue for consideration here is to know if there is a stage, when one has to give a "go signal" knowingly for generating the motor potential, which is accompanied by the corresponding movement. Knowledge of the initiation of the action takes place only when the action is manifested. Knowing of wanting to act is the recognition of the need state and flame of the drive within, which one can facilitate or extinguish. It is our proposition that initiation of an action takes place when the drive reaches certain Critical Level of Potentiating (CLP), so that the neurogenesis of the action automatically takes place. Awareness of the initiation of the action indeed takes place only when the motor potentials and the corresponding movements occur.

It is not the knowledge that initiates the action, but the force of the drive that initiates and propels it. Unconscious origin of a voluntary act is indeed a semantic fallacy. What one means by the word voluntary is the presence of knowing of wanting to act and that one has intentionally given a 'go' signal for starting the act, and it has been carried out willingly or with personal intention. The concept of "free will" in this context indicates that the individual has a choice to give a "go" signal, which would initiate the action. The action cannot be initiated in the absence of the "go" signal. The decision to give a "go" signal renders the individual responsible for the action. However, the neural initiation of action, even before the occurrence of awareness of the initiation of the action, shows that the individual does not have such control on the action initiation, and that the individual is not conscious of the initiation of the voluntary action. The act initiates on its own, when the drive reaches a certain critical limit, which is proposed here, as the "Critical Level of Potentiating" (CLP). The action is released without the awareness of the individual as the drive reaches the CLP. That the individual is aware of the need to act makes one think that the action is initiated consciously or voluntarily. It is the recognition of the drive that one experiences as the need to act. One can learn to inhibit the drive

or even remove the presence of the drive by self-mental control and thereby avoid the initiation of the action. When one speaks about wanting to act, one is reporting the presence of the drive, which is identified as the intention of the person to act.

AWARENESS OF DRIVE AND AROUSAL

Verbal transcending of the presence of drives and specific need states gives the individual opportunity to have verbal awareness of the content of the transcended details (Mukundan 1998, 1999), and analyze them and even alter the intention and redesign action plans. On the other hand, if the drive is not transcended, its nonverbal recognition may remain a subconscious awareness (Mukundan, Kacker 2014). We routinely carry out several movements and acts correctly, without their verbalization and verbal awareness. We move around in our own houses, work places, familiar roads, and carry out activities such as eating, drinking, and many routine acts without articulating and thinking about any of those activities per se. These are familiar movements and acts, often routinely carried out by one, and hence one can engage in those activities without their verbalization as thoughts. On the other hand, one has the opportunity to think of something independent or unconnected simultaneously, when the routine activities are attended to and carried out. Verbal transcoding of intention to act is therefore a necessity for its critical evaluation and communication. The transcoding may be carried out by the use of minimal number of words or extensive ideation using critical evaluations, when one may encounter new and novel sensory-motor challenges. Semantic interpretations become a necessity to develop new internal models and for understanding their internal and external relationship with the self and the world. However, absence of verbal awareness does not reduce the accuracy and precision of familiar movements or recognitions. Verbal transcoding of unfamiliar sensory inputs may spontaneously start occurring, unless the inputs are awesome to the individual and prevents spontaneous verbalization because of emotional arousal blocking thinking and speech processes.

Becoming aware of the need to act and the presence of accompanying drive to act is different from knowing the initiation of the act itself. Individual who wants to initiate an action experiences the drive as an ‘urge’ (Libet 1985). However, one may experience the urge only after initiation of the neural process responsible for the initiation of the voluntary action. This is

