EFFECTS OF SEQUENTIAL DECISION-MAKING AND COGNITIVE RESTRUCTURING TECHNIQUES ON STRESS AMONG FEMALE STUDENTS OF COLLEGES OF EDUCATION IN KANO STATE, NIGERIA

BY

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B. A. Ed Political Science, B.U.K (1984)

M. Ed. Guidance and Counselling, A.B.U (2009)

PhD/Educ/16444/2011-2012

DECEMBER, 2017

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN GUIDANCE AND COUNSELLING

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND COUNSELLING, AHMADU BELLO UNIVERSITY, ZARIA

DECEMBER, 2017

DECLARATION

This thesis entitled **Effects of Sequential Decision-Making and Cognitive Restructuring Techniques on Stress Among Female Students of Colleges of Education in Kano State, Nigeria**, is hereby declared as an original research investigation conducted by the researcher. To the best of the researcher's knowledge, it has never been presented partially or wholly anywhere for the award of any degree. All information derived from the literature has been duly acknowledged.

_____ _____

Khadijah Muhammad KOKI. Date

CERTIFICATION

This thesis entitled **Effects of Sequential Decision-Making and Cognitive Restructuring Techniques on Stress Among Female Students of Colleges of Education in Kano State, Nigeria**, by Khadijah Muhammad KOKI meets the requirements governing the award of the Degree of Doctor of Philosophy in Guidance and Counselling of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

_____ _____

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DEDICATION

In cherished memory of my ever caring, dearest, humble, loving and kind-hearted father, Alhaji Muhammadu Koki, fondly remembered as ‘Alhaji’, whose death occurred on 13th Dhul-Hijjah, 1430 (30th November, 2009). May his gentle soul rest in perfect peace in the Highest Paradise, Jannat-al Firdaus, ameen. The researcher also prays that Allah will join us all therein with His Beloved Prophet, Muhammad (peace be upon him) where insha Allah, we shall meet to part no more, amen Ya Rabb.

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Khadijah Muhammad KOKI.

ABSTRACT

The study examined the effects of Sequential Decision-Making and Cognitive-Restructuring Techniques on Stress among Female students of Colleges of Education in Kano State, Nigeria. Quasi-experimental Design involving Pre-test, Post-test Group Design was employed. The population of the study comprised of NCE II female students in Kano state, identified with stress symptoms. A sample of 28 respondents made up of fourteen (14) married and single were assigned into two (2) treatment groups of Sequential Decision Making and Cognitive Restructuring Techniques for seven (7) and eleven (11) weeks, respectively. The data was collected using Stress Assessment Inventory (SAI) adapted from Balarabe 2007. Nine (9) research questions were answered and an equal number of nine (9) hypotheses, tested at 0.05 significant level. Mean and Standard Deviation were used for research questions while t-test and Analysis of Variance were for testing the hypotheses. The results revealed that Sequential Decision Making Technique had significant effect on stress among single female students; Sequential Decision Making Technique was significantly effective in reducing stress among married female students; Cognitive Restructuring Technique was similarly effective in reducing stress among married female students. No significant effect of Cognitive Restructuring Technique on stress among single female students; Sequential Decision Making Technique was significantly effective in reducing stress among married and single female students; No significant effect of Cognitive Restructuring Technique on stress among married and single female students; There was significant relative effects of Sequential Decision Making and Cognitive Restructuring Techniques on stress among married and single female students; Sequential Decision Making and Cognitive Restructuring Techniques were similarly effective in reducing stress among married female students; There was significant relative effects of Sequential Decision Making and Cognitive Restructuring Techniques on stress among single female students. It was recommended among others that Counsellors, Psychologists and Social workers should be encouraged to use Sequential Decision Making and Cognitive Restructuring Techniques on stress among married and single female students in Kano state colleges of education.

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ABBREVIATIONS

S.D.M.C.T- Sequential Decision Making Counselling Technique

S.D.M-Sequential Decision Making

C.R.C.T.-Cognitive Re-structuring Counselling Technique

CRT-Cognitive Restructuring Theory

CBT-Cognitive Behavioural Therapies

REBT-Rational Emotive Behavioural Therapy

PCT-Personal Construct Theory

S.A.I.-Stress Assessment Inventory

F.C.O.E.-Federal Colleges of Education

SRCOE-Sa'adatu Rimi College of Education

F.C.E (T) B-Federal College of Education (Technical) Bichi

OPERATIONAL DEFINITION OF TERMS

The operational definition of terms are as follows

Sequential Decision Making- In this study is referred to as a decision made by developing an individually arranged and well planned chronological step by step list of daily life schedules, expected to be implemented uninterruptedly for the treatment of stress.

Cognitive Restructuring-Is used in this study as an appropriate therapeutic technique for modifying and replacing stress distorted thought patterns to non- stressful conditions.

Stress: In this research is noted as body's positive or negative reactions to sudden environmental changes or a state of mental, emotional or other strain.

Stressor- Anything that is perceived as challenging, threatening or demanding.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study.

Stress is today recognised among the most global alarming problems, for it can exert a major, often undesirable influence on health. Stress occurs in circumstances where the pressure to perform certain tasks becomes greater than the resources available to perform them. Hence, any internal or external environmental change or stimulus that disturbs homeostasis which under certain condition could result to illness or disease is referred to as stress. In other words, stress comes about as a result of perceived demands or threats in situations appraised to exceed resources or bodies' psychological responses. Thus, it is in most cases an unpleasant state of emotional and psychological arousal that occurs in situations which are perceived as threatening to wellbeing. The prevalence of stress in educational institutions is therefore of great concern because it could lead to illnesses that can affect the students' wellbeing and academic achievement, be it physically, mentally, emotionally, socially or even spiritually.

From the experience of the researcher being a teacher and also a counselor in a tertiary institution, it was observed that students, especially females are generally predisposed to numerous stressful experiences both at home and school. Stress disparity with regards to gender as reiterated by Melanie (2005) also goes in line with the researcher's observation because females seem to be more predisposed to stressful conditions. Unlike their male counterparts, their expected role of societal development could lead them to numerous stressful circumstances for instance, when a number of children and youth get indulged into various forms of vices such as robbery, substance abuse, truancy, fraud, prostitution and other promiscuous acts like lesbianism and homosexuality. They could be wholesomely accountable or blamed for being

‘incapable’ of nurturing these future leaders appropriately. That could also be why they have been generally noticed to experience stress related environmental risks that include financial hardships or academic pressure as well as personal related risks like relationship difficulties, deaths of loved ones or serious illnesses of close ties.

The predisposed stressful encounters as the researcher observed include the monotonous nature of academic challenges related to numerous assignments of various courses from Technical, Commercial, Arts, Sciences and Physical and Health Education departments, change of venues, preparations for excursions/tours and the rigorous readjustments of lecture hours. As such, the limited time provided is skillfully managed for prayers and feeding. Hence, no time is left for them to relax in order to have some relief from stress.

Challenges related to demands on time, perceived lack of support from departments, financial pressure, competition, fear of failure and interpersonal problems are similarly among the causal factors. Inadequate seats, noise pollution and excessive heat coupled with stingy smells of body ordour as a result of improper ventilation and congestion due to over-population as well as lack of sufficient venues are equally contributory and can apparently be stressful and likewise, disrupt the learning atmosphere. Additional noted stressors being experienced relate to unfavourable weather, rapid growth in adolescence, menopause, rigorous rules and regulations, transportation problems, insufficient power supply and also inappropriate sanitary services.

Through observation, many students are effortlessly identified with some stress mental symptoms of worries, confusion, disorientation, indecision and loss of sense of humour as well as physical symptoms like frequent illnesses, dry mouth, muscle aches, flu and weight gain or loss. Similar stress behavioural signs exhibited include nail biting, anxiety, appetite changes, impatience, poor academic performance, poor personal hygiene, impaired speech, poor time

management, nervous cough, withdrawing from relationships, frequent crying, poor eye contact, negative self talk like pessimistic thinking or self criticism and also mind traps such as unrealistic expectations and rigid thinking. The mood signs they encounter also relate to nervousness and irritable feelings, while the psychosocial signs involve sadness, depression, helplessness, hopelessness, competition, suspicion, manipulative tendencies and gossips. Emotional signs on the other hand include frustration, fear, guilt, morbidity, jealousy, shame, embarrassment, tearfulness and hatred while imagery signs involve losing control, failure, humiliation and poor self-image. Allergic reactions, skin problems, chronic fatigue, exhaustion and burn-out are among the biologically associated signs. From the afore mentioned negative health effects, it could be assumed that, as stress becomes persistent, the students may become less confident or fearful in their academic and other life activities, which could significantly distract them from the tasks at hand, to the detriment of good performance.

To be precise, married N.C.E. female students are beset with a number of additional stressful challenges as a result of combining studies with marital, family and other numerous assigned daily life-accountabilities. Through discussion, it was revealed that issues related to rivalry palaver among co-wives, sharing of toilets, sitting rooms, kitchens, housemaids or drivers could as well be stressful. Similar predisposed contributory factors as they further disclosed involve the marital ordained duties, pre natal complications, post natal responsibilities and the rigorous and culturally imposed house-hold chores, especially in the absence of nannies. A nursing mother for example, may even take the trouble of carrying her newly born baby to school along with her. The frequent participations in outdoor ceremonial activities as was observed could similarly be accountable, for they are not expected to give any excuses. Hence, accomplishing these assigned rewarding and ordained responsibilities and more especially the

intense pressure and accumulations of these culturally imposed accountabilities can greatly jeopardize their academic activities as well as general health and wellbeing. That is why stress is believed to occur as a result of a mismatch between what an individual aspires to do and what he/she is capable of doing.

The single female students as was similarly indicated are often engrossed in stressful encounters which could considerably cause them feelings of pressure, strain, tension or dysfunctional behavioral troubles. One major example observed relates to improper care as a result of the outstanding crises inclined to broken homes, in the absence of either of the two biological parents or reliable substitutes. The benefits of motherly emotional affection for instance, are denied to those living in their paternal residents. They could as well be overburdened with domestic chores or exposed to risks associated with societal vices or similar abuses, thereby endangering their morality. Thus, those under complete motherly custody could also experience similar stress inclined risks of inappropriate up keep or neglect due to lack of fatherly emotional affection and general care or as a result of financial constrains. The trouble of appropriate decision on selection of husbands according to them could as well lead to stress manifestations that can in the long run result to ill-health and academic challenges, since stress is generally known to disturb individuals' overall performances both mentally and physically.

Another significant factor as the researcher perceived relates to the observed patriarchal nature of the African culture where females are trained to be feeble and domesticated. This is unlike their male counterparts, whose authority is regarded as supreme (Hake, 1972) and (Ma'ruf, 2002). The supremacy is however misused for some of these students, as noted were denied the rights to decision making, even on selections of academic courses. They comply to substitute their courses of interest through directives from their fathers, husbands or other

significant male caretakers that are seen as the final authorities, despite meeting the admission requirements. This clearly implies ignoring the most crucial aspects of their personality traits of aptitude and interests, which Fortner (2002) considered to have strong relationship with stress. Thus, the bitter experience of denying them the right to make decisions through identifying and choosing alternative options that best fit their life goals, objectives, preferences and values could eventually predispose them to stress, since it has been associated with various damaging effects on general health and wellbeing (Auerbach & Grandling, 2008).From the afore-mentioned factors and despite their feminine feelings of purpose, self-satisfaction and accomplishment, it can be accepted that both the married and single female students could be more predisposed to stressors, when compared to the rest of their student counterparts.

1.2 Statement of the Problem

Students are in dire need of stress treatment mechanisms as a result of the tedious tasks associated with academic, domestic and other daily life rigorous schedules. However, both school counselors and the students as well fail to pay considerable attention to towards this alarming health inclined problem. The counselors also tend to forget the significant relationship between effective learning and adequate provision of stress treatment skills, both at home and school. They cease to realize that students need suitable environments that ensure both physical and mental health for successful academic outcome. To be precise, students in general and especially females, with particular reference to their married and single counterparts are faced with numerous academic and daily life tight schedules that require considerable attention for effective learning and proper accomplishments of their daily life accountabilities.

The need for appropriate decision-making in various aspects of life is very essential. It enables people to have focus through effective use of better choices which could assist

significantly in treating negative stressful conditions. That is why many situations arise that require making sequences of actions to bring about favourable solutions. This describes the SDM technique as a process that requires appropriate selections of strategic actions on both short and long term consequences. It also implies the technique's efficacy in identifying and selecting the best alternative choices that fit goals, objectives, preferences and values. SDM additionally improves relaxation, increase in sense of purpose, confidence in tasks accomplishments, appropriate use of time and improved mental and physical health, which makes it become considerably recognized in numerous spheres of scientific fields, clinical settings, human physical body images and dieting, among others (Miller &Davis, 1996).

Since SDM technique is a useful tool applied in numerous spheres of researches and also a recognised formulated and dynamic decision system where behavior unfolds over time under the influence of the decision maker's plans, the NCE married and single female students that are often predisposed to numerous stressful tasks can benefit much from it by examining their complexities for appropriate solutions. They can be assisted to treat their stress both at home and school through appropriate application of individually and well designed sequential formats. However, the major problem with the technique is that it is more inclined to complex scientific researches, long term planned health related projects and gigantic marketing schemes.

In the same vein, the students can as well receive effective CR stress psychological interventions like exploration, reflection, coping skills, assessments, relaxation, homework and communication training by breaking their stress devastating thought patterns, emotions, physical feelings and actions into smaller parts in order to make them easier to deal with. In other words, through these effective and combined cognitive and behavioural CR therapeutic approaches, the

students can adequately identify, modify, challenge or change their irrational and distorted stress thought patterns (cognition) as well as responses (bahaviours) both in and out of school settings.

These can essentially help in treating their stress as well as improve their general health and academic achievements. It is against this background that the researcher wants to find out the effects of both techniques on stress among married and single female students in Kano State colleges of education.

1.3 Objectives of the Study

The study was guided by the following objectives:

1. To examine the Effect of SDMT on stress among single female students in Kano state colleges of education.
2. To examine the Effect of SDMT on stress among married female students in Kano state colleges of education.
3. To find out the Effect of CRT on stress among married female students in Kano state colleges of education.
4. To find out the Effect of CRT on stress among single female students in Kano state colleges of education.
5. To determine the Effect of SDM Technique on stress among married and single female students in Kano state colleges of education.
6. To determine the Effect of CR Technique on stress among married and single female students in Kano state colleges of education.
7. To examine the relative Effects of SDM and CR Techniques on stress among married and single female students in Kano state colleges of education.

8. To examine the relative Effects of SDM and CR Techniques on stress among married female students in Kano state colleges of education.

9. To examine the relative Effects of SDM and CR Techniques on stress among single female students in Kano state colleges of education.

1.4 Research Questions

The research questions are as follows:

1. What is the Effect of SDMT on stress among single female students in Kano state colleges of education?

2. What is the Effect of SDMT on stress among married female students in Kano state colleges of education?

3. What is the Effect of CRT on stress among married female students in Kano state colleges of education?

4. What is the Effect of CRT on stress among single female students in Kano state colleges of education?

5. What is the Effect of SDM Technique on stress among married and single female students in Kano state colleges of education?

6. What is the Effect of CRT Technique on stress among married and single female students in Kano state colleges of education?

7. What is the relative Effect of SDM and CRT Techniques on stress among married and single female students in Kano state colleges of education?

8. What is the relative Effect of SDM and CR Techniques on stress among married female students in Kano state colleges of education?

9. What is the relative Effect of SDM and CR Techniques on stress among single female students in Kano state colleges of education?

1.5 Research Hypotheses

The following hypotheses were tested:

Ho.1 There is no significant Effect of SDMT on stress among single female students in Kano state colleges of education.

Ho. 2 There is no significant Effect of SDMT on stress among married female students in Kano state colleges of education.

Ho.3 There is no significant Effect of CRT on stress among married female students in Kano state colleges of education.

Ho.4There is no significant Effect of CRT on stress among single female students in Kano state colleges of education.

Ho.5 There is no significant Effect of SDMT on stress among married and single female students in Kano state colleges of education.

Ho.6 There is no significant Effect of CRT on stress among married and single female students in Kano state colleges of education.

Ho.7 There is no relative Effect of SDM and CR Techniques on stress among married and single female students in Kano state colleges of education.

Ho.8 There is no relative Effect of SDM and CR Techniques on stress among married female students in Kano state colleges of education.

Ho.9 There is no relative Effect of SDM and CR Techniques on stress among single female students in Kano state colleges of education.

1.6 Basic Assumptions of the Study

The study was conducted based on the following assumptions:

1. That SDMT may affect the stress of single female students in Kano state colleges of education.

2. That SDMT may affect the stress of married female students in Kano state colleges of education

3. That CRT may affect the stress of married female students in Kano state colleges of education.

4. That CRT may affect the stress of single female students in Kano state colleges of education.

5. That SDMT may have effect on stress among married and single female students in Kano state colleges of education.

6. That CRT may have effect on stress among married and single female students in Kano state colleges of education.

7. That SDM and CR Techniques may have relative effects on stress among married and single female students in Kano state colleges of education.

8. That SDM and CR Techniques may have relative effects on stress among married female students in Kano state colleges of education.

9. That SDM and CR Techniques may have relative effects on stress among single female students in Kano state colleges of education.

1.7 Significance of the Study

The findings of the study will hopefully be beneficial to the female students, counselors, educators, curriculum planners, lecturers, families as well as researchers.

For enhancement of their academic success and general health and wellbeing, this study is also expected to provide an insight in to stress, with particular reference to general awareness on its negative effects among the married and single female students in colleges of education.

Furthermore, looking at the challenges faced by female students, the findings could hopefully enhance stress management among them, especially by considering their expected role of becoming teachers, in the near future. Thus, they could hopefully cope and adjust to stressful environmental circumstances inclined to the previously discussed problems like those of domestication, the patriarchal nature of the African culture, denial of right or freedom to appropriate decision making even on career and occupational choices as well as other persona-social concerns, combining studies with family responsibilities, financial pressure and also rapid growth in adolescence and menopause. Thus, they could hopefully be able to cope with their stress in accomplishing their daily life schedules both at home and school. This in essence can enable them to experience the beneficial effects of increase in sense of purpose, appropriate use of time/management, improved mental and physical health as well as improved relaxation and self confidence.

The study is similarly hoped to facilitate educators and curriculum planners to include both SDM and CR techniques into the curriculum in order to assist students realize stress negative effects and coping strategies which could essentially improve academic performance among others.

By considering the numerous aforementioned problems inclined to female education, the students could hopefully be helped by their counsellors to manage their stress through these techniques because implementations of such new findings could significantly reduce redundancy and likewise serve to them as motivators. Such variety of techniques could as well give them

more opportunity in helping their clients for they could feel more engrossed in their helping profession.

Lecturers could similarly benefit if the students happen to cope with their stressful encounters adequately, for they can be able to control their large numbers which could lead to improved teacher-student relationship.

The conducive stress treated atmosphere could as well enhance their families' mental and physical health in the sense that they could (to some extent) be able to accomplish their tasks more effectively within their family cycles.

Researchers may also find the study significant when it comes to reviewing of related studies, among others.

1.8 Scope and Delimitation of the Study:

The scope of this study was to find out the effects of SDM and CR techniques on stress, which is one of the alarming health-inclined problems among female students of the Colleges of Education in Kano state. Specifically, the study was limited to investigating effects of SDM and CR as techniques of stress treatment through group counseling exercises despite the fact that other techniques like Rational Self Analysis, Stress Inoculation Training, Goal Setting Technique and Problem Solving could ideally be equally effective. To obtain the sample of the study, only N.C.E. II married and single female students were selected from two COE in Kano state out of the existing three (3),though many students within the state's rural and urban institutions as well as beyond are found exhibiting some stress symptoms.

The data was collected within seven (7) and eleven (11) weeks for SDM and CR techniques, respectively.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, the reviewed relevant works to the present study were conducted under the following headings and subheadings- Conceptual Frame-work: Concept of Stress, Concept of SDM and Concept of CR; Theoretical Frame-work: Theories of Stress, Theories of SDM, Cognitive Behavioural Theories; Theory of CR; Review of Related Literature; Summary of Literature Review.

2.2.1 Concept of Stress

The word stress as stated by Selye (1976) is from a Latin root, meaning hardship. There is no precise definition of stress due to its high subjective phenomenon that differs for each individual (Selye, 1976). This could be due to the fact that people respond to stress differently because things that are distressing to some, can be pleasurable to others. Hence, stress can be moderately defined based on stimulus or as a response, while the cognitive definitions focus more on perceptions which encompasses a whole spectrum of interacting factors inclined to stimulus, response, cognitive appraisal of threats, psychological defenses and the social milieu. That is why the definitions vary among different experts (Greenberg, 1999). Selye (1976) and (1980) has similarly disclosed difficulty in finding an adequate definition of stress, even among professionals.

The definition of stress according to Selye (1976) is considered as peoples' physical and emotional reactions through life changes and experiences that could have either positive or negative effects. It also refers to arousal of specific responses inclined to physiological systems and elicitation of behaviours that are harmful (McEwen, 2000). Stress is also considered as a

combination of a stressor, stress reactivity and strain (Greenberg, 1999).In another definition, it is regarded as a primary physiological reaction to certain threatening environmental events (Lazarus & Folkman, 1984) and (Selye, 2012). Stress is also referred to as the relationship between a person and the environment which he/she appraises as taxing or exceeds his/her resources and thus, results to endangering his/her wellbeing (Lazurus & Folkman, 1984b) and (Ursin & Eriksen, 2002). According to Davis (2000) stress involves both emotional and physical strains, caused by response to pressure from outside world. Bickford (2005) similarly defined it as body's reaction to sudden environmental changes.

The postulation of Canadian Centre for Occupational Health and Safety (C.C.O.H.S.) (2000) is that stress is the body's way of responding to any kind of demand, caused by both good and bad experiences. Health and Safety Executive (HSE) (2007) presented the definition as the adverse reaction people have to excessive pressures or other types of demands placed on them. Another one by The Patient Education Institute (P.E.I) (2010) is noted as the body's way of responding to any kind of demand, positively or negatively. La Montagne, Keegel, Louie & Ostry (2010) regarded it as the external forces that impinge on the body. Karth (2007) gave the definition as the body's nonspecific response to a demand placed on it.

A cognitive definition by Palmer, Cooper and Thomas (2003) and Alkan (2004) is noted as a situation which occurs when one perceived that the pressure exceeds one's perceived ability to cope. Palmer and Dryden (1994), Froggatt (2003) and Corey (2004) indicated it as a condition or feeling experienced when one perceives that demands exceed the personal and social resources that one is cable of mobilizing. Maisamari (2003) and Gladding (2003) presented it as the body's psychological response to a perceived demand or threat. Lazarus and Folkman (1986) considered it as the nervous tension that results from internal conflicts out of a wide range of

external situations. To Krohne (2002) stress is referred to as any stimulus or change in the external or internal environment that disturbs homeostasis, which under certain condition can result to illness. Selye (1976a) and Ibrahim (2006) regarded it as a state manifested by a specific syndrome which consists of all the nonspecifically induced changes within the biological system. The above explanations imply that stress is not a disease and can as well turn out to be possess some health inclined advantages ("eustress") which motivates or aids to higher performance levels or goals' achievements. As such, stress could be a natural life companion that occurs whenever people happen to encounter some significant life changes, whether positive or negative. Therefore, it could lead to mild, severe or even re-occurring series of illnesses, referred to as "distress". In a nutshell, it is only when it becomes intense or goes on for some time that it could lead to mental or physical ill health.

2.2.2.1 Anxiety

Since stress relates to daily life events, anxiety could be noted as one of the most distressing emotions felt by numerous people. Anxiety, usually referred to as "severe fear or nervousness" is noted as a feeling commonly experienced when faced with stressful life events (Krohne, 1978). That is why Greenberg (1999**),** Ibrahim (2006) and Mayo Clinic (2013) disclosed that people experience anxiety in some stressful situations. KCHC (2010) also cited that disturbing emotional feelings usually predispose individuals to stressful experiences as a result of internal life events like feelings and thoughts, coupled with habitual behavior patterns.

2.2.2.2 Risks of Stress

According to Moran (2010) people evaluate stress as a real or imagined danger when resources are less than the perceived demands. For example, a real danger could be where an individual lacks means of needs' satisfaction, while the imagined one could relate to feeling

condemned due to fear of failure in important life events. Thus, it is hard to think of any disease in which stress cannot play an aggravating role P.E.I. (2010) Pg 16.

The following are classifications of risks associated with stress:

Environmental Risks

- These risks include unemployment, job uncertainty, unclear role definition, dangerous occupations and shift work.
- Pressure associated with school performances or academic pressure.
- Financial hardships associated with general up keep, health care access and affordability.
- Weight of current affairs involve problems with major disasters, reported crimes, war, environmental degradation and bribery and corruption (Patient Education Institute, 2010) Pg 16.

Personal Risks

- They involve relationship difficulties, marital breakdown, resolution of custody issues and child rearing, especially in the absence of extended support, etc.
- Coping with work, needs of partners and those of the family in general.
- Other risks include loss and grief like deaths or serious illnesses of loved ones (Patient Education Institute, 2010) Pg 17.

2.2.2.3 Symptoms of Stress

Stress symptoms differ among individuals due to variations in reacting to adjust or cope with their environmental or situational changes. As such, these varying and specific reactions are referred to as ‘stress fingerprint’’ or “stress print” which can be physical, psychosocial or behavioural in nature, examples of which include**:**

- **Cognitive Aspects-** Include problems of thinking patterns, confusion and disorientation.
- **Physical Symptoms-**Like sweaty palms, muscle tension, racing heart and light headedness.
- **Behavioural Aspects-** Examples include trying to do things perfectly; trying to control events to prevent danger; avoiding situations where anxiety might occur and leaving situations when feelings of anxiety begin to occur.
- **Moods**-Such as nervousness, irritable feelings, anxiousness or panicking.
- **Thoughts**-Include worries, catastrophic thoughts, under-estimation of coping ability, under-estimation of seeking help and over-estimation of danger (Klinic Community Health Centre (2010) Pg 21.

Another classification of these symptoms are-

- **Internal Life Event**

Like fears associated with flying, heights, public speaking, chatting with strangers and repetitive thought patterns. They also include unrealistic or perfectionist expectations, worries about future events like job restructuring and waiting for medical test results.

- **Habitual Behavior Patterns**

They include failing to plan ahead, over scheduling and failing to set or maintain healthy boundaries Klinic Community Health Centre, (2010) pg 25.

2.2.2.4 Classification of Canadian Centre for Occupational Health and Safety C.C.O.H.S (2000)

The Classification of Canadian Centre for Occupational Health and Safety C.C.O.H.S (2000) also noted another classification as-

Table 2.1 Symptoms of Stress by Canadian Centre for Occupational Health (2000)

Physical	Psychosocial	Behavioural
Headaches.	Anxiety.	Overeating or loss of appetite
Grinding teeth.	Irritability.	Impatience.
Clenched jaws.	Sadness.	Quickness to argue.
Chest pain.	Defensiveness.	Increased use of alcohol/ Drugs.
Shortness of breath.	Anger.	Increased smoking.
Pounding heart.	Mood swings.	Withdrawal or isolation from others.
High blood pressure.	Hypersensitivity.	Neglect of responsibility.
Muscle aches.	Apathy.	Poor job performance.
Indigestion.	Depression.	Poor personal hygiene.
Constipation or diarrhea.	Slowed thinking or racing thoughts.	Change in religious practices.
Increased perspiration.	Feelings of helplessness,	Changes in close family relationships.
Fatigue.	hopelessness, or being trapped.	
Insomnia.		
Frequent illness.		

Symptoms of Stress by (C.C.O.H.S, 2000) Pg. 4

2.2.2.5 Moran (2010) Classification is Presented as-

Moran (2010) presented another complementary signs as-

- **Physical Signs-**Include dry mouth, muscle aches, pains, (especially in the neck, shoulders and lower back) high blood pressure, flu, chest pains, sweating, nausea and weight gain or loss.
- **Behavioural Signs-**Are like increase in drug usage, yelling, swearing, nervousness, nail biting, fidgeting and pacing.
- **Mental Signs**-Include difficulty in concentration, decreased memory, difficulty in making decisions, mind racing, confusion, loss of sense of humour, inattentiveness and bad dreams.
- **Emotional Signs**-Include frustration, worry and fears (Moran, 2010) Pg 19.

2.2.2.6 Classification of Royal College of Nursing (2005)

This classification is described as-

- **Emotional Signs-**Such as anger, guilt, hurt, morbid, jealousy, shame, embarrassment, suicidal feelings, fits of rage, tearfulness, deterioration of personal hygiene and appearance, hatred, likes and dislikes.
- **Mental Signs**-Like lack of concentration, difficulty in making decisions, confusion, disorientation and panic attacks.
- **Imagery Signs-**Include helplessness, isolation, losing control, accidents, failure, humiliation, nightmares and poor self-image.
- **Cognitive Signs-**Examples include 'I must perform well', 'life should not be unfair', 'I must have what I want', 'others must approve of me' and cognitive distortions.
- **Interpersonal Signs-**Are like competition, putting other's needs before own, obsequious/sycophantic/submissive behavior, suspicion, manipulative tendencies and gossips.
- **Biological Signs**-Include flu/common cold, lowered immune system, poor exercise and recreation, frequent urination, allergies or skin problems, heart disease, chronic fatigue/exhaustion/burn-out, cancer, diabetes, rheumatoid arthritis, asthma, epilepsy and biologically based mental disorders.
- **Physical Signs**-They include sleep pattern changes, fatigue, loss of sexual drive, infections, dizziness, tingling hands or feet and breathlessness.
- **The Drive for Success-**Modern society is now driven by 'work'. Therefore, personal adequacy equates with professional success, as such, people crave for status and likewise,

abhor failure. Thus, the demand for monetary success or professional status is simply overwhelming.

- **Behavioural Signs**-Are like restlessness, irritability, accident proneness, sleep disturbances, increased caffeine intake, phobias, impaired speech, poor time management, appetite changes, nail biting, compulsive behavior, nervous cough, low productivity, withdrawing from relationships, decreased/increased sexual activity, frequent crying and poor eye contact (Royal College of Nursing (2005).Pg 3-4.

2.2.2.7 Stressors

What causes people to experience stress is referred to as a stressor. According to Greenberg (1999**)** if a stressor is perceived as threatening, a person may react with anger and anxiety, which could lead to activation of the autonomic nervous system. He further noted that, if the reaction continues to be severe, the resulting physical and psychological strain may cause adverse consequences. That is why McGregor and Antoni (2009) and Kvillemo and Bränström (2011) reiterated on the essence of stress coping strategies.

The classification of stressors presented include the following-

2.2.2.8 External Psychological Stressors Mayo Clinic (2013)

These are indicated to be associated with the following factors-

- **Physical Environmental Stressors**-Such as noise, poor lighting, heat and confined spaces.
- **Social/Relational Stressors**-Like rudeness, bossiness, aggressiveness, bullying, conflicts, lack of social support and loneliness.

- **Organisational Stressors**-Include rules, regulations, schooling, work deadlines, getting a passing grade and culture.
- **Major Life Events**-Such as birth, death, transfer, promotion and marital problems.
- **Daily Hassles**-Involve commuting or mechanical breakdowns and travel schedules.

Internal Psychological Stressors-

These stressors can often be the most harmful as a result of their frequent occurrences. Stressors along this line are anxieties about events that may or may not happen. Thus, the stress response continues to be active as long as a person continues worrying about them. Their examples include-

- **Lifestyle Choices**-Like poor time management; unhealthy nutrition, lack of sleep and overloaded schedules.
- **Negative Self–talk-**

Involve pessimistic thinking, self criticism and over analyzing.

