Stress-Illness Connection: Critical Factors Moderating the Link

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By
Rev. Fr. Professor Chuka Mike Ifeagwazi
Professor of Clinical Psychology
University of Nigeria
109th Inaugural Lecturer

Summary of the Lecture
One major psychological factor that has been linked with illness episodes is stress. This lecture focused on the connection between chronic stress and health problems and highlighted the critical factors mediating the stress-illness link. The lecture discussed a number of stress-related illnesses and emphasised the role of psychology in the initiation, progression, exacerbation and treatment of the illness episodes. It reviewed some of the traditional models of clinical pathology such as the biochemical and bio-psychosocial models as well as the concept of stress and models of stress. It was argued that the biomedical hypothesis, although, a major scientific advance over demonological model which explains natural phenomena in terms of supernatural, superstitious, and demonic causes, is too reductionistic and limited. The diathesis-stress model or the biospsychosocial perspective provides a comprehensive explanation of illness and health. It was observed by this lecturer that modern scientific psychology has witnessed an explosion in psychological research, developed systematic scientific theories, and intervention techniques that have challenged most of the traditional philosophical, demonological and biomedical approaches to

explaining natural phenomena, including physical disorders and mental illness.

The lecture drew the attention of the medical community to a number of psychological disorders, including the somatoform disorders, such as hysteria, that may disguise themselves but present as physical illness. These somatoform disorders currently referred to as somatic symptoms and related disorders by DSM-5 have been discovered by clinical investigators to be disturbingly present in relation to general physical or medical condition. They are medically inexplicable and evoke considerable frustration and anger among medical practitioners. They are triggered by severe psychological stress or emotional conflict, and they are, therefore, psychological in origin.

The lecture highlighted a number of studies which showed that life stress and other psychological factors influence susceptibility to a variety of psychiatric and medical conditions and exacerbate existing medical conditions. **Part 1** of this lecture captured among other things, the background considerations and overview of emerging fields connecting psychological stress and illness. The fields of behavioural medicine and health psychology, which assume a holistic or bio-psychosocial explanation of health and illness, emerged in the 1970s as a challenge to the traditional biomedical model which assumes a mind-body dualism. **Part II** of the lecture addressed among other things, the issue of how stress is linked to illness, indicating the physiological and/or behavioural pathways linking stress to illness. **Part III** of the lecture explored the critical variables moderating the stress-illness link, including social support network, cognitive appraisal, personality traits, and religious faith. It is recommended that people should learn to manage their stress loads well using the stress buffers or moderators highlighted in this lecture as well as other stress management strategies, particularly relaxation training which will neutralise the sympathetic or autonomic arousals.

STRESS-ILLNESS CONNECTION: CRITICAL FACTORS MODERATING THE LINK

Protocol

The Vice-Chancellor, Professor B.C. Ozumba
Members of the University of Nigeria Governing Council
Members of the University of Nigeria Senate
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Deputy Vice-Chancellor (Administration, Nsukka Campus)
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Principal Officers of the University
The Deans and Directors of Faculties and Institutes
Distinguished Past Inaugural Lecturers
Distinguished Professors
Distinguished Academics /Administrators
Heads of Academic and Administrative Departments
My Distinguished Colleagues in the Lordôs Vineyard, Monsignori, Rev. Fathers, and Rev. Sisters
Other Priests and Ministers, Present
Non-academic Staff of the University
Royal Fathers
Our Esteemed Guests
Lions and Lionesses
Ladies and Gentlemen

It is my pleasure to welcome you all to my inaugural lecture. I feel highly honoured by your esteemed presence. This is the first inaugural lecture from the Department of Psychology, University of Nigeria, Nsukka. When I glanced through the full list of past Inaugural Lecturers and their beautiful photographs as published by the Senate Ceremonials Committee to mark the Centenary Inaugural Lecture which was held on Thursday, October 29, 2015, I was shocked to discover that the Department of Psychology established in 1964 (52 years old) has not produced a single Inaugural Lecturer. I was, therefore, challenged and emboldened to

face this daunting task of packaging and presenting this lecture as the 109th Inaugural Lecturer of the University of Nigeria, Nsukka. As a Clinical Psychologist, I have known for years that chronic stress affects diverse areas of human functioning, and that chronic stress arousal can contribute to illness episodes. For instance, performing a challenging task such as giving a speech or presenting an inaugural lecture (as I am doing now) in front of a well informed, highly enlightened, and perhaps, highly critical audience is likely to lead to transient increases in heart rate and in blood pressure. My inaugural lecture entitled ñStress-illness Connection: Critical Factors Moderating the Linkò has been packaged to present information relating to the pathways connecting stress and health problems.

THE INAUGURAL LECTURE
PART I

INTRODUCTION
Background Considerations

Early medical approaches to conceptualizing the aetiology, evaluation and treatment of clinical pathology were based on biomedical model probably because of the dominant influence of Cartesian dualism (mind-body problem) which views mental events as separate and distinct from physical events. The biomedical model assumes that disease is an affliction of the body and is separate from the psychological and social processes of the mind. This perspective became widely accepted during the 19th and 20th centuries and still represents the dominant view in medicine (Sarafino, 1998). The model was championed by such influential figures as Hippocrates (widely regarded as the father of modern medicine) and Emil Kraeplin. It continues to influence the medical training and orientation of medical students as well as the development of diagnostic and classification systems, including the International Classification of Diseases (ICD) and Diagnostic and Statistical Manual of Mental Disorders (DSM). Medical

schools continue to pay homage to Hipocrates by having new physicians swear the Hippocratic oath (Nevid, Rathus & Green, 1994), perhaps in acknowledgment of the overwhelming contributions of Hippocrates and the biomedical model to the development and practice of modern medicine.

The biomedical hypothesis, although a major scientific advance over demonological model which seeks to explain natural phenomenon in terms of supernatural, superstitious and demonic causes, is limited and inconclusive. The biomedical model has been criticised as being irritatingly too reductionistic and essentially a single-factor model of illness, explaining illness in terms of a biological malfunction (Taylor, 2003).

The biomedical model seems to ignore the complex interplay of biological, psychological, and social factors that underlie the development and maintenance of clinical pathologies. Other competing models such as the biopsychosocial model affirm that health and illness are consequences of the interplay of biological, psychological and social factors (Taylor, 2003; Engel, 1977). Taylor (2003) recognises the critical relevance of holistic approach to medicine and maintains that health and illness are caused by multiple factors, and produce multiple effects, and that the mind and body cannot be distinguished in matters of health and illness because both so clearly influence individualôs state of health.

In recent times, it has become increasingly evident that life stress and other psychological factors influence susceptibility to a variety of psychiatric and medical conditions (Cohen, Janicki-Dervets & Miller, 2007). Research shows that stress can even contribute to the development of major illnesses such as heart disease, depression, obesity or exacerbate existing illnesses (APA, 2013).

Overview of Emerging Fields of Studies Connecting Psychological Stress and Illness

The Role of Psychology

Psychology is a rich, exciting and fascinating field of study that has been defined as the scientific study of behaviour and mental processes. Being a dynamic and rapidly developing scientific discipline, it has undergone many radical changes since Wundt established the first psychological laboratory in 1879 at Liepzig in Germany. Although it developed as a young science out of the disciplines of philosophy and physiology, modern scientific psychology has witnessed an explosion in psychological research, developed systematic scientific theories and intervention techniques that have challenged most of the traditional philosophical, demonological and biomedical approaches to explaining natural phenomena, including physical disorders and mental illness.

Psychological science has continued to push the frontiers of scientific knowledge and has helped to explain many seemingly mysterious and puzzling medical conditions which have appeared medically inexplicable, including the somatoform disorders such as hysteria. Although the medical or disease model of psychopathology produced brilliant results in its early days, particularly the discovery that general paresis (a mysterious mental disorder involving the gradual and irreversible breakdown of physical and mental functioning) has a physical cause, and diagnosed as an advanced case of syphilis or syphilis infection (Alloy, Jacobson and Acocella, 1996), it could not unravel the mystery surrounding hysteria. It has been a long leap from evil spirits (demonological model) to brain pathology as causes of illness (Barlow & Durand, 2005). But the emergence of psychological and biopsychosocial perspectives on health and illness based on the psychological research tradition marked a revolutionary paradigm shift.

For instance, one of the earliest systematic psychological research conducted by Friedman and Rosenman (1959) on Type A personality pattern established clearly that specific behaviour patterns characteristic of some individuals, can contribute to serious illness. This sent a message to physicians that to consider only the physiological aspects of illnesses may be wholly inadequate for successful diagnosis, treatment, intervention and prevention (Hock, 2005). It is important to recognize the psychological component of illness since successful treatment of illness must involve the entire person: mind and body (Hock, 2005).

The somatoform disorders involve physical symptoms that are the result of psychological causes rather than any known medical condition. Psychological factors are ubiquitously present in relation to general medical conditions (DSM-IV-TR, 2000) and psychological symptoms may disguise themselves and manifest or present themselves as physical illness. Somatoform disorders lie at the borderline between psychology and medicine and tend to draw our attention to the intimate relationship between psychological status and physical health.

The somatoform disorders are psychological disorders masquerading as physical problems, encompassing a number of clinical disorders often encountered in general medical settings, such as conversion disorder (previously called hysteria), somatization disorder, hypochondriasis and psychogenic pain. The essential feature of somatoform disorder is that psychological conflicts take on somatic or physical form (Alloy, et al., 1999). Patients with somatoform disorders may present a variety of medical or somatic complaints such as muscular aches, and pains, headaches, abdominal pain, menstrual difficulties, false pregnancy, limb paralysis, and impaired hearing or vision (Crider, Goethals, Kavanaugh & Solomon, 1983). A more extreme example of a clear

somatoform disorder is pseudocyesis, or false pregnancy, in which a woman believes she is pregnant, but physical examination and laboratory tests confirm that she is not (Nolen-Hoeksema, 2001).

Perhaps, conversion disorder, traditionally known as hysteria, represents a typical example of how psychological factors or emotional stress and conflicts can result in physical complaints. It is very difficult for physicians to track down or diagnose conversion disorder. This disorder, first described in the medical literature by Hippocrates in the 5thC BC, suggests that psychological stress or a psychological problem has been converted into a physical symptom (Crider, et al., 1983). As reported by Crider, et al., the symptoms of conversion disorder have confused and mystified physicians over the centuries because they so clearly resemble the symptoms of physical disorders, and they evoke considerable frustration and anger among medical practitioners.

Conversion symptoms can occur dramatically, and they include paralysis, deafness, blindness, mutism, pseudocyesis. Usually the symptom develops suddenly following an extreme psychological stressor, and many conversion patients appear completely unperturbed by their symptoms - a response described in clinical psychology literature as *la belle indifference*, or ñbeautiful indifferenceò (Nolen-Hoeksema, 2001; Alloy, et al., 1999). As pointed out by Nolen-Hoeksema, one particularly dramatic conversion symptom is **glove anesthesia**, in which people lose all feeling in one hand as if they were wearing gloves that wiped out physical sensation. There is apparently no identifiable physical or organic pathology to account for it since conversion symptoms are often triggered or precipitated by intense psychological stress. In fact, Freud (cited in Nolen-Hoeksema, 2001), found that patients presenting symptoms of glove anesthesia tended to regain feeling in their hands when, usually under hypnosis (a psychological treatment procedure that places people in a trancelike mental state during which they become highly suggestible).

It was the treatment of hysteria using hypnosis (or hypnotic induction and suggestion) that laid the foundation for Freudôs psychoanalytic theory of the unconscious conflict. Cases of hysteria, like that of ñAnna Oò, widely known in medical and psychological literature, led Freud and other neurologists, such as Breuer, with whom he published their classic *Studies in Hysteria*, to the belief that clinical disorders, such as hysteria, are psychological in origin and could be treated by psychological intervention techniques. Both Breuer and Freud used hypnosis to induce carthasis (emotional cleansing) in hysterical patients (Rosenhan & Seligman, 1983). In fact, Breuer used this psychological intervention technique (hypnosis) to treat a woman-ñAnna Oòï with hysterical complaints. The case of ñAnna Oò (whose real name was Bertha Pappenheim) figured prominently in Freudôs development of psychoanalysis ï a psychological method of intervention that does not involve the use of drugs or physical means. It has been proposed by Freud and other psychodynamic theorists that hysterical symptoms are functional, allowing the individual to achieve both primary and secondary gains. They block the personôs awareness of internal conflict (primary gain) and confer the secondary gain of excusing the person from burdensome responsibilities and attracting attention, sympathy and support of other people (Alloy, et al., 1999).

Somatization Disorder

Like conversion disorder, **somatization disorder** involves the expression of psychological issues or problems through somatic complaints that are medically inexplicable. This condition, often referred to as Briquetôs syndrome, is marked by multiple somatic complaints or symptoms that are recurrent or chronic rather than a single physical complaint. Somatizing psychological distress is fairly common and fairly uniform throughout the world (Barlow & Durand, 2005). The most common somatic complaints in somatization disorder are headaches, paralysis, fatigue, heart palpitations, chest pain, nausea, and vomiting, abdominal pains,

menstrual and sexual problems. Patients present these symptoms in vague, dramatic and exaggerated ways.

These physical complaints begin by age 30 and cause the somatizing patients to seek medical treatments, constantly going from one medical doctor to another doctor, changing doctors and hospitals, as they engage in ñdoctor shoppingò in search of relief from symptoms. The somatizing patients, particularly in western culture, present themselves for frequent medical evaluation and laboratory tests, and undergo unnecessary surgery for vague somatic complaints that cannot be explained medically.