typically demonstrated by using the slow DC potential called the Bereitschaftspotential. The potential is a slow negative shift, taking place in the baseline 3 – 4 seconds before the motor action potentials are initiated (as seen from the cephalic changes and peripheral motor potentials) during the execution of the action/response by the individual. The Bereitschaftspotential over the scalp before the onset of the motor potential in the individuals was first demonstrated by Kornhuber and Decckeein 1965 (Decckee, Kornhuber 1978; Deecke, Eisinger, Kornhuber1980). Several later studies (Deckee 1985, 1987, 1990; Shibasaki et al. 1980a, 1980b, 1981, 1996; Libet 1985, 1999; Mukundan et al. 1986; Khanna et al. 1989; Singh, Knight 1990, 1993; Ikeda et al. 1992, 1993, 1994, 1995; 1999, Hamano et al. 1997; Madhavi, Mukundan 1999; Sakai et al. 2000; Picard, Strick 2003; Soon et al. 2008) demonstrated and confirmed the findings. These studies showed that the neurogenesis of an action starts well before the motor potentials are generated in the brain. It was Libet (1985), who first pointed out that potential marked the beginning of the volitional process at least 350 ms before the conscious wish to act is experienced by the individual. He reported that the potential showed decision to act take place about 200 ms before the muscles are activated. Mukundan et al. (1986) demonstrated that the Bereitschaftspotentialhas negative onset latency between -2.4 sec to -3.1 sec in a spontaneous voluntary button press paradigm. Libet (1999) proposed that all conscious mental activities are "initiated unconsciously."Matsuhashi and Hallet (2008) found that a mean 1.42 second existed before the neural beginning of the movement and the conscious intention to move took place. Soon et al. (2008) found in their fMRI study that presence of predictive neural activation was present in the Front polar and Parietal cortical area and it stretched from the precancerous into posterior cingulated cortex almost 10 seconds before the subject became aware of motor decision.

The awareness of acting has indeed two phases, one of initiating the muscular efforts to act, which is the outcome of the motor activation in the brain, and another preceding it, when the individual wants to act or is aware of the presence of wanting or the need to act, but the action is not yet initiated. A volunteer sat in the experimental room with fingers on a button for doing the button press voluntarily and spontaneously, for helping the experimenter (Mukundan et al. 1986) in a scientific study. There were a few volunteers in the study, who sat for long durations without pressing the button, who later explained that they did not feel like pressing as the examiner had

told them that they must press the button only voluntarily. However, this was not good enough for some of them to press the button on their own will. Some others, who pressed the button, did it rapidly, unless cued, and explained that they were doing so just to satisfy the investigator. None felt a personal need to press the button; it was always an obligatory task, except on a few occasions. Awareness of the button press seemed to occur, from their reports, only when each pressed the button. The button press in this paradigm is different from the one used in a CNV paradigm, when the subject is warned by a first stimulus about the need to make response (press the button) when a second stimulus is presented a few seconds later. A negative DC shift starts on the scalp with the first stimulus and remains at the peak value until the second stimulus is presented. It sharply falls to the baseline after the response to the second stimulus. Wanting to act is indeed recognized and may be transcoded when verbal awareness of the same would be evoked.

Hunger, thirst and other survival needs create drives, which result in actions and responses leading to gratification of the need state. In the animal world, these may be associated with fight and flight responses. Responses of flight and fight therefore, occur even automatically, without their sensory perception of the source, as explained in preattentive emotions (LeDoux1996, 1998, 2003; Morris et al. 1998; Whalen et al. 1998; Soars, Ohman 1998; Windmann, Kruger 1998).The biological state of the driveway be similar in all states of hunger in all individuals. However, the experience of actions and responses leading to its satiation could vary from individual to individual. Thus, one may get satiated only if he has dinner in a five/seven star hotel, whereas another has satiation by sitting on the roadside and eating from a broken plate. The biological compositions of the food eaten in varying life situations may almost be the same. However, the experience, one acquiresfrom the related actions vary significantly, depending on the cognitive values one desires, develops and attaches with the sensory – motor events related to the actions. The biological or physiological nature of the drive may be the same in all. Nevertheless, the components of actions and efforts deployed for the gratification vary from individual to individual, contributing to variations in the associated experiential and semantic interpretations. Experiences that each person wants to acquire in life vary and they are conceptualized and expressed by each by using his own capabilities. We speak of the drive to study and learn a new specialty or subject, to invent a new method, to learn driving, dancing, and

singing and playing a musical instrument, to become emotionally attached to another, to go on a long drive or walk, to pass an examination, to buy a new car/house, to share excitement with the peer group, and so on. Cognitive labelling of drives among people may be infinite across time and space. Experiences vary depending on the fact if the individual has truly come in possession or only anticipating the outcome. During such pursuits, drive is experienced as a specific motivation for striving in a direction, often with different strategies and action plans for achieving the goal.