- **Mind Traps-**Like unrealistic expectations, taking things personally, all or nothing thinking, rigid thinking and exaggeration.
- **Personality Traits-**Involve psychological problems like perfectionists and workaholics**.**

Physiological Stressors-These stressors include poor health, physical illness, pregnancy and injury (Mayo Clinic, 2013). Pg 22

2.2.2.9 The Classification of Klinic Community Health Centre (2010)

This classification is noted as:

- **Environmental Stressors**

Environments usually bombard individuals with intense and competing demands in the process of adjustment. Such examples could be weather, bright lights, noise, crowds, pollution, traffic, unsafe or substandard housing and crimes.

- **Social Stressors**

People can experience multiple stressors arising from demands associated with different social roles that they occupy like those of occupational, parenthood, marital and care-giving. Others include deadlines, financial problems, interviews, presentations, conflicts, demand for time or attention, loss of loved ones, divorce and co-parenting.

- **Physiological Stressors**

Situations and circumstances affecting the body can be described as physiological stressors. Such examples include rapid growth of adolescence, menopause, illness, aging, giving birth, accidents, lack of exercise, poor nutrition, and sleep disturbances.

- **Thoughts Stressors**

The brain interprets and perceives situations as stressful, difficult, painful, or pleasant. This signifies that some situations in life are stress provoking though, it is the thoughts that determine, Klinic Community Health Centre (2010) Pg 15-17.

2.3.1 Causes of Stress

Stress is caused by various factors. For example, Kyrou and Tsigos (2006), Katz (2007), Pedersen, Zachariae and Bovbjerg (2010) and Li, Ma, Geng, Qin, Hu and Li(2011)reiterated that causes of stress and its negatively inclined effects can significantly affect the overall performance of an individual, which could result to serious ill-health, both mentally and physically.

2.3.1.2 Generic and Constitutional Pre-disposed Factors Ibrahim (2006)

According to Ibrahim (2006) stress is caused by generic and constitutional pre-disposed factors, described as follows-

- **Endocrine Factors-**Like body changes in hormonal balance.
- **Psychological Factors-**In cases of threats to status/prestige, accidents, frightening experiences, bereavement, interpersonal problems, occupational worries and conflicts.
- **Financial Factors-**Include taxes, bills and unplanned expenses.
- **Organizational Factors-**Like rules and regulations.
- **Emotional Factors-**Such as instability over minor frustrations, which is a situation where individuals develop certain traits of anxiety and distress.
- **Physical Factors-**Include fatigue and infections, among others Ibrahim (2006) Pg 56.

The above points have indicated that stress can as well be referred to as a temporary adaptation process which is accompanied by mental and physical symptoms. This has shown how stress usually occurs as a result of the disturbance in equilibrium between demands and the ability to respond to these demands.

2.3.1.3 Categories of Stressors

Stress has been previously described as the body's response to either positive or negative changes which create some taxing demands. Thus, a person experiences joy after successful accomplishments of various tasks, implying that certain amount of stress in life is indeed desirable. That is why the word "eustress" was coined, referring to positive or good stress. Thus, eustress according to Selye (1974) is an integral part of many pleasurable and motivational activities which relieves monotony as well as spurs people towards worthwhile goals. It is unlike distress, which is prejudicial to health and well-being (Selye, 1950a & 1950b).

2.3.1.4 Objective Categories of Patient Education Institute (2010)

Three objective categories of stressor according to Patient Education Institute (2010) are presented as follows-

- **Accidental Hassles-**These are temporary experiences but which can significantly lead to stress. Examples include losing a house key, having a flat tyre or lateness.
- **Major Life Challenges-**These can be either positive or negative. The positive ones relate to graduation, marriage, getting a job, starting a new business and birth of a baby. The negative ones on the other side relate to death in a family, losing a job and divorce, among others.
- **Ongoing Problems-**Include stressful situations such as unhappy marriage, unstable or unsuitable job, poor relationship with family members or with a co-worker and debt accumulation (Patient Educational Institute, 2010) Pg 33.

2.3.1.5 Classification of KCHC (2010)

The classification of KCHC (2010) is described in two forms, indicated as:

- **Negative Personal Stressors-**

They can include losing contacts with loved ones, being abused or neglected, filing for divorce, separation from a spouse or a committed relationship, unemployment, children's and legal problems, substandard housing, job insecurity, death of a family member, hospitalization (oneself or a family member), injury or illness (oneself or a family member) and bankruptcy.

- **Positive Personal Stressors-**

They can include job promotion, starting a new job, marriage or commitment ceremony, buying a home, having a child, holiday seasons, retiring, taking educational classes or learning a

new hobby. These have evidently indicated some positive aspects or healthy qualities of stress, KCHC (2010) Pg 27.

2.3.1.6 Categories of Stressors by American Physiological Association (APA, 2005)

These classifications are based on three categories, namely:

- **Acute Stress**

This is the most common form of stress which comes from demands and pressures of the recent, past and anticipated demands as well as pressures of the near future. In small doses, acute stress is thrilling and exciting. Because it is short term, it does not have enough time to do the extensive damages. But too much is exhausting and can even lead to psychological distress, if being overdone on short-term bases.

- **Episodic Acute Stress**

Lifestyle and personality issues are so often ingrained and habitual with those suffering from episodic acute stress, that they see nothing wrong with the way they conduct their lives. They blame their woes on other people and external events. Frequently, they see their lifestyles, patterns of interacting with others and ways of perceiving the world as part and parcel of who and what they are. Sufferers can be fiercely resistant to change.

The symptoms of episodic acute stress are: Extended over arousal, persistent tension, headaches, hypertension, chest pain and heart disease. Treating episodic acute stress requires intervention on a number of levels, generally requiring professional help, which may take many months.

- **Chronic Stress**

Chronic stress as (APA) (2005) reiterated stems from traumatic early childhood experience that get internalized and remain forever painful. Chronic stress comes about when a person never sees a way out of a miserable situation. It exists as a result of a created view of the world or a belief system that causes unending stress for the individual. It is the stress of unrelenting demands and pressures for seemingly interminable period. With no hope, the person gives up seeking solutions, which leads to profound effects on personality. The worst aspect of chronic stress is that people get used to it or even forget that it is there. They nonetheless ignore that it is chronic, because it is old, familiar and sometimes almost comfortable. Thus, they wear down to a final fatal breakdown, which kills through violence, heart attack, stroke, cancer and perhaps, even suicide. That is why Ibrahim (2006) proposed that stress tends to have cumulative effects on individuals and that sometimes minor series of these experiences coupled with infections or fatigue may lead to a developed state of tension and anxiety. These cumulative effects may also result to burn-out, a severe and critical health condition. This corresponds to the opinion of De Longis, Folkman and Lazarus (1988) who posit that if left uncared, the extremity of stress can lead to numerous critical or even permanent unhealthy conditions.

The symptoms of chronic stress are difficult to treat. Since personality or deep-seated convictions and beliefs must be reformulated, recovery therefore needs active self-examination that often requires professional help with extended medical and behavioural treatments. This is because physical and mental resources are depleted through long-term attrition. Thus, it could be logical to admit that CR technique could assist the stressed female students to reformulate the depleted physical and mental personality resources inclined to their deep-seated stressful convictions and beliefs.

2.3.1.7 Classification of Eustress and Distress-

Eustress/Positive Stress

A certain amount of stress in life is desirable because as noted earlier, it is not all stress that is detrimental. Eustress assists in successful accomplishments of various tasks or assigned responsibilities and this occurs when the stress level is high enough to motivate a person into action in order to achieve his/her goal. Thus, eustress in other words provides a sense of urgency and alertness needed for survival when confronting threatening situations. Appropriate amount of it can therefore trigger passion for work, tap latent abilities and even ignite inspirations (Froggatt, 1997) and (Raj, 2009). Krohne (2002) also noted that although sometimes stress is of crisis proportions but it is not always of that severity. Greenberg (1999) corroborated by reiterating that positive stress is healthy and prophylactic because researchers have confirmed that an optimal amount of it (not too much and not too little) is pleasurable(Moran, 2010).

- **Characteristics of Positive Stress**

These characters according to M.C.C.H.C (2010) are that

- It motivates and focuses energy.
- It is short-term.
- It is perceived as within individuals' coping abilities.
- It creates feelings of excitement.
- It improves performances, M.C.C.H.C (2010) Pg 20.

Stress could therefore motivate individuals to become more productive and constructive though, it can be destructive when response to it becomes too strong or accumulated.

Characteristics of Negative Stress

- These characters according to M.C.C.H.C (2010) are closely associated with problems inclined to anxiety that can also be-
- Experienced within a short or long-term duration.
- Perceived to be out of an individual's coping ability.
- Inclined to unpleasant or negative feelings.
- Associated with decrease in an individual's general performance.
- Associated with mental and physical ill-health, M.C.C.H.C (2010) pg. 22

2.3.1.8 Classification of Lazarus (1999)

According to Lazarus (1999) stress can be caused by both good and bad experiences. Selye's work proposed by Holmes and Rahe (1967) also notified that critical life events, regardless of their specific (positive or negative) qualities, stimulate changes that produce challenges to organisms. They also noted that changes in habits, rather than the threats or critical events, can as well stimulate changes that produce challenges to the organisms. However, Thoits (1983) noted that there has been little empirical support for this theoretical driven and exhibited postulation.

Regarding these experiences and changes, Selye (1976) explained that when under threat, an individual's body releases a rush of adrenaline chemicals into the blood in order to allow a 'flight' or fight' response. That is to give a push needed to fight the threat or to run away from it. Medical research also suggests that some hormones are released as part of the body's automatic and innate "flight or fight" stress response, which provide quick energy to cope with emergencies and exigencies (Ibrahim, 2006). He similarly emphasized that these hormones often build and without release, contribute to wear and tear. Another description indicated by Davis

(2000) is that stress hormones often build and without release, contribute to numerous health problems. In a similar vein, McGregor and Antoni (2009) and McGrady (2010) corroborated by declaring that individuals' coping abilities are challenged when stressors become accumulated by demanding for physical or psychological outlets. This corresponds to the views of De Longis, Folkman and Lazarus (1988) who disclosed that if left uncared, the extremity of stress can lead to numerous critical or even permanent health problems. That is why Ibrahim (2006) reiterated that stress tends to have cumulative effects on individuals and that a times, minor series of these experiences coupled with infections or fatigue may lead to developed state of tension and anxiety. This is believed to result into burn-out or severe conditions that could affect health and lead to unhappiness. This is an indication that excessive stress can inhibit the body's immune system as well as directly impair the functioning of key body systems (John & Ross, 2003), (Jones & Bright, 2007) and (Katz, 2007). Stress is therefore usually believed to increase an individuals' susceptibility to illnesses as well as exacerbates such illnesses or even protracts recovery (Ibrahim, 2006).

From this classification, Lazarus (1999) further noted that psychological stress cannot be solely confined to the environment or just as a result of personality characteristics. Instead, he acknowledged stress to be dependent on a particular kind of 'person-environment-relationship', as such, the struggle to adapt to life, may be termed stress. This is an indication that Lazarus and Folkman (1984) disagreed with the theoretical classification of Selye (1974) where 'destructive' stressor is distinguished by 'anger and aggression' while the 'constructive' type on the other hand is being distinguished by 'emotions associated with positive striving and empathic concerns'. Thus, on the contrary, Lazarus (1999) suggested something further by presenting another description of three specific classifications described as

- **Harm/Loss-**The harm here refers to 'psychological damage' or loss that 'has already happened'.
- **Threat**-Is that which focuses on harm or loss which has not yet occurred but is likely to, in the near future. In other words, this refers to anticipation of harm that may be imminent.
- **Challenge**-Sees that, difficulties may be overcome after encountering hardship when something needs to be gained. In other words, challenge results from demands that a person feels confident at mastering.

2.3.1.9Negative Effects of Stress

The Common Negative Effects of Stress Include the Following-

On the Body	On Mood	On Behaviour
• Headache. • Muscle tension or pain • Chest pain. • Fatigue. • Change in sex drive. • Stomach upset. • Sleep problems.	• Anxiety. • Restlessness. • Lack of motivation or focus. • Irritability or anger. • Sadness or depression.	• Overeating or under eating. • Angry outbursts. • Drug or alcohol abuse. • Tobacco use. • Social withdrawal.

Mayo Clinic Medical Centre (2013) Pg. 26

2.3.2.1 Stress Response: Uniqueness in Experience and Perception

Froggatt (1997) and Davis (2000) considered stress as a natural life companion that occurs when encountering some significant life changes, be it positive or negative. Thus, stress can come from any situation or thought that makes a person feel frustrated, angry or anxious. It can

as well occur in form of eustress, a situation or thought that makes one feel or become motivated. This is because as noted earlier, some amount of it can trigger passions for tasks accomplishments and latent abilities, thereby igniting inspiration. Thus, stress could serve as a positive contributory factor, a challenge or as a pressure at enhancing life performance and productivity (Davis, 2000). As such, response to stress is just like an individual's fingerprint which happens to be unique, despite having a lot in common with the fingerprints of others. For example, public speaking, meeting with a boss or job interviews are stressful situations for most people though, to others it is exiting. Thus, one person's stress is therefore another person's stimulus! And vice-versa. Hence, a number of ways to reduce and manage stress are available, since there is no single solution or remedy (Murray, 2005).

When something happens, there arises an automatic mental evaluation of the threatening situation where a person decides on how to deal with it as well as the skills to apply. As such, if he/she decides that the demands of the situation outweigh the skills he/she has, then he/she labels the situation as "stressful". If he/she on the other hand decides that the coping skills outweigh the demands, then he/she sees it as a challenge, thus, not perceived as stressful. Therefore, how people perceive a stress provoking event and how they react to it, determines its impact on their health (KCHC, 2010). Life events therefore, may be seen as stressful where an individual responds in a manner that may have a negative effect on his/her physical, mental and social wellbeing (Lazarus & Folkman, 1984) and (Anderson & Seniscal, 2001). Moreover, stress becomes more stressful when thoughts about it are distorted and amplified. This is because the nervous system acts as if that is what is really happening (K.C.H.C., 2010).

This could be why people in distress may "take out" their frustration on those around them. Others may keep their feelings to themselves and experience a sullen gloomy feeling or

otherwise remain isolated from others (Davis, 2000)**.** These have simply indicated the different degrees to which people perceive and also react to situations, which also reflects on the need for different applications of specific coping skills. That is why Krohne (1978) pointed out that no two individuals will respond exactly the same way to a given situation.

2.3.2.2 Individuals' Reactions to Stressors

Greenberg (1999) noted stress response to be uniquely perceived as well as experienced. The descriptions of these differences as he postulated are that

i. People differ in reactivity, which refers to the degree of change in responses as a result of the stressful experiences.

ii. Reactivity to the stress can cause vulnerability to illness.

iii. The reactivity affects personality.

iv. The reactivity affects general health and wellbeing.

2.3.2.3 Gender Differences in Stress Reactivity

Differences are found between the way males and their female counterparts cope with their stressful experiences. According to Torkelson and Muhonen (2003) and Greenberg (2011) these differences occur as a result of the natural disparity between their feminine and masculine inbuilt. These differences are described as:

2.3.2.4 Tend and Befriend Females' Stress Reactivity

Taylor et al (2000) have found that females are predisposed to exhibit nurturing activities designed to protect themselves and others from stress. Day and Livingstone (2003) corroborated by indicating that females use social groups more than their male counterparts as a response to stress. According to Iwasaki, MacKay and Ristock (2004) they tend to experience stressors

emotionally. That is why researchers noted that they tend to be more emotionally nurturing and socially involved than men (Greenberg, 2011). As such, they considerably express their emotions and care more about people as well as seek more social support (Nelson & Burke, 2002). These activities are termed 'Tend and Befriend' which goes contrary to the stressful reactions of their male counterparts.

2.3.2.5 Flight or Fight Response of Males' Stress Reactivity

The males on the contrary exhibit more risk-taking strategies. When faced with danger or in responding to stressful situations, they seem to be assertive, calm as well as apply some certain action skills (Burke, 2002). According to Taylor et al, (2000) men usually employ more of a flight-or-fight response for defense as well as perceive things as beyond their full control. That is why they focus on themselves alone, with less interest and need to involve others (Burke, 2002).

This explains that the females' stress reactions and behaviours are more humanly-inclined with regards to need for supportive assistance, unlike the courageous reactions of their male counterparts which relate more to risk associated reactions. That is why Krohne (1978) indicated some existing differences in stress reactions, with regards to gender.

2.3.2.6 Stress Prevention Measures

As noted earlier, individuals become stressed due to a number of reasons. As such, stress has been described as an ongoing process which is an inevitable life experience. Since stress is the mind and body's reactions to changes, any potential issue (whether positive or negative) that causes a stress reaction is therefore referred to as a stressor (Greenberg, 1999) and (Turner & Raphel, 2012). Thus, stress possesses some positive effects when it assists constructively in

dealing with several problems including accomplishments of variety of tasks. That is why the CCOHS (2000) and United Kingdom Health Executive (UKHE) (2000) reiterated that stress is not a disease but that it could lead to mental and physical ill health when it becomes intense or goes on for some time. Davis (2000) corroborated by describing that persistent stressful experiences can result to negative health effects. In the same vein, Selye (1956) described it as a non specific body response to any demand placed upon it. In a nutshell, the implication of stress preventive measures proposes that people have to in the same physiological manner adapt to 'positive life experiences' (such as job promotion) and likewise those which are 'negative', (as in cases of deaths or illnesses of loved ones). Therefore, with increasing emphasis on stress prevention, many pioneering experts have provided several preventive measures, including advice and techniques of both body and mind, such as-

2.3.2.7 PEI Stress Recommended Prevention Measures

According to Chao (2011) stress is a situation beyond a person's available resources and coping abilities. Thus, finding various preventive ways become necessary. Following are the preventive measures indicated by Patient Education Institute (2010).

- **Avoiding Controllable Stressors**

Since many stressful situations can be under control, they can as well be avoided completely. An example could be where an individual agrees not to shop together with his/her spouse, if it is found to be stressing.

- **Planning of Major Life Style Changes**

When an individual for instance, plans on graduating, getting married and taking a new job at the same time, he/she is in a lot of good but overwhelming changes when they happen together. It therefore becomes imperative to plan out such major changes wisely in order to avoid stress.

- **Realising of Limitation**

There is need for an individual to learn how to say 'NO' to new responsibilities that he/she is not sure of fulfilling. It is easier to do so, rather than to leave them unaccomplished. It is also healthier as well as fairer to all those involved in these responsibilities.

- **Prioritizing Tasks**

It is very important to prioritize, when faced with more than one task. An individual is expected to do one thing at a time. It is better and healthier to accomplish a task very well and without rushing the self, before proceeding to the next.

- **Improving Communication**

An individual can significantly prevent relationship stress at home and work place, among others, if he/she listens carefully, smiles, admits when wrong, gives complements as well as expresses feelings and thoughts sincerely and assertively.

- **Sharing of Thoughts**

An individual should share his/her thoughts with a spouse, parents, children or friends as well as get advice. He/she should ponder on such and follow them, if they make sense. Such companions may see some ways out for him/her which he/her might not have initially thought of.

- **Developing Positive Attitude**

Without a positive approach to life, preventing and managing stress becomes very difficult. If an individual thinks that he/she is not in control, he/she is setting him/herself up for failure and more stress.

- **Rewarding of Self**

Treating the self successfully overcomes challenges. Part of such reward could involve relaxation like taking a vacation for big achievements or special treats for smaller ones**.**

- **Exercises**

They are among the most effective ways of preventing stress. Starting things by being more physically active and having exercise for at least thirty (30) minutes every other day is highly recommended.

- **Eating and Sleeping Well**

Good sleep and nutritious three square meals can help in developing a healthier life style as well as assist in prevention (to some extent) of stress.

2.3.2.8 Character Strength

Developing positive attitude is another preventive measure. Character, according to Devi (2011) is doing what is right where nobody is looking. Character is also believed to determine what exactly an individual is. Hence, the true test of character is not how much people know how to do things but how they behave when they do not know what to do. Therefore, reflection on an individual's character is his/her thoughts, actions, habits and behavior. This explanation indicates that exercising positive attitude through thoughts, actions, habits and behaviours can effectively help in coping with negative stressors (Devi, 2011).

2.3.2.9 Goal of Stress Management

Researchers illustrate that with a great deal of stress, a great deal of illness occurs and with only a minute amount of stress, a great deal of illness can still occur (Greenberg, 2011). Coping mechanisms as Arnold (1960), Janis (1958), Lazarus (1966 &1974) further emphasised are important mediators of stress outcome. Weis (2008) corroborated by highly recommending the need for effective stress relieving exercises. That is why some people consider systemic approaches to critical life events. However, stress as noted earlier, cannot be totally inexistent in life because without joyful and motivating stressors, life would certainly have been dull. That is why Greenberg (2011) regarded it as stimulating as well as welcoming.

In the most accurate meaning therefore, the goal of stress management is not about learning how to avoid or escape the pressures and turbulence of modern living; it is about learning to appreciate the body's reactions to these pressures as well as on learning how to develop skills in order to cope for appropriate body adjustment. Thus, the major goal of stress management is to limit the harmful effects, since it is a life companion. This relates to the assertion of Aldwin (2000) who stressed on the importance attached to effective stress management. Similarly, Varvogli1 and Darviri (2011) also pointed effective management of stress through cognitive, behavioural and psychological management strategies.

Lazarus (1991) on the other hand noted that many stress interventions fail as a result of treating individuals as if they are all alike thus, neglecting the importance attached to 'stress fingerprint'. As such, for effective maintenance of life's quality and vitality, the best solution is to seek individually appropriate coping strategies. The protest raised by Lazarus (1991) coincides with that of Devi (2011) by reiterating on the need for an individual to try to find out his/her:

- Types of stressors.
- The anticipated timing of occurrences of these stressors.
- The interrelationship of these stressors.

2.3.3.1Stress Management Techniques

Stress, as was emphasized by Benson and Klipper (2000), Anderson and Seniscal (2001) and Mc. Grady (2010) is an ever-present phenomenon, since it is inevitable in life. It was similarly indicated that stress symptoms if left unchecked, can affect thoughts, feelings and behaviors (Andres, 2011) and (MCCHC, 2013). Hence, provision of effective stress treatment measures for students' academic success and general wellbeing is regarded as very crucial (Melanie, 2005), (McGregor and Antoni (2009). Such strategic measures according to Boss (2002) and Andres Larraz (2011) can as well reduce health care costs.

Among the stress coping strategies presented are:

2.3.3.2 Stress Management by Deckro, Ballinger, Hoyt, Wilcher, Dusek, Myers, Greenberg, Rosenthal and Benson (2002) and Stanley (2012).

- Identifying the stressor(s).
- Managing of thinking, while interpreting the stressors.
- Considering the consequences of actions.
- Hanging the thinking to healthy ways of coping or management, Deckro et-al (2012) Pg 196.

This means that recognizing common symptoms of stress usually assists in getting clues that could help in the treatment (MCCHC, 2013). As such, once these symptoms are recognized,

stress can as well be adequately treated (Matheney, Curlette, Aysan, Herrington, Gfroerer, Thompson & Hamarat, 2002). This is why Weiss (2003) emphasized on the need for healthy life and living which (Boss, 2002) believed could be successfully achieved by seeking effective treatment strategies.

2.3.3.3 Stress Management Strategies of Selye (1936).

Greenberg (1999) posits that Selye (1936) did not earlier specify the notion of stress management but that his recent model, Selye (2008) indicated that stress could be coped with through:

- Removing stressors from life.
- Preventing certain neutral events from becoming stressors.
- Developing proficiencies in dealing with conditions that are wanted to be avoided.
- Seeking relaxation or diversion from the demand, Greenberg (1999) Pg 277.

2.3.3.4 Stress Management of Wheeler and Devi (2011)

Proper path for smooth and healthier life as indicated by Wheeler (2007) and Devi (2011) could be achieved through:

- Eliminating conflicts.
- Exercising the right controls.
- Making correct choices or decisions, Wheeler (2007) and Devi (2011) Pg 31.

That is why Brower and Stanley (2012) noted that, engaging into temporary and negative coping strategies like drug, alcohol addiction, gambling or excessive eating, can potentially create more stressors that could in the long run result to more serious health complications after

the usual experience of the temporary and quick fixes that relieved the stress. These coping strategies portrayed variations of stress responses and their different beneficial effects.

2.3.3.5 Stress Management Recommendations of KCHC (2010)

Acute stress as was earlier discussed is linked with variety of critical health consequences that need urgent interventions. The benefits of stress treatment and relaxation can be best noticed when practiced regularly and for long time durations (KCHC, 2010). Engaging into these interventions therefore highly recommends exercising patience. The ten (10) recommended tips of stress management by Klinik Community Health Centre (2010) are-

- **Planning by Visualising Expected Events**

If a person is stressed out because of giving a presentation or a job interview for instance, there is need to rehearse it repeatedly in order to become familiar with the subject matter as well as gain more self confidence. This tip coincides with the coping hassles of Lazarus (1966), stress life change by Holmes and Rahe (1967) and also the control model technique of Karasek (1979).

- **Thinking Positively**

There is need to take time to put things into perspective, when faced with a difficult situation. Sitting alone in a quiet room and going over the issue in mind could assist in easing such difficult and stressful situations.

- **Imagining Potential Negative Big Events**

If get laid off from work for example, an individual has to try to imagine what could be done about it. The purpose here is not to think negatively but to try to have a back-up plan in case things go differently.

- **Relaxing with Deep Breathing**

Taking a deep breath is a normal body reaction to stress. By repeatedly inhaling slowly through the nose, holding the breath for a few seconds, then exhaling through the mouth, an individual can counteract/neutralise the fast shallow breathing associated with stress.

- **Relaxing by Clearing the Mind**

There is need to force the mind to relax in a quiet place if an individual takes a break, by focusing on one peaceful image or thought. Sometimes, the mind can also be filled with thinking and visualization of favourite moments such as a memorable tour or vacation.

- **Relaxing the Muscles**

Stress causes muscles to become tense. By tightening the different muscle groups with full concentration for some few seconds and then relaxing it slowly, a person can be able to feel the difference of the effective outcome which relieves stress. Same also apply to autogenic relaxation technique, a training that involves a sensation of heaviness, warmth and tingling in the limbs (Luthe, 1965) as well as relaxation responses (Benson & Klipper, 2000).

- **Relaxing by Stretching and Exercising**

Relaxation is a simple, effective and helpful skill that involves regular practices of stretching and exercising skills. It is perceived as the easiest, least expensive and most popular approach to stress management. Relaxation can be exercised anywhere, anytime and whether at daylight or night. Another advantage is that an individual can take the mind off the stressor, while in action. Moreover, the techniques can be self-taught with DVDs or through the internet. Relaxation manages anxiety, anger and depressed feelings. Thus, it controls and improves emotional, physical and general wellbeing (Richardson & Rothstein, 2008) and (Anderson & Seniscal, 2001).

- **Relaxing with Massage Therapy**

Stress can cause muscle knots in different muscle groups. An individual can be helped to loosen the tension through massages and other related therapeutic aids. This corresponds to progressive relaxation, a technique of contracting and relaxing of body muscles (Jacobson, 1938).

- **Seeking Help**

Seeking help in doing things that might be overwhelming is also significant. An individual will be surprised to find that people around might have genuine interest in rendering some forms of assistance because they might have similar problems which had since been satisfactorily resolved.

- **Seeking Professional Help**

Professional help may be necessary for people who become stressed when faced with situations that are normal to others, like in cases of delivering speeches or attending to other similar gatherings. Confronting and conquering these fears are also other good alternatives because avoiding them may not be possible, K.C.H.C (2010) Pg 27-29.

2.3.3.6 Moderators/Mediators Effects on Stress Pearlin, Morton, Elizabeth & Joseph, 1981)

- **Moderators**

Mediators refer to social or personal resources that attenuate the effects of stressors or rather change the situations that create the stressors.

- **Mediators**

These are the stress coping strategies, personal resources and social support with certain effects on stress due to changes made on the behavioral or psychological states in response to the stressors. Researchers, as indicated have theorized certain resources to have mediating effects on

the stress outcomes which relate to coping strategies, personal resources or social support that focus on the following aspects-

- Changing the Situation Causing the Stressors-Like finding a new job, after being fired.
- Preventing a Stressor from Occurring-Like marriage counseling, to prevent divorce.
- Re-interpreting Stressors in a Different Light-Like looking at increased job responsibility.
- Managing the Stress Outcomes-Like meditation in one's daily routine (Pearlin, Morton, Elizabeth & Joseph, 1981) Pg 26-29.

2.3.3.7 Cognitive Transactional Stress Management Strategy by Lazarus and Folkman (1984)

As noted earlier, stress leads to subsequent endangering of general well being. Thus, various life experiences could nudge or shove an individual to disequilibrium. Such experiences could be due to change in temperature, a threat from someone or some other life changes/challenges (Lazarus, 1984).

In this strategy and as was earlier noted, the same stressful situation experienced by different people may result to different reactions, since people interpret situations differently. This interpretation of a stressor according to Lazarus and Folkman (1984) is termed as their 'cognitive appraisal'. Lazarus and Folkman (1984) also emphasized on confrontation, referred to as 'behavioral response' against the stressor. A threatening event can however, become chronic or prolonged if it turns out to be withdrawal from the stressor, which may result to illness or disease. As such, a person can perceive a life situation as stressful, meaning that life is cognitively appraised as distressing. Therefore, where a demand is evaluated as a threat, some

form of adjustment is needed while coping is engaging into a behavior or thought in order to respond to a demand.

This strategy according to Lazarus and Folkman (1984) has two (2) stress coping mechanisms indicated as ‘oriented coping’ and ‘emotion-focused coping’. For example, the response to a demand for an individual who had a difficult final exam due to unpreparedness or lack of talent and as such perceived that as stressful would try to find a successful way out by finding a better mechanism of learning the material, in order to earn a good grade. Lazarus (1984) called this task ‘oriented coping’. On the other hand, it might otherwise mean managing of feelings or accepting that this is a subject in which he/she is not particularly talented, which Lazarus (1984) called ‘emotion-focused coping’.

Engaging into either of these above mechanisms requires an appraisal of the demand. Lazarus (1984) presented three primary categories of appraisal, namely: Primary appraisal, Secondary appraisal and Reappraisal. ‘Primary appraisal’ involves judging how much of a threat is involved, and how important the outcome is. It also involves psychological appraisal which relates to primary appraisal process, where an individual evaluates whether the event is harmful, threatening, challenging or even neutral. Once that primary appraisal occurs, he/she must determine whether he/she has the resources needed to meet that demand. Lazarus called that ‘secondary appraisal’.

Once attempts are made to respond to the threat or to meet the demand, a reappraisal occurs to determine/evaluate whether the response made was effective or otherwise. This is the subjective experience of stress, which is a balance between the primary and secondary appraisal. Likewise, the interaction of primary and secondary appraisal is referred to as emotional reaction to the stressor.

One important form of appraisal is determining how confident an individual is in the management. If he/she is confident, he/she will engage in a behavior or thought to manage it, since he/she believes that what he/she does will be effective. If he/she is not confident, then he/she thinks that it will not work. This is what Bandura (1977) called self efficacy, which is further subdivided into 'outcome efficacy' and 'personal efficacy'. The examples presented here are that, an individual might believe that people can exercise a number of strategies to give up cigarette smoking. That is 'outcome efficacy' and 'personal efficacy' on the other hand is where he/she believes never to succeed in giving up the cigarette smoking, although many people can give it up successfully.

Cognitive strategy as explained above, considers stress to occur as a result of a perceived threat where determination is made by primary appraisal, while secondary appraisal refers to whether the individual has the available resources to effectively respond to that threat. Once he/she responds, he/she evaluates whether the response was effective or not. If it however happened to be ineffective then, he/she has to choose a different response, referred to as reappraisal (Lazarus & Folkman) Pg 23-30.