Research conducted in western culture (e.g., Gureje & Simon, 1999) has shown that as many as 25% of visits to primary care physicians are promoted by physical symptoms that lack clear organic pathology. Research in Africa (e.g. Uzoka, 1982; Ezeilo, 1982; Ifeagwazi, 2006; Ebigbo, 1985) suggests that there is a recognized tendency among African clients toward somatization of psychological problems. Africans tend to present psychological issues and problems through physical complaints or symptoms, including sensation of sudden loss of heart function (*obi mmapu*), heat in the head, or body, crawling sensation, feeling of heaviness or pressure in the head, fear of death, feeling of lump in the throat, being troubled by witches, restlessness of mind (Uzoka, 1982). Ebigbo and Ihezue (1981) hypothesize that the phenomenon of somatization, prevalent among Africans represents a defense mechanism, whereby psychological distress is channeled into somatic complaints and thereby is prevented from erupting into the symptoms of a full fledged mental breakdown. The somatic complaints themselves are idiomatic and indeed very often point to particular types of social and psychological problems (Ebigbo & Ihezue, 1981).

Ifeagwazi (2006) observes that there is a high rate of spiritualization and somatization of psychological problems in

Africa, and that these clinical problems are frequently ñmisdiagnosedò by spiritual or faith healers as spiritual attacks. Thus, problems connected with psychological stress, anxiety, and depression are not just somatised but spiritualised in most cases by African clients. It is a common knowledge that currently in Africa, many emotionally distressed and traumatised people, including the elite seek professional help from faith healers and deliverance ministers rather than utilising psychological or psychiatric services or even orthodox medical services as the first line of treatment. As explained by Ifeagwazi (2006), many African societies have not moved beyond the cultural belief system and supernatural views that conceptualized clinical pathology as possession by demons or evil spirits, and maladjustment is still considered in terms of demonic or spiritual attack. The practice of medicine and healing in Africa are, therefore perceived, as essentially religious (Ejizu, 1992), or spiritual as most people in African culture invoke explanations of psychopathology that are tainted with superstitious, metaphysical and magical beliefs even in modern times. Although the somatoform and somatic complaints respond purely to psychotherapy, a good number of African clients patronise spiritual healers and traditional healers or native doctors and do not voluntarily seek psychotherapy.

Hypochondriasis

Hypochondriasis is preoccupation somatoform disorder that can present a picture very similar to that of somatizaton disorder. People who suffer from hypochondriasis, referred to as hypochondriacs, report abnormal concern and worry about body function, or anxiety about physical health status. They are preoccupied with the fear that their symptoms are due to underlying serious illness, such as cancer. However, no organic basis can be found for the complaints (Nevid, et al., 1994), as the clinical symptoms presented by hypochondriacs are merely normal bodily changes, such as occasional coughing, and sweating that are unrealistically interpreted as signs of serious illness (Comer, 2007;

Noyes, 1999). According to Comer, this fear of serious illness persists among hypochondriacs despite medical reassurance, and they frequently engage in ñdoctor shoppingò just like somatization patients. Other somatoform disorders categorized by the DSM-IV include body dysmorphic disorder (imagined ugliness) and pain disorder.

In general, the onset of somatoform disorders discussed above and related disorders such as dissociative disorders (which involves disruptions of consciousness, memory, and identity) is typically related to some stressful experiences. This point to the role of psychology in illness episodes.

Holistic Approach to Health and Illness: Biopsychosocial Model

A statement we often hear in psychology is that we need to understand the whole person (Sarason & Sarason, 1980). Man is a biopsychosocial unit. Although a disorder may be primarily physical or psychological, it is always a disorder of the whole person - not just the body or the psyche (Carson, Butcher & Mineka, 1998). Thus, the impact of biological, psychological and sociocultural variables on health should be recognised and emphasised. Historical trends in the study of psychology over the years have always favoured such holistic or integrative perspective. The need to understand clinical conditions such as conversion hysteria led to the emergence of the field of psychosomatic medicine (the field that studies the relationship between psychological factors and physical health). In the early1930s and 1940s, a number of clinicians intensified interest in psychosomatic medicine by attempting to integrate Freudian ideas with a growing body of knowledge concerning the bodily aspects of emotional experiences (Sarason & Sarason, 1980; Sarafino, 1998). Alloy, Jacobson and Acocella (1999) pointed out that for years, psychology had recognised the existence of psychosomatic disorders (also called psychophysiological disorders) − that is

physical illnesses influenced by emotional factors. These clinical conditions such as hypertension, ulcer, asthma, migraine or tension headache were listed in the early version of the *Diagnostic and statistical manual of mental disorders (DSM)* as psychophysiological disorders. Psychosomatic disorders can best be conceptualized within a diathesis-stress model. Diathesis refers to constitutional vulnerability or biological predisposition, and stress refers to eventual events that activate the predisposition to be expressed in clinical pathology. The interaction between biological predisposition/genetics and environmental stress in determining the development of clinical pathologies is expressed in diathesis-stress hypothesis (Nevid, et al., 1994).

In particular, some authors (Dunbar, 1943; Alexander, 1950, as cited in Taylor, 2003) helped to shape the field of psychosomatic medicine by offering profile of particular disorders believed to be psychosomatic in origin, including essential hypertension, skin disorders, arthritis, colitis and ulcers. Such physical disorders in which psychological or emotional factors are believed to play a causal or contributing role have traditionally been termed psychosomatic, which is derived from the Greek roots *psyche* meaning ñsoulò or ñmindò and *soma* which means ñbodyò. Thus, the field of psychosomatic medicine was developed to explore the possible health-related connections between the mind and the body (Nevid, et al., 1994). As stated by Nevid et al., psychological factors can influence physical functioning, while physical factors can influence mental functioning. We shall in this lecture review studies that demonstrate the role of psychological stress in essential hypertension. It may be necessary to point out that psychosomatic disorders are not the same as somatoform disorders earlier discussed. Individuals with psychosomatic disorders have actual physical illness (such as hypertension) that can be documented with medical tests, and that is being exacerbated or worsened by psychological factors. In contrast, an individual with

somatoform disorder does not have any illness or defect that can be documented with medical tests (Nolen-Hoeksema, 2001).

However, categorising a few select illnesses as psychosomatic is problematic, as it suggests that psychological factors contribute only to these medical conditions. In fact, one major criticism of the psychosomatic movement documented by Taylor (2003) was that it cordoned off a particular set of diseases as caused by psychological factors, thereby restricting the range of medical problems to which psychological and social factors were deemed to apply. Thus, the psychosomatic hypothesis was criticized as evidence accumulated to report that widely diverse medical conditions were affected, if not caused by psychological factors. Consequently, the list of psychosomatic or psychophysiological disorders was dropped by the DSM-III in1980 in favour of a comprehensive category referred to as psychological factors affecting medical conditions that could apply to any illness (Alloy, et al., 1999).

According to Nietzel, Speltz, McCauley and Bernstein (1998), modern behavioural medicine considers psychological factors as potential influences on almost all diseases. It is now believed that any medical condition, including cancer and human immunodeficiency virus (HIV), can be influenced by psychological factors such as stress. The medical scientific community now recognises that psychological and emotional factors can initiate, exacerbate and prolong medical diseases and problems. In fact, there is a special DSM-IV diagnostic category that is called psychological factors affecting medical conditions, which addresses conditions in which there is a marked relationship between psychological and physical disturbance (Halgin & Whitbourne, 2003).

Many professionals are coming to believe that physical illness can no longer be studied apart from psychological factors (Alloy, et al.,

1999), and physicians and psychologists now recognise that the biopsychosocial model provides fuller explanation of both health and illness. This model considers health and illness to be determined by a combination of biological, psychological and social factors (Wood, et al., 2008). Although a clinical disorder may be primarily physical or primarily psychological, it is always a disorder of the whole person (not just the body or the psyche) (Carson, et al., 1998), as scientists and clinicians have come to recognize that mind and body are more closely intertwined than would be suggested by the dualistic model (Nevid, et al., 1991).

This more holistic or unified concept of mind and body has favoured the use of the biopsychosocial model which stresses that health and illness are caused by multiple factors and produce multiple effects. In contrast to the biomedical model which assumes a mind-body dualism, the biopsychosocial model maintains that the mind and body cannot be meaningfully separated in matters of health and illness as already stated. Interestingly, the biopsychosocial perspective maintains that the process of diagnosis should always consider the interacting role of biology, psychology, and social factors in assessing an individualôs health or illness (Oken, 2000, as cited in Taylor, 2003). Biological, psychological and social factors are implicated in the etiology, maintenance and progression of every clinical disorder and as such, the biopsychosocial model represents an attempt to integrate the psychological (the ñpsychoò) and the environmental (the ñsocialò) into the traditional biomedical (the ñbioò) model of health and illness (Ogden, 2000). This reflects a holistic or a whole-person approach to health that calls for interdisciplinary collaboration among various health professionals, including physicians, clinical psychologists, medical sociologists, social workers, and nurses.

Behavioural medicine and health psychology have been regarded as two fields that emerged in the 1970s as a challenge to the

traditional biomedical perspective on health, and both follow the biopsychosocial explanation of health and illness. Both disciplines have dealt with the role of psychological factors in all facets of health and illness; built upon and extended the holistic or whole-person approach to illness pioneered by the field of psychosomatic medicine which represented the earliest challenge to the biomedical model (Ogden, 2000; Davison & Neale, 2001).

According to Schwartz and Weiss (1978), behavioural medicine is an interdisciplinary field concerned with the understanding of how social, psychological and biological factors combine to produce illness and how this understanding can be translated into more effective treatment and prevention of illness. It attracts professionals from psychology, sociology, and medicine who seek to integrate behavioural disciplines (psychology, sociology, health education) and biomedical knowledge into an interdisciplinary effort to understand, diagnose, treat, and prevent illness (Nietzel, et al., 1998). As earlier stated, modern behavioural medicine considers psychological factors as potential influences on almost all diseases, and, therefore, included psychology in the study of health. It shifted attention from traditional biomedical views of health by not only focusing on treatment, but also focusing on prevention and intervention. Health psychology, which is closely related to behavioural medicine, is perhaps the most recent development in this process of incorporating psychology into an understanding of health and illness (Ogden, 2000).

As stated by Carson et al. (1998), health psychology is the subspecialty within the behavioural medicine approach and within the discipline of psychology that deals specifically with psychologyôs contributions to the diagnosis, treatment, and prevention of the psychological components of physical illness. Health psychology regards psychological factors not only as possible consequences of illness, but as contributing to its aetiology (Ogden, 2000), and one major psychological factor that

has been linked with illness episodes and has strongly motivated my research interest is stress.

PART II
Life Stress and Illness

Stress is a pervasive clinical phenomenon that has been linked to health and illness. Perhaps, one may wish to ask the question ñwhat is stress?ò In addressing this question, it must be observed that the most critical problem encountered by stress researchers is the definitional problem. Although many people use the word ñstressò in interpersonal communication, its definition, eludes universal agreement.

Selye (1956) who is generally regarded as a pioneer researcher in the field of stress-related illness defines stress as the non-specific response of the body to any demand made upon it. Selye borrowed the term stress from engineering, in which it is used to describe a force applied against resistance (Gazzaniga & Heartheron, 2003). As an engineering and physical construct, stress refers to the amount of force acting on a physical object. When a load is applied to a material, a balancing force is set up within the material, and this internally acting force is termed a stress (John, 1983, as cited in Ifeagwazi, 2008a).

The use of the term stress has been extended and employed in the fields of biology, medicine and psychology to apply to human organisms. In both its biological/medical and psychological uses, the term stress refers to physical strain and psychological strain respectively, and was applied to humans to mean an outside force acting on the body or mental powers (Mason, 1975). Most psychologists define stress as the physiological and psychological response to a condition that threatens or challenges an individual and requires some form of adaptation or adjustment (Wood et al., 2008).

Simply put, stress is both a physiological and psychological reaction to situations that demand adaptation (Raulin, 2003). It is a load or burden under which we survive or crack, as it takes a heavy toll on our physical and mental health by imposing wear and tear on our body systems. According to Brehm, Kassin and Fein (2002), stress is an unpleasant state of arousal that arises when we perceive that the demands of a situation threaten our ability to cope effectively. The emotional reaction to stress triggers heightened physiological arousal due to increased reactivity of the sympathetic nervous system (Halgin & Whitbourne, 2003; Ifeagwazi, Chukwuorji & Kalu, 2013).

Most definitions of stress now emphasise the relationship between the individual and the environment (Taylor, 2003). This reflects the interactional or transactional model of stress, which conceptualises stress as a process that includes stressors (events that produce threats to a personôs well-being) and strains (the personôs physiological and psychological responses to a stressor); but adds an important dimension, namely the relationship between the person and the environment (Lazarus & Folkman, 1984, as cited in Sarafino, 1998).

As pointed out by Alloy et al. (1999), some cognitive theorists define stress not as stimulus or response, but as an interaction between the stimulus and the personôs appraisal or interpretation of it, a process that determines a personôs response. According to cognitive models of stress, it is not just the event itself, but also the way it is perceived, appraised and interpreted that determines its impact. The context of the event also determines its psychological impact (Halgin & Whitbourne, 2003).

Stress is not necessarily bad as researchers have always differentiated between stress that is positive and beneficial (eustress) and stress that is harmful and damaging (distress). From

an adaptive point of view, moderate level of stress facilitates and motivates adaptation.