An infant learns cognitive labelling of drives from parents and gradually from elders, teachers, and peer group, all start occurring from early childhood, when the child learns to get emotionally excited in small adventures of everyday life. Initial labeling begins always as happiness and pain, experienced in movements with parents and others on whom the child is dependent. Further excitement and variations occur when the child plays around with toys, explores new areas and engages in activities. The emotional excitement and arousal experienced by a child serve as the potential resource of drive and arousal, which the child would learn to trigger on for exploration and adventure, whenever there is a need to be aroused. The opportunities and the potentialities for emotional arousal may be diverse, but the biological arousal itself is proposed to be common in nature, except it may vary in intensity, directionality, the risk associated with each attempt, and the experiential labelling, which the child acquires. Alertness and physical preparedness to start acting become part of the drive, which help start and maintain the relevant activities. The relevant action is initiated and executed only when the drive reaches the CLP. Presence of drive to act and the ability to nurture, trigger, maintain, and inhibit the drive become important characteristics of each individual. As achievement in different pursuits of life is a function of the drive one can deploy for relevant actions, this capability may become more important than general intelligence or competence. Thinking and wishing do not automatically produce actions, which bring in positive results. Many who may be of high intelligence may not have the drive to act and do not therefore achieve what they are capable of achieving in life, whereas a person with lesser competency may achieve high, because of deployment of high drive and the consequent hard work. Despite wanting to read and study, a child or an adult may fall asleep with the book in the hands, in minutes after start reading. The same person may spend sleepless nights before an examination, continuously reading and

learning. Cognitive appraisal of the urgency of the need to act is an important factor that arouses the individual, which facilitates initiation and execution of actions. However, the drive level one could make use of may depend on the drive levels one has acquired and learnt to deploy during developmental and early years.

INHIBITORY CONTROL

The Bereitschaftspotential shows that the true initiation of the action has taken place, before the individual has recognized the presence of related movement. One can have control on a persisting drive, but not on the initiation of action when the drive reaches the CLP. One can learn to keep the drive under control or allow drive to climb. Keeping the drive under control allows one to keep actions under control. The control that allows one to delay or inhibition of action is known as response inhibition. The complex functional role of response inhibition and its frontal origin have been discussed in several studies (Miyake et al. 2000; Andres, 2003; Stuphorn and Schall, 2006; Aron, 2007; Mostofsky, Simmonds 2008;Verbruggen, Logan 2009a,b; Leotti, Wager 2010).The role of Orbitofrontal Cortex and the Anterior Cingulate Cortex in response inhibition has been well established. The frontal inhibitory controlswere proposed in the motor system, sensory system, emotional and instinctive systems, which initiate and regulate the functional activations of these subsystems(Goldar et al. 1993). Increase in the drive level or arousal therefore, must be considered to release the controlled functional subsystems from the frontal inhibitory control. The frontal inhibitory control is acquired during neural development of the brain and this control may be considered to facilitate regulation of functional capabilities or skills acquired by the different cortical areas. There are numerous studies(Kalivas, Volkow 2005; Garavan, Hester 2007; Goldstein et al. 2007; Schoenbaum, Shaham 2008 – to cite a few recent studies), which have revealed the increased frontal (Orbit frontal and ACC) activity in conditions of intoxication and drug abuse, their craving, binge abuse, whereas the same activity decreases in their withdrawal states. Alcohol and drugs have their own varying effects on the neural tissues and the various functional systems. The phenomenology of the neural activation seen in neurochemical addiction must be considered different from the activation that may be present during normal arousal and drive to act, as the increased frontal activation does not facilitate either constructive cognitive evaluations or behavioral expressions.