2.3.3.8 Stress Self Care Strategies of Scott (2007)

Stress is experienced daily and in a number of multiple ways. Scott(2007) emphasized that since people cannot always control the circumstances experienced in life, they can nonetheless handle and control stress by taking proper care of their bodies, souls and minds, in order to be in optimum shape and also to remain healthy. That is why Delongis and Holtzman (2005) reiterated on the need to cope and reduce negative stressors. The following strategies of Scott (2007) can effectively assist in dealing with stressful challenges-

- **Getting Enough Sleep**

Stress can make sleep more elusive due to busy schedules. Since sleep is a very important aspect of life, lack of it can unfortunately lead to negative impact on emotional and physical wellbeing. Thus the need to handle stress through sufficient and peaceful sleep for proper functioning of the body is very essential.

- **Maintaining Proper Nutrition**

Well balanced and nutritious meals are necessary because poor dieting is more vulnerable to stress.

- **Having Regular Exercises**

Exercise has positive effects that assist both physically and mentally. It releases stress and keeps the body healthy by releasing endorphins which increases feelings of overall wellness. Thus, it becomes imperative to practice it regularly as well as appropriately.

- **Maintaining Social Support**

It is beneficial to have people to lean on, when in need. Friends can provide insights when sad or confused. Thus, associating with them helps to have some fun and advice. It is also important to lend supportive ears, when they are in need as well. Social support keeps people healthier and happier and so, creates a buffer against stress. This relates to Borcherdt (2002) with regards to sense of humour. As such, the need to learn how to expand social circle as well as to cultivate supportive friendships is highly recommendable.

- **Finding Hobbies**

Spending time doing a hobby can be relaxing and could as well take the mind off stress-producing thoughts. A hobby like drawing for example can provide a nice relief from stress. Anything that an individual enjoys which can provide some fun and distraction from stress can

work. Greenberg (1999) also noted that, creative as well as productive hobbies or those which build expertise in skills like crafts, gardening, non competitive sports, playing an instrument, writing, singing, dancing, spending time with loved ones, including pets are experiences that give satisfaction and contentment as well as promote feelings of calmness and relaxation. However, a hobby that is too demanding, time-consuming or expensive will probably add to stress (Greenberg, 1999).

- **Pampering of Self**

Taking care of the outer side of the body like a spa treatment for example, can work wonders for an individual's internal state. Thus, regularity in pampering one's self could in essence relieve stress and make life feel great.

- **Keeping the Mind Sharp**

By keeping the mind sharp in taking life challenges, an individual maintains the attitude of considering stress as a challenge, rather than a threat. As such, he/she will be more equipped to solve or handle such challenges. Stress relief memory games for instance, can be fun to play with and could as well assist in managing life stressors.

- **Having the Right Attitude**

Much of what people experience in life can make them feel more stressful or less so, depending on their different points of view. Looking at things from an optimistic frame of mind can not only decrease stress level but can as well bring back more success in life. People can therefore become more optimistic by having the right attitudes. They can even change ingrained negative thought patterns to more positive ones, by using positive affirmations.

- **Processing of Emotions**

Keeping emotions bottled up usually leads to an emotional explosion later on. It is generally healthier for an individual to listen to his/her feelings, process them and try to understand them. He/she should regard them as messengers that tell him/her when something is not right. A great way to process emotions is the act of journaling. By writing about feelings and potential solutions to problems, he/she can reduce stress in his/her life and even see some health benefits.

- **Maintaining Spiritual Practice**

Stress is more stressful when thoughts about it are distorted and amplified because the nervous system has to act as if that is what is really happening. Research shows that a lifestyle inclined to religion or spirituality is generally healthier. Many people according to Scott (2007) use prayer as a major stress reliever and also a strategy for emotional health. Boswell, Kahana, Dilworth and Anderson (2006) similarly noted this effectiveness. This reveals the essence of spirituality at enhancing as well as nurturing of the soul and body Scott, (2007) Pg 60-65.

2.3.3.9 Applying Sense of Humour

Experiences related to 'appropriate application of fun' is enough a reason to relieve stress. Thus, Chapman (2010), KCHC (2010) and Greenberg (2011) indicated humour to be an effective way of releasing stress. Thus, an individual can amuse him/herself as well as amuse those around.

2.3.4.1 Reducing and Managing Stress by Royal College of Nursing (RCN) (2005).

R.C.N (2005) maintained that the following techniques can be used in reducing and coping with numerous stressful experiences-

Lifestyle Management

- Maintaining a balance between work and play.
- The need to plan and use leisure regularly.
- The need to have regular exercises.
- The need to maintain a healthy diet.
- The need to avoid or reduce caffeine and nicotine intake as well as avoidance of negative stimulation of alcoholic drinks which are noted to exacerbate the stress response.
- The need to build and maintain support networks.

Being One's Own Expert

This can be achieved by

- Identifying the main sources of stress.
- Assessing the effectiveness of the current stress strategies.
- Thinking about any new or different strategies that can be applied.
- Trying to anticipate future occurrence of stressful periods and also to plan accordingly, preferably in written forms. Writing the main stresses as well as thinking on how to control the situations. However, if an individual cannot have control, the need to think of how he/she can have influence, is required. If he/she cannot even have such an influence, then the need arises to think of how to accept or become conditioned to such a situation. This is because the essence is to take time in order to be as objective as possible.

2.3.4.2 Thinking Skills

An individual must be aware of unhelpful thinking, for example, 'I must be perfect, I must never make a mistake' or 'I must complete this task today'. It is very important to challenge

inner pressures by finding out more realistic thought patterns like ‘I will do the best that I can today in order to complete this task or “I will do what I can but it is not the end of the world if I do not complete this task today’. Thus, by turning the ‘musts’, ‘oughts’ and ‘shoulds’ into likes and preferences, an individual can learn to identify, control as well as accept what can and cannot be realistic because regular life challenges are inevitable.

Stressful assumptions and generalizations which do not have any proof that guarantees their reliability are also needed to be avoided, such as-

- Mind reading and jumping to conclusions.
- Generalisation, for example, ‘this always happens to me’.

2.3.4.3 Managing of Personal Perceptions of Stress

These can be achieved through-

- Use of constructive self-talk and avoiding self degradation.
- Giving the self ‘a regular pat on the back’-for encouragement and also to show some self concern, affection and care.
- Maintaining a sense of proportion and to also remembering that you have survived some difficulties before, meaning that, the experience is not at all new or beyond survival.
- Thinking about what helped in surviving the previous difficulty is as well important. Through this way of thinking, an individual may get some clues regarding the present situation.

2.3.4.4 Relaxation

An individual should-

- Learn to relax, because (as noted earlier) it is a key to managing stress. Relaxation and sleep tell the brain that the threat has diminished and the flight or fight response can be switched off, so use relaxation techniques to help in sleeping more easily.
- Think and also practice things that have some relaxing effects and are very much enjoyed like-

  - A good book to read.
  - A hobby.
  - A walk in a favourite place.
  - A long soak in a bath.

- Plan to treat yourself (by squeezing out of normal routines) with more simple pleasures.
- Use meditation skills and other complementary alternatives like massage.

2.3.4.5 Physical Outlets

To burn up the excess adrenaline and release endorphins (the feel good hormones), there is need for exercise which is another key to managing stress. If an individual is not used to exercising, he/she can start small, with what he/she enjoys–like regular walks, swimming, gentle work out in the gym, Jogging, bicycle riding and trekking exercises. Recreational sports like skipping, squash, badminton, football and tennis can be good as well. Gardening and housework, which are energetic, can be very beneficial too.

2.3.4.6 Emotional outlets

An individual can

- Cry or apply other forms of safe therapeutic measures to express hurt or anger.
- Off load and also gain a fresh perspective by talking about feelings with supportive friends, family and colleagues, among others.
- If an individual on the contrary is not a talker or feels quite isolated, he/she should write these feelings down in form of letters or diaries in order to remain un-posted.

2.3.4.7 Individual or Group Counselling

- Counselling generally helps in getting regular assistance by way of managing or reflecting on emotional, mental and physical happenings. Stress complexities are therefore not exempted.
- Since Counselling is a general supportive service for any type of life changes or challenges, individuals with stressful feelings that seem out of control could probably be relieved. Their counselors can help them through skillful techniques like relaxation, assertion, time management and thinking.
- Career Guidance and Counselling services may help stressed and frustrated students gain greater awareness of career values and interests. They can also learn to take control of working life, by making choices that meet their needs. Same also apply to gaining more accurate confidence from realization of skills, competencies and personal attributes as well as understanding how these can be matched to a variety of career options.

2.3.4.8 Medical Interventions

Medical interventions also assist (to some extent) in the treatment of stress. Thus, patients can be advised on various treatments and coping strategies together with other self-help measures such as dieting.

Utilising these numerous stress management and educational aspects could hopefully assist greatly, when exercised appropriately R.C.N (2005) Pg 1-5.

2.3.5. Concept of Decision Making

Human beings are generally confronted with daily life events and experiences that need quick and appropriate decisions, varying from simple daily routines to others which require more time and mental efforts or deliberation. Whatever the circumstances and fields of application, it is certain that good decisions lead to good results (Harris, 1998) and (Anderson, 2002). That is why decision making relates to identifying and choosing alternatives, based on values and preferences of the decision maker (Figueira, Greco & Ehrgott, 2004). It is also clarified as a process that requires making suitable choices out of other alternatives (Keeney & Raiffa,1976) and (Balsic, 2013) or a technique used to investigate on selecting appropriate decision from the perspective and experience of the person making the decision (Lisa, Trevor, Jude & Richard, 2005) and (Jigau,2007). Okon (2001) on the other hand sees it as a process where selection is made from two or more possible choices. This implies the need for critical analyses on the numerous available options before identifying the best that fits goals, objectives, desires, values and so on.

SDM is similarly a decision making process that gradually unfolds over time, under the decision maker's planned actions. Thus it is a systematic applied technique with different strategic disciplined approaches inclined to numerous fields related to both scientific and non

scientific fields. It as well relates to psychological and physical areas associated with human bodily images and dietary (King et-al, 2014), marketing methodologies (Zarozny, 2002), decision utilities and also life threatening and constrained situations such as stress (Lollett, Rogove &Scott, 2003). Same also applies to multiple life style behaviours as well as behavioural changes (Schulz, Kremers, Vandelanotte, Adrichem, Schneider, Candel & Vries, 2012).

Among the major benefits of SDM technique according to Miller and Davis (1996) are psychological health and physical relaxation. It also enables individuals to develop improved sense of purpose and self confidence in tasks accomplishments by prioritizing activities based on values.

Pressure associated with school performances, lateness, financial hardship, family problems and nurturing of the children, to mention some (especially in the absence of extended support) can significantly predispose female students to stress. However, they could greatly experience some positive changes or become conditioned to more favourable situations in dealing with such stressful experiences through appropriate use of well developed SDM self designed formats. Hence, SDM in this study refers to a decision made by developing an individually arranged and well planned chronological step by step list of daily life schedules, expected to be implemented uninterruptedly for the treatment of stress. In other words, with the help of these self designed formats, the NCE married and single female students can be assisted to treat their stressful encountering in order to accomplish both the academic and other daily schedules effectively.

2.3.5.1 Conceptual Definitions of Sequential Decision Making

People generally face several situations which require making sequences of actions to bring about favourable outcomes. Hence, specified decision strategies are designed to eliminate unmatched options for most desirable outcomes. That is why Hansson (2005) defined SDM as a division of decision processes into stages that always come in the same order or sequence. SDM according to Barto, Sutton and Watson (1989) and Whiten (2002) is a designed set of tasks, where the consequences of an action can emerge at a multitude of times after the action is taken. They further defined it as a process that involves selecting strategic actions on the basis of both short and long term consequences. Another definition by Barto (1989) and Watkins (1989) is that it is a formulated and dynamic system, where behavior unfolds over time, under the influence of the decision maker's plans. Kristian and Luc (2004), Emma, Bethany, Lihong, Michael and Nicholas (2008), Martijn (2009) and Walsh (2010) similarly gave the definition as the notion of choosing an action to maximize possible long-term reward as well as solving the exploration-exploitation dilemma efficiently. Gelatt (1962) and Pitz and Harren (1980) defined it as a process where an individual identifies an optimal outcome by multiplying the probability and perceived value of different options as well as selecting the option which yields the highest products. Gati and Asher (2001) on the other hand presented it as the decision making with exhaustive search that ensures consideration of all alternatives. According to Janis and Mann (1977) it is a technique bounded by rationality of human cognition, with a tendency to select satisfying or **"**good enough", rather than optimizing choices.

In a nutshell, SDM can simply be defined as a kind of decision with strictly defined sequence of stages, expected to be appropriately observed or implemented uninterruptedly, for the best choice or outcome. It therefore presumes consecutive decision stages occurring in

succession, instead of being undertaken simultaneously or concurrently. Thus, it can be noted that SDM can satisfactorily assist the female students in coping with their tress, since it is capable of solving different problems, ranging from seemingly simple ones to those of high complexities.

2.3.5.2 Counselling Rules of Decision Making

Regarding their clients' decision making, counsellors need to be aware of-

i) The personality resources activated in the decision-making.

ii) The specific tendencies of certain categories of people.

iii) The specific tendencies of certain activity fields.

iv) Being capable to indicate their effects on the clients.

v) Helping clients discern their own advantage and possibility of growth.

vi) Being capable to indicate their effects on the society.

vii) Prevention of self involvement into the clients' position while processing the decision, even if the situation is clear from a formal or theoretical point of view (Chiru, 2007) Pg. 7.

This shows that counselors can help their clients with some clues to enable them identify, remember, imagine and reflect backward and forward in order to learn from the expectations of the future as they learn from the past. Thus, they can benefit by creating changes as well as responding to these changes. As such, through provision of professional assistance, students can be guided to treat their daily life stress, although tempting the path of rational decision takes into cognizance a multitude of consequences which significantly rely on the clients' interests and psychology, with particular reference to emotional aspects.

2.3.5.3 Challenges Faced by Counselors in Decision Making

Individuals usually face certain life situations that need important decisions. Such big stake life decisions for example relate to selection of careers, job pathways, life partners, residential areas and medical interventions. Thus, when a decision or choice is made between options, an individual tries to obtain as good an outcome as possible (Brown, 2002), (Elliot, 2005) and (Emma, Bethany, Lihong, Michael & Nicholas, 2008). According to Dawes and Beach and Mitchell (1978) decisions made without planning, may lead to risks, while Hogarth (1980) and Brans and Vincke (1986) associated such decisions with failure or rather a few chances of success. This has proven the need to take appropriate plan in making any big stake life decisions (Tversky, Amos & Kahneman, 1986) and (Triantaphyllou, 2000).

This clearly indicates that counselors need considerable and effective 'course of action' in dealing with their clients' (big stake life) decisions, to enable them move on with clear images of what needs to be done and with improved self-perception (Bright, Pryor & Harpham, 2004) and (Walsh, Goshin & Littman, 2010). As such, it becomes a challenge to a client when faced with a difficult dilemma, since there is rarely one right answer to such complex circumstances. The need for effective systematic application of decision models to help the clients control, manage or resolve these complex dilemmas by the counselors is therefore essential. It also applies to the need for counselors' critical understanding of their clients' momentary dissatisfactions and also to consider their interests and general welfare (Chiru, 2007). The implication here is to enable them provide the clients with adequate professional explanations for their chosen courses of action. This is what Gelatt (1989) and Brans and Marechal (1994) referred to as the crucial part of the counselor and was also corroborated by Brans, Vincke and Marechal (1986)and Phillips (1994) who referred it as a wise decision making. This has shown

why professional counsellors implement different courses of action with effective and sound ethical modalities in addressing their clients' dilemmas (Miller & Davis, 1996).

Lai, Bo and Cheung (2002), Leyva-López and González (2003) and Pynadath and Tambe (2002) on the other hand reiterated on the benefits of exercising these systematic applications within groups, while Gass and Rapcsák (1998) and Miller and Miller (2005) noted the beneficial effects of both group and individual decision making.

Through adequate use of these systematic modalities and effective application of professional counseling, several views related to different suitable solutions could be raised by the school counselors which can essentially assist students in a number of ways such as those predisposed to stress.

2.3.5.4 Reasons for Complexities of Some Decision Making over Others

The answer to the question of why some decision making is harder than others is not simple but can however be reduced to one principal cause which is 'the uncertainty about the outcome of the decision'. More precisely, it is the uncertainty about the cost or reward that will be generated by the decision, whether in a near or far future. However, this could also be due to the role played by chance events (Bright, Pryor & Harpham, 2004)or inappropriate selection of decision strategies (Beach & Mitchell, 2005).

The uncertainty according to Paquet (2006), Izadi (2007) and Boularias (2010) is generally caused by-

i) A limited capacity of accurate modeling of all the parameters/limitations.

ii) A limited capacity of accurate modeling of all the variables related to the decision-making problems.

iii) An inherent indeterminacy within the problem itself such as predicting the behavior of a person.

This uncertainty according to Boularias (2010) can also be caused by-

i) Limited capacity of enumerating and processing of all the possible decision outcomes.

ii) High number of available choices.

iii) Duration of the decision's impact on the future, (Boularias, 2010) Pg.51.

These indicate the need to minimize complexities and simplify the situations in order to make effective predictions for best possible outcomes. It also implies making appropriate use of variables, time and models, so as to discover the natural phenomenon in a better desirable process.

2.3.5.5 Factors Characterising Sequential Decision Making Tasks

A decision maker undergoes a process of successive observations before reaching the final decision. The significant features that distinguish individuals in decision making according to Einhorn and Hogarth (1975) include individual differences on knowledge, effects of social factors as well as ability in tasks accomplishments. Other features according to Payne, Bettman and Johnson (1988) are characters of alternatives such as variations in tasks priority and the weights inclined to specific attributes of these tasks.

According to Einhorn and Hogarth (1975) other factors involve aspects of choice tasks associated with time pressure, which implies that the greater the task, the longer the time spent at reaching the appropriate decision. An enormous difference for instance exists between an elderly mother's decision on buying a particular brand of new pots and that of making appropriate decision on choosing a new nanny, out of many. Deciding to buy the new pots as could be observed is made almost automatic, with little efforts and relatively few consequences. This is

because the task of buying the pots has become habitual or routine to her. It also indicates that people generally become conditioned to making appropriate decisions on some particular events or activities due to their regularity or frequent occurrences. Therefore, the factor of time pressure lies on the importance/weight of the tasks to be accomplished (Payne, Bettman & Johnson, 1993). As such, decisions made with minimum impact including those made on daily basis require very little deliberation as well as mechanisms of rationality because such decisions just come about as a result of experience (Chiru, 2007). This indicates how the processes of these categories of decision making unfold automatically along with the person's life style, values, and experiences.

Nonetheless, the above assertion disagrees with the general perspective of professional decision makers because as noted earlier, every decision (to some extent) needs both deliberation and mental mechanisms. As such, this variation can be solved relative to the consequences of selecting the most suitable nanny (which is evidently quite heavier and time consuming due to more deliberations and mental mechanisms) when compared to the (habitual/ordinary) buying of the new set of pots.

The declarations of Brans and Vincke (1985) on processing SDM information into choices and actions proves that female N.C.E. students can ideally apply the technique in coping with stress in order to enable them discharge their academic and other daily schedules satisfactorily.

2.3.5.6 Sequential Decision Making Processes

Some decisions do not usually come just at a single stance. This implies that it is natural to divide decisions into phases or stages, for most of them are not momentary (Fülöp, 2000) and (Kidd, 2003). SDM process as noted earlier presumes consecutive stages because it occurs in

succession due to the nature of its chronological arrangement. Thus, it is a process that involves selecting strategic actions on the basis of short and long term consequences (Buzzle, 2014) and (Kartha, 2014).It is as well a division of decision processes into parts or stages that always come in the same order or sequence (Masanao, 1976).This is why Triantaphyllou and Sanchez (1997) and Leung (2001) pointed that SDMT is greatly associated with multi-criteria decision making process that solves various forms of complex, classical and advanced challenging problems.

According to Hansen (1972) and Payne, Bettman and Johnson (1993) there are three processes of decision making, noted as-

i) Simple Habitual Process-

This process according to Hansen (1972) is a simple task, which lacks complexities. A typical example can be referred to the previous one of buying the new set of pots because it involves a simple decision task, despite existence of preferences. This is because appropriate decision making usually requires preference, no matter the process, weight, type or nature (Weirich, 1983).

ii) Moderate Processing-

Moderate processing relates more to advanced tasks and activities and is also highly inclined to effects of time and efforts (Payne, Bettman & Johnson, 1993). It is as well the category that could ideally assist the female students treat their stress by accomplishing their daily schedules through cautious observation of individually planned developed sequential formats. The relevance of this application is ideal because it is natural to divide decisions into phases, since most of them are not momentary (Fülöp 2000). Most decisions moreover, occur in succession (Kidd 2003) and (Hansson, 2005) because they presume consecutive or chronological stages (Buzzle, 2014) and (Kartha, 2014). This is corroborated by Whiten (2002) who described

SDM technique as a designed set of tasks, where consequences of actions emerge at a multitude of times, after the action is taken. For effective result, Einhorn and Hogarth (1975) on the other hand consider the importance of substantial time and efforts in processing these sequential formats.

iii) Extensive Processing

This third category particularly relates to long term planned schemes involved with giant developmental plans. Alagoz, Hsu, Schaefer and Roberts (2009) have noted this powerful analytical technique to possess extensive processing tools that are widely used in many industrial/manufacturing and clinical or health-care schemes. Typical examples include large scale health care services, big estate investments and business enterprises with enormous productions, supplies and advertisements.

2.3.5.7 The Categories of Sequential Decision Making

These are classified into three, namely-

i. **Stimulus Based Decision-**This is where decision must be made using all externally available relevant information in summary tables, catalogues or packages.

ii. **Memory Based Decision-**This is where a decision must be made using information only available in memory.

iii. **Mixed Decision-**It is where both information in memory and those externally available are used. This is probably the most prevalent (Lynch &Srull, 1982) though Payne, Bettman and Johnson (1993) disclosed stimulus based display as the most appropriate. Others used are noted to include one developed by Biehal and Chakvavarti (1983).

2.3.5.8 Misconceptions about SDM and Problem Solving Sequential Techniques

Misconception comes about between these two sequential techniques due to similarities that make them intimately connected. For example:

i) Both techniques apply systematic and disciplined strategic approaches.

ii) They both comprise of well organised steps designed for tasks accomplishments in numerous aspects that include that of time management.

iii) The processes of both techniques operate formally, that is by following their arranged steps.

iv) Both techniques are gradually learned, developed and refined over time.

v) Participants feel confident in exercising both these techniques (Moran, 2010) Pg 6.

Some distinguishing features between both sequential approaches are that-

i) In problem solving technique, an individual can-

- Withdraw from some of the arranged steps as well as the tasks.
- Defer some tasks to a later time or date, unlike in the case of the undisrupted procedure of the SDM.

ii) SDM comprises of numerous assigned tasks which makes it more comprehensive when compared to that of problem solving.

ii) Problem solving is more inclined to general objectives because decisions are made on variety of problems or experiences while SDM relates more to specific objectives (Okon, 2001) Pg 20.

2.3.5.9 Merits of Decision Making

The following are some advantages of decision making-

i) Decisions about to be taken on the basis of insufficient or incomplete information stimulate peoples' sensitivity to social events, increase in degree of attractiveness and challenges as well as in interests.

ii) Decision makers (especially in the implementation phase) take on full responsibility, whatever the initiators or supporters. This could be because decisions are personal experiences, with consequences principally faced by people who make them.

iii) Decision making reduces the threshold of tolerance to error or compromise because those that act against their decision for good reasons become more flexible and inclined to broader understandings of issues.

iv) An individual can consult others in order to decide. For example, friends-for personal decisions, family-for financial concerns and a counselor-for professional issues, among others.

v) Decision making creates diverse opportunities to express and strengthen personal values in concrete situations. This is because the choice characterizes peoples' identity and styles of solving various life problems (Ekárt & Németh, 2005) and (Chiru, 2007).

Other beneficial effects of SDM include increase in sense of purpose, improved psychological health and physical relaxation (Miller & Davis,1996). Exposure to SDM technique also conditions individuals, it also enables them develop more self confidence in tasks accomplishment and also to realize the significance of prioritizing of activities based on importance/values as well as in time management (Isen, 2001) and (Clore & Storbeck, 2006).

2.3.6.1 Demerits of Decision Making

However, disadvantages are also found related to some aspects of decision making. For example:

i) A decision if agreed upon may not necessarily be implemented because when requested, a counsellor may signal and assess its fulfillment but if unimplemented, time, energy and resources of the counselors and especially that of the clients are wasted.

ii) Decisions made are not always capable of replacing contrary habits.

iii) Emotions have variable weight in decision making and can overcome the rational evidence.

iv) Confidence in a person's own decisions may be mistaken with decision-making competence in any situation.

v) There is no guaranteed success if a person follows a certain decision making model or the good practice of others.

vi) The irrevocable character of some decisions cause problems.

vii) The unique character or alternatives, values, possible future, hesitation and unilateral concentration can affect the fair judgment of the decision maker.

viii) The illusion of being in control of irrational, random, or poorly standardized situations is not the reality.

ix) The preference for easy decisions is momentarily beneficial and is moreover, not grounded individually but in opinions, current or group pressure. Example is enrolling into university under the pressure of family members or classmates.

x) Decision making is a life sector which ignores connections with other sectors. An example is accepting proposal of working in another city for a better salary and ignoring the possible negative effects on the family life (Chiru, 2007).

Other problems identified by Kahneman, Slovic and Tversky (1982) arise when a decision maker fails to follow the prescribed decision processes by-

i) Failing to consider all options.

ii) Assessing the probabilities of events incorrectly. Thus, poor decision outcomes occur due to incorrect assessments of events by the decision maker or when he/she fails to consider all available options. That is why it is necessary to be cautious while training clients in designing their SDM formats.

2.4.0.1 Concept of Cognitive Restructuring

Cognitive restructuring is a therapy used to identify as well as modify negative thinking patterns. It is a technique that alters negative automatic thoughts that occur in provoking situations by replacing them with more rational beliefs. CR according to Diana (2013) involves paying attention to thoughts, recognizing when they are irrational, challenging them and also learning replacement thoughts and behaviours. CR helps at evaluating the rationality and validity of peoples' assumptions and interpretations. Thus, it helps to toss away negative and unhappy thoughts as well as increases the level of awareness in overcoming any faulty thinking error. Moreover, CR changes subconscious thoughts in dealing with situations for more positive frame of mind.CR is appropriate in the treatments of various health issues, persona social concerns, educational and career associated aspects.

In CR, clients are agreed upon to be solely responsible for their resolutions. Furthermore, in this procedure, therapists ask questions without any condemnation, regarding the irrational beliefs in order to elicit the meaning, function, usefulness and the consequences of those beliefs. This proves CR to be a cognitive therapy or process of learning that refutes cognitive distortions or fundamental faulty thinking with the goal of replacing these thoughts with more beneficial

ones. It also refers to changing ways of the clients' negative thoughts. For instance, when one is angry or something goes wrong, the situations may turn out to be negative because everything seems to become ruined. That is why CR replaces such thoughts with those that are more realistic and logical. In CR therefore, it is postulated that people's emotions and behaviours are greatly inclined to their thought patterns (Sharp, 2004). If clients can therefore change their habits of negative self talks for example, they can easily become happier, more hospitable and productive. They can as well be able to accomplish more positive changes (Sharp, 2004).

The explanation above indicates CR as a good therapeutic tool that assists clients to modify their negative or irrational behaviours, emotions and thoughts such as systematic biases or otherwise as a technique that treats unrealistic beliefs by examination through jointly agreed experiments undertaken by the clients and their therapists. It similarly explains its effects on clients' challenges for conscious choices with full accountability for accepting these decisions or choices.

Since the technique is a cognitive and at the same time behavioural therapy that teaches clients to identify and evaluate their automatic thoughts in order to modify or discard those that are negative, it can ideally be agreed upon that students can learn how to treat their different stressful experiences. That is why CR is used in this study as an appropriate therapeutic technique aimed at modifying and replacing the academic and also domestic stress distorted thought patterns of the married and single female NCE students to those that are more beneficial as well as comfortable.

2.4.1.2 Historical Development of CRT

From the historical perspective, CR is a technique pioneered by Albert Ellis, the proponent of Rational Emotive Therapy (RET) and Aaron, T. Beck, among others. It is listed under classical conditioning techniques, a behavioural stimulus response learning process by a psychologist called Ivan Pavlov. In the 1960s, Aaron T. Beck, a psychiatrist, observed that during his analysis sessions, his patients tended to have internal dialogues going on in their minds. He also realized that only a fraction of this part of thinking is revealed to him by these patients. Thus, he came to realize the importance of the link between thoughts and feelings and made up the term 'automatic thoughts' to describe emotion-filled thoughts that pop up in the mind. Beck later noted these thoughts to have fallen into three categories, that is-the patients had negative ideas about themselves; the environment; the future. He also discovered that these streams of automatic thoughts seemed to arise instinctively. Thus, by assisting them to identify and evaluate these thoughts, he realized that they were able to think more realistically. As a result, they felt emotionally better and also behaved more functionally (Jane & Steven, 2003). This has shown how the patients were counseled to change their underlying beliefs about themselves, their world and others (Martin, 2007). However, therapists like Herzberg (1945) and Salter (1949) were recognized to have earlier used the technique before Ellis and likewise Ellis did not claim to be the initiator of CRT (Jane &Steven, 2003).

In other words, Beck and Ellis made the reference of CR to be a cognitive therapy as a result of the use of logical reasoning. It is presently recognized as a cognitive-behavioural therapy because of employing behavioural aspects, though the balance between both cognitive and behavioural elements vary among different techniques of the (CBT) therapies. Martin (2007) similarly described CBT as an effective therapeutic technique that focuses on 'here and now,

with the help of professional therapists and well structured psychotherapies used in alleviating both symptoms and patients' vulnerabilities.

2.4.1.3 Cognitive Behavioural Theories as Comprehensive Behavioural Therapies

CBT had since been applied in the treatment of stress. The idea behind personal construct therapy, the influence of rational emotive therapy and the role of cognitive experiences in determining behavior have all fallen under the umbrella of cognitive theory which focuses on thoughts, cognitive schema, beliefs, attitudes and attributions that influence peoples' feelings and meditations on relationships between antecedents and behaviours. Thus, in the process of stress treatment, the prominent features of these theoretical approaches are merged. That is why this study reviewed these particular cognitive and behavioural therapies.

2.4.1.4 Relationship between SDM and CBT Techniques

Sequential decision making being a multi-criteria type of decision is also significantly based on rationality (Hartung & Blustein, 2002). Moreover, thoughts have significant influence on feelings (Frijda, 2000). Hence, by appropriate use of reasoning, choices are made out of selections from a number of options which create diverse opportunities of expressing and strengthening of personal values in concrete situations, which corresponds to the theoretical basis of CBT.

Generally, SDM is known as a designed set of tasks bounded by rationality where the consequences of actions emerge at a multitude of times after the action was taken. As such SDM is a formulated and dynamic system where behavior unfolds over time, under the influence of the decision maker's plans (Martjin, 2009) and (Walsh, 2010). That is why it is natural to divide

decisions into phases or stages, for most of them are not momentary (Fulop, 200), (Kidd, 2003), (Buzzle, 2014) and (Kartha, 2014).

Empirical studies have been successfully conducted using a number of different variables related to human and non-human samples, indicating the efficacy of SDM technique, similar to the case of CBT. Thus, in various spheres of researches, SDM has for long been noted as very effective. As such, it could as well assist these stressful students in aspects related to effective time management and appropriate tasks accomplishments with regards to values considerations and efficient use of priorities in conducting their activities. The technique could similarly create for them diverse opportunities of expressing and strengthening their personal values in concrete situations.