Brief Review of Core Stress Models

Fight or Flight Model and its Impact on Health

Investigators (e.g., Ogden, 2000; Taylor, 2003; Sarafino, 1998; & Nevid, et al., 1994) have reported that our bodies have a natural physiological or biological response to stress known as the fight-or-flight response. When it is not prolonged, this physiological response is adaptive and energising because it helps the body fight or flee from a threat or stressor. When this physiological response is prolonged, it causes wear and tear on the body, potentially contributing to illnesses such as ulcers, headaches, high blood pressure, coronary heart disease and impairment of the immune system. The experience of a stressor or threat activates our physiological alarm system which in turn mobilises our body resources in preparation for emergency response. The alarm reaction serves to mobilise the body for defense (Canon, 1929). The physiologist, Walter Cannon (1929) called this initial mobilization of the body defenses the fight-or-flight arousal reaction. This physiological reaction is accompanied by some bodily changes, including elevated blood pressure, increased heart rate, increased respiration rate, and increases in blood sugar level (Nevid, et al., 1994). Cannon suggests that these physiological changes that result from the activation of the autonomic nervous system and the endocrine system prepare an individual for an emergency reaction to either confront or fight the stressor or to fly away and escape from it. Within Canonôs model, stress is defined as a response to external stressors, which is predominantly seen as physiological (Ogden, 2000).

The General Adaptation Syndrome (GAS) and Illness Onset: Hans Selye's General Adaptation Syndrome (GAS)

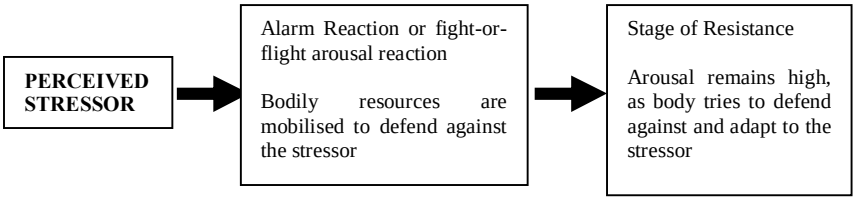

Figure 1: General Adaptation Syndrome
Source: Adapted from Sarafino (1998)

Selye (1956, cited in Sarafino, 1998) observes that the fight-or flight response proposed by Cannon (1929) is only the first in a series of reactions the body makes when stress is prolonged or chronic. He proposes a three-stage physiological reaction to a stressor, consisting of the alarm and mobilization stage, the resistance stage, and the exhaustion and disintegration stage. The general principles of the GAS theory have been confirmed by scientific research (Gazzaniga & Heartherton, 2003). As already indicated, the alarm stage is the emergency reaction that prepares the body for fight or flight. The alarm reaction mobilizes the body for defense. It is initiated by the brain and regulated by the endocrine system and the sympathetic division of the autonomic nervous system (Nevid et al., 1994). If the stressor persists, the resistance stage is entered. The individual adapts to the stressor by adopting a variety of coping mechanisms. If the stressor still persists, the last phase of GAS is entered. This is the exhaustion and disintegration phase in which bodily resources and reserve stores of energy are depleted, and the organism loses its ability to resist, such that further exposure to stress can lead to illness and death (Carson, et al., 1998). Both the alarm and resistance phases of GAS require a considerable amount of energy, and when all the energy reserves and resources we rely on to combat or deal with

the stressor are used up, or taxed to their limits, a profound, life-threatening physiological exhaustion sets in. The person experiences a breakdown in physical health or psychological decompensation. It is during this stage of exhaustion and disintegration that illness episode may be initiated (Edlin & Golantry, 1985). Thus, people under chronic or prolonged and unremitting stress can experience wear and tear on their bodies as well as chronic and serious illnesses such as hypertension and clinical depression.

The GAS model briefly reviewed in this lecture is important in our understanding of stress, and how prolonged and unremitting stress can result in ill health. In particular, it posits a physiological mechanism for the stress-illness relationship (Taylor, 2003). Selye believes that repeated or prolonged depletion of resources, characteristic of the third phase of GAS, is responsible for physiological damage that sets the stage for illness onset.

In fact, chronic stress can be costly in terms of taking a heavy toll on the individualôs physical and mental health. Research evidence has shown that life stress and other psychosocial factors influence susceptibility to a variety of mental (psychiatric) and medical conditions. Substantial evidence exists for association between increased stress and reports of symptoms of disease, use of medical services, and verified organic illness (Herbert & Cohen, 1994). Experts estimate that between 50 and 80 percent of illness episodes or medical conditions are stress-related (Pelletier, as cited in Schafer, 1996). The list of illnesses in which chronic stress may play a role is alarmingly long, including hypertension, obesity, heart attack, stroke, ulcers, cancer, arthritis, diabetes, sleep problems, headache, fatigue, constipation, infertility, clinical depression, suicidal ideation, psychological burnout, intellectual and memory impairment (Awake, 2005; Taylor, 2003; Sapolsky, 1998). Stress can contribute to the development of the aforementioned illnesses or exacerbate existing illnesses. It can

also impair or reduce the effectiveness of the immune system-the bodyôs natural disease−fighting system.

Acquired Immune Deficiency Syndrome (AIDS), which is caused by human immunodeficiency virus (HIV) is a disease of the immune system which is directly affected by stress. Thus, stress may promote the deadly progression of HIV to AIDS. This is an example of how psychological factors may directly influence biological processes (Barlow & Durand, 2005). According to Ogden (2000), illnesses such as HIV, cancer and coronary heart disease (CHD) illustrate the role of psychology throughout the course of an illness.

As observed by researchers (e.g., Gazzaniga & Healtherton, 2003), not only does stress lead to specific physiological responses that affect health, but many people cope with stress by indulging in behaviours that are harmful to their health, including excessive alcohol/drug use, cigarette smoking, eating junk food, decreased sleep, sexual promiscuity, and aggression. People who experience high levels of stress tend to perform behaviours that increase their risk of becoming ill. For instance, people under intense stress tend to consume more alcohol, cigarettes, and coffee than people who experience less stress. Thus, stress can influence health by increasing the frequency of harmful or unhealthful behaviours (e.g, alcohol/drug use) and by decreasing the frequency of healthful behaviours (e.g., exercise, regular sleep, avoiding alcohol, and eating healthful diet) (Herbert & Cohen, 1994). It is, however, to be noted that while too much stress can have a detrimental impact on our physical and psychological health, a moderate level of stress can be positive, energising, motivating, and beneficial (eustress). When an individual is not motivated at all, he/she can be apathetic and lethargic (Hahn et al., 2005).

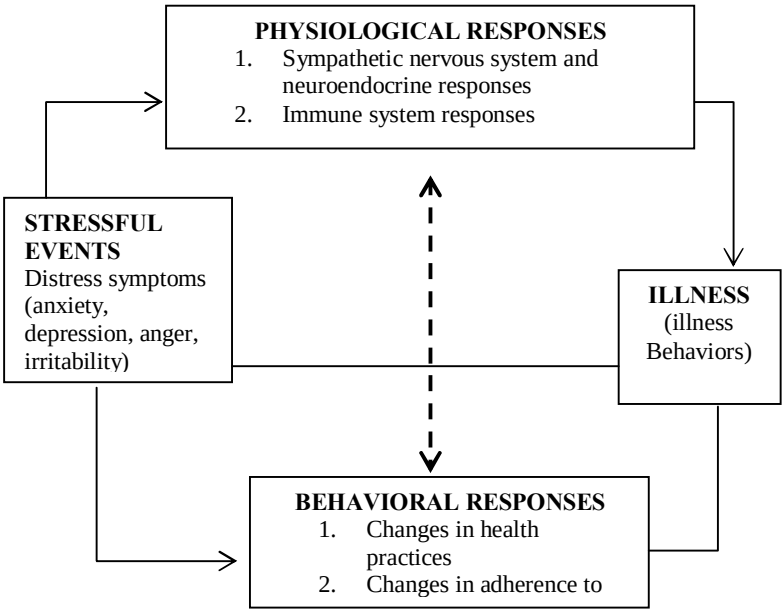

Figure 2: A model of the Pathways linking stress to illness
Source: Adapted from Herbert and Cohen (1994)

As shown in figure I, episodes of anxiety, depression and other negative emotional states such as anger and irritability can be triggered by stress. Next, either stress or these negative emotional states will trigger physiological responses, such as heart rate, high blood pressure, palpitation, and rapid heart beat, as a result of the activation of the sympathetic division of the autonomic nervous system and the neuroendocrine system. Cathecholamines such as epinephrine (or adrenaline) and norepinephrine, as well as corticosteroids or glucocorticoids, such as cortisol which serve as stress hormones, are released into the bloodstream. It is also possible for the pathway linking stress to illness shown in figure 2 to be in reverse direction, such as in a situation where illness may lead to high level of stress.

Stress, Immune System and Illness

Perceived stress influences the immune system and alters the immune system status and functions. Stress contributes to illness by imposing long-term wear and tear on the body and mind thereby reducing resistance to disease such as developing ulcers or hypertension after years of chronic work pressure (Schafer, 1996). This cumulative wear and tear on the major body systems caused by chronic stress has been described in current stress literature using the concept of allostatic load. The concept of allostatic load (McEwen & Stellar, 1993), represents the cumulative burden (wear and tear) on the major body systems, resulting from either too much stress or from poor regulatory management of stress, and is thought to be a key part of the process that results in vulnerability to disorder and disease (Monroe & Cummins, 2015; Monroe, 2008; Taylor, 2003). The building of allostatic load results in wear and tear, and overtime, this kind of wear and tear can lead to illness by compromising the immune system status and function. Thus, one of the ways in which stress may affect our health is by impairing the functioning of our immune system, our bodyôs line of defense against disease. The immune system produces white blood cells (Leukocytes) that systematically engulf, envelop and kill pathogens like bacteria, viruses, fungi, and parasites. These white blood cells or leukocytes sustain microscopic warfare as they undertake search-and-destroy missions, in order to identify and destroy foreign agents, or antigens invading the body (Nevid, et al., 1994).

When stimulated by antigens, lymphocytes spring into action to help the body subdue and overcome the invaders (Comer, 2007). One group of lymphocytes called helper-Tcells identify antigens and then multiply and trigger the production of other kinds of immune cells. Another group called **natural killer T-cells** seek out and destroy body cells that have already been infected by viruses, thus helping to block the spread of the viral infection. A third group of lymphocytes known as B-cells produce antibodies,

protein molecules that recognise and bind to antigens, mark them for destruction, and prevent them from causing infection (Comer, 2007).

The links between psychosocial stress, the immune system, and illness have been established by research over the years. The study of the immune system as a link between stress and illness has evolved into a specialty of health medicine called psychoneuroimmunolgy, which is a field of study in which psychologists, biologists, and medical researchers combine their expertise to learn the effects of psychological factors (emotion, thinking, and behaivour) on the immune system (Alloy, et al., 1999; Cohen, 1996; Wood, et al., 2008).

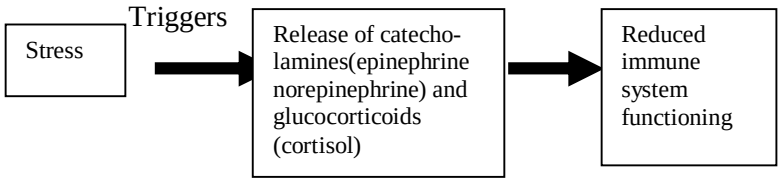

Fig.3: The relationship among stress, immune functioning, and disease
Source: Adapted from Halgin and Whitbourne (2003)

Stress may affect the immune system through several mechanisms. In particular, some of the biochemicals released under stress, as part of the alarm reaction or fight-or-flight response, such as catecholamines (e.g., epinephrine or adrenaline and norephinephrine) and glucocorticoids (e.g, cortisol) may suppress the immune system (see fig.3). This may possibly lead to higher rates of infectious diseases (Nolen-Hoeksema, 2001). For instance, increases in cortisol and epinephrine are associated with decreased activity of T cells and B cells against antigens. This decrease in lymphocyte activity appears to be important in the development and progression of a variety of infectious diseases and cancer (Kiecott-Glaser & Glaser, 1995, cited in Sarafino, 1998). HIV, the

virus that causes AIDS, attacks the T cells of the immune system, gradually but progressively weakening the immune system, leaving the individual vulnerable to opportunistic infections that cause death. Stress can cause decreased levels of the immune systemôs B and T cells. Periods of high stress are correlated with increased symptoms of many infectious diseases, including genital herpes, cold, and flu (Wood, et al., 2008).

In addition, the stress of bereavement, academic pressures, sleep deprivation, and poor marital relationship have been linked to lowered immune response and illness episodes. Bereavement can be a particularly difficult experience for widows and widowers. Studies comparing widows with comparable married women (non-widows) (e.g., Ifeagwazi, 2002; 1998; Parkes & Brown, 1972) demonstrate that widows reported significantly many more stress symptoms than the non-widows, including fatigue, sleep disturbance, fast heart beats, difficulty in concentrating, depression and fear of ñgoing crazy.ò One of the pioneering studies to demonstrate a link between the stress of bereavement and the immune system was conducted by Bartrop et al. (1977) and their finding showed that lymphocyte function was significantly suppressed following the death of a spouse.

Other studies (e.g., Prigerson, et al., 1997) have shown that severe bereavement weakens the immune system, increasing a personôs chance of suffering from a long list of physical and psychiatric illnesses for up to two years following the death of a spouse or conjugal bereavement. For several months after the death of a spouse, the widow or widower suffers weakened immune system function and is at higher risk of mortality (Prigerson, et al., 1997, as cited in Wood, et al., 2008). It has also been reported that both men and women in unhappy marriages have weakened immune system. Divorced or separated men tend to have poorer immunological functioning than men enjoying blissful marriages

who tend to have stronger immune systems (Kiecolt-Glaser, et al., 1987, cited in Sue, et al., 2003).