Developing and deploying drive to act are different from learning to selecta specific action for execution in a problem solving situation one has encountered, though the latter may take place only if the drive is present. Drive to act may be considered part of driveto live, which an individual learns to recognize and label. Selection of specific actions become complex as the individual may have several needs and choices in the emotional and cognitive domains, with personal and material assets and liabilities. There are several neuropsychological and functional neuroimaging studies, which have thrown considerable light on these executive issues and the functional roles of different areas of the frontal cortex in the executive functions. They have special importance in conditions of alcohol and drug abuse and related neural conditions because of derailment of response inhibition ability. The loss of inhibitory ability in these and other neuropsychiatric and neurological conditions, result in various behavioral aberrations. One may only gradually acquire the ability to withdraw or in hibita drive that would otherwise initiate action in a given context, especially if it is facilitated to reach the CLP limits because of the personal wanting or compulsion to act or respond. Ability to facilitate selectively one response, while ignoring another requires semantic understanding of the differences of the responses, which have diverse or opposite emotional effects on the individual. Critical response inhibition ability may be impaired when choice has to be made from conflicting responses and response selection is not influenced by semantically (rationally) decided choice. A cognitive appraisal or value judgment of the responses is a prerequisite to the occurrence of conflicts and it represents a need to suppress a response or choose from competing responses. The main issue under focus here is the initiation of responses and actions, especially when they are cued from outside. Occurrence of a conditioned response depends on the acquired strength of the stimulus – response bondage. In the absence of such stimuli or the presence of fear, as in preattentive emotion, both of which can automatically elicit a response, the action must be initiated from within, using the drive aroused and the associated autobiographic remembrances. The drive aroused is a function of the experienced need to act, and the anticipated effects of the actions to be executed. Drive is required for one to get up from the bed or a chair and switch off or on a light, close a window or door, or get up from bed and start reading or learning, etc., if they are not automatically triggered as a conditioned response, in everyday life. It is not a ‘go’ signal that initiates the action, but the drive, which reaches the CLP, when the individual automatically starts the specific action. Action may be initiated even if conflicts are present, if the drive reaches

the CLP limit. One may recognize the need to act within, or may not recognize the presence of the drive to act. Such recognition could occur without transcending the state and developing verbal awareness of the same. For example, one could eat food with least recognition (or mindfulness) of the processes of putting food in the mouth and chewing it.

ACQUIRING INHIBITORY CONTROL IN EARLY CHILDHOOD

The only way an action can be prevented from occurrence is to hold the drive back. This is indeed an ability, which one has to acquire through practice during the developmental years. A heightened drive could be significantly reduced or blocked by personal efforts and the respective action or response may be prevented or blocked from being executed. Socially unacceptable responses could be prevented or suppressed even if the drive is intense, if one has the ability to inhibit or move away from the drive. One must develop this ability to control drive by inhibition through experiential learning during the early developmental years. Cognitive labeling of acceptable – no acceptable actions is a psychosocial responsibility, which must be initiated and reinforced in each individual by the family, self, and social organizations, including governmental agencies. This was earlier carried out by religious beliefs and those who controlled religions. Control of drive needs to be individually acquired during developmental stages, facilitated by family, schools, peer groups, and social organizations.

A thought, remembrance or sensory event may induce and escalate the drive, which may be experientially detected, and if the drive is intense enough, responses and actions may automatically be initiated, unless the individual make efforts to reduce or inhibit the drive. One may succeed in directly controlling the drive only if one is trained in such inhibitions, even if the drive is strong. Natural and normal training for the genesis and the control of drive starts in the infancy. There are culturally different contexts and patterns of facilitations and inhibitions, practiced by parents, elders, and teachers engaged in the upbringing of a growing child. This may start with feeding habits, carrying the child around, etc. It involves training a child to learn to wait peacefully to be taken care of, for meeting the personal needs and demands. What is important is not to deny responding to the needs, but allow the child learn to wait patiently for a while for satiation and to carry the act in a systematic manner, whenever possible. This gives opportunity for the child to learn to wait to achieve satiation, instead of instantaneous satiation of