2.5.1.0 Theoretical Framework

2.5.1.1 Sociological Theory of Stress (STS) by Pearlin, Morton, Elizabeth and Joseph (1981)

The STS relates closely to the theoretical base for this study because many people relate stress theories to observations about aspects of social life, referred to as social theory. Burr (1995) and Babbie (2004) described theory as an explanation of observations that guide in researches and also demonstrate how to intervene or predict behaviours. Krohne (2002) noted two approaches to stress theories and described one to be based on physiology and psychobiology (specific relationship of external stressors) which focuses on `systemic stress' of Selye (1976). The second type pioneered by Lazarus (1966 & 1991) and Lazarus and Folkman (1984) was based on psychological stress (bodily processes) that focuses on cognitive psychology. That is why two competing arguments exist as to why timing of life events produces stressors. Some researchers regarding these competing arguments according to Morton, Elizabeth

and Joseph (1981), Thoits (1995) and Pearlin (1989 &1999) have investigated on how sequencing of life events and transitions lead to both positive and negative outcomes.

One argument is that there are societal norms where certain transitions should be made relative to others and that when individuals deviate from these paths, the society produces stressor. The explanation is that society produces stressor due to violation of its norms and values. An example here could relate to the ongoing imitation of the opposite sex, like wearing of earrings by males and likewise, the tight-fitted or transparent attires worn by the female counterparts. These, to the Nigerian cultural beliefs are detested and seen as unethical and so those indulged in, may experience stress as a result of the societal harassment and condemnation. That is why some stress experts envision stress to occur as a result of insufficient social support to cope effectively with life events Greenberg (1999).

The other argument with less emphasis reveals that certain sequences of life events generate practical objective obstacles, which could in turn create stressors. Example is having a child, which specifically necessitates both emotional satisfaction and appropriate motherly and fatherly care including adequate fatherly financial support. However, leaving only one out of these two biological parents to account for these major parental roles may not necessarily predispose him/her to any stressors, simply because it depends on his/her strength, conviction and financial capacity.

Pearlin, Morton, Elizabeth and Joseph (1981) who developed the theory noted it as a sociological stress theory that focuses on influential effects of social conditions on a number of stressful outcomes. Other writers according to Greenberg (1999) call it the 'social support theory'.

Morton, Elizabeth and Joseph (1981) and Pearlin (1989 & 1999) postulated stress process to be based on three fundamental concepts noted as stressors, moderators/mediators and stress outcomes, which are explained below-

- **Stressors**

Stressor relates to a number of factors which according to Thoits (1995) and Pearlin (1989 & 1999) can be inclined to external, environmental or social factors. It can otherwise relate to internal, biological or psychological factors that challenge individuals to either adapt or change (Mirowsky & Catherine, 2003). Typical examples of stressors could similarly relate to discrete events such as destruction of an individual's home by a tornado or a chronic problem that relates to degenerative neurological illness. That is why the theory explained chronic stressors to comprise of a wide variety of stressors that include: Status strains, Role strains, Ambient strains and Quotidian strains, which are described as-

- **Chronic Stressors-**

Comprise of a wide variety of stressors that include status strains, role strains, ambient strains and quotidian strains, explained as:

- Status Strains-According to Turner and William (2003) these are considered as stressors that arise out of a person's position in the social structure like living in abject poverty, holding a stigmatized or devalued status by the society like belonging to a particular race, gender or religion.
- Role Strains-Focus on stressors that arise from conflicts or demands within an individual's roles and also links between macro level influences and individual outcomes. Initial research focused only on the negative effect of having many roles, arguing that they create competing demands on the individual, thus acting as stressors. Yet,

subsequent research has shown that under certain conditions, having many roles can benefit the individual through provision of more fungible resources that carryover from one role to another.

- Ambient Strains-Focus on stressors from individuals' proximal environment, most often measured as their neighborhood like threats of crime or violence or on access to resources like schools, hospitals, fire departments, and other public services.
- Quotidian or Daily Strains- Are perceived to produce the lowest intensity stressors and arise out of daily hassles of issues such as waiting in traffic, petroleum station, airport, railway or motor-park. They could as well involve cooking or other domestic chores or services.

- **Moderators**

Refer to social or personal resources that attenuate the effects of stressors or rather change situations that create the stressors due to their mediating effects on the stress outcomes.

- **Mediators**

These are the stress coping strategies, personal resources and social support.

- **Stress Outcomes:**

These are the psychological (mental), emotional (feelings) or physiological (bodily structure/processes) conditions resulting from exposure to stressors after accounting for the moderators or mediators.

- **Sequential Process of Sociological Stress Theory and Stress Proliferation**

It can be observed that the above presented stress strains were classified sequentially because some primary stressors often lead to several secondary stressors. This means that stressors rarely occur in isolation from one another, which is a process referred to as stress proliferation. Thus,

proliferation has been noted to have better account for the dynamic link between individuals and their societal engagements.

The above discussed societal stress theory inclined to status, roles, ambient strains and quotidian strains could significantly predispose the female students to a number of stressful experiences. Without considering their other sides of bulky and tedious academic concerns particularly in the absence of nannies, the nursing and married ones among them for instance may be accused of neglecting some of their culturally assigned quotidian chores. The singles may similarly face related consequences of loaded academic schedules. The society may likewise misunderstand their persona-social confused situation of indecisiveness regarding the selection of suitable husbands. Hence, those who for instance happen to violate or erroneously behave contrary to the respected cultural norms and values as a result of such pressure or lack appropriate care in cases of broken homes may similarly face the same societal accusations or condemnation without being excused or shown any sign of concern or guidance, talk less of counseling, thereby resulting to stress due to insufficient social support. As such these predisposed stressful conditions can have drastic effects on their general health and also academic achievements.

2.5.1.2 Systemic Stress Theory by Selye (1976)

This theory relates to the theoretical base for this study and with major components of SDM and CR techniques. It is a kind of physiological theory of stress, investigated by Selye (1976), which Krohne (2000) described to have great influence on all spheres of stress researchers. Selye (1976) was noted as the first person to present a scientific explanation of stress (Krohne, 2000). He indicated that prolonged stress (chronic stress) can be very damaging to health and that short term stress (acute stress) can be adapted by the body due to ‘flight or fight’

response which enables organisms to cope with the environmental demands. The theory was based on physiology and psychobiology of stress response pattern called `General Adaptation Syndrome' (GAS). The model states that an event that threatens an organism's wellbeing (a stressor) leads to bodily response patterns that proceed in three phases, namely-

- **The Alarm Reaction Stage**

This first stage comprises of an initial shock phase and a subsequent counter shock phase. The shock phase exhibits autonomic excitability. Thus, upon encountering a stressor, hormones such as cortisol and adrenalin are released into the blood stream, so as to meet the threat or danger. The counter shock phase marks the initial operation of defensive processes because the body's resources become mobilized. Frankl (1997) was in support of this theoretical perception by reiterating that, between stimulus and response, there is a space. In that space is our power to choose our response. In our response lie our growth and freedom.

- **Stage of Resistance**

The organism enters this phase if noxious/harmful stimulation continues. The symptoms of the alarm reaction disappear, which seemingly indicate the organism's adaptation to the stressor. However, while resistance to the noxious stimulation increases due to cortisol and adrenalin continued circulation at elevated levels, resistance to other kinds of stressors decreases at the same time and outward appearance seems normal. These result to-

  - Increase in heart rate, blood pressure, breathing, sweating, muscle tension, decrease in salivation, pupils' dilation and so on.
  - The body remains on red alert.

- **Stage of Exhaustion**

Resistance gives way to this third phase of exhaustion. Exhaustion occurs when aversive stimulation persists, that is when stress has been prolonged. The symptoms of alarm reaction (that is stage one) reappear but resistance is no longer possible, as the organism's ability to adapt to the stressor becomes exhausted. This happens as the stressor continues and gets beyond the body's capacity, meaning that the supply is incapable of meeting the bodily demands. Thus, the level of stress hormones cannot then restore to homoistesis. Exhaustion of these body resources leads the organism's tissues to wear and tear as well as become susceptible to disease. Hence, appearance of irreversible tissue damages occur which could even lead to the death of the organism.

In a nutshell, Selye (1976) theorized that in order to activate the sympathetic nervous system, an individual can handle his/her stress by striving hard to enable the body system to react with 'fight-or-flight' response (Selye, 1976) Pg. 23-25.

- **Weaknesses of GAS**

Some limitations are found in GAS despite being very prominent as well as primordial.

- The stress conception of Selye (1976) according to Engel (1985) is seen as a reaction to a multitude of different events for all kinds of approaches. This makes it become a synonym for diverse terms like anxiety, threat, conflict, uncertainty or emotional arousal.
- There was also lack of uniformity among the stress responses because Selye (1976) postulated stress to have always produced the same physiological pattern. However, when researchers compared these patterns, different responses had been observed.

- Selye (1976) also used none humans (rats) for his research on human stress responses. Rats may not however respond in the same psychological way as humans.
- Assessing of stress as an outcome similarly implies that the tests conducted may not necessarily have the same outcome for all. Thus, labeling the stress response pattern is also a limitation.
- Limited role was also given to psychological factors, though (due to individual differences) researchers had found differences in aspects related to hormonal secretions, reactions, perception and coping abilities, among others.
- Selye (1976) did not also consider coping mechanisms as important mediators of the stress-outcome.
- There was no specific explanation on mechanisms of cognitive transformation. He did not relate how objective noxious events lead to the subjective experiences of being distressed. That is why Janis (1958) and Arnold (1960) indicated researchers to have argued that humanly stressful experiences are mostly inclined to cognitive mediation.

2.5.1.3 Life Events Allostatic Load Theory

This is the theoretical base for this study and with major components of SDM and CR techniques. McEwen (1998) based his theory on effects of life events stressors on health. This theory proposes cumulative physiological risks to be associated with exposure to psychosocial structures over an individual's life. He pointed that stress occurs where a situation requires more resources than are available. The example given is that an individual might experience stress

while taking a test unprepared. To measure this type of stress, researchers of this theory compare routine stressful events with those of major events, as in the case of deaths of loved ones. The rationale is that the more a person experiences these routine stressful events, the greater is his/her stress.

Supporters of this theory as Greenberg (1999) proclaimed consider routine life events more significant than the major ones which occur infrequently. They argue that daily hassles, though appearing less important by themselves, add up and accumulate, thereby becoming more stressful than the less occurring major events. Thus allostic load in this theory refers to the cumulative biological 'wear and tear' from stress responses that seek to maintain the body equilibrium. It also refers to the cumulative biological wear and tear that can result from excessive cycles of responses in the systems, as they seek to maintain environmental challenges.

The chronic deregulation is believed to confer cumulative physiological risks for diseases and disabilities by causing damages to tissues and major organ systems. McEwen proposes that a key mediator of increasing risks for diseases is the deregulations of systems designed to balance the organism's responses to environmental demands. Greenberg (1999) noted that there is simple evidence for this view because exposure to stress elicits adaptive physiological responses in the regulatory systems- the nervous systems, cardiovascular and immune systems. Allostasis on the other hand is the adaptive maintenance of vitality in these systems in response to changing environmental circumstances which includes stress inclined experiences. McEven (1998) reiterated that as these systems become taxed and deregulated, they begin to exhibit imbalances in the primary mediators of the stress response.

This theory relates closely to the negative effects of life event stressors among the female students because it proposes cumulative physiological risks of daily life events that seriously

disturb them as well as hinder their daily life engagements. The tedious academic tasks, routine domestic accountabilities and other daily life schedules are typical examples of life event predisposed stressors that can have significant negative effects on their health, studies and wellbeing. The theory precisely proclaimed that routine life events are more significant than the major ones which occur infrequently. As such daily hassles, though appearing less important by themselves, add up and accumulate, thereby becoming more stressful than the less occurring major ones, as in cases like deaths of loved ones.

2.5.2.1 Decision Making Theories

Determining appropriate course of action when faced with a difficult dilemma can be very challenging. Thus, SDM plays key roles in solving numerous aspects of dilemmas, ranging from seemingly simple tasks to those that are complex. SDM is usually a type of decision making with exhaustive search that ensures consideration of all alternatives. It is a technique bounded by rationality of human cognition where behavior unfolds over time, under the influence of a decision maker's plans. The thought of tasks accumulations, both in and out of home can lead to intense pressure and excessive stress that can impair academic achievement and general wellbeing. Thus, a stress predisposed female student could not adequately accomplish her academic activities and other life accountabilities satisfactorily. As such she can appropriately develop her own individually designed sequential format to accomplish her academic, domestic and other daily life schedules in order to cope with stress. This will in essence assist at improving her studies as well as general health and well being.

2.5.2.2 Factors to Consider in Making a Good Decision

In making appropriate decisions, an individual is expected to consider-

i.) The outcome of the decision at any moment in the future.

ii.) How the decision will change the context of the problem.

iii.) How it will interfere with other decisions that should be made in the future.

iv.) How it will affect self, family and others.

2.5.2.3 Principles of Decision Making

Decision making is governed by guiding principles. Miller and Davis (1996) and Hansson (2005b) postulated that when exploring an ethical dilemma, the need to examine the situation to see how issues could be solved is necessary. At times, these principles alone as they assured can sufficiently clarify the issues in a way that resolving the dilemma will become obvious. According to Hansson (2005a) valued and standard decisions relate more to moral philosophy, while Hoose and Paradise (1979) affirmed that a counselor is probably acting in an ethically responsible way if he/she:

(1) Has maintained professional and personal honesty of the client.

(2) Has maintained the best interests of the client.

(3) Has no any malice or personal gain.

(4) Can justify his/her actions as the best judgment of what should be done.

2.5.2.4 Moral Principles of Sequential Decision Making

Kitchener (1984) explained the moral principles of SDM as:

i) **Autonomy**: This addresses concept of independence, where the counsellor allows clients freedom of choice and also to act on their own values when making decisions. Two important considerations that encourage clients to be autonomous are:

(a) Helping them to understand whether their decisions and values may be received within the context of the society and also how they may impinge on the rights of others.

(b) Clients' abilities to make sound and rational decisions.

ii) **Non-malfeasance:** Is the concept of not causing harm to others, usually explained as "above all do no harm". It reflects both ideas of not inflicting intentional harmor engaging into actions that risk harming others. This according to Rosenbaum (1982) and Stadler (1986) is generally considered as the most critical of all though, they are all theoretically of equal weight.

iii) **Beneficence:** It reflects the counselor's responsibility of contributing to the clients' welfare. According to Miller and Rubenstein (1992) this simply means to do good, to be proactive and to prevent harm as much as possible.

iv) **Justice**: This does not mean treating all individuals the same but "treating equals equally and un-equals unequally, in proportion to their relevant differences". Thus, if an individual is to be treated differently, the counselor needs to be able to offer a rationale that explains the necessity and appropriateness of treating that individual differently.

v) **Fidelity:** This involves notions of loyalty, faithfulness and honouring commitments. If growth is to occur, the counselor must not threaten the relationship, nor leave obligations unfulfilled. This will enable the clients to trust the counselor and have faith in the relationship.

2.5.2.5 Effectiveness of Sequential Decision Making Technique

Pressure associated with school performances, lateness, financial hardship, health care access, coping with a partner's needs and the family's, and child rearing, (especially in the absence of extended support), are among the risks of stress caused by irrationality which could lead to stress. In line with these stress predisposed risks, SDM technique can conveniently be used either in group or individually to assist the female students treat their stress in order to accomplish both their academic and other related daily schedules effectively. Thus, making appropriate use of developed SDM self designed formats could greatly help them to change from stressful conditions to better or favourable outcome.

The major benefits of observing SDM technique according to Miller and Davis (1996) involve improved psychological health and physical relaxation. Exposure to SDM technique also enables individuals to develop more self confidence in tasks accomplishment and realizing the importance of prioritizing activities based on values.

2.5.2.6 Treatment of SDM with other Techniques

SDM has for long been applied in some research fields related to scientific, psychological, physiological, physical and also psychosocial. An example is one carried out by Schulz et-al (2012) which was titled Effects of a Web-Based Tailored Multiple-Lifestyle Intervention for Adults. It was based on a two-year randomized control trial of comparing and testing the effects of Sequential and Simultaneous web-based tailored interventions on multiple lifestyle behaviors.

The findings revealed that all individual lifestyle-behaviors had changed over time and that at both follow-ups, the Sequential condition had significant changes in smoking abstinence, compared to the Simultaneous condition. Moreover, the Sequential condition was as well more effective in decreasing alcohol consumption than the Simultaneous condition at 24 months.

Another study aimed at Maximizing Total Marketing Benefits was a two year research on the SDM technique and Reinforcement Learning which was conducted by Pednault, Abe and Zadrozny (2002).The result revealed that the two proposed methods applied for optimizing total accrued benefits had out-performed the usual targeted-marketing methodology, which indicates the positive effects of both SDM and the reinforcement Learning.

Lollett, Rogova and Scott (2003) similarly conducted their study using SDM technique on Homogeneous and Non-communicating Multi-agent System, guided by Reinforcement Learning. The study demonstrated the feasibility of the SDM technique with regards to limited resources in time-constrained situations; improvements in decision utilities and also some beneficial effects with regards to both military and non-military tasks. It also revealed reduction of decision latency as well as improvements inclined to medical decision-making and life-threatening situations.

2.5.3.1 Positive/Descriptive Decision Making Theory by Kahneman, Slovic and Tversky (1982)

The descriptive decision theory is a theory about how decisions are actually made. In other words, it is a theory concerned with describing observed behaviours under the assumption that the decision making agents are behaving under some consistent rules. These rules may for instance have a procedural framework like 'Tversky's Elimination by Aspects Model' (Hansson, (2005). Dillon (1996) indicated it as a theory of 'what we are observed to do' because it analyzes and describes methods used for decision making. It is one of the applied strategies of decision making in numerous research fields. It is also less analytic and easier to use (Kahneman, Slovic and Tversky, 1982) because it does not require the decision maker's comparison of one attribute

to a completely different attribute**.** That is why it relates more to intuitive feelings, attitudes and beliefs (Geletti, 1989) or as beliefs and behaviours, in the words of Balsic (2014). Models of this class according to Churi (2007) include classic client-oriented counselling model of Rogers (1951), the social learning theory of Krumboltz (1983) and social knowledge of Elliot (2004). This implies that the decision maker has less cognitive load, though it might not be optimal, for some important information might be missing. That is why Hartung and Blustein (2002) emphasised intuitive aspects of thinking to play vital roles in processing appropriate decision making.

There is however currently a debate on the value of intuitive processes in decision making, which is typically featured by lack of overt cognitive effort and the implicit integration of available information. This is contrary to deliberative processing which generally involves effortful, conscious and analytic thoughts (Betch & Glockner, 2010). However, behaviour and feelings are generally known to have significant influence on decision making (Brim & Orville, 1962), (Shafir, Osherson & Smith, 1993) and (Kidd, 2004).Descriptive theory possesses strategic inflexibility in the sense that reliable choices are reached without 'trades-off' between a high value on one dimension of an alternative and a low value on another dimension of attributes (Keeney & Raiffa, 1976) and (Payne, 1976).

The above discussion indicates significant relationship among this decision theory and the holistic one proposed by Gelatt (1989) with regards to intuitive thinking and also the bounded rational type theorized by Simon (1955).

- **Features of Descriptive Decision Theory**

Descriptive theory according to Balsic (2014) is the original root theory of both normative and prescriptive theories because they originated from it. Payne, Bettman and Johnson (1993)

explained descriptive models to be generally non-compensatory. Alternatives are non-compensatory because they have been eliminated through sequential comparison or assessment. Moreover, choice does not merely depend on the 'objective' conditions but also on the 'internal nature' of the decision maker. Thus, decisions are often the results of applications of attitudes and moral principles, where attributes are activated in the order of their decreasing validities, or in other words, based on priority (Kahneman, Slovic & Tversky, 1982). That is why there is need to understand the nature of the decision elements, how they are established and modified by experience as well as how they determine values.

The normative and prescriptive models on the contrary are typically regarded as compensatory. Compensatory models come about when a decision maker 'trades-off' between a high value on one dimension of an alternative and a low value on another dimension (Keeney & Raiffa, 1976) and (Payne, 1976). This means that an individual can have other chances of reselections to adjust, apart from the unsatisfactory ones that were previously made. Such a decision is seen to be less risky as was proposed by Gärdenfors and Nils-Eric (1988) and Howard (1988).

Descriptive theories relate more to behavior that is why it significantly acknowledges applications of the 'right' brains, which is basically regarded as attitudinal. This coincides with the opinions of Dubois, Didier and Henri (1988), Zeelenberg (1999) and Frijda, Manstead and Bem (2000) who described decision making to be highly inclined to feeling uncertain about the future as well as feeling positive about the uncertainty. However, the declarations of Benedetto, Dharshan, De, Ben and Raymond (2006) and Clore and Storbec (2006) have indicated how the clients' chances of sourcing and selecting from numerous available options have been restricted due to this theoretical limitation.

It could be observed that clients can benefit through this descriptive process by assisting them through counseling to remember, imagine and reflect backward and forward in order to learn from the expectations of the future, as they learned from the past. Thus they can learn how to create changes and also respond to these changes so that they can seek certainty and confidence as well as avoid being subjective in making decisions. The negative effects of stress symptoms for example such as mind traps like unrealistic expectations, rigid thinking as well as other contributory factors like bereavement, overloaded domestic and academic schedules, could be effectively treated.

- **Demerits of Descriptive Theory**

A part from the few problems discussed above, Ertelt and Schulz (2002) also observed additional ones noted as follows:

i. It is assumed that people use the discipline to simplify real life situations.

ii. It is used to solve problems step by step, through trial and error.

iii. It takes only a few alternatives into consideration.

iv. It applies only a certain assessment criteria at a given time.

v. Decisions are kept open in order to integrate new information.

The above mentioned problems presume issues associated with wasting of time in the decision processing and also in integration of new information. It also involves simplifying problems, instead of adequate search, to reach appropriate and desirable solutions. Using just a single method or limited options, basically through trial and error also restricts applications of other various alternatives.

2.5.3.2 Holistic Decision Making Theory and Counseling Strategy of Gelatt (1989).

This relates to the theoretical base for this study. Decision choice as noted by Tversky and Daniel (1986) refers to 'crucial happenings of the mind and Gelatt (1989) on the other hand considered holistic theory to be a crucial part of the counsellor. The theory according to Gelatt enables individuals to conveniently come up with reliable and satisfactory decision choices by using both 'left and right brains', whether in natural or human-formulated manner. The 'left brains' refers to rationality/cognition, while the 'right brains' relates to intuition that is feelings, attitudes and beliefs.

However, there is currently a debate about the value of intuitive processes in decision making, which is typically featured by lack of overt cognitive effort and the implicit integration of available information. In the context of decision making, intuition can influence decision making through either emotion or cognition or otherwise a mixture of both, although it is regarded as a non sequential information-processing mode which contrasts with the deliberative decision making style that generally involves effortful, conscious and analytic thoughts (Thomas, 2002) and (Betch & Glockner, 2010). However, application of the right and left brains is what is referred to as the whole, which is the heart of this theory.

Holistic theory possesses strategic flexibility in the sense that reliable choices are reached by using both the 'right' the 'left' brains and also by reflecting on the future and the past. That is why behaviour and feelings are known to have significant influence on decision making (Brim & Orville, 1962), (Shafir, Osherson & Smith, 1993) and (Kidd, 2004). Same also apply to the postulations of Zeelenberg (1999) and Frijda, Manstead & Bem (2000). The ideas of Ugur, Dana, Elnatan & Robert (2008) and Linkov et al (2004) also coincide with the strategic flexibility of decision making re-adjustments, when found to be unsatisfactory or inappropriate. That is why

Hartung & Blustein (2002) emphasised intuitive aspects of thinking to play vital roles in choice selections.

Gelatt (1989) developed and defined this theory as a decision and counseling framework that helps clients to deal with change and ambiguity, accept uncertainty, inconsistency and utilize the rational as well as the intuitive/instinctive sides of thinking and selection. This uncertainty is what Bright, Pryor and Harpham (2004) referred to as the heart of this theory. Holistic theory coincides with the significance attached to guidance assisted services as emphasized by Lisa, Trevor, Jude and Richard (2005) and Ratliff (2009). This also applies to the use of rationality and attitudinal aspects, proposed by Simon (1955) and the unrestricted nature of compensatory model of Payne, Bettman and Johnson (1993) as well as that of Beach and Mitchell (1978).Janis and Mann (1977) have however cautioned on the need for careful assessments of choice selections, so that risks that could lead to unpleasant experiences can be avoided.

- **Variations Between Holistic/Modern and the Olden Decision Theories:**

The doctrine of the old theory dogma which distinguishes it from this theory greatly relies on the mental functioning (the left brain). It is also particularly appropriate for objective and scientific methods, unlike in case of the holistic, which is general and at the same time uses the whole brain by acknowledging applications of both 'right' and 'left' brains. Thus, Holistic theory is basically attitudinal and is as well associated with some paradoxical counseling methods. This coincides with the opinions of Dubois, Didier and Henri (1988), Zeelenberg (1999) and Frijda, Manstead and Bem (2000) who described decision making to be highly inclined to feeling uncertain about the future as well as feeling positive about the uncertainty. Thirdly, the old theory as noted by Benedetto, Dharshan, De, Ben and Raymond (2006) and Clore and Storbec (2006) relates to restricted nature of the clients' chances of sourcing and selecting from

numerous available options. This could be why Einhorn (1970) criticizes this restricted nature which on the contrary Gelatt (1989) surprisingly appreciated by emphasising that such restrictions assist in making good decisions that are certain as well as consistent.

The above discussion has shown that counselors can be able to help clients to remember, imagine and also reflect backward and forward, so as to learn from the expectations of the future, as they learned from the past. Clients can therefore benefit by creating changes as well as responding to these changes. Thus, it is the counselors' duty to encourage them to seek certainty and confidence, in order to avoid subjectivity in their processes of making decisions. Such assistance could in essence encourage them to have confidence when facing life challenges.

2.5.3.3 Compensatory and Non Compensatory Decision Making Theories

Payne, Bettman and Johnson (1988) disclosed the central distinction among different decision models to be based on the extent to which they make trade-offs among attributes in order to choose from the alternatives. What this means is that the models which screen or eliminate alternatives through sequential comparison (or assessment of their attributes) are classified as sequential (non-compensatory), once they have been eliminated. A model is deemed non-compensatory where surpluses on subsequent dimensions cannot compensate for deficiencies uncovered at an early stage of the evaluation process of the selected decision. The reason is that the alternatives have been already eliminated (Payne, Bettman & Johnson, 1993). This coincides with the views of Einhorn (1970), Tversky (1972) and Schoemaker (1980).

Non compensatory decision making in this research refers to a well developed and sequentially strategic format which is expected to be accomplished without altering, postponing or ignoring any of its strategic step(s) or sub steps. The heuristics assume the strategy of this

decision making as ‘conflict avoiding’ which involves choice selections that employ the idea of limited, rather than unlimited substitutability between attributes. Recent psychological researches have been observed to indicate how people often avoid tradeoffs by focusing on just one reason (Payne, 1976). Therefore, under a non compensatory rule, tradeoffs among all attributes cannot be defined. However, Bettman (1982) supports the compensatory idea by considering it easier to process decisions simultaneously, rather than sequentially. Chiru (2007) corroborated by associating the irrevocable non compensatory character with hitches that could generate some problems.

The non-sequential (Compensatory) decision making on the other hand as can be observed from the above explanation is where the decision maker trades-off between a high value on one dimension of an alternative and a low value on another dimension (Payne, 1976). It is a theory that requires decision makers to identify all possible attributes that can be influential. This describes its flexibility in terms of re-adjustments, unlike in the case of the non compensatory type, which is inflexible and generally less exhaustive.

2.5.3.4 SDM Models

Below is description of a teamed work decision-making model of Miller and Davis (1996):

1. To identify the problem.
2. To determine the nature and dimensions of the dilemma.
3. Generate potential courses of action.
4. Consider potential consequences of all options.
5. Determine the selected course of action.
6. Implement the course of action.
7. Evaluation.

2.5.3.5 Modern Sequential Decision Problem-Solving Model of Dewey (1978).

This consists of five (5) sequential stages, described as-

1. A felt difficulty.
2. Definition of the character of that difficulty.
3. Suggestion of possible solutions.
4. Evaluation of the suggestion.
5. Further observation and experiment, leading to acceptance or rejection of the suggestion.

2.5.3.6 Sequential Decision Making Model of Brim (1962)

Another influential decision model by Brim (1962) is divided into six (6) steps:

1. Identification of the problem.
2. Obtaining the necessary information.
3. Producing possible solutions.
4. Evaluation of such solutions.
5. Selection of a strategy for performance.
6. Implementation of the decision.

2.5.3.7 Recognised Prime Sequential Decision Making Model of Klein (1989).

In more recent times, Klein (1989) has proposed the RPD model as a descriptive type of decision making that deals with natural setting within some organisational or real life contexts. The RPD model was developed based on the observation and questioning of 150 professional decision makers. The model contains four major components, presented as:

1. Recognising cases as typical.
2. Situational understanding.

3. Serial evaluation.
4. Mental simulation.

2.5.4.1. Factors to Consider Before Application of Cognitive Behavioural Therapy

Rupke, David and Marjorie (2006) disclosed that certain considerations have to be taken before application of CBT.

- Therapists' active participation in CBT treatment sessions is significantly required. There may also be the need for detailed records on the clients' thought, feelings and behaviours, for effective therapeutic outcome.
- It involves close working relationship of clients and therapists as well as professional trust and respect.
- CBT may disappoint a therapist that looks for a 'quick fix' by taking longer time for successful completion of the therapeutic exercise as earlier expected.
- CBT may not be appropriately effective on treatments of rational thinking impairments and brain diseases and injuries.

2.5.4.2 Duration of CBT Therapeutic Intervention

According to Rupke, David and Marjorie (2006) CBT in most cases covers twelve (12) to sixteen (16) sessions, usually within twelve (12) weeks, lasting for about fifty (50) minutes to an hour. It can however in some cases serve as a preparatory exercise or trial to more intensive treatments. Moreover CBT is relatively brief in duration and also flexible to implement. It is similarly conducted both individually and in group sessions.

- **Effectiveness of CBT**

CBT is inclined to ‘cognition’ because it addresses mental events like thinking and feeling and is as well associated with behavior as a result of the thinking and feeling (Rashmi, Natalie & Mark, 2007). CR is among the scientifically tested and effective type of face to face therapeutic technique. It is a short term goal oriented therapy and also flexible to implement. It is similarly conducted both individually and in group sessions.

CBT is noted to significantly assist in numerous spheres of clinical disorders (Sharf, 2004). It works by transforming clients’ attitudes and behaviours through focusing on thoughts, beliefs and images (cognitive processes) and how these relate to their behaviours, as a way of dealing with the problems. It has the advantage of breaking parts into brief discrete strategies and used appropriately in addressing a wide range of problems such as stress, anxiety, depression, addictions, phobias or antisocial disorder, among others. The primary advantage of this therapeutic process in a nut shell is its tendency to alleviate symptoms while simultaneously curtailing the condition. Moreover, clients also learn to develop new coping strategies and are also introduced to some sets of principles that they can apply whenever in need.CBT is a well elaborated theory with standard comprehensive body of knowledge and empirical therapeutic processes to demonstrate its effectiveness. It is as well flexible in terms of relating with other modalities, that is why it is continually evolving with technique related developments. Hence, it is today considered as the most heavily researched type of psychotherapy (Sharf, 2004).

According to Beck (2011) CBT has been precisely recognized with effective and wide variety of techniques related to three categories of health inclined diseases and illnesses noted as:

- Psychological problems such as anger, aggression, promiscuity, obsessive stealing, compulsive gambling marital and other relationship problems.