With respect to student stress, Ifeagwazi (2006) observed that studying in the university is potentially stressful and that sustained and unremitting academic workload or pressures can tear and wear a student down. Students deal daily with a myriad of stressors, including examinations, poor living conditions such as overcrowded hostels, inadequate classrooms and noisy neighbours (Ifeagwazi, 2006). In particular, the school or academic environment exposes the student to constant evaluation and appraisal of his or her academic performance. Such evaluation exercises seem to generate some measure of anxiety, particularly examination or test anxiety among students. Test anxiety is a common reaction to examination stress. Test anxious students complain of such clinical problems as nervousness, inability to concentrate, a blank mind, and a feeling of sickness when they are confronted with taking a test such as mathematics test (Woodard, 2004).

As reported by Ifeagwazi (2008b), examination can be perceived as a unique kind of stressor for students, and generally, students, irrespective of gender, age and level of study, feel more relaxed on campus when examinations or class tests are not in sight, but react with panic, tension, fear, anxiety and other illness symptoms once examination period approaches. Ezeilo (1982) reported that examination period is a period of psychological stress for students, a period marked by an increased number of undergraduate students seeking medical attention at the University Medical Centre. The stress of examination has been linked to lowered immunity or impaired functioning of the immune system as well as increase in infectious illnesses. Some empirical studies (e.g., Glaser, et al., 1987; as cited in Nevid, et al., 1994) have shown that medical students exhibit poorer immune functioning during examination period than they do a month before examination, when their lives

are relatively less stressful. In one study using Nigerian sample, Awaritefe and Kadiri (1981) reported that blood pressure and scores on Spielberger State-Trait Anxiety Inventory Forms X-I and X-2 (STAI X-1 and X-2) of 83 male medical students were significantly higher just before a terminal test than 72 hours after the test. In general, studies have shown that students have more illnesses during examination period, higher levels of psychological stress and increased blood pressure (Lavallo, Pincomb, Edwards, Brackett, & Wilson, 1985).

Examination periods are stressors that have been shown to produce increased infections, and the effect of stress on susceptibility to infections is mediated through the immune system, which protects the body from invading foreign bodies or pathogens (Barlow & Durand, 2005). Many researchers (e.g., Oô Leary, 1990) believe that immunosuppression is the basis of the connection between stress and increased risks of physical illness. As reported by Nevid et al. (1994), students show evidence of poor or suppressed immunological response, as measured by levels of antibodies, such as secretory immunoglobulin A, or sIgA in the saliva during examination periods. Thus, the stress associated with facing examinations can reduce the level of sIgA. Thus, stress contributes to a wide variety of illnesses, including cancer, HIV and other infectious diseases by weakening the immune system.

Sources of Stress

Stressors emanate from various sources and in different forms. There are stressful life events of various kinds, such as death of a loved one, poverty, unemployment, early childhood trauma or abuse, retirement, divorce, job stress, as well as everyday hassles, including interpersonal conflicts. Environmental sources of stress also abound, including environmental pollution, noise, overcrowding, and oral examinations, as well as paper presentations. These stressors are capable of triggering psychological stress reactions, including hypertension, anger,

irritability, and heightened physiological arousal. Stressors are also associated with increase in illness behaviours. As explained by Herbert and Cohen (1994), an illness behaviour is any activity undertaken by a person who feels ill, in order to define his or her state of health. Many of the effects of stress on individuals are manifested in clinical symptoms, such as fatigue, dizziness, dry mouth, palpitations, shortness of breath, anger, tension, sleep disturbance, shortness of breath, poor memory, and anxiety (Ifeagwazi, 2002). When the terms ñillnessò and ñdiseaseò are used in clinical terms, they refer to a variety of clinical conditions, such as psychophysiological disorders and other medical conditions (Herbert & Cohen, 1994).

Life Events' Stress and Illness

One approach to defining and studying stress focuses on the environment or external source of stress, and views stress in terms of environmental events or stressors that cause stress response. This is known as stimulus-based model of stress (Crider, et al., 1983). Stress theory views major life events such as death of a spouse, as stressful and important in creating conditions for various somatic and psychiatric problems (Greenblatt, 1978). Life changes can produce adjustive crises and can overtax the individualôs coping resources, threatening his or her physical or psychological well-being. Stressful life events have been conceptualized as those life experiences which require change, adaptation or coping on the part of the individual (Matias, 1978). They stimulate the individual to make adaptive efforts. It is perhaps this demand for adaptation that is the aspect of stressful life events that has led to their classifications as stressful (Holmes & Rahe, 1967). Exposure to stressful life events can contribute or predispose to psychiatric illness episode, particularly depression, in certain vulnerable individuals (Ifeagwazi, 2011). Stressful life events can diminish our capacity for adjustment or adaptation. They can breakdown the body and set the stage for disease.

The idea that there is a connection between the degree of life stress and illness episode originated from the pioneering works of Holmes and Rahe (1967). These eminent stress researchers studied life events clusters at disease onset of more than 5,000 patients and found that events that led to major readjustments were accompanied by disease onsets. In their early pioneering research on life events, Holmes and Rahe (1967) devised a life events scale called the Social Readjustment Rating Scale (SRRS). One of the main uses of SRRS has been to relate stress and illness (Wood, et al., 2008) and the scale has been used in many studies as a tool for examining the stress-illness relationship. Holmes and Rahe promoted the idea that life stress could be defined and assessed in an objective manner through surveying peopleôs recent experiences. These researchers compiled a list of life events observed to occur prior to the onset of disease called the Schedule of Recent Experience (SRE) which contained 43 human events (Monroe & Cummins, 2015). Included in the list are positive events, such as getting married and having a vacation as well as negative events such as death of spouse, which is ranked as the most stressful life event and thus requires the most adjustment. Thus, of all bereavement experiences, the loss of spouse or widowhood is widely recognised as an extremely painful and agonising experience associated with the risk of psychological and physical distress (Holmes & Rahe, 1967; Bunch, 1972; Ifeagwazi, 2002).

Investigative studies have increasingly linked the impact of stressful life events to psychiatric symptomatology or entrance to psychiatric treatment (Grant, Gerst & Yager, 1967; Ken & Rosentock, 1979). A series of retreospective studies by Paykel (1974) have indicated that unusually high numbers of stressful events occur prior to the onset (usually in a 6-12 month period before onset) of a number of disorders. The disorders for which this relationship was found included depression, schizophrenia, suicide and neurotic syndromes.

Given impetus by Holmes and Raheôs successful quantification of stressful life events via schedules of recent experiences (Holmes & Rahe, 1967), investigators (e.g., Brown, Harris & Hepworth, 1994; Ifeagwazi, 1992; 1998; 2000-2001; 2002; 2003; 2011) have reported an elevated incidence of stressful life events during the period that preceded the onset of clinical depression and other health problems. Events which are particularly important are those which involve an ñexitò from the individuals social scene (e.g., life-time losses), and events which are obviously undesirable (e.g., serious illness, retirement, economic hardship and imprisonment). For instance, Ifeagwazi (2011) investigated the influence of stressful life events on manifestation of psychiatric disorders. The study compared the responses of 49 psychiatric patients (15 male and 11 female schizophrenics, and 10 male and 13 female depressives) drawn from Federal Neuropsychiatric Hospital, Enugu and a control group of 53 subjects (28 males and 25 females) who had never experienced any psychiatric disturbance on the Life Events Inventory developed and validated by Ifeagwazi (1992). Results showed that the psychiatric sample (clinical subjects) experienced more stressful life events prior to their psychiatric illness episodes than the control subjects ($p < .01$). Depressive patients experienced more stressful events than the schizophrenic patients prior to their psychiatric illness episode ($p < .001$).

Ifeagwazi and Obieze (2000-2001) had in an earlier life events study examined the influence of early parentsô death on manifestations of depressive symptoms among young adults. One hundred students, consisting of 50 orphans and 50 non-orphans drawn from 10 secondary schools in Nsukka area of Enugu State participated in the study. Each student was individually administered the Beck Depression Inventory (BDI). Results showed that the orphans reported significantly higher depressive symptoms than the non-orphans ($p < .001$). It was concluded from

the study that the early loss of both parents through death could predispose an individual to develop some emotional difficulties, such as depression, later in adult life.

Stress of Imprisonment

Imprisonment can be viewed as a powerful and critical life event stressor that could impact negatively on the physical and mental health of people incarcerated or remanded in prison. Imprisonment, especially in Nigeria, represents one of the most intense stressful events that an individual can experience and that would severely tax his or her coping and adaptational abilities (Ifeagwazi, 2003). Ifeagwazi (2003) examined the health status of prison inmates in a Nigerian prison. Participants included 146 male Prisoners (67 convicted males and 79 awaiting trial males) who were inmates of Nsukka prison in Enugu State, and 153 non-prisoners drawn also from Nsukka area of Enugu State. The prisoners had been incarcerated for a period ranging from 6 months to 9 years (for the convicted male prisoners), and a period ranging from 3 months to 11 years (for the awaiting trial male prisoners). The non-prisoners were all males who had never been confined in prison for any offence. All the study participants completed the Uzoka Clinical Symptoms Inventory (Uzoka, 1982) which is a 40-item Likert-type scale, designed to assess the physical and psychological health status of Nigerian samples. Results showed that the prisoners reported significantly higher clinical symptoms, reflecting poorer health status than the non-prisoners. Similarly, the awaiting trail male prisoners reported significantly higher clinical symptoms, reflecting poorer health status, than the convicted male prisoners. The most prevalent health problems reported by the prison sample included skin problems (e.g., rashes), restlessness of mind, severe headaches, sleeplessness, nightmares, pain in the body and excessive perspiration. It is evident from this study that there is an urgent need for the provision of holistic medical and psychological health services in Nigerian prisons. The Federal Government of Nigeria

should provide comprehensive clinical and healthcare services that integrate psychological services into Primary Health Care delivery for prison inmates in Nigeria. This is important in the light of the research evidence that high prevalence rates of physiological and psychiatric illnesses are manifesting in prisoners in Nigeria (Igboegwu, 1995).

In another related study, Ifeagwazi (2008c) examined the mental health status of a sample of 67 retired University of Nigeria workers who were members of the University of Nigeria, Nsukka, Pensionersô Association, and a sample of 70 non-retired staff (non-academic staff) of the University of Nigeria, Nsukka. All participants completed the General Health Questionnaire (GHQ-12), which is a self-administered screening test designed for detecting minor psychiatric disturbance among respondents in community settings. A one-way analysis of variance (ANOVA) was performed on the scale items to identify the differences between retirees and non-retirees in terms of different indicators of mental health status. Results showed that the retirees had significantly higher GHQ scores on all the items reflecting poorer mental health status, than non-retirees (see Table 1).

Table 1: Summary of the Statistical Differences between Retired and Non-Retired Workers in Terms of Different Indicators of Mental Health Status

S/N	Item Statement Have you recently:	Retirees (N = 67)		Non-Retirees (N = 70)		
		Mean	SD	Mean	SD	F
1	Been able to concentrate on whatever youûre doing?	2.18	1.01	1.64	.64	9.49**
2	Lost most sleep over worry?	2.51	1.04	2.20	.89	3.85***

3	Felt that you are playing useful part in life?	2.22	1.11	1.56	.72	16.84***
4	Felt capable of making decisions about things?	2.13	1.01	1.70	.69	4.95***
5.	Felt constantly under strain?	2.64	1.04	2.33	.85	6.75**
6	Felt you couldnôt overcome your difficulties?	2.66	1.08	1.97	.78	20.50*
7	Been able to enjoy your normal day-to-day activities?	2.24	1.06	1.87	.76	12.49*
8	Been able to face up to your problems?	2.24	.97	1.93	.73	11.32*
9	Been feeling unhappy and depressed?	2.49	1.13	2.01	.79	24.06*
10	Been losing confidence in yourself?	2.19	1.16	1.81	.82	16.35*
11	Been thinking of yourself as a worthless person?	2.30	1.15	1.51	.74	21.49*
12	Been feeling reasonably happy all things considered?	2.39	1.10	1.94	.66	36.70*

*P < .001, ** P < .01, *** P < .05. *Source: Ifeagwazi (2008c)*

As revealed by Table 1 above, retired workers scored significantly higher on all the GHQ-12 items than non-retired workers.

It is evident from the study that retirement is a critical life stress capable of precipitating psychiatric symptomatology among retirees. It is important for workers to anticipate their retirements and make adequate emotional, physical and financial preparations for their retirement days without allowing themselves to be caught off guard. The pivotal roles of pre-retirement programmes and planning in psychological adaptation of retirees have also been

stressed by many researchers (e.g., Agha, 2004; Okoye, 2003). As suggested by Okoye (2003), these pre-retirement planning programmes could take the form of personal counseling, lectures, and job retraining. It is necessary for workers to imbibe the spirit of self-discipline to conserve significant amount of a money or resources during their productive working life, since some workers never reserve some meaningful resources to draw from or make some viable investments to expect a good return on during their retirement, probably as a result of planlessness, financial profligacy and prodigality.

Traumatic Stressors and Psychopathology

Life is replete with devastating or traumatic stressors, and a good number of people, including children and adolescents, are traumatised in numerous ways. Traditionally, trauma is the experiencing, witnessing or confrontation with an event or events that involve actual and threatened death, or serious injury, or a threat to the physical integrity of self or others (American Psychiatric Association, 2000). A traumatic experience is a disastrous or an extremely painful event that has severe psychological and physiological effect (Halgin & Whitbourne, 2003). Stressful conditions over which the individual has no control are particularly traumatic and such traumatic conditions can challenge the psychological defenses of even resilient people (Willerman & Cohen, 1990). Traumatizing events include but are not limited to military combat, rape, flood, erosion, kidnapping, armed robbery, terrorist attacks, plane crashes, motor accidents, domestic violence, crime and criminality. Here in Nigeria, these aforementioned traumatic events occur with an alarming frequency such that Nigerians live in a constant state of pandemonium, panic, apprehension, trepidation, hyperarousal and experimental neurosis (Ifeagwazi, 2014). In particular, the rampaging Islamist insurgents, Boko Haram, and other criminal groups have continued to torment and terrorise innocent and defenceless Nigerians who appear to be

helpless in the face of growing acts of criminality perpetrated by the deadly militant groups.