a need. The whole process of learning to control the satiation of needs gradually results in an extended self-control practice requiring critical evaluation, and creation of awareness of justification of the need states, and learning controls on responses and actions for their satiation. Opportunities to become aroused high and driven by high drives frequently occur in childhood, which in turn may determine the drive resources of the individual in the long term. Overprotected children may not have adequate opportunity to experience higher levels of drive and to be aroused to higher levels. The positive emotions and emotional excitements experienced by a child may determine his arousal capabilities. Such excitements generally occur while exploring, examining novelty, playing with toys and sharing experiences with friends. Disciplines in everyday life, which control habits or practices of studying, playing, and resting in disciplined manner, help to develop both drive and control of the drive. Each child has to learn to get aroused according to the task requirements, as well as learn to control - inhibit the arousal, when not required. Fear conditioning that may take place during the early period would play a major role in the development of control of drives in the life of an individual. A disciplined punishment from parents and teachers are the only methods to help a growing child understand the unacceptability of a response or action for learning to control their execution. Drive is required for initiation of even simple acts like pressing a button, putting on/off a switch, opening a door, or closing a window. Equally important is the use of drive for navigations, when several actions may be executed in steps, according to a plan of action for the individual finally to reach a predefined goal. Learning to deploy drive continuously is an important discipline each has to learn, as the goals may be temporally and spatially away from sight. They may be a few minutes to several years away from the present. Drive control is learnt through the process of social conditioning or socialization by each child, which forms most important aspect of social upbringing of a child in the family and the society.

ROLE OF SOCIAL CONDITIONING– LEARNING TO CONTROL DRIVE

Social conditioning or socialization is the social controlling method facilitating each child to grow with socially approved norms of behavior. Social conditioning shapes the neurodevelopment of personality and behavior; by enabling a growing child acquire controls on drives, which help to trigger only socially approved responses in various conditions and realms of social interactions. This conditioning would help the growth of drives for executing actions

for positive achievements in life. It will further enhance the growth and strengthening of socially approved behavior and ability for controlling and withdrawal of drive so that socially non-acceptable responses are not executed. The most significant and alarming outcome of absence of adequate socialization is that it makes individuals vulnerable to criminal behavior (Gao et al. 2010, Lorber 2004, Patrick 2006, Raine 2008, 1993). Yu Go et al. (2010) demonstrated the extraordinary relationship between absence of fear conditioning when children were about 3 years, and occurrence of criminal behavior 23 years later in them. They attributed the poor early fear conditioning to the absence the functional involvement of amygdale. Studies by Arseneault et al. (2000), Pine et al. (1997) had implicated maladaptive limbic neural developments a brain marker in persons with antisocial personality, psychopathy, delinquency, and criminal offenders. Birbaumer et al. (2005) found that the neural activation seen inthe amygdala, orbit frontal cortex, insula, and anterior cingulate in normal subjects during delayed fear conditioning was absent in the male psychopaths of their study. Strong indications of ventral prefrontal and orbitofrontal dysfunctions have been reported in persons with psychopathic behavior by Blair 2007; Raine, Yang 2006; Blair, Cippoloti 2000). Absence of fear conditioning in early stages of neural development may contribute to impaired social development of individuals, even when opportunity for such social conditioning is available in the society. It may indeed affect adversely those biologically vulnerable persons, who may indulge in criminal offenses in their later life.

The need to have control over drive is a human requirement, as they alone act according to non-biological needs. Further, the need to control responses to biological needs is also a requirement of human society. Equally important is the social structure and its values, which decide the nature of such controls, and provide each growing child with opportunities for acquiring the control over drive while responding and acting out in various social interactions. Each growing child needs the opportunity to learn and practice social interactions as per the social expectations practiced in the society. They learn to behave in specific manner with the peer group, siblings, friends and strangers of opposite sex, grown-up members in schools and society, parents, teachers, elderly members and others of the society. They learn to walk on the road, get into public and private transport systems, stand in queue during entry into public conveyances and buildings, etc. All modern societies consider that preservation of its social

values is of utmost importance, which needs to be practiced by its each member. It is considered the duty of each person to respect the logical rights of others in every domain of living, where one has to share facilities with others. Thus, preservation of the society and its social values are considered more important than the rights of an individual to practice what they desire and choose.