- Personality Disorders like depression, anxiety and eating disorders, substance abuse, avoidance personality disorders, phobias, schizophrenia and bipolar disorder.
- Medical disorders with psychological elements such as stress and burn-out, in cases of severe stress, chronic and acute pains, colitis, premenstrual and chronic fatigue syndrome, obesity, somatoform and sleep disorders.

2.5.4.4 Basic Principles of CBT

CBT is based on an ever-evolving formulation of clients' problems as well as on conceptualizing each of them in cognitive terms. The several approaches related to CBT include rational emotive therapy, personal construct therapy, rational behavior therapy, social skills training and cognitive restructuring therapy which are mostly guided by the following principles:

- It requires sound therapeutic alliance.
- It emphasizes active collaboration and participation.
- It is problem-focused as well as goal oriented.
- Therapy initiates by emphasis on the present.
- It is educative in the sense that it teaches clients to be their own therapists and further more emphasizes prevention of relapses.
- It provides benefits of healthier thinking that lead to better ways of feeling and reacting even if the people, events or situations do not change.
- It works well when the therapist/coach has positive relationship with the client(s).
- It is based on educational model aimed at assisting clients to replace their negative reactions by learning new positive ways of reacting to people, situations or events.

- Home work is considered as essential because of its frequent application to clients by the therapist(s) (Beck, 2011).

2.6.1.1 Rational Emotive Behavioural Therapy

REBT closely relates to major components of the CR technique, which serves as the theoretical base for this research study. Dryden and Neenan (2002) described CR to have originated from REBT, by the pioneering founder, Ellis (Gladding, 2003). The common premise of REBT is that peoples' ways of thinking largely determine how they feel and behave (Ellis, 1989).

REBT shares the principles of cognitive approaches inclined to emotional disturbances/neurosis which Ellis (1962) regarded as biased and prejudiced thoughts (Huppert, 2009).According to Bulus (1998) REBT is applied in the hope of assisting clients in areas of marital, sexual, educational and many other aspects of persona-social concerns. This implies that stress can as well be coped with through REBT.

2.6.1.2 Elements of REBT

Ellis (1997) cited in Nwaogu (2000) gave the following as key elements of REBT:

a) Show clients the ABCD of REBT. Show them how adversities (As) do not lead to their disturbed behavioural consequences (Cs) but that they personally contribute to their Cs by engaging in strong and persistent beliefs (Bs) about their As. Thus, A x B=C.
b) Particularly show clients that when they disturb themselves (at point C) they have powerful RBs that largely consist of flexible preferences including strong IBs that are largely of absolutistic, rigid musts, should and other demands.

c) Show clients how to think, feel and act against their rigid IBs with a number cognitive, emotive and behavioural techniques which interrelate with each other.

d) Show clients how to specifically dispute their IBs realistically, empirically, logically, juristically or pragmatically. It also involves showing them how to change their rigid and absolutistic demands on themselves, others and world conditions to flexible and workable preferences.

e) Show clients that when they actively and persistently dispute their IBs, they can create an effective new philosophy that includes strong rational coping statements that can help them feel as well as live in better conditions. These beliefs are best disputed through realistic, logical and practical reasoning which is accomplished by using the above ABC model of emotional episodes.

The above explanation shows how REBT relates to techniques that can help clients challenge, dispute as well as question their destructive and self-defeating cognitions, emotions and behaviours for more rational and self-constructive ones (Engels, Garnefski & Diekstra, 1993). This implies REBT to be among the major techniques used in managing problems in various aspects of life, example of which implies to stress.

2.6.1.3 The Distinct Features of REBT

These features include 'therapeutic relationship', which are the core conditions of empathy, respect and genuineness. 'Therapist warmth' advocates reasonable warmth because being overly warm runs the risk of reinforcing clients' dire need for approval. 'Therapist acceptance' is where clients receive unconditional acceptance which teaches clients to accept themselves, whether they are accepted or not by their therapists and others. Another feature is 'therapeutic style of

informality', though formal style can be applied, when necessary. There is also 'therapists' humour' which focuses on the clients' affairs, rather than focusing on the clients themselves (Rogers, 1951) and Dryden and Neenan (2002).

2.6.1.4 View on Human Nature

The theory views man as both rational and irrational, with a personality comprising beliefs, constructs or attitudes. Ellis (1962) emphasized that when man is rational, he becomes effective, happy, competent and forward-looking. Thus, neurotic behavior or emotional disturbances result from his/her illogical or irrational thinking. Hence, man (being logical) feels the particular need and capability of learning to replace his recognized irrational, inconsistent and unrealistic perceptions with rationality and reasonable philosophy (Bulus, 1998).

2.6.1.5 Therapeutic Techniques of REBT

These include teaching in order to re-perceive clients' life events for modifying and disputing the irrational thoughts, emotions or behaviours; Uncovering clients' past and present illogical thinking by bringing them to attention and showing them the effects of maintaining such disturbing and unhappy feelings which could be achieved by demonstrating the exact kinds of their internalized illogical thoughts. Such can also be achieved by teaching how to re-think on these internalized thoughts and also how to challenge and contradict them. Relationship techniques, insight, interpretative and supportive techniques to gain trust and confidence are as well significant; Wide assortment of techniques like desensitization, operant conditioning, didactics teaching, use of bibliotherapy, philosophic discussion and house work are also essential as well as re-enforcement skills and tape listening. Assistance can similarly be rendered through encouragement, persuasion or cajoling/sweet-talk (Ellis, 1962) and (Dryden & Neenan, 2002).

Another technique involved with 4 steps is described as-Detecting clients' irrational beliefs; Discriminating these beliefs from the rational alternatives; Disputing the irrationality by strengthening clients' convictions with those that are rational; Weakening of those thoughts which are irrational (Huppert, 2009).

Dryden and Neenan (2002) similarly presented nine (9) effective criteria of REBT psychotherapy indicated as- Brevity, which refers to helping clients in as short a time as possible; Depth-centeredness, referring to helping clients to focus at the deep level of the irrational beliefs; Encouraging clients to change to rational beliefs; Pervasiveness, referred to as assisting them in dealing with numerous problems, rather than dealing with a few presenting symptoms; Extensiveness, referring to helping them not only to minimize their disturbed feelings but to also promote their potentialities for happy living; Assisting them through a plethora of cognitive, emotive and behavioural techniques in a thorough-going manner. Helping them to maintain progress in their therapeutic programs; Assisting them in dealing with vulnerable factors that could lead them to experience some lapses and relapse; Aiding them to develop and promote new preventive measures for both present and anticipated problems (Dryden and Neenan, 2002).

Since clients' ways of thinking are largely determined by how they feel and behave, REBT as a cognitive technique and with several therapeutic approaches could adequately assist in coping with both academic and domestic stressful experiences of the married and single NCE female students. Thus, the students' distorted stress related thought patterns could be treated appropriately for effective academic outcome and general wellbeing.

2.7.1 Personal Construct Theory (PCT):

PCT being a cognitive approach to personality developed by Kelly (1955) relates adequately to CRT which is one of the theoretical bases for this study. Constructs, which Kelly regards to be the basic unit in this theory are interrelated in an organized and coherent fashion, in form of a hierarchy, with some at lower (subordinate) and others at higher (super-ordinate) levels (Carver & Scheier, 2004). For example, 'organized' versus 'disorganized' may presume 'neat' versus 'dirty'. Constructs in other words are seen to be personal and as such, responsible for determining peoples' reactions to incoming stimuli or information, which enable them to organize their environmental experiences (Ryckman, 1978) and (Boeree, 2006). This makes Kelly (1955) the best example giver of cognitive approach to personality, which aims at explaining human behavior in terms of using their internal processes to increase the understanding of their world (Ryckman, 1978).

2.7.2 Contents of Personal Construct Theory

How these experiences occur according to Kelly (1955) is referred to as 'The Experience Cycle', which involves 5 steps, indicated as (a) 'Anticipation', described as Hypothesis, (b) 'Investment' which relates to events and the experiences encountered in that event,(c) 'Confirmation' of the hypothesis/anticipation(d) 'Disconfirmation' of the hypothesis/anticipation. The final step is that of 'Constructive Revision' which depends on the outcome, referring to either confirmation or disconfirmation of the hypothesis.

2.7.3 View on Human Nature

As a result of scientists and therapists peculiar attitude of looking down on their clients and also by regarding Freudian training as less appropriate, Kelly (1955) developed his own theory with a ‘fruitful metaphor’ which views man as an eminently rational being who gives meaning to his world through his personal constructs. Thus, the theory perceives "man-as-a scientist". Common man therefore, including those seriously mentally ill as Kelly (1955) noted have also constructions of their own realities and that no one's perspective is to be completely ignored, even though there is no any perfect perspective (Boeree, 2006). As such, man is able to revise his constructs based on experience. Man also engages into behaviors that test his expectations in order to improve his understandings of reality, based on his experiences, for adjustment (Boeree, 2006).This reveals that PCT portrays an optimistic view of man, for it is his rationality that makes him the author of his destiny. As such, man is capable to formulate and utilize various forms of construct patterns in his unique approaches to reality (Carver & Scheier, 2004).

There is what Kelly (1955) described as Personality and the Philosophy of Constructive Alternativism which refers to a situation where re-evaluation comes about by improving the construct patterns through exploration and experimentation as well as by revisiting, altering or subsuming them. The simple explanation here according to Schultz (1976),(Ellis, 1989) and Boeree (2006)is that ‘man is free to revise, replace or alter his constructs. Thus, Kelly (1955) views human behavior as ‘basically anticipatory, rather than reactive and that new avenues of behavior open themselves when man constructs the course of events which he surrounds.’ This is because there are always numerous alternative constructions available to choose in dealing with the world because some behaviours are controlled by external forces (Kelly, 1955). Thus, man is

capable to construct, re-evaluate, revisit, distance or discard any constructs patterns because he is afforded the free will to alter or replace his present interpreted events. Determinism and freedom are therefore inseparable in order to understand, predict and control the world, to fit into reality. As such a thoughtful man is neither a prisoner of his circumstances, nor the victim of his biography'.

Personality development according to Kelly (1955) attempts to understand, predict and control the world by formulating and using a construct system, while the development process is a systematic and dynamic interaction between man and the environment. Therefore it is when these formulated constructs integrate into the objective circumstances (confirmed) that man has 'a balanced personality.' If they (constructs) are at variance with the reality, it turns out to be 'a disorganised personality'. Thus, re-evaluation becomes necessary through improving the construct patterns by exploring and experimenting as well as revisiting, altering or subsuming these constructs.

2.7.4 Expectations of Personal Construct Theory

All these processes of constructs formations are determined, not just by the reality but by man's efforts to anticipate himself, including others, from moment to moment, day-to-day and year-to-year **(**Schultz, 1976) and (Webber, 1979). This as Kelly (1955) affirmed is as a result of the experiences he encounters when he moves from one way of looking at the world and that of others. It is as well due to the fact that personality development is a function of cognitions which specifically relates to making meaning of life events (Boeree, 2006). Psychological health therefore according to Kelly (1955) is the ability to revise constructs based on evidence (Boeree, 2006). PCT has its goals of 'opening people up' to alternatives, by helping them to discover their

freedom in order to be able to live up to their potentials. These theoretical goals presented by Schultz (1976) involve helping clients to increase their freedom of movement in life and also by assisting them to revise their constructs when necessary. Same also applies to making better predictions of their environments.

2.7.5 Effectiveness of PCT

Psychopathology and therapy relate to psychological disorders, referring to behaviors and thoughts that include neurosis, depression, paranoia and schizophrenia, which are situations loaded with anxiety, stress, hostilities, threats, guilt or unhappiness. They occur due to constructs malfunctioning which are situations that require treatments through the effective techniques of PCT (Boeree, 2006).

2.7.6 Techniques of Personal Construct Theory

A series of experimental treatments are used with clients in PCT, which involves that of interview (Ryckman, 1978).Other techniques include enactment-for encouraging movement, fixed-role therapy, fixed-role sketch, character sketch and home-work. These rigorous techniques of PCT psychopathology and therapy are very appealing to modern cognitive psychologists (Boeree, 2006).

Since constructs are notably known to be responsible for determining ways that an individual organizes himself and environmental experiences, a stressed student could therefore be helped to understand, predict as well as control his/her world by reforming his/her construct patterns in order to fit into reality, which refers to regaining back of ‘balanced personality”. Precisely, this could be achieved by interrelating and also organizing the coherent nature of these students’ constructs. Thus, they can discard their cognitive, physical, behavioural, psychosocial,

mental, emotional, imagery, interpersonal as well as the biological stress related constructs that predispose them to poor academic performances and other numerous problems as a result of the ability they have in revisiting and re-evaluating their environments through proper applications of PCT effective techniques.

2.6.1 Application of Bounded Rational Sequential Decision Making Theory

Bounded Rational Sequential Decision Making was proposed by Herbert A. Simon (1947) who was similarly acknowledged as the founder of behavioural human decision theory. In decision making however, Simon had accepted the notion of bounded rationality, instead of the assumed one of perfect rationality despite having participated in numerous psychological areas of perception, imagery, memory and thinking (Campitelli & Gobett, 2004).He theorized that human decisions and judgments are limited by available information, time constrains and cognitive limitations (Campitelli & Gobett, 2004).

The distance between rationality and behavior is bridged by the concept of decision making (Simon, 1958). Barnard (1950) further clarified that decisions that people make as organization members are significantly different from their personal ones. Thus, personal decisions may be developed in any particular organization and can as well continue to be made on their extra organizational lives (Yates & Tschirhart, 2006). Simon's approach has therefore led to improved specification of cognitive processes as well as understanding of the interaction between characters of the cognitive system and the environmental contingencies. This also explains that the approach has emphasized the limitations of cognitive systems in decision making, which corresponds to the holistic decision theory of Gelatt (1989).

2.6.2 Conditions and Processes of Bounded Rational Sequential Decision Theory.

The theoretical conditions according to Simon (1947) are emphasised on three important aspects, noted as:

- The Cognitive System-Use of rationality.
- The Role of Search- Environmental characters, the attributes of the task at hand, the current state of search and the information gained.
- The Status of Heuristics- Deliberate mental shortcuts by focusing on one aspect of a complex problem and ignoring others. In other words, heuristics usually govern automatic intuitive judgements through application of simple but efficient rules in decision making and forming judgements.

The theoretical characters as explained by Campitelli and Gobett (2004) are based on three main assumptions because the adequacy criteria applied are not fixed.

- That, first decisions are not performed by agents with perfect rationality.
- That, qualities of decisions vary, for they depend on the levels of expertise of the decision makers. This according to Simon is because experts are more selective in choosing better options due their efficiency in applying higher satisfaction thresholds by using better heuristics and evaluations functions, though their cognitive system does not differ from that of novices. This is because they focus early on the likely solutions, while the novices tend to consider the less- relevant alternatives. Thus, Simon believed experts to be more refined satisficers than novices, despite reiterating the fact that they can never be perfect rational agents.
- To understand decision making, analysis based on performance alone is not sufficient, as it is paramount to investigate the cognitive processes involved.

Simon (1955, 1956 & 1957) strongly criticised the 'perfect rationality' point of view by arguing that humans have a bounded rationality because of complexities of their limited cognitive systems as well as environmental hitches. These make it impossible for them to find maximum or real life decision making situations. Thus, Simon (1956) proposed that people do not maximize but that instead, they 'satisfice'. Satisficing here refers to choosing 'a good enough option' which means that they have an adequacy criterion to decide whether an alternative is satisfactory and that they choose the first option that fulfils that criterion. Hence, they do not evaluate all the available options as well as carry out a full cost benefit analysis of the possible options. Limitations of the cognitive system and that of assessing of the relevant information do not therefore give rooms for perfect rational decisions (Gigerenzer & Reinhard, 2002) and Campitelli & Gobett, 2004).

- **Disparities Between Bounded Rational Decision and Other Decision Theories**

Bounded rationality theory for example differs from others as in the case of mainstream economic type because the methods applied are not fixed, due to the variations based on the levels of expertise of the decision makers, environmental characters, the attributes of the task at hand, the current state of search and the information gained so far, as noted earlier. That is why the parameter of rationality is how well a cognitive process helps an individual to adapt to the environment (Gigerenzer, 1996). This implies that participants' rationality should be tested in real world tasks because they are adapted to it and not to unrealistic situations. The theory in a nutshell states that when individuals make decisions, their rationality is limited by the tractability of the decision problem, the cognitive limitations of their minds and the time available to make that decision (Simon, 1957 & 1976). Interestingly, Simon's challenger of perfect rationality models that uphold analyzing of all alternatives have failed the test (Campitelli & Gobett, 2004)

as a result of an empirical research study conducted by Kahneman, Slovic and Tversky (1982). A simple explanation from this theoretical assertion is that relatively good decisions can be made without the need to analyze all alternatives, which in most situations is believed to be impossible.

This indicates that bounded rationality theory can be applied to treat students with stress symptoms like pessimism, self criticisms, negative self talk, exaggeration and over-analysing as well as other predisposing factors such as rapid growth in adolescence, effects of weather, menopause and unreliable means of transportation apart from both their domestic and academic associated ones. They can be encouraged through counseling to develop more self confidence in dealing with such situations or when faced with other different life challenges.

2.6.3 Developmental Stages of Bounded Rational Decision Making Theory

Simon (1947) made a suitable context/framework of SDM in organizations (Balsic, 2013) that comprises of three stages described as:

i) Identification Phase: Finding occasions for making a decision, referred to as "searching the environment". This means that once the environment has been searched, the need for decision is identified and the 'design phase' commences. It is also referred to as 'intelligence'-(borrowing the military meaning of intelligence).

ii) Development Phase: Finding possible courses of action, which Simon (1947) referred to as 'design'. This comprises investigating and developing the problem domain and alternatives.

iii) Selection Phase: Choosing among courses of action, which Simon (1947) referred to as 'choice'. Balsic (2013) specified this stage to be a particular phase of "design and choice" being responsible for activities related to selection of the most appropriate course of action from the numerous generated alternatives.

- **Disadvantages of Bounded Rational Decision Making Theory**

There arise some criticisms related to limitation of knowledge and also that of cognition (cognitive limitations), despite the straightforwardness and numerous advantages inclined of this theory (Campitelli & Gobett, 2004). According to Sterm and Lavelle (2006) problems arise due to limited capacity of processing all the necessary information required. These criticisms show that some problems or situations can come about that need more deliberations on both knowledge as well as cognition.

2.7.1 Application of Cognitive Restructuring Theory

Cognitive Restructuring being an effective therapeutic technique is recognized as one of the significant segments of Cognitive Behavioural Therapies (CBT). Brain (2006) assured Beck and Ellis to be noted among the pioneers of CRT. As a theory, CRT involves both cognitive and behavioural techniques that change negative thinking, known as 'cognition' and also ways of responding to these thoughts, referred to as 'behaviour'. Feelings, according to Ellis (1989) are caused by thoughts. That is why Otte (2011) and Seligman and Ollendick (2011) reiterated that both healthy and unhealthy feelings have significant inclination to mental abilities. Thus, in reaction to life events, CR relates to emotions and other psychopathological aspects concerned with both normal and abnormal psychological interventions (Roth & Fonagy, 2005) and (Shobola, 2007) as well as a process of helping clients to change their maladaptive thoughts, rigid and extreme beliefs to those which are rational, flexible and non-extreme (American Psychological Association, 2000) and (Salman, Esere, Omotosho, Abdullahi & Oniyangi, 2011). Through this process therefore, clients' distorted thoughts are challenged and tested to bring about more positive thoughts, feelings and behaviours (Sharf, 2004) and Yahya (2006). This also

indicates CRT as a process of learning to replace current negative thoughts and experiences with realistic and more beneficial ones Froggatt (2002), (Omoegun, 2003) and (Ryan & Eric, 2005).

- **View on Human Nature**

CR theory considers man as a logical being, capable of distinguishing right from wrong. Thus, man becomes wholly responsible for generating his dysfunctional or negative emotions and their consequential outcomes. That is why Ogechiesesre (2002) disagreed with the psychoanalysts' point of view by noting certain irrational beliefs as the primary causes of human distress, not as a result of the unconscious impulses. As such man being logical, can discard such negative emotions, feelings and actions by breaking them into smaller parts (Driessen & Hollon, 2010) and (Matusiewicz, Hopwood, Banducci & Lejuez, 2010). This corresponds to the postulations of Murphy, Straebler, Cooper and Fairburn (2010) who assert that clients with extreme and unhelpful problems like social withdrawal, stress, anxiety, depression, drug and alcoholic addiction, sexual and relationship problems could be assisted to revive their (balanced) personality. As such, therapists/counselors apply the various therapeutic techniques of CRT to effect healthy and beneficial changes on their clients. Clients can therefore think to resolve their situational problems, symptoms and events by developing logical and positive beliefs about themselves, others and the world around (Rachman, 1997) and (Gale Encyclopedia of Medicine, 2008).

2.7. Elements of Cognitive Restructuring

Cognitive Distortion (CD):

To understand CRT, it becomes necessary to know what brings about the need for re-structuring. As noted earlier, CD is identified as an irrational thought which though, consciously

made but is hardly recognized by the client as the sole root responsible for his/her psychological ailment. Thus, peoples' interpretations, evaluations, underlying beliefs and thoughts are associated with distortions, errors and biases that could result to unnecessary suffering. This is an indication that most emotions and behaviours occur as a result of what people think or believe about themselves, about others and the world at large. Thus, cognition influences peoples' feelings and responses by interpreting and evaluating things which happen to them. That is why Roth and Fonagy (2005) reiterated that individuals behave according to their unhelpful ways of thinking (usually for over a long period) which ultimately affect their behaviours, emotional and physical feelings. CRT is therefore viewed as a kind of psychotherapeutic process of learning designed to identify and dispute irrational or maladaptive thoughts as well as focusing on 'here and now', instead of on causal factors (Ellis, 1989), which contrasts to the theoretical view of Psychoanalysis.

The common patterns of cognitive distortions identified by Sharf (2004) are noted as-

1. All or Nothing Thinking-Looking at things in absolute black and white, instead of on a continuum. In other words, things are perceived as either complete success or total failure. For example, if something is less than perfect, one sees it as a total failure.

2. Over generalization-This refers to viewing negative events as part of never ending patterns of negativity while ignoring evidence to the contrary. An individual can easily realize that he/she over-generalises when words such as never, always, all, none, nobody or everybody are often used by him/her.

3. Tunnel Vision-This is where an individual is only able to see the negative aspects of situations.

3. Mental Filter-Inclined to the above, this is where an individual focuses and only dwells exclusively on the negatives and ignoring the positives.

4. Magnification or Minimization-This occurs in cases where individuals magnify/exaggerate the negative inconveniences and on the other hand minimize those that are positive. This also relates to situations known as catastrophising that is a situation of telling the self that the undesirable situation is unbearable, while in reality it is just uncomfortable or inconvenient.

5. Discounting the Positive-This is maintaining a negative belief about self that all positive qualities and life accomplishments are only achieved out of luck but not by efforts or maintaining this negative belief to someone else.

6. Jumping to Conclusions-(A) Mind Reading-This is where without any evidence, an individual assumes that people are reacting negatively towards him/her instead of considering other possibilities or making effort to check it out. The negative effect of mind reading is more dangerous because it distorts the mind as well as feelings.

7. Jumping to Conclusions-(B) Fortune Telling-This is anticipation of negative feelings that things will turn out badly and also feeling convinced that the prediction is an already established fact. It often involves:

- Overestimating the probability of danger.
- Exaggerating the severity of the consequences, should the feared event occur.
- Understanding one's ability to cope, should the event occur.

8. Emotional Reasoning-This refers to reasoning based on an individual's negative emotions and ignoring contrary evidence. For example, "because I feel it, it must be true". "I feel stupid, therefore, I am stupid".

9. Rigid Rules (Perfectionism)-This refers to having a precise and fixed idea on how a person or others should behave as well as overestimating how bad it is when these expectations are not met. Or in other words criticizing the self or others, often with phrased or expressed "shoulds", 'should'nts', "oughts", 'ought 'nts', 'have tos', 'have 'nts', 'musts' or "must'nts" statements.

10. Unfair Judgements-This is holding the self personally responsible for events that are not or not entirely under a person's control or otherwise blaming others and overlooking ways in which he/she might have also contributed to that problem.

11. Name-calling-This is putting an extremely negative and emotionally-loaded label on the self or others. It is an extreme form of magnification and minimization and also represents a gross over generalization.

12. Personalisation and Blame-This refers to attribution of personal responsibility, causal role or blame for events over which a person has no control on or attributing same to others.

13. Labelling-This refers to a fixed generalized identification of an individual's shortcomings and also doing it to others.

These distorted thought patterns show that most emotions and behaviours result from what was thought or believed on the self, others and the world. Thus, it is the cognition that shapes how to interpret and evaluate the experiences and also influences feelings as well as guides on how to respond effectively to these experiences. However, sometimes these thoughts, interpretations, evaluations and underlying beliefs contain biases, errors or distortions that are not favourable or beneficial, which eventually result to unnecessary sufferings that lead to unfavourable reactions (Nelson, 2011). Hence, cognitive therapists assist clients to identify these distorted thoughts through collaborative efforts in order to learn how to replace them with healthier thoughts that lead to more desirable reactions and feelings (Grohol, 2015).

- **Therapeutic Relationships of CRT**

Sharf (2004) disclosed that Freeman presented fifteen (15) different CR therapeutic relationships and summarized the basic ones as-

i) Understanding Idiosyncratic Meaning-Words can have different meanings from different people, depending on their automatic thoughts and cognitive schemes. That is why counsellors must be able to instantly clarify what clients mean by certain words.

ii) Challenging Absolutes-Generalised absolute statements are often made by clients, which are biased. Such examples include: Nobody, everybody, I can never, all the time, etc. Questioning or challenging such absolute statements assist counsellors to derive more accurate statements from their clients.

iii) Looking at Normal Situations as Catastrophic-Clients magnify or paint events, ideas or outcomes negatively. A client for example may magnify his/her anticipated failure by saying "If I fail that exam, my life is finished". Thus, the counselors attempt to make the clients see the failure within it's own limits.

v) Challenging all or Nothing Thoughts-This is a perfectionist idea. In passing of the exams for instance, client may see anything below excellent grade as a failure. The counselors therefore make clients understand that it is not scoring everything in the exam that shows one's worth because with average grades, one could still become very progressive in life.

vi) Cognitive Rehearsal-The client here is made to imagine the situation or idea in which he/she has the distorted thought. He/she is first made to imagine the event with it's negative outcome and then later with it's positive consequences.

- **Ways of Untwisting Automatic Thoughts/Identifying the Distortion-**

i) Re-attribution-Clients automatically assume that they are bad and sometimes attribute responsibilities for situations or events to themselves while they do not actually have any control or responsibility for them. They put the blame on themselves which makes them feel guilty or even depressed about what they did not do. Here attempts are made by the counselors to challenge or replace the distorted thoughts with more rational ones by focusing on solving the problem.

ii) Cost Benefit Analysis- By listing the advantages and disadvantages of distorted thoughts related to thinking, behavior patterns or self defeating beliefs, a client is able to see for him/herself how illogical his/her thoughts are in order to replace them with those that are more logical.

iii) The Semantic Method-Refers to simple substitution of a language that is emotionally loaded or less colourful. For instance, it is preferable to say: 'It would have been better if I hadn't made that mistake ', instead of the emotionally loaded one like 'I shuold'nt have made that mistake'.

iv) Defining of Terms (Labeling of Distortions)- There are cases where clients label themselves as being 'inferior', 'fools' or 'losers' due to cognitive distortion. Counselors' responses to answering such questions that there are no such definitions of things like fools or losers help in reducing their distorted thoughts because they feel better and can as well be counseled to realize more positive thoughts that can significantly assist them in life.

v) The Survey Method- Clients in this situation are aided to ask questions in order to find out whether their thoughts and attitudes are realistic or otherwise. A client with public speaking anxiety when counseled, for instance is expected to realize that his/her situation is not as

shameful or abnormal as he/she has thought but a situation where several people respond to by admitting their feeling of nervousness before giving a talk.

vi) Thinking in Shades of Grey-If the self is seen as a general failure, clients should be counseled to think of the experiences they had with partial success (and not total failure) in order to realize what can be learnt from the situation.

vii) Experiment Technique- A client can learn to test the validity of his/her negative thoughts with experiments. For instance, if he/she thinks that he/she is about to die of heart attack, he/she can be encouraged to jog or run, so that it can be proved that the condition is not as critical as he/she thought it to be.

viii) Double-standard Method-Instead of self-condemnation, client should be counseled to talk to the self in a compassionate manner.

ix) Examining the Evidence-Clients should be counseled to examine their assumed negative thoughts with actual evidence for them. By listing several things that had been achieved with full success, they can realize that they had accomplished a lot of things without any failure (Burns, 1989).

- **Therapeutic Processes of CRT**

The new thinking habits are expected to be adequately achieved through collaborative process of teaching in order to re-perceive the clients' life events for modification as well as disputing these irrational thoughts, emotions or behaviours. Treatment can also be achieved by uncovering clients' past and present illogical thinking by: (a) Bringing them to attention and showing them the effects of maintaining such disturbing and unhappy feelings, (b) by demonstrating the exact kinds of their internalized illogical thoughts, (c) by teaching them how to re-think on these internalized thoughts, (d) by showing them how to challenge and contradict

them (these internalized thoughts) (Ellis, 1962) and (Dryden & Neenan, 2002). With the aid of using diaries, clients are also able to actively engage into various types of assignments conducted to aid in the therapeutic exercises.

- **Technique of Hope, Burns, Hyes, Herbert and Warner (2010)**

The steps of these techniques are noted as-

(1) Identification of the problematic cognitions-known as "automatic thoughts" which also refers to dysfunctional or negative views of the self, world or the future.

(2) Identification of the cognitive distortions in the automatic thoughts.

(3) Rational disputation of the automatic thoughts with Socratic dialogue.

(4) Development of a rational rebuttal to these automatic thoughts.

- **Burns (1980) Therapeutic Steps of CRT**

These steps are presented as-

(1) Identifying the thoughts or beliefs that influence the disturbing emotion.

(2) Evaluating them for their accuracy and usefulness.

(3) Using logic and evidence on the thoughts or beliefs that influence the disturbing emotion.

(4) Modifying and replacing them with those that are more useful.

- **Therapeutic Processes of CRT of Beck (2005)**

The therapeutic relationships of Beck, cited in Sczentagotai (2005) are as follows

(1) Identifying maladaptive cognitions.

(2) Modifying maladaptive cognitions.

(3) Assimilating adaptive cognitions.

- **Therapeutic Processes of Learning, Huppert (2009)**

These are indicated to include CR therapeutic processes as learning, which involves Logical Disputation, Psycho-education, Monitoring, Imagined Exposure, Behavioural Activation, Homework and Assignments. They also involve Coping Skills, Assessments, Relaxation, Challenging Certain Thoughts, Thought Stopping, Projects and Training in Communication (Longmore & Worrell, 2007) and (Foa, 2009). Another process indicated by Colin (1997) and Hope, Burns, Hyes, Herbert and Warner (2010) involve Rational Emotive Therapy (RET). These various and effective therapeutic techniques assist counselors/therapists to aid their clients to challenge, contradict and re-verbalize their illogical thoughts to those that are more constructive, meaningful and useful.

2.7.3 Cognitive Distortion and Stress

According to Ellis (1958) individuals are often indoctrinating themselves with false beliefs that were developed over some time which cause them feelings of inferiority, fear or inadequacy. This shows that distorted thoughts are not caused by events but by philosophies and beliefs. Man therefore, becomes wholly responsible for generating his dysfunctional or negative emotions and their consequential outcomes. Thus, certain irrational beliefs are the primary causes of human distress, not as a result of the unconscious impulses (Ogechiesesre, 2002). Hence, CR which Brain (2006) viewed as a means of changing negative perception to less stressful conditions could be used to examine and treat distorted thoughts, feelings and actions. Clients could therefore be able to reduce or even totally get rid of their negative reactions through interpreting situations or events with greater accuracy as a result of their rationality of distinguishing right from wrong.