The psychological distress and dysfunction precipitated by such traumatic experiences take a harsh toll on the physical, emotional, social and spiritual health of the affected people (Ifeagwazi, 2014). One emotional disorder that follows a trauma is known as posttraumatic stress disorder (PTSD) (Barlow Durand, 2005). It seems, therefore, that one significant emotional price that Nigerians have to pay for their constant exposure to life-threatening and traumatising catastrophes is development of PTSD (Ifeagwazi, 2014), which is the only anxiety disorder in which a specific causal agent (trauma) serves as a diagnostic criterion (Nietzel et al., 1998). The psychiatric response of victims of traumatic events has been of research interest (e.g., Ifeagwazi, Abiama & Chukwuorji, 2012; Ifeagwazi, 2014; Chukwuorji & Ifeagwazi, 2015; Chukwuorji, Ifeagwazi & Iorfa, 2015).

The Psychiatric Association of Nigeria during her 44th Annual General Meeting and Scientific Conference, with the theme ñ***Trauma beyond the physical***ò, observed that increasing insecurity, kidnapping and civil conflicts in some parts of the country have had some psychological impact as well as causing trauma among Nigerians (see *Daily Sun Newspaper,* Thursday, December 26, 2013). Particularly, PTSD is a debilitating condition, not only for individuals who are directly affected but also for family and friends (Sims & Sims, 1998, cited in Naire, 2003); and usually, the trauma threatened the victim, or someone close to the victim with mortal danger or serious bodily harm (Nietzel et al., 1998).

Typically, symptoms of PTSD are grouped into 3 major categories, including re-experiencing, avoidance/emotional numbing and hyper-arousal symptoms (APA, 2000). As described by DSM-IV-TR, the traumatic event is persistently re-experienced by the

trauma victims through intrusive memories, thoughts, images, flashbacks, recurring nightmares and dreams about the event. Victims avoid any event or situation that will arouse recollections of the trauma (i.e, stimuli that will act as reminders of the traumatic event). There may be amnesia for the event or inability to recall an important aspect of the trauma, and a sense of foreshortened future. Victims may also experience numbing or deadening of emotions and may feel detached and estranged from people. In addition, victims typically are chronically overaroused. The chronic arousal symptoms include, insomnia or difficulty falling or staying asleep, irritability or outbursts of anger, difficulty concentrating, hypervigilance, and exaggerated startle response. The symptoms of PTSD may persist for several months or years, cause significant distress and affect individualôs ability to function socially, occupationally and domestically (APA, 2000; Davison et al., 2014).

In general, two anxiety-based clinical disorders that develop in response to an extreme psychological or physical trauma are acute stress disorder (ASD) and PTSD. Both disorders (ASD and PTSD) are recognised by DSM-IV-TR (APA, 2000) as psychiatric conditions linked with traumas and could present with similar symptoms including intense fear, horror, and helplessness as well as symptoms that indicate numbing, depersonalization, derealization, and detachment from the trauma (i.e, symptoms of dissociation). Trauma-related symptoms that develop within one month after the trauma and lasting more than two days but less than one month are diagnosed as ASD (APA, 1994, cited in Nietzel et al., 1998). ASD is short-lived and lasts from two days to four weeks. Beyond those points, it is reclassified as PTSD, a diagnosis that is appropriate when the symptoms persist for more than one month (Halgin & Whitbourne, 2003; Alloy et al., 1999).

PTSD was previously labeled ñshell shockò, combat or battle fatigue experienced by soldiers who fought and survived wars.

Clinical observations of soldiers who had experienced the stress of combat led to the identification of a cluster of symptoms of psychological trauma that were displayed by many soldiers. In particular, it was the aftermath of the Vietnam War that spurred the acceptance of the diagnosis of PTSD (Davison, et al., 2004). In a Nigerian study which was designed to assess the mental health status of Nigeria-Biafra War Veterans, using the General Health Questionnaire (GHQ-12) (Goldberg, 1972), Ifeagwazi, Abiama and Chukwuorji (2012) found that Biafran War Veterans reported more mental health problems and were more psychologically distressed than the comparison group of non-veterans. In another related study, using the posttraumatic stress disorder checklist-military version (PCL-M), Ifeagwazi and Chukwuorji (2015) found that disabled Biafran War Veterans reported significantly higher levels of PTSD symptoms and lower levels of social support than non-disabled Biafran War Veterans. One consistent research evidence documented in the literature is that PTSD symptoms can last a long time after a trauma.

Studies of children who were sexually and/or physically abused, including rape victims, showed that they remain at increased risk of PTSD as well as other anxiety disorders, depression, substance abuse, and sexual dysfunction well into adulthood (Dubner & Motta, 1999, cited in Nolen-Hoeksema, 2001). Halgin and Whitbourne (2003) highlighted some studies that found evidence of children developing PTSD after witnessing violent family arguments and beatings (e.g., Kilpatrick & Williams, 1997), and of others becoming symptomatic following the loss of a sibling to violence and murder (e.g., Freeman, Shaffer, & Smith, 1996). Even the severe beatings, harsh and inhumane treatments that house helps experience in the various families they serve could constitute traumatic experience. Thus, being a house help could be a risk factor for psychopathology or psychiatric illness (Ifeagwazi & Ezema, 2010). The use and abuse of house helps constitute an important aspect of child maltreatment which can be operationally

broadened to encompass child abuse, neglect, and child labour. In one exciting Nigerian study, Eya (1994) investigated the status of house helps as both victims and perpetrators of child abuse and neglect. Her findings showed, among other things, that house helps suffered more maltreatments than non-house helps of the same socio-economic status. Ebigbo and Izuorah (1985) examined the psychological status of house aides in Enugu as indexed by their level of intellectual functioning. Their findings indicated that the average house aide is intellectually on the borderline towards mental retardation. Ifeagwazi and Ezema (2010) examined the mental health status of 91 house helps drawn from Nsukka area of Enugu State, using the General Health Questionnaire (GHQ-12). Result showed that the house helps obtained significantly higher scores on the GHO-12 measure, reflecting poorer psychological or mental health than the non-house helps. This is consistent with other studies which found that maltreated sample exhibited anxiety, sleep disturbance, social detachment, low self-esteem, and more depressive symptoms, self-destructive behaviour and occasionally psychotic episodes (Green, 1978; Kinard, 1982 as cited in Eya, 1994). This suggests the need for elite families hiring or engaging the services of house helps to treat them more humanely, and be more caring, protective and supportive to them. These house helps are, in most cases, overtaxed, overstretched and exploited. They are physically, emotionally, sexually abused and traumatised.

Daily Hassles

Perhaps what is more intriguing about stress is that daily annoying, irritating, and frustrating experiences such as worrying about oneôs weight, queuing up for fuel at filling stations, interpersonal conflicts, being stuck in traffic gridlock, and searching for a key may be more stressful than the major life events. These frustrating and irritating daily experiences are called hassles. Some psychologists have argued that the accumulation of daily hassles contribute more to illness than major stressful events, with

interpersonal conflicts being the most toxic of our daily hassles or stressors (Lazarus & Delongis, 1983). Environmental stressors such as chronically high levels of noise have been shown to raise blood pressure (Nevid, et al., 1994). Lifestyle variables such as Type A pattern, lack of exercise, too little sleep, smoking, and snacking on junk food can also be detrimental to health. Some of the things we may choose to indulge in like our bad habits, unhealthy lifestyles, and refractory behaviours, may also put us at risk of developing stress-related illnesses. For instance, coronary heart disease is largely attributable to lifestyle variables (Wood, et al., 2008).

Work Stress and Psychological Burnout

One important aspect of life stress research has focused on work stress and psychological burnout. The dominant view in most stress literature is that chronic stress results in psychological burnout, a syndrome resulting from the cumulative effect of stress in a work-related environment (Moss, 1989). Burnout can be viewed as an extreme reaction to a continuing, stressful situation (Atkinson, 1995); a psychological condition in which energy and motivation are sapped or drained (Vininga & Spradley, as cited in Horowitz & Bordens, 1995); the experience of emotional and physical exhaustion together with strong feelings of frustration and failure (Wolfe, as cited in Kitchener, 1992). According to Horowitz and Bordens (1995), burnout means that people have depleted energy reserves, lowered resistance to illness, increased dissatisfaction and pessimism, and increased absenteeism and inefficiency at work.

Freudenberger (1974) coined the term burnout which is increasingly applied to people succumbing to stress in a variety of human-service profession. As a syndrome, burnout is characterized by three components, namely emotional exhaustion, depersonalization of the clients, and a reduced sense of personal accomplishment that occur among individuals who work with

people in some capacity (Maslach, Jackson & Leiter, 1996; Taylor, 2003). Burnout researchers have identified a number of signs and symptoms that characterise burnout. They include working harder and accomplishing less, chronic fatigue, lower morale, feelings of lack of control, apathy, identity confusion, irritability, sleep disturbances, frustration, headache, alcohol and drug dependency, guilt, loss of sense of humours, loss of compassion and empathy for patients, absenteeism, reduced effectiveness on the job, cyncism, bitterness, negativity or hostility, depression, disorientation and forgetfulness as well as psychosomatic complaints (Atkinson, 1995; Kitchener, 1992; Strictland, 1998).

As pointed out by Maslach (cited in Taylor, 2003), human-service providers suffering from burnout exhibit a cynical and seemingly callous attitude toward those whom they serve and treat people in detached ways. This negative and detached attitude is best captured by the term depersonalization which refers to callous, unfeeling, or detached attitude toward others, as shown by treating people as objects with little or no interest and concern for, and sensitivity to their needs (Sarafino, 1998). Workers or human-service providers who experience burnout are likely to endorse or agree with the following items or statements derived from Maslach Burnout inventory (MBI) (Maslach & Jackson, 1981):

ñ I feel emotionally drained from my work;ò
ñ Working with people directly puts too much stress on me;ò
ñ I worry that this job is hardening me emotionally;ò and
ñ I donôt really care what happens to some patients.ò

Research indicates that people who are burned out describe themselves as used up, frustrated, callous, hardened, apathetic, lacking in energy, and without motivation (Cordes & Dougherty, 1993; Maslach, 1982, as cited in Brehm, et al., 2002). The personality profiles of individuals who may be vulnerable to burnout have been described in the literature (see Squires & Livesley, 1984, as cited in Kitchener, 1992). They include:

idealism, high levels of motivation, a sense of commitment, dedication, apparently tireless energy, inability to say ñNOò to work demands, a tendency to perfectionism and a lack of comprise. Although most of these characteristics would appear admirable and desirable to achieve occupational success and hit the peak or apex of oneôs professional status, they could constitute potential risk factors for psychological burnout especially in susceptible individuals with limited coping resources.

Studies in the area of occupational stress have shown that certain occupational settings are potentially stressful. In particular, medical and other helping professionals including medical doctors, nurses, psychiatrists, clinical psychologists and priests are occupational groups whose professions involve responsibilities for peopleôs lives, and they invariably deal with life or death situations everyday. They often encounter and deal with people in times of crisis and distress, and have the additional emotional burden of working continuously in emotionally charged situations that involve feelings of anxiety, tension and hostility (Sarafino, 1998). They are, therefore, highly vulnerable to burnout.

For instance, empirical studies have reported high rates of burnout among nurses who work in stressful environments such as theatre and intensive care units in hospitals (Moos & Schaefer, 1987; Ifeagwazi, 2005-2006). Gray-Toft and Anderson (1981) reported that stress-inducing factors pervade nursing duties across the various settings in which they work, and these are significant determinants of stress and burnout. Ifeagwazi (2005-2006) investigated the influence of marital status on self-report of symptoms of psychological burnout among 91 nurses drawn from 7 hospital units of the University of Nigeria Teaching Hospital, Enugu. These nurses were individually administered the Nigerian Adaptation of Maslach Burnout Inventory (Ugwu, 1998) originally developed by Maslach and Jackson (1978). Results showed that the widowed nurses reported significantly higher burnout

symptoms than married nurses (P < .001). This finding seems to attest to the mental hygiene function of marriage and underscores the fact that widowhood is a difficult and distressing period, a state of great stress associated with risk of physical and psychological distress or breakdown, particularly in the Igbo (Nigerian) culture where widows are often marginalised, dehumanised, and dispossessed of their husbandsô properties. These difficult and agonising experiences could complicate problems for these widows in their adjustive struggles (Ifeagwazi, 2002), thereby resulting in psychological burnout.

With respect to hospital units, results of the Duncan Multiple Range Test revealed that nurses in the theatre unit reported a mean burnout symptoms score that was significantly higher than nurses on the postnatal, casualty, labour, surgical and outpatient units. Nurses in the Intensive Care Unit (ICU) reported a mean burnout symptoms score that was significantly higher than nurses in the postnatal unit. Generally, the nursing field can be viewed as one of the most stressful of the helping professions and the nursing staff should adopt adequate self-care measures to reduce the potentials for burnout. In particular, engaging in work stress management is a critical component of the self-care measures.