Practice of a uniform social conditioning pattern is still not adequately understood across the globe for all human beings. Social values have emerged over centuries and mainly from the practice of religion, which continue to indicate the purpose of life and style of living, for each individual, which is also accepted by most individuals in many societies. Many societies practice independent social values, as faith in the rules of religionis an individual's choice and is not forced on any member of the society. These social values and practices may have become rules of a society after several years of practice, wisdom, and rational explanations. What is important is the presence of socially approved practices, which every child is expected to learn and master so that he has his drive under control to initiate any action or response directed to other individuals and the infrastructures of the society. It may not be wrong to say that there are societies, without such effective independent socialization regimeor social controls. There may be many children, who grow up without drive controls, and later indulge in antisocial and criminal activities. Violence in young adults, because of failures in their relationship with friends of opposite sex is common in all societies. One may live and continue relationship with a partner of opposite sex, despite receiving and suffering from violent responses (Jain & Kacker 2013) from the partner. Many of their children in such societies grow up without learning self-controls, except those who have been brought by parents, who have been exposed to such systems, as they have visited societies, where such regime is practiced. One may develop the ability to inhibit the drives intentionally at later stages, when one learns about the need and the superior gains in life. Educational institutions are places where value based social-interaction can be extensively practiced and children could learn and acquire self-controls. Learning self-controls serves two fold purposes, one is that the child acquires the ability to control own drive, and the second is that the child learns the social values, essential for the preservation of the social system, which is supporting the growth and existence of all in the society. Developing critical thinking capability during the early years of development becomes a boon, when coupled with self-controls, as the

combined effect regulates the execution of rightful behavior in the given context. Consequences of absence of self-control of drive are manifold. Other than execution of actions, which may be considered criminal, It affects the development of the personality of the individual and a need arises for self-justification of own undesirable responses and actions. The social process theories (Sutherland 1947; Festinger 1953; Akers 1998; Akers, Silverman 2004) explain how absence of cultural and social controls, and/or personal inadequacies contributes to the genesis of criminal behavior in individuals. This may also be aggravated by biological inadequacies, if present, in individuals.

DRIVE INITIATION OF ACTION

Opportunities to gain control over drive occur only when drive itself is present in abundance in a person. Creating and facilitating drive is vitally important feature of biopsychosocial development in a child. Learning to control this drive is only the next phase of the same development. The characteristic features of the presence of drive are the need state and the restlessness and discomfort that accompany, when need is not satiated. The child is first conditioned to respond to the needs and then learns to recognize the need states within, and then only he can learn to control the drive. It is generally presumed that a common state of heightened arousal exists in the system in all need states. The needs are experienced as different states, but all of them may need to propel the system to perform for the satiation of the needs or controlling the pain – pleasure related effects. The energy utilized for this is essentially physical and is utilized mainly in responses and actions. Actions are initiated only if the system is awake. Wakefulness is an essential precondition for drive to initiate actions. Actions are automatically initiated when the drive reaches the CLP, though action is recognized only when it is executed. Homeostatic imbalances initiate responses automatically, until one learns to bring their initiation under personal control. Thus, one learns to control responses related to normal biological drives of hunger, thirst, and sex. Similarly, conditioned responses are initiated automatically on recognition of each of the conditioned stimuli. Socialization plays important role in learning to control these drives in the developmental years. When unacceptable and undesirable actions are initiated because of lack of control on the drive, the actions are termed impulsive. An impulsive child may get opportunity to develop the control, but its continued presence may easily get a grown up into juvenile category needing special help and rehabilitation.