Man's negative thoughts, emotions and actions can therefore be discarded or modified thorough these wide assortment of techniques that include supportive services, insight, interpretations, techniques of relationship, desensitization, operant conditioning, didactics teaching, use of bibliotherapy, philosophic discussion, re-enforcement skills, tape listening, encouragement, persuasion or cajoling/sweet-talk (Driessen & Hollon 2010) and (Matusiewicz, Hopwood, Banducci & Lejuez, 2010).

Considering the above clarifications, students can learn and also continue practicing these CR techniques if counselors can assist them to widen their conscious perspectives for positive changes by rethinking and considering more adaptive patterns of favourable alternatives at the initial stages of their stress symptoms. As such, these numerous irrational symptoms of stress inclined to cognitive, physical, behavioural, psychosocial, mental, emotional, imagery, interpersonal and biological phases such as muscles ache, frequent illnesses, anxiety, fear, hopelessness, isolation, neglect of responsibility, guilt, embarrassment, difficulty in decision making, disorientation, poor time management, loss of sense of humour, gossips, worries, chronic fatigue, nervous cough, nail biting, tearfulness, impaired speech, sleep and appetite pattern changes, jealousy, suspicion, manipulative tendencies as well as poor recreation and those of personal hygiene and self image could be seriously dealt with, despite the existing disparities as a result of 'stress finger prints' due to individual differences. These stressful thought patterns can be so strong, persistent and automatic prior to therapy, until new thinking habits become stronger, with regular practice.

- **Stress Treatment with CRT and other Techniques**

Related to CRT and stress treatment is a study conducted on academic stress and health outcomes among college students by Aya (2009). (61.3%) of the respondents were females and

under 30 years of age. The findings revealed strong relationship between stress and health and also significant correlation of stress with coping and academic self efficacy. A similar study on effectiveness of C.R and systematic desensitization techniques in controlling high-stakes test anxiety among secondary students was conducted by Muhammad (2014). 40 respondents out of a population of 300 were selected through purposive sampling technique. The findings revealed CR treatment to have significant effect at reducing the students' high-stakes test anxiety, though systematic desensitization treatment was similarly effective.

Another study on effectiveness of CR and proper study skills in reduction of test anxiety symptoms among high school students was conducted by Kivi, Rafeie and Kiani (2015) with a population of 300 and a sample size of 30. Results indicated that anxiety scores for experimental group were reduced due to the intervention of the treatment techniques and there was also significant difference in effects of both techniques in reducing the anxiety symptoms when compared to the control groups. Moreover, it was revealed that the effect of CR was more than that of correct study skill. Similarly, Pradhan, Mendinca and Kar (2014) conducted a **cross-sectional experimental design** research titled evaluation of examination stress and its effect on cognitive function among medical students, with a total of 100 sample size (49 males, 51 females) of age groups 18-21 years. The findings indicated all the parameters to be significantly increased in pre-examination setting as compared to post-examination setting, irrespective of gender. The results also revealed that excessive stress affects cognitive functions and the students' performance in examinations. It is further observed that the female counterparts were more stressed than their male counterparts.

2.8.0. Review of Empirical Studies

2.8.1Empirical Studies of SDM Techniques

The reviewed related studies presented in this research involved those conducted both within and outside the country. However, those of the SDMT as can be observed are very scanty, when compared with that of the CRT, though it (SDM) has for long been applied in some researches related to scientific, psychological, physiological, physical and also psychosocial fields. That is why Littman (1996) described the technique to be fundamentally inclined to gigantic marketing ventures, long term health related planned schemes and also numerous areas associated with scientific environmental projects. A similar declaration by Alagoz, Hsu, Schaefer and Roberts (2009) is that SDM techniques are powerful analytical tools widely applied in scientific, industrial, marketing, specific health related areas of expertise and different spheres of environmental aspects.

However, among the few reviews presented in this study include one titled Simultaneous versus Sequential Counselling, for Multiple Behavior Change which was carried out by Hyman, Pavlik, Taylor, Goodrick and Moye (2007).A randomized experiment was implemented in a publicly funded primary care setting to test whether a sequential presentation of stage on change-based counselling could be more effective at stopping smoking, reducing dietary sodium level and increase in physical activity than the technique of Simultaneous Counselling. A total of 289 (67.3% female) African Americans with hypertension, aged 45 to 64 years that were initially non adherent to the 3 behavioral goals were randomized to the following conditions: (1)1 in-clinic counseling session on all 3 behaviors every 6 months, supplemented by motivational interviewing by telephone for 18 months; (2) a similar protocol that addressed a new behavior every 6 months; or (3) 1-time referral to existing group classes ("usual care"). The primary end

point was the proportion in each arm that met at least 2 behavioral criteria after 18 months. Out of the 289 respondents, 230 (79.6%) completed the study.

The results revealed that only 6.5% in the simultaneous arm, 5.2% in the sequential arm and 6.5% in the usual-care arm were able to meet the primary end point in the 18 months. However, results for single behavioural goals consistently favoured the simultaneous group. At 6 months, 29.6% in the simultaneous, 16.5% in the sequential, and 13.4% in the usual-care arms had reached the urine sodium goal. At 18 months, 20.3% in the simultaneous, 16.9% in the sequential, and 10.1% in the usual-care arms were urine cotinine negative. It was concluded that long-term multiple behavior change is difficult in primary care. Thus, the study provides strong evidence that addressing multiple behaviours sequentially is not superior to, and may be inferior to, a simultaneous approach.

Another empirical study was that conducted by King et al (2014), titled Behavioral Impacts of Sequentially versus Simultaneously Delivered Dietary, Plus Physical Activity (PA) Interventions: The CALM Trial. The aim was to make an evaluation on combining dietary and physical activity (PA) interventions to enhance adherence. They tested how sequential versus simultaneous diet, plus PA interventions affected behavior changes by using 200 respondents over age 44 years, not meeting national PA and dietary recommendations (daily fruits, vegetable servings and percent of calories from saturated fat) were randomized to one of four 12-month telephone interventions: Sequential (Exercise-First or Diet-First), Simultaneous, or Attention-Control. Later at 4 months, the other health behavior was added in the sequential arms.

In the results, 93% of the respondents were retained through 12 months. At 4 months, only Exercise-First improved PA, and only the Simultaneous and Diet-First interventions improved dietary variables. At 12 months, mean levels of all behaviors in the Simultaneous arm

met recommendations, though not in the Exercise-First and Diet-First arms. Thus, the researchers observed a possible behavioral suppression effect of early dietary intervention on PA that merits investigation.

A similar research by Schulz, Kremers, Vandelanotte, Adrichem, Schneider, Candel and Vries, (2012) was titled Effects of a Web-Based Tailored Multiple-Lifestyle Intervention for Adults. The research was based on a two-year Randomized Controlled Trial, Comparing Sequential and Simultaneous Delivery Modes. It was aimed at testing the effects of a sequential and simultaneous Web-based tailored intervention on multiple lifestyle behaviors. With 3 tailoring conditions (ie, sequential, simultaneous, and control conditions) in the Netherlands in 2009-2012, a randomized controlled trial was conducted. Follow-up measurements took place after 12 and 24 months. The intervention content was based on the I-Change model. In a Health Risk Appraisal, all respondents (N=5055) received feedback on their lifestyle behaviors that indicated whether they complied with the Dutch guidelines for physical activity, vegetable consumption, fruit consumption, alcohol intake, and smoking. Respondents in the sequential (n=1736) and simultaneous (n=1638) conditions received tailored motivational feedback to change unhealthy behaviors one at a time (sequential) or all at the same time (simultaneous). Mixed model analyses were performed as primary analyses while regression analyses were done as sensitivity analyses. An overall risk score was used as outcome measure. Effects on the 5 individual lifestyle behaviors were then assessed and a process evaluation was performed regarding exposure to and appreciation of the interventions.

In the results, both tailoring strategies were associated with small self-reported behavioral changes. The sequential condition had the most significant effects compared to the control condition after 12 months (T1, effect size=0.28). After 24 months (T2), the simultaneous

condition was most effective (effect size=0.18). All 5 individual lifestyle behaviors changed over time, but few effects differed significantly between the conditions. At both follow-ups, the sequential condition had significant changes in smoking abstinence compared to the simultaneous condition (T1 effect size=0.31; T2 effect size=0.41). The sequential condition was similarly more effective in decreasing alcohol consumption than the control condition at 24 months (effect size=0.27). Change was predicted by the amount of exposure to the interventions (total visiting time: beta=–.06; P=.01; total number of visits: beta=–.11; P<.001). Both interventions were appreciated well by respondents without significant differences between conditions. It was concluded that although evidence was found for the effectiveness of both programs, no simple conclusive finding could be drawn about which intervention mode was more effective. Thus, the best kind of intervention may depend on the behavior that is targeted or on personal preferences and motivation. It was recommended that further researches are needed to identify moderators for intervention effectiveness.

A two year research study on the SDM technique and Reinforcement Learning was similarly carried out by Pednault, Abe and Zadrozny (2002) and was aimed at maximizing total marketing benefits. The result revealed that the proposed method for optimizing total accrued benefits out-performed the usual targeted-marketing methodology, which indicates the positive effect of the SDM technique.

Lollett, Rogova and Scott (2003) also conducted their study using SDM technique on homogeneous and non-communicating multi-agent system, guided by reinforcement learning. The results demonstrated the feasibility and benefits of the SDM technique for both military and nonmilitary purposes with regards to limited resources in time-constrained situations;

improvements in decision utilities; reduction of decision latency as well as improvements inclined to medical decision-making and life-threatening situations.

2.8.2 Empirical Studies of CRT

Among the CRT related researches in this study is one carried out by Rosenberg, Jankowski, Fortuna and Mueser (2011). They explored the Feasibility and Efficacy of a Manualised CR Program for Treating Adolescents Suffering from Posttraumatic Stress Disorder (PTSD). Nine (9) girls and three (3) boys with PTSD were enrolled into 12–16 weeks individual treatment on weekly basis. Paired t-test was used to test pre-post change for PTSD symptoms and depression. There were statistical significant improvements in both PTSD symptoms, t(8)=8.81, p 0.05 and depression, t(8)=6.38, p0.05. Treatment gains were maintained at the 3 month follow-up for both PTSD symptoms, t(7)=10.32, p 0.05 and depression, t(7)=6.08, p 0.05. The results showed that depressive symptoms had been reduced substantially among each participant. Therefore all clients rated themselves as improved. Thus, with improvement seen as related to treatment and both at post treatment and follow-up, the feasibility of implementing a manualized CR program to treat PTSD in adolescents was suggested.

A complementary research on Effects of Rational Self-analysis and Stress Inoculation Training on Stress Management among Employees was carried out by Orokoyo (2012). It was conducted using pretest, post test quasi experimental control group design, with a population of 120 workers and a sample size of 20 experimental and 10 subjects of control group. Results were analysed with t-test and Analysis of co-variance statistics, tested at 0.05 significant level. The findings revealed that S.I.T. can effectively manage stress among the workers since the observed mean scores are indicated as(x=11.200) for the experimental group and (x=30.00) for the control, with (t-value=12.147) and (t-crit=2.101). The R.S.A. is similarly effective in managing stress

among the workers as indicated: Pretest mean scores=(33.200) and (11.200) for the posttest; (t-value=14.938, t-crit=2.101).

Another study conducted by Abramowitz and Deacon (2006) was a short term/brief but intensive investigation on the Efficacy of Cognitive Therapy (ICT) among a Large Population of Rural Patients, recruited from routine clinical centres with panic disorder (PD). The treatment involved 9 hour therapy over 2 consecutive days. Assessment conducted at pre-treatment and a 1 month follow-up revealed positive effects of CR technique on the PD symptoms because about 60% of them became panic free after the treatment.

A study titled Effects of Psychological Techniques by Salman, Esere, Omotosho, Abdullahi & Oniyangi (2011) was set to determine the Efficacy of Goal Setting and CR at Improving Academic Performance of Secondary School Students in Mathematics. It was a pretest, posttest quasi-experimental control group design with a sample of 120 students aged from 15-18, purposively sampled from a randomly selected coeducational public secondary school in Ilorin metropolis. Participants were randomly assigned to Goal Setting and CR (treatment groups) and a control group (placebo). A validated Mathematics Ability Test (MAT) was administered to them before and after the experimental programmes. Analysis of covariance with Scheffe Post-hoc Statistics were used for data analyses. The results revealed significant differences in the Mathematics performance abilities of the three groups. Those in the treatments reported improved Mathematics performance than their counterparts of the control group. The results showed significant effects of the treatments (F, 2.119=23.87, p=0.05); implying that both males and females benefitted maximally from the treatments. However, there was no significant main effect of gender; there was also no 2 way interaction of treatment and gender (F, 2.119 +1.15; $p<0.05$). The Multi Classification Analysis (MCA) revealed CR group to have the highest

mean score of 210.00, followed by Goal Setting group with 208.13, while the control group was 182.68. Thus, it was recommended that the techniques should be factored in secondary school Mathematics curriculum.

A similar study by Kalkan and Ersanli (2008) on Effects of Marriage Enrichment on Cognitive Behavioural Approach on Levels of Marital Adjustment of Couples was conducted with a sample size of 30 subjects. It was a quasi-experimental pretest, posttest control group design. Marital Adjustment Scale (MAS) was used in the study, while Mann-Whitney U and Wilcoxon tests were applied for analyses. The findings did not reveal significant difference between the marital adjustment levels of the experimental and control groups (pretest-experimental=38.66+11.25, pretest control=41.53+11.67, $p>.05$). However, there was significant difference between the levels of marital adjustment of the post tests of experimental and control groups ($p=2.037$, $p<.05$). Marital adjustment scale score of the control group also revealed no significant difference between pretest and post test. Wilcoxon Rank test indicated significant difference between pre and posttests scores of the experimental group in terms of marital adjustment level ($Z=3.412$, $p< .05$). The findings indicated that marriage enrichment program had positive effects on some levels of marital adjustment. As such, it was recommended that enrichment programmes can be used to enhance marital adjustment.

Another study on Effectiveness of CR and Proper Study Skills in Reduction of Test Anxiety Symptoms among High School Students was conducted by Kivi, Rafeie and Kiani (2015). The study was tested in the context of a pretest-posttest quasi-experimental design, comprising a population of 300 and a sample size of 30. They were randomly classified into two 15-subject groups of experimental and control groups. Multiple regression and Multivariate Analysis of Variances were used in determining the difference and effectiveness of each

technique on test anxiety symptoms. The percentage of test anxiety in girls=52.5, in boys=20.7. Results showed prevalence of the test anxiety among the students as 36.6%. The pretest mean score of the experimental group=232.00 and that of posttest=120.13, revealing that test anxiety scores of the experimental group was reduced due to the intervention of the treatment techniques. There was also significant difference in the effects of both techniques in reducing the test anxiety symptoms (T^2= *4.011* and P<0.05). Similarly, for the experimental and control groups (t=13.073 and p< 0.0 00) and (t=9.131 and p <0.63). Test (pair-wise comparison) moreover showed that the effect of CR was more, when compared to that of Correct Study Skill in reducing the test anxiety symptoms.

Blevins (2009) analyzed the Effects of Socio-economic Status on Academic Performance among Students using a population size of 250. The researcher used the number of students scoring proficient in the 2007 Communication Arts and Math portions of MAP test and the percent of students on free and reduced lunch program. Using Pearson r Statistics, the results showed significant correlation between academic success and socioeconomic status in Communication Arts portion of MAP tests. There was also similar significant correlation between academic success and socioeconomic status in the Math Portion of MAP tests.

The study of Yahya (2008) was on Effects of Cognitive Restructuring on Attitudes of Secondary School Students in Ilorin towards HIV/AIDS Patients. It was carried out using stratified random sample of 50 males and females, out of 205 population. The design was a pre-test, post-test Quasi-experimental Control Group type and data was analysed by t-test statistic. It was revealed that there was no significant difference in the pretest attitudes scores of the experimental and control groups towards HIV/AIDS patients (t=0.99<t-crit=2.02) at.05 alpha level; there was significant difference in the pretest and post-test attitudes scores of the

experimental and control groups towards HIV/AIDS patients (t=3.94>t=2.02) at.05 alpha level; there was significant difference in the pretest, posttest scores of the experimental group (t=13.43> 2.60). C.R was therefore effective at modifying the students' attitudes towards HIV/AIDS patients because the experimental group had improved when compared to that of the control group after exposure to the treatment intervention.

A similar study on Effectiveness of C.R and Systematic Desensitization Techniques in Controlling High-stakes Test Anxiety among Secondary School Students was conducted by Muhammad (2014). 40 respondents out of a population of 300 were selected through purposive sampling technique. Using quasi-experimental pre-test post test control group design, the hypotheses were tested at 0.05 significant level. The findings revealed CR treatment to have significant effects in reducing the students' test anxiety (t=12.736, p=0.000), systematic desensitization treatment was similarly effective (t=8.665,p=0.000). There was also no significant difference in the effectiveness of both techniques. Application of the techniques in schools was therefore recommended as a result of their effectiveness.

The one conducted by Aya (2009) was on Academic Stress and Health Outcomes Among College Students. 61.3% of the respondents were females and under 30 years of age. Hierarchical Regression Analysis was used in the predictor and background variables of academic stress. The findings revealed that predictor variables did not significantly predict health outcomes (F (4,22.5=.67, p<.05). However, when mean scores of all stress sub-scales were included, r^2 was significantly increased (F)5, 224=17.57, p<.001) which means that stress significantly predicted health outcomes after controlling the background variables that accounted for 27% of change in health outcome. This implied that there is a strong relationship between stress and health. The result also showed that stress and coping showed that r^2 was statistically

significant (f(13,216)=9.79, p<.001 which also revealed significant correlation of stress with coping and academic self efficacy.

Pradhan, Mendinca and Kar (2014) related study was a **cross-sectional experimental** research **design** titled Evaluation of Examination Stress and its Effect on Cognitive Function among Medical Students. It comprised of a total number of 100 sample size, (49 males, 51 females) of age group 18-21 years. The pre and post data were analysed using Paired t-test and Pearson's Correlation Coefficient Statistic. The findings indicated all the parameters to be significantly increased in pre-examination setting as compared to post-examination setting, irrespective of gender because the results of parameters of pulse rate (PR), systolic blood pressure (SBP), diastolic blood pressure (DBP), VRT and stress scores=($p \leq 0.01$) and auditory reaction time (ART)=($p \leq 0.05$). PR shown as ($p \leq 0.01$) was significantly increased in females as compared to males. Stress scores and SBP=($p \leq 0.05$) were observed to have increased significantly in males when compared to the females in pre-examination setting. Both ART and VRT=($p \leq 0.05$) were shown more in females when compared to males. The results revealed that excessive stress affects cognitive functions and the students' performance in examinations. It is further observed that female learners were more affected by stress which impaired their cardiovascular parameters like PR and cognitive parameters prior examination.

Mosalanejad, Koolace andJamali (2012) investigated the Effect of CBT on Mental Health and Hardiness of Infertile Women of 20-35 years that were receiving assisted reproductive therapy (ART) in Jahrom university hospital of Iran. The purpose was to determine the effect of the technique in reducing stress, anxiety and depression. It was a quasi-experimental pretest, posttest, control group design, comprising a population of 70 and a sample of 31 who were randomly grouped into (n=15) experimental and (n=16), of the control. The pre-posttest

instruments used were Depression, Anxiety and Stress Scale (DASS) and normalized Persian version- Ahvaz Hardiness Test (AHT), for assessing psychological distress and psychological hardiness. The experimental group received 1 hour and 30 minutes weekly sessions of group therapy for 15 weeks. The t-test statistic applied in the study revealed significant differences between DASS test in the stress levels (p=0.000), anxiety (p=0.001) and depression (0.007), meaning that there was decrease in the psychological distress of the treatment group after treatment and likewise, the level of the psychological distress of the control group was higher than that of the experimental group. Thus, it was recommended that CBT could be used in reducing stress, anxiety and depression among infertile women, since it has been effective.

A brief but intensive research finding was likewise made by Abramowitz and Deacon (2006) on the Efficacy of Cognitive Restructuring among Rural Patients Recruited from Routine Clinical Practice of Panic Disorder (PD). The treatment involved 9 hour therapy over 2 consecutive days. The assessment conducted at pre-treatment and a 1 month follow-up revealed positive effects of CR technique on the PD symptoms because about 60% of them became panic free after the treatment.

In a similar vein, the empirical study of Emmanuel, Okreke and Anayochi (2015) was conducted also using pre-test-post-test quasi-experimental control group design to investigate The Effects of Assertiveness Training and CR Technique on Self-esteem of Female Undergraduate Victims of Relationship Violence. The sample comprised of 90 female students, randomly selected through multi-stage sampling technique from three universities. Data were analysed using Analysis of Covariance. There was significant effect of treatment in the pre-post self-esteem scores in the experimental and control groups ($F(2,87) = 43.884$, $P < .05$); also significant difference in the effect of age in the pre-post self-esteem scores of relationship

violence between young and older subjects (F (2,87)=16.808, P < .05). There was no significant interaction effect of age in the pre-post self-esteem scores of relationship violence in the experimental and control groups (F(3,86) = 0.188, P < .05). As such, both intervention programs were recommended to be adequately provided in university counselling centres so as to help students discover their potentials as well as to develop competence in order to relate intelligently with others.

A related study by Okwun (2011) on Effects of Cognitive Restructuring and Communication Skills on Conflict Resolution among Nigerian Couples was conducted using 48 married subjects. The Analysis of Covariance Statistic used in the study revealed (F-value of 70.38 as against the C-value of 2.85) at 0.05 significant level. Scheffe test indicated mean difference of CRT(=74.000, CST=65.000 and a combination of CRT/CST=58.000), whereas the control group=24.417) which is significantly different when compared to the treated group. This revealed significant effect of the technique on the experimental group, when compared to the control.

The complementary study of Deacon, Fawzy, Lickel and Wolitzky (2011) was on Cognitive Diffusion and CR Techniques on Distressed Undergraduate Women with Negative Self-referential Thoughts of Body Shapes. Using a Clinical Analogue Sample of these female students, the effectiveness of both techniques was revealed as a result of the substantial and comparable levels of improvement on measures of their (female students') body images.

Olufunmilola (2013) had a similar research study on Efficacy of C.R and Behavioural Rehearsal on Conduct Disorder among Adolescents in Special Correctional Centres. A randomly selected sample size of 90 was assigned to 2 experimental and one control group out of 186 population. The data collected was analyzed using Analysis of Variance (ANOVA), Regression

and t-test at 0.05 level of significance. The treatments of the experimental groups when compared to the control revealed a significant difference, F (2, 87) = 46.622, (p= 0.942). This indicates both interventions as effective in the treatment of conduct disorder among the adolescents. However, the mean scores indicated CR respondents to display a higher conduct disorder level after treatment (66.0333), when compared to those of Behavioural Rehearsal (65.4333), which indicates that Behavioural Rehearsal technique is to some extent more effective than CRT.

The complementary study of Olubusayo (2014) focused on Effectiveness of CRT on Reduction of Mathematics Anxiety among Senior Secondary School Students. It was a 2 X 2 X 3 pre-test, post-test factorial design that involves treatment, gender and study habit. Sample of 180 respondents was drawn from Mathematics anxious students and were randomly assigned to CR training, with a control group that received a placebo treatment. They comprised of 90 males and 90 females of high, medium and low levels of study habits. Mathematics Anxiety Rating Scale (MARS) and Study Habit Inventory (SHI) were the instruments used in the research. Analysis of Covariance was used for analysis, tested at 0.05 significant level. The results indicated significant effect of CR training on the level of anxiety in Mathematics of the experimental group than that of control group (F-ratio= 5.81, P <0.05). It also showed that gender affected students' anxiety in Mathematics significantly with male students having more reduction in Mathematics anxiety than their female counterparts. However, it was revealed that Study Habit did not significantly affect the students' anxiety in Mathematics. Recommendation was made for Counselors to use CR treatment as a strategy for reducing anxiety in Mathematics among secondary school students, since it has been identified as effective.

Hrapczynski (2008) carried out a similar study on Impact of Couple Therapy for Abusive Behavior on Partners' Negative Attributions About Each Other: Relationship Satisfaction, Communication Behavior, and Psychological Abuse. The application of CBCT and Usual Treatment (UT) were applied to investigate the degrees to which couple therapy could assist in relationship satisfaction, communication behavior, and psychological abuse. Quasi-experimental pre-test, post-test control group design was used with a randomly selected sample of 24 couples in CBCT and 26 in UT, assigned to 10 weekly 90-minute sessions. The study indicated therapeutic changes among the couples experiencing psychological and physical abuses, implying both treatments as effective. A decrease in negative attributions in the CBCT condition was significantly associated with an increase in relationship satisfaction for women ($r = -.40$, $p = .03$ (one-tailed) and men ($r= -.45$, $p = .02$ (one-tailed). Likewise, decrease in negative attributions in the UT condition was significantly related to improved relationship satisfaction for women [$r = -.51$, $p = 0.05$ (one-tailed)], but not for men [$r = -.23$, $p = .13$ (one-tailed]. Thus, it was concluded that negative communication behavior decreased more in the CBCT condition when compared to the UT condition for both men and women.

Another research on Educational Predispositions of Chinese and Indian Recent Immigrant Families was conducted by Gordon and Liu (2015). Using a population of 144 and a sample size of 28, Critical Dialogic Inquiry was applied and Correlation, Regression, t-tests and Variance Analyses were used to analyse the data. The results indicated no significant total mediating affect of study year and residency on the relationship between study major and depression, anxiety and stress. Study year; ($z=0.714$; $P>0.05$); depression; ($z=1.791$; $P>0.05$); anxiety;($z=0.857$; $P>0.05$) for stress. Residency: ($z=1.695$; $P>0.05$); for depression; ($z=1.445$; $P>0.05$); for anxiety; ($z=1.576$; $p >0.05$) for stress. This reveals that the result is generally

transformative for all involved, because the research reflects on attitudes, expectations, and traditions of home country. Thus, there was effect of study year and residency among these families. It has also shown that students that were satisfied with their education had lower depression, anxiety and stress scores than those who were not fully satisfied.

2.9 Summary

In the literature review, discussion was made on concepts of stress, sequential decision making and cognitive restructuring techniques. Included were also detailed descriptions on the numerous signs, causes, categories, processes, preventive measures, coping strategies and the predisposing negative effects of stress, which is seen as a threat that endangers academic achievement, general health and wellbeing. Positive stress, as was similarly reviewed is on the contrary recognized as a motivator which closely relates to successful accomplishments of numerous daily life accountabilities. The Sociological, Systematic and Life Events Allostatic Load theories of stress were also presented.

The two theoretical bases used to conduct this study are Sequential Decision Making and Cognitive Restructuring techniques. Hence, the processes, treatment techniques, views, principles, major features and effectiveness of these two techniques were also adequately discussed. Positive/Descriptive, Holistic Counseling and Compensatory and Non-compensatory SDM theories with some Models of Decision Making were as well explicitly presented. Included were also CBT inclined areas of Rational Emotive Behavioural Therapy and Personal Construct Theory.

CR, being one of the major techniques of cognitive behavioural therapy (CBT) has for long been realized as one of the most effective and contemporary stress treatment technique. The

technique of SDM can similarly be related to CBT due to its strong inclination to logical reasoning. As such, the significant positive effects of the SDM designed formats can also strongly relate to stress treatment because it can specifically be designed for conducive tasks accomplishments. Thus, the SDM technique can purposively be designed in a number of ways to assist at improving and resolving both human and non human related problems under numerous different circumstances and environments that include both domestic and academic settings.

The samples of the reviewed empirical research studies had similarly shown effectiveness of both techniques, especially that of CRT. This was because the researcher had not laid hands on any of SDM that solely relates to stress or on those associated with female students' marital statuses and likewise any specifically in line with those married and single, though the technique has for long been used in numerous scientific, psychological, physiological, physical and psychosocial research fields among others. This, as previously disclosed is because SDM relates more precisely to scientific as well as other environmental, marketing and long-term health associated planned schemes. Therefore, this study will provide empirical data that will explain how effective the technique can be in coping with the problems of stress. To the best of the researcher's knowledge, earlier studies had not been specifically conducted on the persistent negative effects of stress among female students, with particular reference to those that are married and single. As such, the outcome of this study will hopefully fill in the existing gap within the field of research studies as well as in the Counselling profession in general.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The chapter presents the research design, population, sample and sampling technique, instrumentation, validity, pilot testing and reliability, procedure for data collection, procedure for data analysis and the treatments procedures.

3.2 Research Design

The study applied Quasi Experimental design involving Pre-test, Post-test design. Karlinger (1973) posits that quasi experimental research exploits the vigour and control that exist in experiments as well as preludes an absolute answer to cause and effect relationship between research variables. Ray (2000) and Kumar (2004) similarly disclosed that the design involves manipulation of one or more independent variable(s) but without random assignment of subjects to conditions. Thus, in this research study, respondents were selected based on their high scores from Stress Assessment Inventory (SAI).

The pre-test, post-test design as depicted by Emmanuel (2013) is presented as follows-

Figure 3.1 Research Design Illustration

G_1- O_1 X_1 O_2

G_2- O_3 X_2 O_4

Where: G_1=Experimental Group 1 (SDM Counselling Technique).

G_2= Experimental Group 2 (CR Counselling Technique).

O_1, O_3 refer to the observations before commencement of the experiment, ie

O_1-Pre-test (Sequential Technique).

O_3-Pre-test (CR Technique).

O_2, O_4refer to observations after the experiment or treatment, ie

O_2-Post-test (Sequential Technique).

O_4 -Post-test (Cognitive Re-structuring).

X_1 and X_2 represent treatment:

X_1 Treatment (Sequential Technique).

X_2 Treatment (CR Technique).

3.3 Population

The population of the study comprised of N.C.E. II married and single female students in Colleges of Education of Sa'adatu Rimi and FCE (T) Bichi, in Kano metropolis. There are altogether seven hundred and sixty eight (768) married and single N.C.E. II female students in both institutions. The breakdown includes 157 married and 275 single respondents from SRCOE, making a total of four hundred and thirty two (432) while in FCE (T) Bichi, 102 represents those married and 234 on the other hand by the singles, making a total number of three hundred and thirty six (336). They are married and single students that undertake various courses from different departments in these two tertiary institutions as shown in table 3.1 below.

Table 3.1 Population of the Study

School	Married	Single	Total
SRCOE	157	275	432
FCE (T)	102	234	336
Grand Total	**259**	**509**	**768**

3.4 Sample Size and Sampling Technique

The sample of this study was made up of sixty four (64) female students identified with stress symptoms in the two colleges of education. Proportionate Distributed Sampling Technique was used in selecting twenty eight (28) NCE II female students out of sixty four (64) of them. A self developed check list by the researcher was used to identify the students that experienced stress. SRCOE was represented by 25 married and 10 single respondents while FCE (T) Bichi were represented by 18 and 11 married and single respondents, respectively.

From each of these institutions, fourteen (14) respondents that had high scores from 50-75 and above from SAI were selected to serve as the two (2) treatment groups. Thus, the sample size for the study was made up of a total number of twenty eight (28) married and single NCE II female students from SRCOE and FCE (T) Bichi, that is 14 from each institution. The choice complies with the views of Egbochuku (2008) and Gravetter and Forzano (2009) who strongly uphold that researchers have not yet come to agreement with any appropriate assigned number of subjects desirable for group counseling. In the same vein, Cohen and Marison (2000) specifically indicated the appropriateness of smaller groups. Kolo (2003) corroborated by indicating a sample of 3 to 12, which relates to the postulations of Ray (2000), Abubakr (2005) and Paneerselvam (2005) on benefits of using smaller sample sizes. (Refer to Appendix 1for Details).