Of the professionals whose work involve extensive contact with distressed individuals (e.g., priests, medical doctors, clinical psychologists, lawyers, and nurses) priests remain a relatively unstudied population. In fact, stress and burnout can be perceived as important clinical topics that have not been rigorously studied or explored within the context of Catholic priesthood. Priests and ministers of God are often the first to be sought out by people in trouble (Egan, 1986). The roles and functions that priests perform are multiple, demanding, and impose enormous burden on them. Whether as parish priests, assistant parish priests, educators or academics, rectors and chaplains, Catholic priests face heavy workloads, complex tasks and responsibilities. Thus, Ifeagwazi

(1995) stated that priestly functions are highly demanding and emotionally involving, and priests continuously encounter stresses and difficulties associated with the priestly ministry. This assertion was corroborated by Akubue (1996) who affirmed that priesthood is a demanding ministry. Catholic priests normally have the triple office of sanctifying, teaching and ruling the people of God in whatever domain they find themselves (Owan, 1995). As pointed out in Akubue (1996), the functional dimensions of each of the tripartite priestly roles impose heavy demands on the tools of evangelization: like obedience, discipline, pastoralism, gentleness, preaching the word of God, instructing the people of God, holiness, chastity, administering the sacraments and celebrating the liturgy. In the words of Akubue, many priests eager to make a demonstrable impact in a short time overdraw from their physical and mental account, thereby exhausting their reserve capital. Here, Akubue seems to be referring to the phenomena of stress and burnout among priests.

Since burnout results from chronic stress (Taylor, 2003), it is critically important that priests who by virtue of the high demands of their profession/vocation strive constantly under stressful experiences or events, be constantly aware of their stress levels or stress overloads. They should periodically scan their bodies for psychological and physiological symptoms of stress and burnout such as anxiety, depression, chronic fatigue syndrome, confusion, irritability, hypertension, heart attack, ulcer, sleep disturbance, overeating, smoking, excessive drinking of alcohol, and general poor health. As reported by Ifeagwazi (1995), there have been several cases of priests, religious and even seminarians suffering from essential hypertension, cancer, diabetes, insomnia, psychopathology as well as distrubing cases of those collapsing and dying while driving, while attending to officials duties, and while asleep. The possible etiologic role of stress/burnout in some of the illness episodes and sudden deaths suffered by priests cannot be ruled out altogether.

As earlier stated, priesthood has its special demands, and as such there are unique challenges and stressors that priests encounter. Ifeagwazi (1995, 2008a) contributed to the stress/burnout literature by exploring the phenomena of stress and burnout among priests. Some of the sources of stress for priests identified by Ifeagwazi (1995) include the following:

1. Loneliness
2. Monotony of daily routine
3. Not having an opportunity for further studies
4. Worry about being asked to study in Nigeria
5. Restrictions of oneôs ambition with regard to further study
6. Dissatisfaction with appointment and posting
7. Inability to satisfactorily meet up with workload in the parish or other work areas
8. Strains associated with organising fund raising activities (e.g., for erecting physical structures, bazaars).
9. Scheduled/unscheduled pastoral visitation by oneôs bishop
10. Conflict or disagreement with the bishop
11. Conflict or disagreement with the parishioners
12. Interpersonal problems with colleagues (Fellow Rev. Fathers)
13. Difficulties with celibate life
14. Frustrations arising from lack of a vehicle or the use of old and non-functional cars
15. Financial difficulties
16. Worry about family problems
17. Feeling of being discriminated against, marginalized or maltreated.

In general, it appears that the occupational settings of priests are potentially stressful. Certain stressors are encountered by priests as intrinsic part of their priestly ministry. Ministering to the sick, anointing the dying, burying the dead, counseling the bereaved and depressed, traveling long distances to celebrate or participate in

wedding or funeral ceremonies and meetings are some of the intrinsic aspects of the priestly ministry that could constitute difficult and distressing experiences for priests.

In particular, priests are inundated with requests for help, and in most cases, they find it difficult to turn down such requests for help without having some feelings of guilt. As good pastors, many priests are ever willing to sacrifice their personal resources, interests, and concerns for the benefit of their clients/parishioners, often skipping meal time, siesta, leisure, recreation, night sleep and rest period in order to attend to peopleôs problems. They respond to such emergencies as sick calls even at very odd hours of the night. In most cases, there is an apparent lack of reciprocity, gratitude and appreciation, of their (priests) efforts by the recipients of their services like clients and parishioners. These seem to constitute potential sources of stress, discouragement, and burnout to priests (Ifeagwazi, 2008a). The literature on stress and burnout indicates that often caregivers or care providers perceive that they give much more support than they get back from their clients or patients, and this imbalance aggravates burnout (Van Yperen, Bunk & Schaufelli, as cited in Taylor, 2003). Belle (1982) has used the term ñsupport gapò to describe relationships in which one person gives far more support or care than he or she receives. This kind of imbalance in providing and receiving care, appreciation, love and support is characteristic of relationships in which one party is seriously impaired and burned out. People who feel that their work is unappreciated are more susceptible to psychological burnout than others (Wood, et al., 2008).

Student Stress and Burnout

Mr. Vice Chancellor, the dearth of empirical data on psychological burnout among Nigerian University students motivated me to explore the phenomenon of psychological burnout among a group of university of Nigeria undergraduates. Specifically, Ifeagwazi (2006) examined the incidence of psychological burnout among a

sample of psychology students of the University of Nigeria Nsukka (N = 130). Burnout among students refers to feeling exhausted because of study demands, having cynical and detached attitudes towards oneôs study and feeling incompetent as a student (Schaufeli, Martinez, Pinto, Salanova, & Baker, 2002). Given the well documented evidence that Nigerian undergraduates undergo a great deal of stress as they pass through the universities (e.g., Ezeilo & Chukwu, 1995; Nweze, 1985), and also given the evidence of the important link between stress and psychological burnout (e.g., Ugwu, 1998; Enukora, 2010; Ifeagwazi, 2005-2006), it was hypothesised that a higher proportion of Nigerian undergraduates would report higher levels of burnout symptoms. The brain fag (or brain tiredness) syndrome has been reported to be very common among Nigerian (African) students, and others whose work requires intensive reading and other intellectual activities (Prince, 1989). Symptoms include difficulties in concentrating, remembering, and thinking; and these symptoms are experienced by West African university students in response to the challenges of schooling (APA, 2000). The designation ñbrain fagò (or brain tiredness) was originally selected because the students attributed their symptoms to overwork of their brains, and they often state that their brains are ñfatiguedò (Prince, 1989). What is not clear, however, is whether the students are using these symptoms, seemingly attributed the brain fatigue or brain fag to express or communicate their feelings of psychological burnout (i.e, feelings of being exhausted, used up, lacking in energy, frustrated and without motivation).

Perhaps, there seems to be common elements identifiable in both burnout and brain fag syndromes, including the experience of physical exhaustion or tiredness in response to the demands or pressures of schooling. It can be reasoned that since Nigerian (African) university students encounter many stressors and experienced brain fag in response to the challenges of schooling

(Prince, 1989; Jegede, 1983), it is possible that they could equally experience psychological burnout.

As mentioned above, Ifeagwazi (2006) explored the phenomenon of psychological burnout in a sample of 130 psychology students, University of Nigeria, Nsukka who completed the 15-item Maslach Burnout Inventory- Student Survey (MBI-SS) (Schaufeli et al., 1996). Students who experience burnout are likely to endorse or agree with the following sample items or statements derived from the MBI-SS:
-ñI fell emotionally drained by my studyò
- ñI feel burned out from studyò
-ñ I have become less enthusiastic about my studiesò.

Students were given time at the beginning of an examination on environmental psychology to complete the MBI-SS. The result showed that a higher percentage of the undergraduates (90%) reported lower levels of burnout symptoms. Conversely, a lower percentage of undergraduates (10%) reported higher levels of burnout symptoms. This suggests that the majority of psychology students who participated in the study were successful at coping with the demands and pressures of schooling and did not necessarily experience brain fag syndrome or burnout in response to the stresses and challenges of schooling. This could reflect the personality characteristics of individuals who have stress resistant and coping resources or stress buffers such as personal hardiness, sense of personal control, social and institutional support as well as training in stress management.

Stress and High Blood Pressure Connection

As earlier indicated, modern behavioural medicine considers psychosocial factors such as stress, emotional states and personality traits, such as anger, hostility, anxiety as potential influences on almost all illnesses, including hypertension. As pointed out by Nevid et al. (1998), evidence for the adverse effects

of psychological variables on physical health is particularly strong for cardiovascular diseases, which include high blood pressure, and heart attacks (myocardial infarctions).

One of the most insidious cardiovascular illnesses in the present day Nigeria is high blood pressure, technically called hypertension (Ifeagwazi, 2004). It is often referred to as the silent killer because most patients are asymptomatic (without symptoms) until substantial vascular damage has occurred (Fox, 1999). According to Nweze (1984), there have been numerous but isolated cases of Nigerians collapsing and dying at meetings, while asleep, in their offices or about to board aircrafts. The possible causative role of hypertension in most of these seemingly ñmysteriousò deaths cannot be ruled out completely.

Hypertension in adults is defined by a systolic pressure greater than 140mmHg and/or a diastolic pressure greater than 90mmHg (Fox, 1999), and is measured by a sphygmomanometer. Blood pressure is measured by systolic and diastolic pressure, and clinical evidence suggests that both pressures significantly affect the cardiovascular system (Onwubere, 2005). Taylor (2003) reported that of the two, systolic pressure has somewhat greater value in diagnosing hypertension. Over the long term, frequent elevations in blood pressure eventually lead the arterial walls to thicken, resulting in sustained hypertension (National Heart, Lung, and Blood Institute, 1998). Hypertension is a serious medical condition, and a risk factor for other clinical disorders, including the narrowing of the arteries (atherosclerosis), coronary heart disease (CHD), heart attacks, strokes and kidney failure (American Heart Association, 2001).

As reported by Durand and Barlow (2000), a small percentage of cases of hypertension (5-10%) can be traced to specific physical abnormalities, such as kidney and endocrine diseases, and is known as secondary hypertension. The vast majority of people

with hypertension have primary or essential hypertension, that is, hypertension without any specific verifiable biological or organic cause.

Studies on primary or essential hypertension specifically, and psychophysiological disorders in general, emphasise the aetiological role of psychosocial stress and personality variables. Individuals who are exposed to chronic life stress may be at risk for developing essential hypertension. For instance, job stress, unemployment and noisy environments have been implicated in hypertension (Pickering, et al., 1996). Taylor (2003) documented research evidence (e.g., Girdler, et al., 1996) which reports that laboratory studies that expose people to stressors like stressful task provoke elevated blood pressure responses. It has also been reported that people already diagnosed with hypertension show large blood pressure responses to a wide range of stressors. This is in harmony with the idea that stress reactivity or excessive sympathetic nervous system activity in response to stress may be crucial in the development of hypertension (Taylor, 2003). Just as some empirical studies link the experience of stressful events with high blood pressure, other studies have shown a connection between reducing stress arousal and lowering blood pressure. Sue, Sue, and Sue (2003) reported that reducing stress by relaxing, both at home and at work, significantly lowers blood pressure.

In addition to stress, there is also evidence that anger and hostility play some roles in essential hypertension (e.g., Ifeagwazi, 2004, 2006, 2007a). Anger refers to an emotional reaction to a stressor (Webb, 2002). According to Rosenhan and Seligman (1984), the major theme that runs through psychodynamic theories about hypertensive personality is damned-up hostility and anger. What is however not very clear about the anger variable is the aspect of anger that is most critical: becoming angry easily, becoming angry and not expressing it, or having a cynical or hostile attitude toward others. Research has not totally resolved this issue (Davison, et al.

2004). Current evidence suggests that what may be more important is not whether anger or hostility is suppressed (anger-in) or expressed (anger-out), but rather how frequently anger and hostility are experienced (Miller, Smith, Turner, Guijarro & Hallet, 1996, as cited in Durand & Barlow, 2000). As pointed out by Brehm et al. (2002) people who have lots of anger and suppress it are as likely to develop high blood pressure as those who have anger and express it. It is the feeling of anger that is toxic, not whether you hold it or let it out (Everson, Goldberg, Kaplan, Julkunen & Salonen, 1998). Sarafino (1998) cited empirical studies (e.g., Diamond, 1982) which indicate that hypertensives are more likely to be chronically hostile and resentful than are normotensives (i.e., people who have normal blood pressure). Other studies (e.g., James et al., as cited in Sarafino, 1998) have reported that systolic and diastolic blood pressures increase more when people experience anger and hostility in their everyday lives than when they experience positive emotions such as happiness.

Ifeagwazi (2007a) compared hypertensive patients and normotensive individuals on anger arousal measure. All participants (71 previously diagnosed hypertensive patients and 76 normotensive individuals) completed the Anger Arousal Subscale of the Siegel Multidimensional Anger Inventory. Results showed that the hypertensive patients had significantly higher anger arousal scores than the normotensive individuals. Other studies (e.g., Kidson, as cited in Carson et al. 1998) found hypertensive patients as a group that is significantly more insecure, anxious, sensitive, and angry than non-hypertensive control group.

