Opinion

Freedom of Will
A Neurobehavioral Perspective

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Abstract
The concept of freedom of the will is discussed in the context of neuropsychiatric disease. Psychiatric conditions or neurological disease affecting the brain can modify freedom of will to varying degrees depending upon severity and response to treatment. Milder psychiatric disorders are common and exact thresholds for making diagnoses may be difficult to define reflecting a continuum between abnormal and normal. The study of these neuropsychiatric conditions may provide insight into the role of neurological and psychological factors in freedom of the will in both the mentally healthy and mentally ill. The author suggests a dynamic view of freedom of will with changes in degrees of freedom occurring throughout the life-cycle. The study of neuropsychiatric conditions has implications for any discussion of freedom of will.

Key Words: freewill, life-cycle, neurobehavioural disorders

INTRODUCTION
The concept of freedom of the will occupies a central place in philosophy. The Oxford English Dictionary defines freewill as "the power of determining one's choice of action independently of causation or fate". Alternatively, freewill in the philosophy of life is defined in more broad terms as "the doctrine that human action is not free but determined by motives regarded as external forces acting on the will". Neurological and neuropsychiatric conditions have implications for any discussion of freedom of the will, regardless of how it is defined.

A variety of clinical forms of global and focal brain diseases can affect freewill. One of the more common global brain disorders is Alzheimer’s disease, an incurable neurodegenerative condition of unknown etiology (Katzman, 1986). This progressive disease is characterized pathologically by severe neuronal dropout and clinically by behavioral changes. As the disease progresses, the patient becomes incapable of independent self care.

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There is a loss of those capacities which are acquired in the normal course of development of most humans such as the awareness of time, language and memory (Cummings, 1985; Grewal, 1995). As the severity of the dementia increases, there is a corresponding progressive loss of freedom of will. In the end stages of dementia, with a loss of self awareness, the patient evolves into a chronic vegetative state, and is confined to bed, requiring total nursing care (Task Force, 1994; Grewal, 1994). This loss of freedom of will in patients with Alzheimer's disease is a reversal of the progressive gain in freedom of will that occurs in human development from infancy to adulthood. Children are born with the potential for development of freedom of will. In conditions such as mental retardation, depending upon the severity, a corresponding decrease in the potential level of freedom of will that can be obtained by that individual may result. In Down's syndrome, there is a loss of the full potential of cognitive capacities and also a loss of the full potential of freedom of will. Other medical conditions may be characterized by an alteration of freewill which may then be reversible. Delirium, a common condition in hospitals, occurs when the patient is confused and exhibits disorientation to name, place and time (Cummings, 1985). When the patient has delirium, he is incapable of self care and usually confined to bed. With appropriate therapy he returns to his normal state with the corresponding "usual" level of freedom of will. Similar to global brain disorders, focal brain diseases may have a variety of causes but are often the result of vascular disease. The consequences of such lesions depend upon the location within the brain. In some cases, the patient's freewill may be intact however he may be unable to express or demonstrate this capacity. Patients who have suffered a stroke involving a portion of the internal capsule may be unable to move the contralateral limb on command in spite of normal comprehension of the command. Alternatively, a lesion may result in a form of aphasia characterized by an inability to verbally express any desires or wishes. Such patients have the capacity to understand spoken and written language but may not be able to speak and communicate their ideas (Cummings, 1985). Focal brain lesions may also change the behavior of the patient in more subtle ways. Patients with lesions involving the frontal lobes are capable of communicating and may have no overt physical or neurological complaints, however, psychological changes have been noted. These changes are demonstrated by the study of a famous patient, Phineas Gage, a 25 year old railroad worker, who in 1848, suffered a frontal lobe injury with a tamping iron. Soon after the accident, although he exhibited no deficits of language, motor function or perception he was a different person. Prior to the accident, he was described as responsible and intelligent and appeared to be a socially well-adapted individual. After his recovery, he lost this sense of responsibility and lacked respect for social conventions despite retained abilities of learning, memory and intelligence. In a recent report, the localization of his brain damage was reconstructed to the ventromedial portion of both frontal lobes (Damasio H, 1994). Studies of other patients with similar lesions show similar behavioral abnormalities. In a series of experiments performed on these patients with risk taking behavior, it has been demonstrated that awareness of the consequences of making poor choices does not preclude these choices from being made (Damasio, 1994). If such frontal lobe injury occurs early in life, some have suggested that a personality with anti-social features may result (Meyers, 1992; Price, 1990). Frontal lobe lesions demonstrate that the choices we make can be affected by brain disease and that conscious knowledge of
consequences of bad decisions is not enough to prevent these decisions from being made. This is not such an unusual concept if the discussion is expanded to include psychiatric conditions.

Obsessive compulsive disorder is characterized by recurrent, persistent thoughts (obsessions) or alternatively, by repetitive behaviors (compulsions) which are excessive or unreasonable. In either case, the patient is unable to control these obsessions or compulsions which may in turn cause distress or disrupt that person's life. In a similar way, the highly anxious person may be unable to control his anxiety or the substance abuser may be unable to control his addiction (APA, 1987). In all of these conditions, the medical or social consequence of their behavior is not enough to make patients alter their behavior to alleviate these psychological symptoms. Regardless of environmental or genetic etiologies of these mental disorders, these individuals cannot always "will" themselves into changing this behavior.