Table 3.2 Distribution of Sample based on Institutions

School	Married	Single	Total
SRCOE	7	7	14
FCE (T)	7	7	14
Grand Total	**14**	**14**	**28**

3.5.1 Instrumentation

The instrument used for this study is titled Stress Assessment Inventory (SAI) adapted from Balarabe (2007) Stress and its Effects on Adjustment and Performance. The researcher used it to identify and assess the respondents' stress before and after treatment, with a view to examine the effects of the two treatment techniques used in the study. SAI comprises of five (5) sections. 1st is the bio-data, which is designed to elicit information regarding the respondents' marital status and institutions, 2nd is physical stress, which relates to feeding, clothing, shelter, health and recreation, then psychological stress, which involves aspects of security and social relationship, followed by those of academic and future concerned aspects, which formed the 4th and 5th sections, respectively.

(Refer to Appendix 2 for Details).

3.5.2 Scoring Procedure of the Instrument

The scale has 25 items where a respondent can score a minimum of 25 points and maximum of 100. The items were measured on a 4 point Likert Scale as follows

4. Very true

3. True

2. Untrue

1. Very untrue

None of the 25 items was reversely scored, because they were all positively phrased. Any score over 30 indicates vulnerability to stress; scores between 50 and 75 reveal a serious indication of stress, while scores from 76 and above are extreme indicators of stress. Thus, The SAI stress responses ranged from that of vulnerability, seriously vulnerable and extremely vulnerable.

3.5.3 Validity of the Instrument

Content and face validity of the instrument were established by giving copies of the SAI to 6 lecturers of department of Educational Psychology and Counselling, A.B.U. Zaria by the researcher for observation. The SAI was assessed and corrected by reframing the title from Stress Scale to Stress Assessment Inventory. The scale level was also suggested to be reduced from 5-4. The words employed against the scales were similarly changed from 5-Almost always, 4-More than half the time, 3-About half the time, 2-Sometimes but not often and 1-Never, to 4-Very true, 3-True, 2-Untrue and 1-Very untrue. All the items were also suggested to be positively phrased. In order to obtain truthful responses, some of these items were similarly advised to be re-constructed by adding the word 'worry' for precision and more clarification. It was then found to be suitable for measuring the stress of Kano state NCE II married and single female students in SRCOE and FCE (T) Bichi.

3.5.4. Pilot Study

The instrument was pilot tested at FCE Kano after a check list of 150 copies on stress was administered to 70 NCE II married female students and 80 single ones, in order to find the ones

that experienced stress. The institution was chosen because it is not part of those used in the main study. Moreover, the admission requirements are the same as the conventional N.C.E. awarding institutions of the two (2) experimental groups. Twenty five (25) copies of SAI were there after administered to each group of the N.C.E. II single and married students that were identified with stress, making a total number of fifty (50). After two (2) weeks, the instrument was re-administered to them. The two scores were correlated to assess the reliability of the instrument. Thus, a test retest technique was used in establishing the reliability of the instrument.

N.B. (Refer To Appendix 5 & 10 for Details).

3.5.5 Reliability of the Instrument

To determine the reliability of SAI for the purpose of this research, a pilot test study was conducted by the researcher. Using test-retest method, SAI was administered twice with interval of two weeks on the same sets of 25 married and 25 single NCE II female students, making a total of fifty (50) respondents. The result obtained using Spearman Rho Analysis on SPSS (2007) was .694, which indicated that the instrument is relatively reliable for the purpose of this study. (See Appendix 5 for Details).

3.6 Procedure for Data Collection

The researcher collected a student's field research introductory letter form from the department of Educational Psychology and Counselling, ABU Zaria and presented it to the concerned officials of SRCOE, FCOE (T) Bichi and FCOE, Kano for permission to get access to the respondents from these sampled schools in order to obtain the appropriate data for conducting the study. The researcher there after, discussed with authorities on how to conduct the research treatment sessions. Students with stress symptoms from both sampled schools of FCOE (T) Bichi and SRCOE were identified after a checklist on stress identification was

administered by the researcher. Those with higher stress scores were selected to participate in the research study. After grouping these selected students, the researcher administered the Stress Assessment Inventory (SAI) to them as pre-test, followed by treatment sessions for both groups for a period of seven and eleven weeks for SDM and CR treatments respectively, while post-test was thereafter administered to all of them.

(See Appendices 1, 2, 8, 9 & 10 for Details).

3.7 Treatment Procedure

The study was carried out in three segments comprising of pre-treatment, treatment and post treatment phases, described as follows-

Pre-Treatment Phase

The first and starting point of the therapeutic techniques noted as pre-treatment phases were meant for preliminary introductions and pre-test administrations of SAI. In these phases, respondents were assured of confidentiality and likewise, there was establishment of rapport between them and the researcher. Detailed descriptions on the research programs were also presented by the researcher, followed by the SAI administration to the groups, comprising of twenty eight that were assigned to the two treatments.

Treatment Phase

This section formed interactive communication sessions between the researcher and the respondents identified with stress symptoms in the sampled schools. Thus, it is the phase that dealt with actual manipulation of the treatment conditions being carried out on a number of sessions in forms of group counseling for the treatment groups. As such, both packages of the SDM and CR therapies were conducted at this phase. The respondents of both schools were

divided into two (2) different treatment groups of married and single, without a control group. The first group of FCOE (T) Bichi exposed to SDM had 7 consecutive weeks with duration of 30 minutes, while that of SRCOE exposed to CRT was conducted within 40 minutes, which lasted for 11 consecutive weeks. The first weeks of both groups were slated for introducing the programs, followed by administration of SAI for the pre-test data while the last and final weeks were scheduled for therapeutic conclusion, administration of SAI for the post-test data and also termination of the counseling exercises.

Post treatment Phase

After the skills training interventions, SAI was re-administered to all the respondents used in the study that were exposed to both techniques of SDM and CRT interventions in order to ascertain the effects of the treatments. Respondents were prompted to terminate their stress inclined thoughts, feelings and behaviours by utilizing the newly acquired skills in accomplishing their daily life schedules for healthy life and living, both at school, home as well as in other different environmental settings. SAI was re-administered to all respondents and the post-test data was collected, scored and analysed to determine the effects or possible changes in the groups when the data was statistically computed.

3.8 Treatment Sessions

The treatment session of SDM was conducted for seven weeks, with duration of thirty minutes per week while that of CRT was conducted for eleven weeks, with forty minutes duration. The packages were the two interventions of SDM and CR techniques.

Treatment Group I: Bounded Rational Sequential Decision Making Sessions.

The breakdown of the seven weeks of the SDM treatment is as follows:

First Week: Initial orientation and pre-test administration of SAI.

Second Week: Searching/Identifying the Stressful Feelings and Reactions to Determine the Dimension of the Decision (SDM).

Third Week: Developing and Examining of Potential Consequences.

Forth Week: Narrow Choice (Selecting Out of a Few but General alternatives or Opinions).

Fifth Week: Choosing among Courses of Action, (The 'Actual Choice).

Sixth Week: Implementation:

Seventh Week: Wrap up and post-test administration of SAI.

(Refer to Appendix 3 for Details).

Treatment Group 2: CRT Treatment Sessions.

The breakdown of the eleven weeks CRT treatment is as follows:

Treatment Package of Group II Respondents of CRT

First Week: Orientation and Establishing Counselling Relationship.

Second Week: Introduction of CRT

Third Week: Identification of the Upsetting Situation (Functional Analysis):

Forth Week: Positive Thought Patterns

Fifth Week: Focus on Realistic Interpretations of Events:

Sixth Week: How to Change Negative Thinking

Seventh Week: Modifying Negative Thoughts.

Eighth Week: Construction of Realistic Balanced Thoughts.

Ninth Week: Construction of Realistic Balanced Thoughts (cont).

Tenth Week: Stress Reduction

Eleventh Week: Evaluating the Re-structuring Process, wrap up and post-test administration of SAI.

(Refer to Appendix 4, for Details).

The researcher was provided with the opportunity of discussing with the students on numerous issues related to symptoms associated with stress inclined thoughts, feelings and behaviors, the negative effects it has on health and wellbeing as well as on academic performances and accomplishments of daily life schedules, among others. It had as well decisively helped at looking into the importance and ways associated with stress treatment. They were able to participate effectively by freely disclosing and also sharing their feelings and experiences without reservations as a result of the strong established rapport and assurance of confidentiality by the researcher.

The technique of SDM has contributed enormously in the students' treatment of stress more than that of the CR. They have gained from the technique's beneficial effects of time management, increase in sense of purpose, improved mental relaxation and physical health, as a result of being conditioned to the use of their self developed sequential formats.

CR being among the most effective psychological treatment techniques for numerous disorders that involves stress has been proved to be a significant tool that greatly assisted at identifying and also untwisting the respondents' negative thought patterns to realistic, meaningful and useful ones. In a nut shell, the major beneficial effect of CR technique here lies at enhancing the students' general welfare with regards to effective accomplishment of their daily accountabilities both at home and school, as a result of treating their stress.

(See Appendices 3 & 4, for Details).

3.9.1 Conceptual Model of Variables

Independent Variables.		Intervening Variables.		Dependent Variable.
Sequential Decision Making Counseling Technique. (SDMCT).		Interaction. Effects of testing.		
Cognitive Restructuring Counseling Technique. (CRCT).	⇒	Lack of interest. Selection bias. Absenteeism.	⇒	Stress Management.

This model is significantly concerned with the research variables and their interrelationships. Independent, dependent and intervening variables were used in this study due to its quasi experimental nature. There is, in this study manipulation of the independent variables in order to see their effects on the dependent one(s). The variables likely to prevent the researcher from attributing the observed changes are referred to as intervening variables due to introduction of the dependent one (Riegler, 2014). As such, it is imperative that the researcher controls them in order to be assured that the observed changes are due to the effects of the independent variables on the dependent one.

The independent variables in this research study are SDM and CR Counseling techniques while the dependent one is referred to as Stress Treatment.

The extraneous variables are:

i. Interaction between the two experimental groups.
ii. Effect of testing.
iii. Lack of interest by respondents.
iv. Absenteeism and lateness by respondents.
v. Selection bias.

3.9.2 Control of Extraneous Variables

The measures to be used to control these variables become necessary in order to prevent or significantly reduce the chances of affecting the respondents' performances. First to address is:

i. **Selection Bias**

For any respondent to be part of these experiments, there arise the need to score very high marks in the Stress Assessment Inventory (SAI). Thus, pre-test scores had ruled out this problem.

ii. **Interaction**

This describes how the respondents' group interaction affects each other. However, there was no any interaction between both groups, as they are far from each other. As such, all the research activities were conducted separately in their different educational environments which had prevented them to interact. Therefore, respondents with stress symptoms belonging to F.C.E. (T) Bichi went through the SDMC technique while those of S.R.C.O.E. were exposed to the CR technique.

iii. **Absenteeism and Lateness**

Importance attached to fulfilling of promise as is religiously ordained was emphasized to the respondents by the researcher. They were as well encouraged to develop interest during the therapeutic sessions in order to capture their involvement and full participation.

iv. Effects of Testing

The logic behind the pre-test and post-test was not revealed to the respondents. As such, they did not get any idea on the use of the tests. They were also enlightened on the significance and need for maintaining confidentiality in all the information given as well as throughout the duration of the Counselling interventions.

v. Lack of Interest by the Respondents

The demanding nature and uncomfortable conditions inclined to academic engagements are obviously known to be tedious as well as stressful. Thus, engaging students into other programs could be an additional burden which can easily lead to lack of interest. In order to reduce stress, boredom and also make the Counselling interventions fruitful and interesting, the researcher:

i. With the help of some lecturers of F.C.E. (T) Bichi, the researcher was able to find a quiet, well ventilated and clean lecture room and she was as well capable of finding same conducive atmosphere in S.R.C.O.E, which is the institution where she teaches.

ii. Applied some sense of humour while interacting with the respondents.

iii. Provided some light refreshments during the Counselling activities.

3.10 Procedure for Data Analysis

The data collected was analysed using the Statistical Package for Social Sciences (SPSS) (2007) and the alpha value 0.05 was adopted to form the level of retention or rejection of the hypotheses. The researcher used descriptive and inferential statistical tools for the analyses of data. Descriptive statistics of mean and standard deviation were used to answer the research questions while t-test was used to test comparison between two variables. The Analysis of Variance (ANOVA) was employed in hypothesis 7 to test the relative effects of both techniques on forms of marital statuses. This is a statistical tool used when there are more than two variables to be tested.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The chapter presents analysis of the data collected from the experimental study. It consists of introduction, respondents' demographic data, answering of research questions, hypotheses testing, summary of major findings and discussion of results. The research questions were answered using Mean and Standard Deviation and lower mean scores indicate reduction of stress among the respondents. Eight (8) null hypotheses were tested using Independent t- test, except the seventh (7^{th})one which was analysed by Analysis of Variance. The demographic data was presented using Percentage while the basis for acceptance or rejection of the hypotheses was 0.05 level of significance. Pre-test was conducted using One-way analysis of Variance (ANOVA) on both experimental groups to ensure that there is no significant difference in their stress levels. The essence is to ascertain that all the Post-test score differences are entirely due to effects of the treatments.

4.2 Demographic Characteristics of the Respondents

Table 4.1 Distribution of respondents in the treatment groups

Groups	Frequency	Percentage (%)
SDMT Training	14	50%
CRT Training	14	50%
Total	**28**	**100%**

Table 4.1 above shows the distribution of subjects in the two treatment groups. Twenty eight (28) respondents were used for the study. 14 (50%) as is shown comprises of 7 married and 7 single females of SDMM Treatment group from FCOE (T) Bichi while the other which served

for CRT from SRCOE is similarly indicated as 14 (50%), also comprising of 7 married and 7single females.

These respondents were selected for the study as a result of being identified with stress symptoms by scoring very highly when they responded to the Stress Assessment Inventory.

Table 4.2 Distribution of Respondents by Marital Status.

Marital Status	**Frequency**	**Percentage (%)**
Married	14	50%
Single	14	50%
Total	**28**	**100%**

Table 4.2 above shows the distribution of the respondents according to marital status. It can be observed that both groups are of equal number and percentage.

4.3 Answering the Research Questions:

The nine (9) research questions raised in chapter one were answered below using mean scores and standard deviation.

Table 4.3: **Pre-test stress-mean scores and standard deviations of married and single female students exposed to SDMT and CRT**

Descriptives

STRESS	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
PRETEST CRT SINGLE	7	68.7143	7.58758	2.86784	61.6969	75.7316	59.00	80.00
PRETEST CRT MARRIED	7	70.8571	6.06709	2.29314	65.2460	76.4683	63.00	79.00
PRETEST SDM MARRIED	7	69.2857	9.55186	3.61027	60.4517	78.1197	55.00	80.00
PRETEST SDM SINGLE	7	68.7143	7.45462	2.81758	61.8199	75.6087	60.00	82.00
Total	28	69.3929	7.37533	1.39381	66.5330	72.2527	55.00	82.00

Table 4.3 above shows the pre-test stress mean scores of the CRT single and married female respondents and also those of the SDMT married and single. The pretest stress mean scores of all

these four groups indicated as (68.7143, 70.8571, 69.2857, 68.7143 and 69.3929) (respectively) explain that they have almost equal stress mean scores, meaning that there is no significant difference among them in terms of stress. The essence is to ascertain that all differences in their Post-test stress-mean scores are entirely due to effects of the treatments, not from any other sources. Reduction in stress-mean scores between post-test and pre-test scores will therefore be attributed to the effects of SDM or CR interventions.

Research Question One:

What is the effect of SDMT on stress among single female students in Kano state colleges of education?

Table 4.4: **Mean and standard deviation of pre and posttest stress scores of single female students exposed to SDMT**

GROUPS	N	Mean	S D
Pretest	7	68.57	7.46
Posttest	7	49.86	7.78

Table 4.4 above shows the pretest and posttest stress scores of single female respondents exposed to SDM technique. The pretest stress mean score was (68.57) while that of the post-test was (49.86), with a mean difference of 18.71. This shows that there was reduction of stress among the students after the treatment. Hence, the question asked can be answered that SDM training may be effective on stress among the single female students in Kano state colleges of education.

Research Question Two:

What is the effect of SDMT on stress among married female students in Kano state colleges of education?

Table 4.5: **Mean and standard deviation of pre and posttest stress scores of married female students exposed to SDMT**

GROUPS	N	Mean	S D
Pretest	7	69.29	9.41
Posttest	7	41.71	5.47

Table 4.5 above shows the pretest and posttest stress scores of the married female respondents exposed to SDM technique. The pretest stress mean score was (69.29) and the post-test stress mean score was (41.71) with a mean difference indicated as 18.71. This shows that there was reduction of stress among these students after the treatment. Therefore, the SDM technique could be effective on the stress of the married female students.

Research Question Three:

What is the effect of CRT on stress among married female students in Kano state colleges of education?

Table 4.6: **Mean and standard deviation of pre and posttest stress scores of married female students exposed to CRT**

GROUPS	N	Mean	S D
Pretest	7	70.86	6.22
Posttest	7	57.71	7.57

Table 4.6compared the pretest and posttest stress scores of married female students exposed to CRT technique. The pretest stress mean score of the married female students was (70.86) while the post-test stress mean score was (57.71), with a mean difference of 13.15. This shows that CRT technique could have effect on stress among the married female students.

Research Question Four

What is the effect of CRT on stress among single female students in Kano state colleges of education?

Table 4.7: **Mean and standard deviation of pre and posttest stress scores of single female students exposed to CRT**

GROUPS	N	Mean	S D
Pretest	7	68.71	8.01
Posttest	7	60.29	6.90

In Table 4.7, the pretest and posttest stress scores of single female students exposed to CRT technique were compared. The pretest stress mean score was (68.71) while the post-test stress mean score was (60.29). The mean difference was 8.42. This shows that the there was a reduction in stress which implies that CRT technique could be effective on stress of the married female students in Kano state colleges of education.

Research Question Five: What is the effect of SDMT on stress among married and single female students in Kano state colleges of education?

Table 4.8: **Mean scores and standard deviation of posttest stress scores of married and single female students exposed to SDMT**

GROUPS	N	Mean	S D
Sequential Decision Making Single	7	49.86	7.78
Sequential Decision Making Married	7	41.70	5.47

Table 4.8 above shows the posttest stress scores of married and single female respondents exposed to SDM technique. The post-test stress mean score of the single respondents treated with SDM is (49.86) while the post-test stress mean score of the married respondents is (41.70). Though difference is found in the stress levels between married and single female students exposed to SDM technique but the question asked can be answered that SDM training may be effective on stress among both single and married female students in Kano state Colleges of Education.

Research Question Six: What is the effect of CRT on stress among married and single female students in Kano state colleges of education?

Table 4.9: **Mean scores and standard deviation of posttest stress scores of married and single female students exposed to CRT**

GROUPS	N	Mean	S D
Cognitive Restructuring Single	7	60.29	6.90
Cognitive Restructuring Married	7	57.71	7.57

Table 4.9 above shows the post-test mean scores of single and married female respondents exposed to CRT. The post-test stress mean score of the single respondents treated with CRT is (60.29) while the posttest mean score of those married is revealed as (57.71). This shows the married respondents to have the least mean stress scores. It also indicates relatively no marked difference between both groups. CR technique could therefore be effective on stress among the single and married female students.

Research Question Seven: What is the relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education?

Table 4.10: **Mean and Standard Deviation of posttest stress scores of married and single female students exposed to SDMT and CRT**

	N	Mean	S. D.	MD
Sequential Decision Making Single	7	49.86	7.78	
Cognitive Restructuring Single	7	60.29	6.90	10.43
Cognitive Restructuring Married	7	57.71	7.57	
Sequential Decision Making Married	7	41.71	5.47	16.00
Sequential Decision Making Single	7	49.86	7.78	
Sequential Decision Making Married	7	41.71	5.47	8.15
Cognitive Restructuring Married	7	57.71	7.57	
Cognitive Restructuring Single	7	60.29	6.90	2.58
Total		**52.39**	**9.91**	

Table 4.10 above shows the post test stress mean scores of SDMT and CRT techniques of single and married female respondents. It indicates that the single respondents exposed to SDMT had a mean stress score of (49.86) while the CTR singles had a mean stress score of 60.29. The mean difference was 10.43 in favor of the SDMT singles that had the least stress scores. Similarly, the SDMT married and CRT married had their mean scores indicated as 41.71 and 57.71 respectively. By studying the differences in the stress mean scores of the respondents exposed to these two treatments, it could be noted that SDMT appears to be more effective when compared to that of the CR. Nonetheless, it can be concluded that both techniques could significantly help in the treatment of stress among the married and single female students.

Research Question Eight: What is the effect of SDM and CR techniques on stress among married female students in Kano state colleges of education?

Table 4.11: **Mean and standard deviation of posttest stress scores of married female students exposed to SDMT and CRT**

GROUPS	N	Mean	S D	MD
Cognitive Restructuring Single	7	57.71	7.57	
				16.00
Sequential Decision Making Married	7	41.71	5.47	

Table 4.11 above shows the post test stress mean scores of married female respondents exposed to SDMT and CRT. The post test stress mean scores of married females respondents exposed to CRT is (57.71) while the SDMT group had a stress mean score of (41.71). The comparison showed that there was relatively marked difference in stress among the groups in favour of the SDMT married respondents that had the least stress mean scores, which suggests that the SDM and CR trainings could be effective in reducing stress of the married female students.

Research Question Nine: What is the effect of SDM and CR techniques on stress among single female students in Kano state colleges of education?

Table 4.12: **Mean and standard deviation of posttest stress scores of single female students exposed to SDMT and CRT**

GROUPS	N	Mean	S. D.	MD
Cognitive Restructuring Single	7	60.29	6.89	
				10.43
Sequential Decision Making Single	7	49.86	7.77	

Table 4.12 above shows the post test mean scores of respondents exposed to CRT and SDMT. The post test stress mean score of single respondents exposed to CRT is (60.29) while that of the singles is (49.86). This implies that SDMT having the least stress mean score (in favour of the CR) could be more effective on stress among the single female respondents.

4.4 Hypotheses Testing

Nine hypotheses were raised to determine the effects of SDM and CR techniques on stress among married and single NCE female students in Kano state. The hypotheses were tested and the results were presented as follows:

Ho.1Hypothesis One: There is no significant difference in the pretest and posttest stress mean scores of single female students exposed to SDMT in Kano state colleges of education.

Table 4.13: **t – test analysis of pre and posttest mean stress scores of single female students exposed to SDMT**

GROUPS	**N**	**Mean**	**SD**	**SE**	**Df**	**t-cal**	**t-crit**	**P**
Pretest	7	68.71	7.54	2.81				
					12	4.631	2.179	0.001
Posttest	7	49.86	7.78	2.94				

Table 4.13above shows the pretest and posttest stress scores of single female respondents exposed to SDM technique. The pretest stress mean score was (68.71) while that of post-test was (49.86). The mean difference was 18.85. The t calculated (4.631) is greater than the t-critical (2.179). Similarly, the p value was 0.001 which is less than the 0.05 level of significance. This shows that the there was a significant difference in the pre and posttest scores of female students

exposed to SDMT. This signifies that, SDMT is effective at reducing stress among single female students. Hence the null hypothesis is rejected.

Ho.2 Hypothesis Two: There is no significant difference in the pretest and posttest stress mean scores of married female students exposed to SDMT in Kano state colleges of education.

Table 4.14: **t – test analysis of pre and posttest mean stress scores of married female students exposed to SDMT**

GROUPS	N	Mean	SD	SE	Df	t-cal	t-crit	P
Pretest	7	69.29	9.55	3.61				
					12	6.628	2.179	0.001
Posttest	7	41.71	5.47	2.07				

Table 4.14revealed the comparison between pretest and posttest stress scores of married female students exposed to SDM technique. The pretest mean stress score was (69.29) while the post-test stress mean score was (41.71). The mean difference was 27.58. The t calculated (6.628) is greater than the t-critical (2.179) and the p value was 0.001 which is less than the 0.05 level of significance. This shows that there was significant difference in the pre and posttest scores of married female students exposed to SDMT. Hence, SDMT is effective at reducing stress among the married female students. Thus, null hypothesis 2 was rejected.

Ho.3 Hypothesis Three: There is no significant difference in the pretest and posttest mean stress scores of married female students exposed to CRT in Kano state colleges of education.

Table 4.15: **t – test analysis of pretest and posttest mean stress scores of married female students exposed to CRT**

GROUPS	N	Mean	SD	SE	Df	t-cal	t-crit	P
Pretest	7	70.86	6.07	2.29				
					12	3.586	2.179	0.004
Posttest	7	57.71	7.57	2.86				

Table 4.15 compared the pretest and posttest stress scores of married female students exposed to CRT. The pretest mean stress score was (70.86) and the post-test stress mean score was (57.71). The mean difference was 13.15. The t-calculated (3.586) is greater than the t-critical (2.179) and the p value indicated as 0.004 is less than the alpha value of 0.05which signifies that there is significant difference in the pre and posttest stress scores of the married female students exposed to CRT. Therefore, the null hypothesis was rejected, meaning that. Hence, CRT is effective at reducing stress among the married female students.

Ho 4 Hypothesis Four: There is no significant difference in the pretest and posttest mean stress scores of single female students exposed to CRT in Kano state colleges of education

Table 4.16: **t – test analysis of pretest and posttest stress mean scores of single female students exposed to CRT**

GROUPS	N	Mean	SD	SE	Df	t-cal	t-crit	P
Pretest	7	68.73	7.59	2.87				
					12	2.175	2.179	0.050
Posttest	7	60.29	6.90	2.61				

Table 4.16 compared the pretest and posttest stress scores of single female students exposed to CRT. The pretest mean stress score was (68.73) and the post-test was (60.29) with a mean difference of 8.44. The t-calculated (2.175) is less than the t-critical (2.179). Similarly, the p value was 0.050 which is equal to the alpha value of 0.05. This shows that there was no significant difference in the pretest and posttest stress scores of the single female respondents exposed to CRT. Hence, CRT is not effective at reducing stress among single female students. Therefore, null hypothesis 4 was retained.

Ho 5 Hypothesis Five: There is no significant effect of SDMT on stress among married and single female students of colleges of education in Kano state.

Table 4.17 **t-test analysis for posttest stress mean scores of married and single female students exposed to SDM treatment:**

GROUPS	N	Mean	SD	SE	Df	t-cal	t-crit	P
Sequential Decision Making Single	7	49.86	7.78	2.94				
					12	2.266	2.179	0.043
Sequential Decision Making Married	7	41.71	5.47	2.07				

Table 4.17 above shows t-test analysis for post test stress mean scores of married and single female students exposed to SDMT treatment. The t-calculated as the table indicates is greater than t-critical (2.266>2.179) and the test is significant at .005 alpha level, at degrees of freedom 12. The null hypothesis is therefore rejected. Hence, there is significant effect of SDM technique on stress among married and single female students of COE in Kano state. The analysis has also revealed that both married and single female students exposed to the SDM treatment had their stress significantly reduced.

Ho 6 Hypothesis Six: There is no significant effect of CRT on stress among married and single female students in Kano state colleges of education.

Table 4.18:**t-test analysis for posttest stress mean scores of married and single female students exposed to CR treatment:**

GROUPS	N	Mean	S. D.	S. E.	Df	t-cal	t-crit	p
Cognitive Restructuring Single	7	60.29	6. 90	2.61				
					12	0.665	2.179	0.519
Cognitive Restructuring Married	7	57.71	7.57	2.86				

Table 4.18 above shows t-test analysis for post test stress mean scores of married and single female respondents exposed to CR treatment. The t-calculated for the posttest stress mean score obtained is less than t-critical (0.665<2.179); the test is significant at .05 alpha level and at

degrees of freedom 12. The null hypothesis is therefore retained. Hence, there is no significant effect of CR technique on stress among married and single female students of COE in Kano state. The analysis revealed has also indicated that both married and single female students exposed to SDM treatment had their stress significantly reduced.

Ho 7 Hypothesis Seven: There is no relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education.

Table 4.19: **One-way Analysis of variance (ANOVA) on relative effects of SDMT and CRT treatments on stress among married and single female students**

	Sum of Squares	**Mean Square**	**f-cal**	**Sig.**
Between Groups	1477.54	492.51	10.093	.000
Within Groups	1171.14	48.80		
Total	2648.68			

Table 4.19 above presents the post test stress mean scores of married and single female students exposed to SDMT and CR treatments. It reveals that $F(3,24) = 10.093$; $p < 0.05$ which indicates that there was significant relative effect of SDM and CR techniques on stress among the married and single in respondents exposed to both techniques. This analysis therefore shows that the null hypothesis was rejected. Hence, there is significant relative effect of SDM and CR techniques on stress among married and single female students of COE in Kano state. It also revealed that the married and single female students exposed to SDM and CR treatments had their stress significantly reduced.

To find the point of difference, the data was further subjected to Scheffe's Multiple Comparison. The results of the comparison are presented in the table 4.19 below:

Table 4.20: Multiple comparisons of married and single female students exposed to SDMT and CRT

					95% C.I	
(I) GROUPS	**(J) GROUPS**	**M. D. (I-J)**	**Std. Error**	**Sig.**	**L. Bound**	**U. Bound**
Cognitive Restructuring Single	Cognitive Restructuring Married	2.57	3.73	0.923	-8.65	13.79
	Sequential Decision Making Single	10.43	3.73	0.076	-0.79	21.65
	Sequential Decision Making Married	18.57	3.73	0.001	7.35	29.79
Cognitive Restructuring Married	Sequential Decision Making Single	7.86	3.73	0.246	-3.36	19.08
	Sequential Decision Making Married	16.00	3.73	0.003	4.78	27.22
Sequential Decision Making Single	Sequential Decision Making Married	8.14	3.73	0.219	-3.06	19.36

Table 4.20 above shows the Analysis of Scheffe's Multiple Comparisons of the relative effects of stress mean scores of married and single female students exposed to SDMT and CRT techniques. The result reveals CRT married female students as (p=0.923) while the SDMT single students is (p = 0.076) which indicates that there was no significant relative effects on stress among the married and single female students exposed to CRT. But there was significant relative effect between single female students exposed to CRT and the married exposed to SDMT (p = 0.001), in favor of the married SDMT that had least stress score.

Similarly, there was no significant relative effects in stress among married female students exposed to CRT in comparison with the singles exposed to SDMT(p=0.246) while there was significant difference between married CRT and married SDMT(p=0.003).Also, comparison between SDMT married and single students showed that there was no significant difference between them (p = 0.219).There was also no significant relative effects in stress among married female students exposed to SDMT in comparison with the singles exposed to SDMT (p=0.246).

Ho 8 Hypothesis Eight: There is no relative effect of SDM and CR techniques on stress among married female students in Kano state colleges of education.

Table 4.21: **t-test Comparison mean stress scores of married female students exposed CRT and SDMT**

GROUPS	N	Mean	SD.	S. E.	Df	t-cal	t-crit	P
Cognitive Restructuring Married	7	57.71	7.57	2.86				
					12	4.535	2.179	0.001
Sequential Decision Making Married	7	41.71	5.47	2.07				

Table 4.21 above shows t-test analysis for post test stress mean scores of married and single female students exposed to SDMT treatment. Since t-calculated as the table indicates is greater than t-critical (4.535>2.179) and the test is significant at .05 alpha level, at degrees of freedom 12, the null hypothesis is rejected. Hence, there is significant relative effect of SDM and CRT techniques on stress among married female students of COE in Kano state. Therefore, this analysis revealed that the married female students exposed to SDM and CR treatments had their stress significantly reduced, in favor of the SDMT, which has lower stress mean score.

Ho 9 Hypothesis Nine: There is no relative effect of SDM and CR techniques on stress among single female students in Kano state colleges of education.