Chronic anger and hostility keep the individualôs blood pressure high and increase the risk of developing other cardiovascular illnesses such as heart attacks and strokes as earlier indicated. This makes physiological or biological sense because these are emotional states that could trigger the fight-or-flight arousal reaction associated with the activation of the sympathetic nervous

system (Greenberg, 1983). Blood pressure elevation and increase in heart rate are parts of the alarm or emergency reaction, which serve an adaptive function when they occur in response to an occasional threat. If an individual constantly experiences stressful situations that elicit angry and hostile reactions, however, his or her blood pressure and heart rate may become chronically high (Rosenhan, & Seligman, 1984). Thus, a pattern of anger is toxic and lethal (Miller, 1996), since anger affects the heart through decreased pumping efficiency, putting people with chronic angry feelings at risk for dangerous disturbances in heart rhythm (arrhythmias), especially people who already have cardiovascular disease (Ironison and Colleagues, 1992). Overall, it has been reported that blood pressure tends to be elevated when people are angry, resentful, hostile or anxious than when they are relaxed and contented (Sue, et al., 2003); and that being easily angered could be a psychological diathesis (Davison et al., 2004). As recommended by Ifeagwazi (2007a), hypertensive patients seeking professional help should be screened and assessed for anger or angry feelings, given the research evidence (e.g., Faber & Burns, as cited in Davison, et al., 2004) that of the various negative emotions, anger is the most strongly linked to elevated blood pressure. Excessive anger may also serve as a warning sign and symptom of psychiatric illness.

It can be observed that drug therapy with antihypertensive agents (e.g., diuretics, beta-blockers, and benzodiazepines) is currently the major treatment of choice employed by most physicians in the clinical management of hypertension (Ifeagwazi, 2004), but most drug interventions treat the symptoms and do not deal with the fact that the person is reacting emotionally to psychosocial stress (Davison, et al., 2004). Thus, behavioural treatment of hypertension using behavioural treatment approaches, such as anger management techniques, anxiety and stress reduction techniques, including various forms of relaxation and biofeedback training, meditation, and cognitive interventions appear very useful

and important, particularly in cases of essential hypertension (Ifeagwazi, 2004), and may provide useful adjuncts to pharmacotherapy (Philips, 1991). Behavioural treatment techniques should be incorporated into standard medical treatment for hypertension, as clinicians have increasingly realized that medical treatments alone are insufficient (Halgin & Whitbourne, 2003). Edlin and Golanty (1985) lamented that it is unfortunate that more people with hypertension are not advised to try relaxation technique to lower their blood pressure before being advised to take drugs for the rest of their lives to control blood pressure. They draw attention to the fact that ñevery one of these drugs has side effects that are dangerousò. (p. 405).

Type A Pattern and Heart Disease

Type A personality pattern has been linked to an individualôs risk of heart disease. As stated by Edlin and Golanty (1985), two cardiologists, Friedman and Rosenman, created a medical furor by suggesting that almost all heart diseases are of behavioural origin. Clinical evidence linking heart diseases like coronary heart disease (CHD) to behavioural or psychological variables stemmed from Friedman and Rosenmanôs (1974) observation of the behaviour of cardiac patients. First identified by these two cardiologists, the Type A behaviour pattern has been used to characterize individuals with strong sense of commitment to duty, a sense of time urgency, hard-driving, need to hurry, impatience with delays, and explosive/accelerated speech, and easily aroused to anger and hostility.

The Type A pattern involves constant striving for achievement and status, concentrating on more than one activity or project at a time, a dangerous mix of anger, cynicism and
free ï floating hostility (Friedman & Booth-Kewley, 1987; Matthews, 1988). Type A persons are too busy to notice their surroundings, and they schedule appointments too tightly and have morbid preoccupations with deadlines. They tend to be easily

aroused and have competitive achievement striving. They often tabulate success in life in numbers of articles or books written, projects under way, and material goods acquired (Davison & Neale, 1997). They have the tendency to set unrealistic goals for themselves and ignore their body signals indicating limits of physical and mental energy (Nweze, 1984).

In contrast to Type A persons, the Type B individuals are characterised as more relaxed, serene, easy-going, less ambitious, less concerned about deadlines, not subject to time pressure, and are less at risk for burnout, heart attack, and sudden death than Type As. The literature suggests that Type A behaviour pattern is a particular behaviour pattern thought to characterize future cardiac patients (Mathews, 1982); and has been called ñcoronary prone behaviourò (Sarafino, 1998). Type A individuals exhibit greater sympathetic nervous system reactivity and this overreactivity could be one link in the chain connecting Type A behaviour to the development of cardiovascular disease such as hypertension, which is a potential risk factor for CHD (Pittner & Houston, as cited in Ifeagwazi, 2008a). In particular, hostility and anger appear to be the toxic elements in the link between Type A and CHD, which include illnesses, like angina pectoris (chest pain), heart attack (myocardial infarction), and atherosclerosis, which result from the blocking or narrowing of the coronary arteries.

Studies have reported that Type A persons are twice as likely as Type B individuals to develop CHD and to die of CHD (Sarafino, 1998). Studies have also found that Type A persons have significantly higher mean arterial blood pressure scores than Type B individuals (Ifeagwazi & Oguizu, 2006). Some aspects of Type A coping behaviours such as anger, cynical hostility, and impatience are more toxic and have been found to be associated with increases in blood pressure (Webb, 2002). Type A behaviour pattern produces excessive physiological arousal in stressful situations (Feldman, 2005), which results in the elevation of

catecholamine (e.g., epinephrine and norepinephrine) and cortisol levels as well as increases in heart rate and blood pressure. Ultimately, such excessive physiological reactivity results in increased incidence of CHD (Black & Barbutt, 2012; Feldman, 2005).

PART III
Exploring the Critical Factors Moderating the Stress –Illness Link

Mr. Vice chancellor, it should be noted that in studying stress and illness connection, it is important to explore the critical variables that mediate or moderate this link. An impressive body of research evidence has demonstrated a link between stressful life events and physical and psychiatric illness, just as this lecture has extensively reported. Also, increasing attention has been focused on factors that moderate the stress-illness connection (Kobasa, 1982). As pointed out by Ogden (2000), the relationship between stress and illness is not linear or straight forward, and there exists an avalanche of evidence to suggest that several factors may mediate the stress-illness link. The question of how some persons remain healthy despite their encounter of stressful life events has continued to generate research interest.

Researchers have identified a number of factors as moderators or mediators of stress ï illness connection. It is sometimes assumed that certain stressful or traumatic events are so devastating and horrific that virtually everyone will react exactly the same way to the traumas. However, this assumption ignores the factor of individual differences or variability in reaction to stressful or catastrophic events. As stated by Sue et al. (2003), not everyone who faces stressful events develops illness. For instance, stress reactions to traumas (e.g. war traumas) differ markedly from one individual to another. Not all people are disabled by traumatic experiences (Alloy, et al., 1999). Even if the nature of the traumatic stressor is similar, not all individuals will develop

PTSD. Some individuals are vulnerable and some are resilient (Perry, Conroy & Ravitz, 1991), and most people are resistant to psychopathology, even under extreme or traumatic conditions (Willerman & Cohen, 1990). It has become increasingly evident that some individuals are not debilitated and do not necessarily breakdown (Cohen & Wills, 1985), and that certain individuals may even experience positive outcomes after facing traumatic situations (Linky & Joseph, as cited in Wilson & Boden, 2008).

One interesting positive outcome that has been identified in the literature is posttraumatic growth (PTG), which has been described by many western researchers as positive changes in the aftermath of trauma, crisis, catastrophe, and stressful life events (See Ifeagwazi & Chukwuorji, 2014a); sense of increased ability to face adversity, and an increased sense of personal or ego strength and development (Bhushan & Hussain, as cited in Wilson & Boden, 2008). This underscores the fact that stress affects people differently, an observation that led some stress researchers (e.g., Kobasa and her colleagues, cited in Brehm, et al., 2002) to wonder why some people are more resilient and have stable, robust and healthy personality functioning despite encountering high stressful life events, while others are more vulnerable, devastated and traumatized. This situation raises the possibility that other variables moderate or mediate the general stress-illness link (Davison & Neale, 2001). It can be explained that the stress-illness link can be moderated by such factors as cognitive appraisal of the stressful event; availability of social support; personality hardiness, selfi efficacy, resilience and self-esteem; religious or spiritual faith; and coping resources.

Cognitive Appraisal of Stressful or Traumatic Events

Events are not inherently stressful until they are perceived, appraised and interpreted as stressful. Thus, the transactional model of stress views stress, not as a stimulus or response, but as a transaction or interaction between the individual and his

environment. According to this model, our perceptions and interpretations of events around us determine their psychological or emotional impact (Lazarus & Folkman, 1984). As observed by Lazarus (1981), individuals are not mere victims of stress, but how they appraise and interpret the stressful event (primary appraisal) and how they appraise their coping resources and options (secondary appraisal) influence their emotional reaction to the stressful events. Thus, the relationship between stress and illness can be mediated by the individualôs cognitive appraisal and interpretation of the stressful situation.

Availability of Social Support

Social support has been found to serve as a protective resource or coping response that moderates responses to stressful events. Social support is the support or help provided, usually in time of difficulty, need, or crisis, by significant others such as family members, friends, relatives, colleagues, natural caregivers, in coping with stress. It refers to the existence or availability of people on whom we can rely, people who let us know that they care about, value and love us (Sarason & Sarason, 1980).

Social support has therapeutic effects on both psychological and physical health (Cohen & Wills, 1985) and people who have limited, few or weak social bonds or support networks are prone to health problems (Cobb, 1976; Ifeagwazi 1998, 2007b). Infact, social support influences an individualôs health status. Lynch (cited in Ogden, 2000), reported that widowed, divorced or single individuals have higher mortality rates from heart disease than married people. This suggests that heart disease or cardiovascular illness and mortality are related to lower levels of social support (Ogden, 2000). Ifeagwazi (2007b) examined the roles of social support, locus of control and age in psychological adaptation of Nigerian widows. One hundred and thirty-seven widows participated in the study. They completed 3 inventories, namely the Social Support Questionnaires, the Rotterôs (1966) Locus of

Control Scale, and the Emotional Adaptation Indicator Scale. Results showed, among other things, that the three main effects of social support, locus of control and age were statistically significant. Specifically, widows with low social support reported significantly poorer or lower level of psychological adaptation than widows high in social support. Widows with external locus of control (externally ï oriented widows) reported significantly poorer or lower level of psychological adaptation than widows with internal locus of control (internally-oriented widows). Younger widows reported significantly poorer or lower level of psychological adaptation that older widows.

It can be concluded from Ifeagwaziôs (2007b) study that the provision of high levels of social support, having an internal locus of control orientation, and being older in age are critical factors positively influencing the adaptational outcomes of recently widowed Nigerian women. Studies have shown that social support is linked with a variety of dependent measures, including health, personal adjustment, and a sense of well-being. Researchers have proposed two theories in order to explain how social support influences the health status of an individual, namely, the stress buffering model, and the direct or main effect model. As stated by Ogden (2000), the stress buffering model proposes that social support helps individuals cope with stress, thereby mediating the stress-illness link by buffering the individual from the stressor. It is termed stress buffering model because it posits that support ñbuffersò (protects) persons from potentially pathogenic influence of stressful events (Cohen, 1988). The main effect model proposes that social support has salutary effect irrespective of whether people are under stress. As noted by Ogden (2000) the main effect model suggests that social support mediates the stress-illness link, with its very presence reducing the effect of the stressor. Conversely, the absence of social support is perceived as stressful and pathogenic.

Personality Hardiness, Resilience, and Self–efficacy Beliefs

Personality hardiness, resilience, and self-efficacy also serve as potent moderators in the stress-illness relationship. Stress researchers (e.g., Bonanno, 2004; as cited in Comer, 2007) have reported that many people respond to stress with a set of positive attitudes collectively called hardiness or resiliency, which enables them to carry on their lives with a sense of fortitude, control and commitment. Kobasa and her colleagues (1982) have identified three personality attributes that differentiate individuals who remain healthy and more resilient under stress and those who exhibit high incidence of illness and are more vulnerable. These three attributes, collectively referred to as hardiness, are control, commitment, and challenge. Perceived control is critical to any coping mechanism, and it is the uncontrollable life events that correlate highly with physical and psychiatric illness episodes.

According to Wood et al. (2008), hardy individuals perceive themselves not as victims of whatever life brings but as people who have control over consequences and outcomes. They feel a strong sense of commitment to or involvement in both their work and their personal life. In addition, they welcome challenges in life, viewing them not as threats but as opportunities for growth and improvements (Wood, et al., 2008). Thus, psychologically hardy chief executives or business executives resist illness despite heavy stress loads, and they perceived themselves as being in control of their lives (Nevid, et al., 1991).

In particular, studies on locus of control (a personality belief system that refers to the belief in oneôs ability to influence outcomes or events in oneôs life) have shown that among persons under stress, those who have greater sense of personal control over what occurs in their lives (internal control) remain better adjusted than those who feel overwhelmed by external forces beyond their control such as luck, chance, or powerful others (external control). Research has provided relatively consistent evidence that internal

locus of control serves as life stress buffer, thereby mediating the stress-illness link (Ifeagwazi, 2007b; Kobasa, 1979; Lefcourt, 1976).

Research also indicates that selfï efficacy is a powerful factor in mediating the stress-illness response as already indicated. Ogden (2000) define selfï efficacy as an individualôs feeling of confidence that he or she can perform a desired action. Studies report that people with high self-efficacy show less psychological and physiological strain in response to stressors than people with low selfï efficacy (Sarafino, 1998; Bandura, Taylor, Williams, Mefford, & Barchas, 1985). Ifeagwazi and Oguizu (2006) found that individuals who are low in selfï efficacy had significantly higher mean arterial blood pressure scores than individuals who are high in self-efficacy. Other studies indicate that self-efficacy may have a role in mediating the stress-induced immunosuppression and physiological changes like blood pressure, heart rate, and stress hormones (e.g., Bandura, Rees & Adams, 1982; cited in Ogden, 2000).