Although imperfect, one of the major achievements of modern psychiatry has been the development of a classification and diagnosis scheme for psychiatric disorders. Such a classification system has allowed large epidemiological and cross cultural studies to be performed. These studies show that the prevalence of psychiatric disorders is high with nearly 50% of individuals suffering a disorder in their lifetime and 22% of people meeting the criteria for any mental disorder in a given year (Kessler, 1994). Furthermore, 9% of the adult population suffers a mental disorder significant enough to cause meaningful impairment requiring mental health services (Goodwin, 1994). These disorders are concentrated in about 1/6 of the population who bear the burden of co-morbidity with three or more coexistent disorders. By definition, mental disorders cause a disruption of carrying out the daily activities of living and are a source of disability. In a recent cross-cultural study, psychopathology was consistently associated with functional disability (Ormel, 1994). This disability was most prominent among patients with major depression, panic disorder and generalized anxiety. However, similar to many medical conditions, there is often difficulty in delineating what is "normal" from "abnormal". For example, when does normal grief following a personal loss become depression? It can be difficult to establish exact thresholds for psychiatric disease. Personality traits are represented by enduring patterns of behavior. However, it can be a clinical challenge to separate personality traits or styles from personality disorders, which occur in 10% of the population (10). Anxiety disorders are common, having a prevalence of up to 20%, often present in association with other disorders. One representative anxiety disorder is a simple phobia, such as fear of flying in airplanes. If an individual is not flying and is not compelled to fly, the phobia may not affect that individual's life. However, if that individual is required to fly, the condition may become significant and may restrict his ability of free choice of how to travel. This illustrates the subtle way that the milder psychiatric conditions can have an impact on behavior. Issues of thresholds and spectra of psychiatric disease suggest that even in "normal" populations, various psychological factors can play a significant role in the freedom of will.

Philosophical and psychological thoughts about freedom of the will show a wide spectrum of views. On the one hand is the view in which man is regarded as totally free but does not want or accept this freedom (Stevenson, 1987). On the other hand is the view, representative of behaviorists, in which it is asserted that "will, free will and will power are
unobservable fictions" (Skinner, 1971). Recently, Searle discusses the study of people with post hypnotic suggestion and questions whether all behavior is a kind of psychological compulsion. He suggests that "instances of hypnosis and psychological compulsive behavior ... are usually pathological and easily distinguishable from normal free action" (Searle, 1990). Searle underestimates the pervasiveness of mental disorders and the difficulties with thresholds in the diagnosis of psychiatric disease. He concludes "for reasons I don't really understand, evolution has given us a form of experience of voluntary action where the experience of freedom is built into the very structure of conscious, voluntary, intentional human behavior". This experience of freedom may not be equal in all individuals. D.C. Dennett suggests freewill is an illusion but that even this illusion of freewill "may be worth wanting" (Dennett, 1990). However, again, even if freedom of the will is a kind of illusion, all of us do not have equal degrees of this illusion.

Young discusses restrictions placed upon our freedom of the will by various factors including those imposed by our nature and by our culture (Young, 1987). Those imposed by our nature include the biological needs to drink, eat, and sleep. Cultural restrictions can include those of language, perception and rationality. However, psychological factors and neuropsychiatric disorders which arise from a complex interplay between genes and environment are also part of our nature and can place restrictions upon freedom of the will.

Sperry has provided an interpretation of freedom of will where a notion of "degrees" of freedom of will is proposed (Sperry, 1976). In the attempt to bring together features of determinism, he argues that "having degrees of freedom does not quite make for complete freedom" and that "complete freedom from causation would mean behavior based purely on chance, on caprice and would result in complete chaos". This concept of degrees of freedom of will can be extended further if differences of higher order human capacities which are affected by neuropsychiatric disorders are included in the discussion.

Conservative estimates indicate that 10-20% of adults in society are suffering from some psychiatric disorder at any given time. Since these disorders can place restrictions upon freedom of the will, then it can be concluded that mental disorders as a whole significantly add to those factors which create disparities in degrees of freedom of will. Even within a lifetime of an individual, the freedom of the will changes since children are not born with freedom of will but have the potential to develop it. As they mature, this capacity may be restricted by psychological, socioeconomic and cultural factors. Then as they grow older, they may suffer neurological diseases, for example, Alzheimer's disease (it has been argued that if we live long enough all of us would develop Alzheimer's disease) this freedom becomes restricted. Therefore, freedom of the will should not only be considered in terms of degrees but as something which is not static and capable of change in over time.

The discussion of freedom of will has more than theoretical and philosophical implications. The foundation of the legal system is a belief in freedom of will making individuals accountable for their actions (Slade, 1994). However, the concept of freedom of the will can also be extended into the broad discussion of psychological health. At the conclusion of his book Adaptation to Life, Vaillant states that "I believe that mental health exists, much like intelligence or musical ability, as a continuum; and not just as the absence of psychiatric maladies" (Vaillant, 1977). Several investigators have suggested that mentally healthy people are those who have insight into their feelings, strengths and weaknesses and
who are masters of their own environment (Jahoda, 1959; Loevinger 1966). The implication is that mentally healthy individuals are aware of the restrictions placed by their psychological make-up, have adjusted and maximized what freedom of will they have in their local environment. This perspective provides a link between mental health and freedom of will.

There have been tremendous advances in neuroscience within the last few decades and more will follow. It has been argued that scientific investigation should teach us in what ways and to what degrees humans are free (Churchland, 1992). The scientific investigation of the psychological and neurobiological basis of neuropsychiatric disease will provide further insight into the nature and extent of freedom of the will.
References