Origin of drive required for execution of actions, which help in accomplishing achievements in life are created and understood through semantic interpretations or ideas focused on it. These may be called non-biologically and psychologically generated drives. Executing actions, which facilitate learning, are encouraged by defining them as goals required for fulfilling purposes of life, which are again defined and shared by the society. These purposes may become more important than responding to the biological needs of survival for many and they encourage them to work hard for those achievements, even if survival needs are threatened and not satiated. Personal organization and control on responding to various biological drives are required for the preservation of the values defined by the society for its preservation. These social values decide the legitimate rights of each individual, which other individuals are obliged to accept and respect. Learning to practice these controls, despite presence of intense personal drives to respond, and learning to share social facilities with others, forms the matrix of socialization process. Each individual in the society is exposed to these values and conditioned to accept the approved social responses. Failure in social conditioning would mean need for identification of the person, and provision of special correction and rehabilitation program and the monitoring their effects. Absence of socialization would mean failure of conditioning in the individual because of some extraordinary condition. It may further indicate absence of the process within the social group, because of which the children do not get opportunity to be brought under the roof of protection and controls in the family and the society. Mere knowledge of ideas is not enough for practicing social values. Absence of social process of conditioning can be easily detected from the patterns of social behaviors of individuals, especially when they are interacting in a group. They are effective in controlling behavior only when social conditioning has taken place with those values. All social institutions starting with the family and schools must help practice the controls from childhood, spreading to all domains of social interactions. Early social conditioning is the most powerful method for mastering the drive within, which help to propel individual to initiate actions leading to achievements and help control actions and responses against the rights of other individuals in the society. An open society is expected to permit freedom of thoughts and actions, as long as they do not infringe on the legitimate rights of others and the accepted value systems of the society. Evolving social processes constantly bring about changes in the living patterns in a society. The members have to debate for accepting or rejecting those changes, instead of resorting to violent and criminal negations and objections. Rigid practice of own

values and inability to objectively evaluate and respect different views of others become the basis for the genesis of violent and criminal offenses in many. This may be the pattern of reactions practiced by the whole society or those, who have not been subjected to positive social conditioning. They refuse to accept non-offensive and legitimate changes in the living patterns of others. Violent criminal methods are often used to oppose such changes. All democratic societies give each individual freedom to select and practice new values, as long as they are rational and legally acceptable and do not hurt genuine feelings and values of others. Use of social conditioning for fostering healthy and positive behavior in young people has been integral part of upbringing in developed countries, whereas there are developing countries, where such socialization process is not present.

CONCLUSION

An extremely important and socially relevant aspect of neurodevelopment of a child is social conditioning in different spheres of life, where the child learns to share his space, facilities, and talents with other children and members of the society. Homes and schools are indeed the most important places, where such socialization processes should start. Opportunities for a growing child must facilitate both the development of capacity to be excited and aroused, as well as, ability to hold back the drive to respond and act. There must be explicit rules, which govern explicit behavior, and methods for enforcing them, if normal suggestions and recommendations do not bring about the desired effects. Development of learning to control drive must be given greater priority and positive reinforcement than punishment for the behavior manifested because of its absence. Use or release of physical force that cause pain and dishonor to others, is the strongest expression of uncontrolled drive. This is commonly described as intentional use of force, which requires the individual responsible for it, not just punished alone, but also examined and monitored within right professional diagnostic system. Increased incidences of crime among younger generation are strong indications of the breakdown of socialization process within a society. It is equally possible that a developing modern society never evolved such in-house, in school, and in-society training programs, and the younger generation do not have opportunities for such self-training. Increased child sex abuse and abuse of women may be considered strong indications of absence of such socialization in a society.

Fight-flight behavior indeed explains how survival needs are met by the brain in animals. However, human mind and human civilization have taken man beyond the spectrum of mere survival needs and the natural principles of equal and opposite reactions. Man must grow beyond the animal potentialities and expressions based on 'fight-flight' model for reaching out to the unique potentialities and expressions of life. Human being is capable of returning love for hate, and it is a unique dimension of this universe, which probably man alone can exhibit. Many men and women over ages have shown this capability and many who are part of the modern societies consider this as their rationale style of living. Social management and rehabilitation of criminal offenders are part of love based value system of a society.

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