The moderating role of resilience has received significant research attention (e.g., Ifeagwazi, Chukwuorji & Zacchaeus, 2015; Hao, et al., 2015), and studies have reported that resilience is a moderator between work stress and burnout, and could serve as a stress buffer to mitigate the adverse effects of work stress. With respect to psychological burnout, it has been shown that highly resilient individuals are less likely to develop burnout symptoms (Hao, et al., 2015). As a personality trait, resilience described as an individualôs capacity for maintenance, recovery or improvement in well-being in the face of lifeôs challenges (Ryff, Singer, Dienberg, Love & Esser, 1998) has the potential to moderate psychosocial outcomes. Ifeagwazi et al. (2015) propose that the initiation of resilience building programme as a form of cognitive behavioural and existential interventions may buffer the negative relationship of alienation to psychological distress.

Another important personality characteristic that serves as a moderator variable is self-esteem, which can be referred to as an individualôs sense of pride, self-respect, value and worth (Hahn, Payne & Mauer, 2005). The literature strongly indicates that selfï esteem is related to psychological health, and that many psychological problems have their underpinnings in low self-esteem, including social rejections, anxiety, depression, eating disorders, and substance abuse problems (Hahn, et al., 2005). Increased or high self-esteem serves as a buffer that protects the individual from experiencing psychiatric conditions such as depression, suicidal thoughts and stress (Brewer, 2002; Ifeagwazi & Ezema, 2010; Ifeagwazi & Chukwuorji, 2014b).

Religious or Spiritual Faith

Clinical evidence has shown that religious or spiritual experiences can be mobilised in response to stressful situations. Spiritual or religious faith offers hope, sense of meaning, and purpose in living to distressed or traumatised people, and contributes to resistance to stress and illness. Victor Frankl, author of the book: *From death camp to existentialism*, which was later revised and retitled *Man's search for meaning*, documented how he managed to survive psychologically the dehumanising and brutalizing Nazi concentration camp experiences by making sense of the traumatizing conditions of the death camp, and relating them to his spiritual and religious faith. Spirituality is a vital component of psychological support that can help trauma victims redefine and make sense of the trauma (see Ifeagwazi, 2014). Wood, et al. (2008) reviewed evidence indicating that religious faith is an important personal factor that contributes to resistance to stress and illness (e.g., Miller & Thoresen, 2003). One proposal is that religious involvement provides people with a stronger form of social support than is available to those who are not religious. Researchers (e.g., Seeman, et al., cited in Wood et al., 2008) propose that religious practices, including meditation and prayer,

may have positive effects on healthï related physiological variables such as blood pressure. People often turn to prayer, reading the Bible/Koran, and other spiritual exercises in times of crisis, sorrow, tragedy, adversity, and traumatic life experiences. One useful traditional prayer that most people under intense stress often say is ñLord, grant me the strength to change that which needs changing, the courage to accept that which cannot be changed and the wisdom to know the differenceò (Atkinson, 1998, p. 82).

Coping Responses

Individuals differ in their coping style (general tendency to deal with situations in a particular way) and their coping strategies (specific behaviours they engage to deal with a stressor or event) (Moran, 1998). The individualôs type of coping style may well mediate the stress-illness link and determine the extent of the effect of the stressful event on their health status (Ogden, 2000). Problem-focused coping (confronting the problem and reconstructing it as manageable) as opposed to emotion-focused coping (e.g., wishful thinking, denial) apparently serves as a good buffer/protection against certain clinical pathologies such as PTSD. Proactive coping can also serve as an effective strategy adopted by an individual in coping with stress. This coping response consists of efforts or actions taken in advance of a potentially stressful situation to prevent its occurrence or to minimise its consequences (Aspinwall & Taylor, 1997, cited in Wood, et al., 2008). This involves up-front efforts to ward off or modify the onset of a stressful event (Brehem, et al., 2002). According to Wood et al. (2008), some stressful situations can be anticipated in advance, allowing proactive copers to anticipate and prepare for the upcoming stressful event.

There is evidence that other factors such as gender (Ifeagwazi & Chukwuorji, 2014a; Stoney et al; cited in Ogden, 2000), exercise (Paffenbarger, Hyde, Wing, & Hsieh, 1986), sense of humor (Martin & Lefcourt, 1983; Nevid et al; 1998), and optimism

(Scheier & Carver, 1992) may mediate the stress-illness connection. However, the research evidence in most cases shows only correlational links.

Summary and Conclusion

This lecture has attempted to highlight the importance of psychosocial stress in illness or disease process. It maintained that health and illness are influenced by biopsychosocial factors and emphasised the need for healthcare professionals to adopt the holistic or integrative approach to clinical pathology, which conceptualises every illness or disorder as a medical, a psychological, and a social problem in aetiology, assessment, diagnosis, and intervention or treatment. The lecture documented a plethora of theoretical and empirical evidence linking stress and illness, and highlighted some critical stress buffers that moderate or mediate the stress illness link.

It is noted that stress is a normal component of life and in a moderate level can be quite adaptive, positive, motivating, helpful and beneficial (eustress). Thus, not every stressful experience is bad, since eustress makes one feel good, energised and motivated. In the same vein, not everyone who faces stressful events develops illness. Some people are resilient, while others are vulnerable.

However, for the vulnerable individuals, chronic stress can be costly in terms of taking a heavy toll on the individualôs physical and mental health, imposing wear and tear on the body, hastening the ageing process, and even precipitating sudden death. Bad stress or distress can be quite crippling, destructive and detrimental to health. The good news, however, is that bad stress or chronic and unremitting stress can be managed by using purely psychological techniques such as relaxation therapy, biofeedback, transcendental meditation, cognitive restructuring and other cognitive interventions. Clinical intervention requiring the expert services of the clinical psychologist is clinically indicated and absolutely

important for the clinical management of all stressï related illnesses.

In fact, it is advocated here that the Federal Government of Nigeria should provide comprehensive clinical and healthcare services that integrate psychological services into the Primary Healthcare Delivery system in the country. Psychology, in particular, should have a special role in the study of medicine, and medical training programmes in Nigerian universities should be restructured or reorganised to reflect psychological or behavioural approaches to the clinical management of health problems. The services of clinical psychologists should be seriously engaged in the training of medical doctors. Ineffective or poor regulatory management of life stress can contribute to illness episodes. It is, therefore, recommended that people should adopt some healthy measures, including relaxation, physical exercise, prayer/meditation, getting adequate sleep, rest, sense of humour (laugh therapy), building social support network, time management, avoidance of excessive use of drugs/alcohol, healthful diets and other coping strategies to manage the stress, pressure and hassles of daily life, which they encounter. Relaxation is incompatible or antithetical to stress response; thus, we should learn how to programme our daily activities and schedules such that stressful and hectic periods will be neutralised with relaxing activities that reduce sympathetic arousal. When we achieve a state of relaxation, we reduce autonomic arousals.

Thus, relaxation response and regular deep breathing are excellent techniques for managing stress arousals, since they are opposite of stress response, as already indicated. They are not complex techniques. I encourage this audience to learn and practice them, since they are extremely important in managing or coping with stress. You cannot be in a state of arousal /tension and state of relaxation at the same time. Use regular deep breathing and relaxation response to counteract the feelings of anxiety, tension, rapid heart beat, palpitation, fear of going crazy, feeling of

impending doom, and other autonomic symptoms associated with chronic stress. As daily pressures, hassles and Type A lifestyle chronically activate our alarm system, clinical psychologists preach and recommend relaxation response, deep breathing exercise, and stress inoculation as critical components of the overall stress management programme. Physicians should actively collaborate with clinical psychologists in order to provide holistic health care delivery to patients because medical treatments alone are incomplete and deficient in handling stress-related health problems such as essential hypertension, cancer, and even HIV.

This lecture has provided some leads in exploring and presenting information relating to the pathways linking stress and illness, but more research is still needed to break further grounds in the fields of positive psychology, behavioural medicine and psychoneuroimmunology. My ongoing and future research efforts are focused on designing and executing more empirical studies along this research track. The stress field will continue to stir and motivate my research interest since there is still a lot to explore and learn about the dynamics of stress, its mechanisms and impact on human physical and psychological health.

Finally, permit me, Mr. Vice-Chancellor, to conclude by thanking you and the members of the Senate Ceremonials Committee led by the highly respected and resilient Prof. Malachy Ike Okwueze for the wonderful opportunity given to me to present this inaugural lecture. The lecture ranks as the first inaugural lecture ever presented by the Department of Psychology, which was established in 1964. This lecture has perhaps put me on the map as the first professor of clinical psychology to present an inaugural lecture at the University of Nigeria, Nsukka. To God be the glory

Summary of my Contributions to the Advancement of Psychological Science

Research Contributions

I have contributed to the psychological literature in the fields of stress, trauma and psychological burnout (e.g., Ifeagwazi, 1992, 1995, 1998, 2002, 2005, 2006, 2008, 2011, 2013, 2014, 2015; Chukwuorji & Ifeagwazi, 2015), and most of these studies have been captured and reviewed in this lecture. I have also contributed to literature in the fields of clinical psychopathology (e.g., Ifeagwazi, 2002, 2006, 2007a,2007b,2007c; Ifeagwazi & Obieze, 2000-2001), clinical psychopharmacology (e.g., Ifeagwazi, 1997, 2005, 2007; Ifeagwazi & Kpenu 2007; Abiama, Ifeagwazi & Chukwuorji, 2015), and mental/physical health (Ifeagwazi, 2003, 2008c, 2010).

As a professional clinical psychologist, I have also contributed to the field of clinical assessment and psychological testing by developing and validating a number of valid and robust clinical psychological tests, which include: (1)The Life Events Inventory (Ifeagwazi, 1992, 2011); (2) The Adaptational Status Indicator (ASI) (Ifeagwazi, 1998, 2004); (3) The Stress Response Indicator (Ifeagwazi, 2002); (4) The Assessment of Sources of Stress Inventory for Priests and Religious (Ifeagwazi, 1995) and (5) The Perceived Reasons for Academic Cheating Inventory (Ifeagwazi, 2008b). Some of these instruments have been used as research tools in data collection for some of the empirical studies captured in this lecture.

It is on record that my Ph.D thesis which embodied the details of the development and factorial validation of the Adaptational Status Indicator (ASI) won the Faculty Postgraduate Prize for the best Ph.D thesis in the Faculty of the Social Sciences for the 1997/1998 session.

I have also been very active in teaching, researching, supervising and graduating students of psychology at both undergraduate and

postgraduate levels since 1992 till date. As a clinical psychologist, I have been painstakingly involved in the clinical training of clinical and counseling students based on the scientist ï practitioner model of clinical training. I have trained these clinical students to acquire clinical skills in the core areas of clinical psychology such as clinical assessment and psychological testing, interpretations and use of tests, psychodiagnosis, psychotherapy and clinical psychopharmacology, clinical practicum as well as supervising their clinical internships and theses at M.Sc and Ph.D levels.

I have trained, mentored and graduated more than 30 clinical psychologists and counseling psychologists, and some of them are currently working as chief clinical psychologists in some Federal Hospitals, including Federal Medical Centre, Umuahia, Neuropsychiatric Hospital, Kaduna, Amino Kano University Teaching Hospital, Kano, Nnamdi Azikiwe University Teaching Hospital, Nnewi, and Federal Prisons, Abuja. In addition, many of my students are lecturing in the various departments of psychology in Nigerian universities, including University of Nigeria, Nsukka, University of Uyo, Imo State University and Ebonyi State University, Abakaliki. Currently, I am supervising 8 Ph.D and 30 M.Sc students

Record of Consultancy

As a clinician, I have been actively involved in rendering clinical services to clients and institutions including:

1 Provision of clinical assessment and psychotherapy to a wide range of distressed clients seeking clinical professional help at the Psychological Services Centre, Department of Psychology, UNN, where I function in the role of Director of Clinical Psychology Programme.
2 Provision of psychological assessment and consultancy services to some dioceses, including Nnewi diocese and

Onitsha Archdiocese at the request of the Local Ordinaries (Bishop and Archbishop)

3 Provision of psychological assessment and consultancy services to religious institutions, including St. Paulôs Seminary, Ukpor and All Hallowôs Seminary Onitsha at the request of the rectors.

4 Provision of clinical, chaplaincy, and pastoral counseling services to hospitals, including All Saintsô Hospital, Nsukka.

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   Title: The Crisis in the Social Sciences: The Nigerian Situation.

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   Title: Economic Science, Imperialism and Nigerian Development.

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   Title:

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   Title: Visions Alternatives: Literary Studies in a Transitional Culture.

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   Title: Land Policies and Compulsory Acquisition of Private Land for Public Purposes in Nigeria.

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   Title: The Surgeon as an Academic.

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   Title: Mechanization of Cassava Production and Processing: A Decade of Design and Development.

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   Title: Discovering What Learners have attained in Mathematics.

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    Title: Brain Surgery, a Luxury in a Developing Country Like Nigeria?

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    Title: Lipids: Your Friend or Foe .

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    Title: Unmasking some Aversive Aspects of Schools Mathematics and Strategies for Averting them.

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    Title: Reflections on History, Nation-Building and the University of Nigeria.

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    Title: In the Spirit of Tespis: The Theatre Arts and National Integration.

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    Title: What have I done as an Agricultural Scientist? (Achievements, Problems and Solution Proposals).

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    Title: A Journey through the Uncharted Terrain of Igbo Linguistics.

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    Title: English Language Learning in Nigeria: In Search of an Enabling Principle.

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    Title: Beyond Entertainment: A Reflection on Drama and Theatre.

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    Title: Affluence and Affliction: The Niger Delta as a Critique of Political Science in Nigeria.

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    Title: Delay and Justice in the Lore and Literature of Igbo Extraction.

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    Title: Practice without Policy: The Nigerian Agricultural Extension Service.

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