Table 4.22: t-test Comparison mean stress scores of single female students exposed CRT and SDMT

GROUPS	N	Mean	SD.	S. E.	Df	t-cal	t-crit	P
Cognitive Restructuring Single	7	60.29	6.89	2.60				
					12	2.654	2.179	0.021
Sequential Decision Making Single	7	49.86	7.77	2.94				

Table 4.22 above shows t-test analysis for post test stress mean scores of single female students exposed to SDMT and CR treatments. Since t-calculated as the table indicates is greater than t-critical (2.654>2.179) and the test is significant at .05 alpha level and at degrees of freedom 12, the null hypothesis is therefore rejected. Hence, there is significant relative effect of SDM and CR techniques on stress among single female students of COE in Kano state. Therefore, this analysis revealed that the single female students exposed to SDM and CR treatments had their stress significantly reduced, in favor of the Sequential Decision Making that has lower stress means score.

(Refer To Appendix VII for Details).

4.5 Summary of Major Findings

1. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among single female students in Kano state colleges of education.

2. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married female students in Kano state colleges of education.

3. Cognitive Restructuring technique (CRT) is significantly effective in reducing stress among married female students in Kano state colleges of education.

4. There is no significant effect of CRT on stress among single female students in Kano state colleges of education.

5. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married and single female students of colleges of education in Kano state.

6. There is no significant effect of CRT on stress among married and single female students in Kano state colleges of education.

7. There is significant relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education.

8. There is significant relative effect of SDM and CR techniques on stress among married female students in Kano state colleges of education.

9. There is significant relative effect of SDM and CR techniques on stress among single female students in Kano state colleges of education.

4.6 Discussion of Results

The findings of this study revealed that Sequential Decision Making (SDM) technique is significantly effective in reducing stress among single female students in Kano state colleges of education. The analysis of the first hypothesis was rejected and has revealed the pretest stress mean score of single female students exposed to SDMT was 68.71 while the posttest was 49.86, with a mean difference of 18.85 and P value of (0.001). Thus, the respondents had gained some increase in sense of purpose (Miller & Davis, 1996) by planning and accomplishing their daily life schedules sequentially, both at home and school. This has also shown the effectiveness of SDM technique with regards to improved mental and physical health (Isen, 2001) and (Clore & Storbeck, 2006).

The finding has similarly revealed that the prevalence of stress in educational institutions is of great concern and likewise the society is as well generally aware of the long term effects of students' academic achievement (Salami, 2001). Thus, researchers according to Carey (2007) have long been interested in exploring variables that are both inside and outside school, which affect the quality of students' academic activities. Stressor, according to Fortner (2002) is regarded as any physical, psychological or environmental event or condition that initiates stress

response. Thus, the finding has indicated stress to be strongly associated with students' school performances (Richardson & Rothstein, 2008), which Crosnoe, Johnson and Elder (2004) termed as 'student factors; family factors and school factors'.

Stress is has been noted to significantly upset peoples' self-esteem, attitude, interests, intellectual abilities and also general wellbeing (Wei, Ku, Russell, Mallinckrodt & Liao, 2008). Thus, in the opinions of Yeh and Inose (2002) sources of stress like depression and anxiety have drastic effects on students. A similar assertion by DeLongis, Folkman and Lazarus (1988) and Day and Livingstone (2003) is that unfavorable environments are likely to distract students from the tasks at hand, to the detriment of good performance. That is why many problems affecting females' academic performances according to Blevins (2009) and Mersha, Bishaw and Tegegne (2013) are caused by their learning environments. Stress can therefore be cited as a cause of major diseases and illnesses (Payne & Hahn, 2002). Hence, the effectiveness of the SDM treatment as the result has revealed has significantly assisted these students in reducing their environmental stressors, which Kaufman 2004) and Moeller (2005) reiterated to have great influence on their academic efforts and success.

A complementary study carried out by Schulz et-al (2012) was titled Effects of a Web-Based Tailored Multiple-Lifestyle Intervention for Adults. The research was in Netherlands and was based on a two-year Randomized Controlled Trial, comparing Sequential and Simultaneous Delivery Modes with 3 tailoring conditions (i.e. Sequential, Simultaneous and Control Conditions) in the year 2009-2012. It was aimed at testing the effects of a sequential and simultaneous Web-based tailored intervention on multiple lifestyle behaviors. Follow-up measurements took place after 12 and 24 months. The intervention content was based on the I-Change model. In a health risk appraisal, all respondents (N=5055) received feedback on their

lifestyle behaviors that indicated whether they complied with the Dutch guidelines for physical activity, vegetable consumption, fruit consumption, alcohol intake, and smoking. Respondents in the sequential (n=1736) and simultaneous (n=1638) conditions received tailored motivational feedback to change unhealthy behaviors one at a time (sequential) or all at the same time (simultaneous). Mixed Model Analyses were performed as primary analyses while Regression Analyses were done as sensitivity analyses. An overall risk score was used as outcome measure, Effects on the 5 individual lifestyle behaviors were then assessed and a process evaluation was performed regarding exposure to and appreciation of these interventions.

In the results, both tailoring strategies were associated with small self-reported behavioral changes. The sequential condition had the most significant effects compared to the control condition after 12 months (T1, effect size=0.28). After 24 months (T2), the simultaneous condition was most effective (effect size=0.18). All 5 individual lifestyle behaviors changed over time, but few effects differed significantly between the conditions. At both follow-ups, the sequential condition had significant changes in smoking abstinence compared to the simultaneous condition (T1 effect size=0.31; T2 effect size=0.41). The sequential condition was more effective in decreasing alcohol consumption than the control condition at 24 months (effect size=0.27). Change was predicted by the amount of exposure to the intervention (total visiting time: beta=.06; P=.01; total number of visits: beta=.11; P<.001). Both interventions were appreciated well by respondents without significant differences between conditions. It was concluded that although evidence was found for the effectiveness of both programs, no simple conclusive finding could be drawn about which intervention mode was more effective. The best kind of intervention may depend on the behavior that is targeted or on personal preferences and

motivation. It was recommended that further research is needed to identify moderators of intervention effectiveness.

Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married female students in Kano state colleges of education. The hypothesis was rejected and the pretest stress mean score of married female students exposed to SDM treatment was 69.29 and the posttest was 41.71, with a mean difference of 27.58 and P value of (0.001).This finding complies with another, carried out by Owoyele (2009) titled Relationship Between Stress Management Skills and Academic Achievement Among Undergraduate Students who were randomly selected from two Nigerian universities. The finding revealed strong relationship between the students' stress, emotional management, academic competence and time management. Efficacy of the SDM training was indicated on coping with the students' major potential stressors which Owoyele (2009) reiterated in his findings to involve rush for space in lecture rooms, insufficient power supply-which makes lecture rooms uncomfortable and social insecurity-which prevents cordial relationship.

The harsh economic conditions and incessant disruption of academic work due to demonstrations and strikes are among the other stressful factors which he specified. Blonna (2005) similarly related noise induced environments as stressful which could lead to increased blood pressure, fatigue, depressed mood and also decreased mental and physical performances. Mayo Clinic (2013) similarly consider noise, poor lighting, heat and confined spaces as physical environmental stressors, while organisational stressors relate to rules, regulations, schooling, work deadlines and getting a passing grade. Cheung, Cheung, Chan, Ma and Tang (2006) corroborated by pointing such stressors to result from variables like demands on time, perceived lack of support from faculty, financial pressure, competition, fear of failure and parental or

interpersonal conflicts. These afore mentioned factors are clear indications that intense pressure and stress could significantly impair the students' academic achievement (Chemers, Hu & Garcia, 2001) and (Bayram & Bilgel, 2008).

In very successful school, it is generally believed that all students should be able to learn effectively(Moore, 2005) and (Tucker & Stronge, 2005).That is why the above cited stressful experiences relate to opinions of Weiss (2003) who reiterated on need for conducive environment, Iwasaki (2003), social support and Chao (2011) on need for leisure. That is another reason for the emphasis of Mori (2000) on significance of addressing mental health of the students. A similar proposal by Neuderth, Jabs and Schmidtke (2008) is on reducing test anxiety and optimizing the students' exams preparation. Hirokawa, Yagi and Miyata (2002) stressed on peaceful coexistence, while Scott (2007) and Weiland (2010) consider integration of spirituality. Tao and Dong (2000) similarly stated the need for students' proper adjustment to learning environments, while Alkan (2004) proposed for emotional attachment. Based on the findings of this study therefore, it is concluded that SDM technique is effective on stress treatment among both married and single female students in Kano state Colleges of Education.

Another finding of this study indicated that CRT is significantly effective in reducing stress among married female students in Kano state colleges of education. The hypothesis was rejected and pretest stress mean score of married female students exposed to CRT was 70.86 while the posttest was revealed as 57.71, with a mean difference of 13.15 and P value of (0.004).The finding of this study complies with that conducted by Muhammad (2014) on C.R and Systematic Desensitization (SD) Techniques in Controlling High-stakes Test Anxiety Among Secondary School students. 40 respondents out of a population of 300 were selected through Purposive Sampling Technique. Using Quasi-experimental Pre-test Post test Control

Group Design, the hypotheses were tested at 0.05 significant level. The findings revealed CR treatment to have significant effect in reducing the students' high-stakes test anxiety. However, the results did not reveal significant difference in the effectiveness of both techniques in controlling the test anxiety among the students, which coincides with this present study of SDM and CR techniques with regards to stress treatment among the married and single female NCE students.

Salman, Esere, Omotosho, Abdullahi and Oniyangi (2011) conducted a related study by determining the Efficacy of Goal setting (GS) and CR Techniques at Improving Academic Performance of Secondary School Students in Mathematics. It comprised a sample of 120 students, aged from 15-18, who were purposively sampled from some selected co-educational public secondary schools in Ilorin metropolis. Participants were randomly assigned to (GS and CR) treatments, with a control group (placebo). By administering a validated Mathematics Ability Test (MAT) to the respondents before and after experiment, significant differences were shown in their Mathematics performance abilities because the treatment groups had shown improvement, when compared with the control group. However, there was no significant main effect with regards to gender.

A similar research on Effectiveness of CR and Proper Study Skills in Reducing Test anxiety Symptoms Among High School Students was conducted by Kivi, Rafeie and Kiani (2015). From a population of 300, a sample size of 30 was randomly classified into two 15-subject groups of experimental and control. It was revealed that anxiety scores for experimental group were reduced due to the intervention of the treatment techniques. Thus, there was significant difference in effects of both techniques at reducing their anxiety symptoms. However, Test (pair-wise comparison) showed that the effect of CR was more than that of correct study

skill in reducing the test anxiety symptoms. Thus, effectiveness of the CR technique as indicated in the finding corresponds to this research work, though it specifically relates to stress among married and single female NCE students.

In another development, this study reveals that there is no significant effect of CRT on stress among single female students in Kano state colleges of education. The null hypothesis was retained and their pretest stress mean score was 68.71 while the posttest was revealed as 60.29, with a mean difference of 8.44 and P value of (0.050). This has been contrary to the research question because it had shown some indication of effectiveness of the technique, based on the respondents' stress mean scores. Thus, the finding has shown the students' conviction in strengthening their rational beliefs (Shobola, 2007) and (Brain, 2006) to identify and dispute their stress inclined irrational beliefs with those which are rational (Roth & Fonagy, 2005) and Kelly (1955).The study that relates to this was that conducted by Kalkan and Ersanli (2008) which revealed that CR is effective at improving marital adjustment among couples. It was conducted with a sample size of 30 subjects using Marital Adjustment Scale (MAS). There was significant difference between the levels of marital adjustment of the post tests of experimental and control groups. Wilcoxon Rank Test indicated significant difference in pre and posttests scores in terms of marital adjustment level, implying that the enrichment training had positive effects on some levels of marital adjustment.

Equally, Olufunmilola (2013) used C.R and Behavioural Rehearsal (BR) Trainings on Conduct Disorder Among Adolescents in Special Correctional Centres in Lagos State. A randomly selected sample of 90 respondents was assigned to 2 experimental and one control groups, out of 186 population. The data collected was analyzed using analysis of variance (ANOVA), regression and t-test, at 0.05 significant level. The treatment groups when compared

to that of control, revealed significant difference which indicates that both interventions were effective in the treatment of conduct disorder among the adolescents. However, the mean scores indicated CR respondents to display a higher level of conduct disorder after treatment, when compared with those of BR, which shows that BR was more effective than CR technique. Thus, as the results of the study have revealed, it can be concluded that the CR intervention has been effective at reducing stress among the married and single female students. This indicates the effectiveness of the CR technique through appropriate use of reasoning as was re-affirmed by Otte (2011) and (Seligman & Ollendick, 2011).

Another finding of this study indicated significant relative effect of Sequential Decision Making (SDM) technique among married and single female students of colleges of education in Kano state. The hypothesis was rejected and pretest stress mean score of married and single female students exposed to the SDM treatment was 49.86 and the posttest was 41.71, with a mean difference of 8.15 and P value of (0.043). This similarly goes in line with the views of Taylor et al (2000) by indicating that females take more responsibilities of household chores and nurturing of the children than their husbands, which also applies to pre-natal accountabilities as indicated by (KCHC, 2010). This is the more reason why in comparison with their male counterparts, many married women with substantial household responsibilities intentionally limit their career aspirations and purposefully reduce their involvement in professional activities (Day & Livingstone, 2003) and (Matud, 2004).The opinions of Tinne (2002) and Nelson and Burke (2002) coincide by emphasizing that accumulation of tasks, both in and out of homes can be very stressing. That is why Jordan, Partland, Legters and Balfanz (2000) and Johnson and Ross (2003) noted that many researchers regard stress to be among the most challenges of today's societies.

Response to stress as Greenberg (1999) reaffirmed is however, inevitable because it is part of life. Hence, every individual according to Jones and Bright (2007) experiences stress at some point in time. That is why Devi (2011) suggested that in times of stress or adversity, it is always best to keep busy and also to plow anger and energy into something positive. As such, constructive thoughts according to Rose (2003) and O'Neill (2004) can significantly assist in seeking happier and healthier life styles**.**

The study titled Simultaneous Versus Sequential Counselling for Multiple Behavior Change by Hyman, Pavlik, Taylor, Goodrick and Moye (2007) also corresponds to this study. A randomized experiment was implemented in a publicly funded primary care setting to test whether a sequential presentation of stage of Change-based Counselling could be more effective at stopping smoking, reducing dietary sodium level and increase in physical activity than the technique of Simultaneous Counselling. A total of 289 (67.3% female) African Americans with hypertension, aged 45 to 64 years that were initially non adherent to the 3 behavioral goals, were randomized to the following conditions: (1) 1 in-clinic counseling session on all 3 behaviors every 6 months, supplemented by Motivational Interviewing by telephone for 18 months; (2) a similar protocol that addressed a new behavior every 6 months; or (3) 1-time referral to existing group classes ("usual care"). The primary end point was the proportion in each arm that met at least 2 behavioral criteria after 18 months. Out of the 289 respondents, 230 (79.6%) completed the study.

The results revealed only 6.5% in the simultaneous arm, 5.2% in the sequential arm, and 6.5% in the usual-care arm, met the primary end point in the 18 months. However, results for single behavioural goals consistently favoured the simultaneous group. At 6 months, 29.6% in the simultaneous, 16.5% in the sequential, and 13.4% in the usual-care arms had reached the

urine sodium goal (P = .01). At 18 months, 20.3% in the simultaneous, 16.9% in the sequential, and 10.1% in the usual-care arms were urine cotinine negative (P = .08). It was however concluded that, long-term multiple behavior change is difficult in primary care. Thus, the study provides strong evidence that addressing multiple behaviours sequentially is not superior to, and may be inferior to, a simultaneous approach.

A similar complementary study relates to that of Blevins (2009) who analyzed Effects of Socio-economic Status on Academic Performance Among Students. The population comprised of students on free and reduced lunch program and those that scored proficiently on Communication Arts and Math (MAP) test portions of (2007). Using Pearson r Statistic, the results showed significant correlation between academic success and socio-economic status in Communication Arts and also between academic success and socioeconomic status of the students.

The present study similarly presents that there is no significant effect of CRT on stress among married and single female students in Kano state colleges of education. CR according to Brain (2006) changes negative perception to less stressful conditions. This implies that the respondents had benefitted from this technique through changing and discarding their stress distorted thought patterns (Omoegun, 2003) and replacing them with better or logical and more beneficial ones (Ryan& Eric, 2005). As such, they had been able to develop their positive constructs by revisiting, re-evaluating and also reconstructing the stress thoughts that were distorted (Kelly, 1955) and (Boeree, 2006). The study has therefore revealed the effectiveness of CR technique on stress treatment among married and single female respondents. In line with this study, another was conducted by Emmanuel, Okreke and Anayochi (2015) which investigated the Effects of Assertiveness Training and CR Technique on Self-esteem Among Female

Undergraduate Victims of Relationship Violence. It was a Quasi-experimental Pre-test-Post-test Control Group Design. A sample size of 90 female students was randomly selected through Multi-stage Sampling Technique from three Universities. Data were analysed using t- test and Analysis of Covariance.

There was significant main effect of treatment in the pre-posttests self-esteem mean scores of the experimental groups; also significant difference was revealed in the effect of age in the pre-posttest self-esteem mean scores of relationship violence between young and older respondents. No significant interaction effect of age in the pre-post self-esteem scores of relationship violence as revealed in the experimental and control groups.

Deacon, Fawzy, Lickel and Wolitzky (2011) carried out a similar study on Cognitive Diffusion and CR techniques on Distressed Undergraduate Women. A clinical analogue sample of these respondents identified with negative self-referential thoughts of body shapes were used in the study. The effectiveness of both the CR and CD techniques revealed indicated substantial and comparable levels of improvement on measures of these female respondents' body images.

Another study conducted by Olubusayo (2014) focused on Effectiveness of CR on Reduction of Mathematics Anxiety Among Senior Secondary School Students. It was a 2 X 2 X 3 Pre-test, Post-test Factorial Design that involved treatment, gender and study habit. A sample of 180 was drawn from Mathematics anxious students, randomly assigned to CR training, with a control group that received a placebo treatment. They comprised of 90 males and 90 females of high, medium and low levels of study habits. Instruments used were Mathematics Anxiety Rating Scale (MARS) and Study Habit Inventory (SHI). The results revealed significant effect of CR training on anxiety level in Mathematics of the experimental group than that of the control. It also showed that gender affected the students' anxiety in Mathematics significantly, with male

students having more reduction in Mathematics anxiety than female students. It was however found that study habit did not significantly affect the students' anxiety in Mathematics. Recommendation was made for Counselors to use CR treatment as a strategy for reducing anxiety in Mathematics among Secondary School Students.

Another finding of this research work has revealed significant relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education. It was indicated that $F(3,24) = 10.093$; $p < 0.05$,revealing that there was significant relative effect of SDM and CR techniques on stress among the married and single female respondents exposed to both techniques.

A related study conducted by King et al (2014) is titled Behavioral Impacts of Sequentially versus Simultaneously Delivered Dietary, Plus Physical Activity (PA) Interventions: The CALM Trial. The aim of conducting the research was to evaluate on combining dietary and physical activity (PA) interventions to enhance adherence. They tested how sequential versus simultaneous diet, plus PA interventions affected behavior changes by using 200 respondents over age 44 years not meeting national PA and dietary recommendations (daily fruits, vegetable servings and percent of calories from saturated fat).They were randomized to one of four 12-month telephone interventions: Sequential (Exercise-First or Diet-First), Simultaneous, or Attention-Control. At 4 months, the other health behavior was added in the sequential arms.

In the results, 93% of the respondents were retained through 12 months. At 4 months, only Exercise-First improved PA, and only the Simultaneous and Diet-First interventions improved dietary variables. At 12 months, mean levels of all behaviors in the Simultaneous arm met recommendations, though not in the Exercise-First and Diet-First arms. Thus, the

researchers observed a possible behavioral suppression effect of early dietary intervention on PA that merits investigation.

Pradhan, Mendinca and Kar (2014) conducted another research using **cross-sectional experimental design.** It was titled Evaluation of Examination Stress and its Effect on Cognitive Function Among Medical Students. The sample size was 100, (49 males, 51 females) of age group 18-21 years. The pre and post data were analyzed with Paired t-test and Pearson's Correlation Coefficient Statistic. The findings indicated all parameters to have significantly increased in pre-examination setting as compared to post-examination setting, irrespective of gender. The results in parameters of pulse rate (PR), systolic blood pressure (SBP), diastolic blood pressure (DBP), VRT stress score and auditory reaction time (ART) were indicated to have significantly increased in females, when compared to the males. However, stress scores and SBP were observed to have increased significantly in males when compared to females in pre-examination setting. The results revealed that excessive stress affects students' cognitive functions and performance in examinations. It is further observed that female learners were more affected by stress, which impaired their cardiovascular parameters like PR and cognitive parameters, prior to examination. Moreover, both ART and VRT were shown more in females than in the males.

Another research on Educational Predispositions of Chinese and Indian Recent Immigrant- families was conducted by Gordon and Liu (2015). Using a population of 144 and a sample size of 28, Critical Dialogic Inquiry was applied, while Correlation, Regression, t-tests and Variance Analyses were used to analyse the data. The results indicated no significant total mediating effect of study year and residency on relationship between study major and depression, anxiety and stress. Thus, the result according to the finding is generally

transformative for all variables involved, because the research reflects on attitudes, expectations, and traditions of home country which indicates significant effect of study year and residency among subjects and has as well indicated students satisfied with their education to have lower depression, anxiety and stress scores than the non satisfied. This coincides with postulations of Moeller (2005) and Dyson and Renk (2006) who stated that new college students experience stress as a result of transition from home to college life. Therefore, based on the result of the study, it is concluded that the use of SDM and CR have been effective in reducing stress among the married female students.

Another discovery of this present study is that there is significant relative effect of SDM and CR techniques on stress among married female students in Kano state colleges of education. The finding has also revealed no significant relative effect on stress among married female respondents exposed to both SDM and CR treatments ($t(12) = 4.535$; $p < 0.05$), also in favor of the SDM treatment, which had lower means stress scores. A comparable work that coincides with the SDMT in this study was a two year research study on the SDM technique and Reinforcement Learning by Pednault, Abe and Zadrozny (2002) that was aimed at Maximizing Total Marketing Benefits. The result revealed that the proposed method for optimizing total accrued benefits out-performed the usual targeted-marketing methodology, which indicates the positive effect of the SDM.

Mosalanejad, Koolace and Jamali (2012) carried out another stress-related investigation on the Effect of CBT on Mental Health and Hardiness of Infertile Women of 20-35 years that were receiving assisted reproductive therapy (ART) in Jahrom university hospital of Iran. The purpose was to determine the effect of the technique at reducing stress, anxiety and depression. A population of 70 and a sample of 31 were randomly grouped into (n=15) experimental and

(n=16), control. The pre-posttest instruments used were Depression, Anxiety and Stress Scale (DASS) and a normalized Persian version of Ahvaz Hardiness Test (AHT) for assessing psychological distress and psychological hardiness.

The experimental group received 1 hour and 30 minutes weekly sessions of group therapy for 15 weeks. The t-test Statistic applied in the study revealed significant differences between DASS test in the level of stress, anxiety and depression. There was also decrease in the level of psychological distress of the treatment group after the intervention.

A similar study was that of Aya (2009) on Academic Stress and Health Outcomes Among College Students. (61.3%) of the respondents were females and under 30 years of age. Hierarchical Regression Analysis was used in the predictor and background variables of academic stress. The findings revealed that the predictor variables did not significantly predict health outcomes but that it was when the mean scores of all stress subscales were included that the predictor variables significantly predicted the health outcomes, indicating that stress significantly predicted health outcomes after controlling for background variables. This implies that strong relationships exist between stress and health and stress and coping. This also applies to significant correlation of stress with coping and academic self efficacy.

The conclusion of Aya (2009) was that stress could affect students' academic activities in addition to illnesses or diseases, be it physical or psychological. This was corroborated by Wolgast (2012) on effects of emotion regulation and multifaceted psychological processes. Aremu (2001) and Hasan (2006) on the other hand described that facing stressors at home may have consequences for anxiety at academic activities. According to Mersha, Bishaw and Tegegne (2013) many problems affecting females' academic performances relate to persona-social concerns, which Noguera (2003) noted to have profound influence on their health. This also

applies to psychosomatic complaints as indicated by Gerber and Pühse (2008) as well as other stressors that involve abuse, neglect and separation from a spouse (KCHC, (2010).

In the same vein, this study revealed significant relative effect of SDM and CR techniques on stress among single female students in Kano state colleges of education($t(12) = 2.654$; $p < 0.05$), in favour of SDM training, which had lower means stress score. The finding has also shown that both treatment groups had benefitted from the two treatments due to their effectiveness. Abramowitz and Deacon (2006) similarly investigated a short term study that corresponds to this research work on Efficacy of Brief Intensive Cognitive Therapy (ICT) Among a Large Population of Rural Patients with Panic Disorder (PD). They were recruited from routine clinical centres and the treatment involved 9 hour therapy over 2 consecutive days. Assessment conducted at pre-treatment and a 1 month follow-up revealed positive effects of CR technique on the PD symptoms because about 60% of them became panic free after the treatment.

Lollett, Rogova and Scott (2003) similarly conducted their study using SDM Technique on Homogeneous and Non-communicating Multi-agent System and Reinforcement Learning. The study demonstrated the feasibility of the SDM technique with regards to limited resources in time-constrained situations; improvements in decision utilities and also beneficial effects with regards to both military and non-military tasks. It also revealed reduction of decision latency as well as improvements inclined to medical decision-making and life-threatening situations. Exposure to the formal observations of the SDM according to Miller and Davis (1996) has therefore helped the female students to realize the essence of time management as well as prioritizing of activities based on values in the process of discharging both the academic and

daily life tasks. That is why disclosed improved self confidence and physical relaxation to be among the major positive effects of the SDM technique.

The study of Okwun (2011) which complements with this was on Effects of CR and Communication Skills on Conflict Resolution Among Nigerian Couples. It was conducted using 48 married subjects. The result revealed significant difference between the treated group and that of control because there was significant effect of the two techniques on the experimental group, when compared to that of the control. The opinion of Matud (2004) corresponds to this by declaring that female adults often experience stress as a result of balancing with family life and personal relationships and also child nurturing accountabilities.

Iwasaki, MacKay and Ristock (2004) similarly cited sources of stress among women to include pressure to meet expectations. Such experiences according to Artinian, Washington, Flack, Hockmanand Jen (2006) could hinder their emotional status as well as predispose them to numerous stressful illnesses. This is also because they are often engrossed with rigorous imposed accountabilities that overbear on their academic and daily life schedules, especially in the absence of helpers. These are enough reasons why women, unlike men are more predisposed to stressors (Melanie, 2005). Another stressor according to Gonzalez, Rodriguez and Greenglass (2006) is that of catering for elders with chronic illnesses and death. The physiological stressors of menopause and rapid growth in adolescence period as KCHC (2010) also reiterated could as well affect the educational status and general health and wellbeing of these students. In a nutshell, both SDM and CR treatment techniques were confirmed to have significant effects on the students' stress reduction.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECCOMMENDATIONS

5.1 Introduction

The chapter presents the summary of the research study on effects of sequential decision making and cognitive restructuring techniques on stress among female students in Kano state COE. It also includes summary, conclusion drawn from the results of the study, recommendations, contributions of findings to knowledge and suggestions for further studies.

5.2 Summary

Stress as discovered in the study has significant negative effects on students' general wellbeing, particularly the females in colleges of education as a result of the strenuous nature of their studies, ordained marital duties, house hold imposed feminine chores, the rigorous participations in different forms of ceremonial festivities and selection of suitable husbands, among others. The main problem faced by these students is that they are not fully aware of their stressful conditions. They neglect to acknowledge that minor series of stress tend to have numerous cumulative effects on health as well as decrease performances. This is very threatening because the worst aspect of stress is that people regard it as 'old and familiar' and therefore get used to it or rather ignore or otherwise even forget that it is there. Thus, people generally become conditioned to it until they 'wear and tear' down to final fatal breakdown, which kills through violence, heart attack, stroke or cancer, to mention some. This is because the physical and mental resources are depleted through long term attrition. Hence, the need for school counselors to be more thoughtful, considerate and dutiful at helping their students with regular and efficient counseling services by way of managing and reflecting on their emotional, mental and physical happenings has been evidently proved.

This research work was designed to find out the effects of SDM and CR techniques on Kano state COE, NCE married and single female students that exhibited the symptoms of stress. Both techniques of the SDM and CR applied in the study were found to be effective in the treatment of stress among these students.

Chapter one presented important aspects related to the objectives of the research work, so as to find out the effects of both SDM and CR techniques on stress among the married and single female students in Kano state COE. It was also aimed at finding out whether there exist significant relative effects between the two techniques as well as which among them(techniques) is more effective on stress among the married and single NCE female students. Furthermore, in this chapter, the objectives were developed into research questions, hypotheses and assumptions of the study.

In chapter two, numerous related studies by various researchers had greatly contributed to the variables of this study. Stress, as discovered from the reviewed literature comes from any situation or thought that provokes feelings of frustration, anger or anxiety, even though these feelings differ to some degree in terms of perceptions and reactions, referred to as 'stress finger prints'. Some stress physical symptoms as indicated in the literature are characterized by dry mouth, dizziness, fidgeting, nail biting, lateness, frequent illness and changes in weight, appetite, sexual and sleep patterns, while the biological signs are noted to include lowered immune system, poor exercise and recreation, frequent urination, allergies, chronic fatigue, biologically based mental disorders and diseases inclined to the heart, cancer, diabetes, asthma and arthritis. Among the behavioural signs are increase in drug use, nervousness, poor time management, frequent crying, neglect of responsibility, poor job performance and personal hygiene and change in family relationships, while the mental signs include difficulty in concentration, decreased

memory, indecisiveness, confusion and loss of sense of humour. Imagery signs are like isolation, helplessness, loss of control, nightmares, accidents, poor self image and failure. Examples of cognitive signs include distortions like 'life should not be unfair', 'I must have what I want', 'others must approve of me' or 'I must perform well'. The emotional signs on the other hand are like frustration, anger, guilt, tearfulness, jealousy, embarrassment, morbidity, worry and fear while competition, manipulative or submissive behaviors, suspicion and gossips relate to interpersonal signs.

Stress, as was also revealed in the literature is caused by both internal and external environmental factors such as bereavement, infertility, occupational/academic worries, financial constraints and on-going problems like unhappy marriage which lead to development of certain traits of anxiety and distress. These in essence tend to hinder the students' academic activities, general health and wellbeing. Stress preventive measures also as reviewed include planning by visualizing expected events, writing feelings down in forms of letters, using diaries, relaxation of mind, muscles exercise, massage, seeking help, having enough sleep, proper nutrition, dieting, use of sense of humour, developing hobbies, squeezing out for more simple pleasures like jogging, gardening, trekking and maintenance of spiritual practice.

In a similar vein, the literature review also involved the treatment techniques of SDM and CR. Empirical findings of both techniques were presented, though that of the SDMT was scanty because it relates more closely to marketing, environmental, scientific and health related long term planned schemes. As such, due to the comprehensive nature of the technique, this study specifically used the sequential aspect of developing organised (sequential) formats designed for accomplishing daily life schedules in the treatment of stress(among the female students). The CR technique as identified in the literature review assists by replacing irrational thoughts or beliefs

and behaviours (like those of stress) to those that are rational or more logical, through appropriate use of reasoning referred to as cognition.

The research design of the study was quasi experimental which involved pretest post test design. The population of the study comprised of married and single female students in Kano state colleges of education who demonstrated stress symptoms. Proportionate Distributed Sampling Technique was used in selecting twenty eight (28) NCE II female students out of sixty four (64), fourteen (14) per each tertiary institution of Sa'adatu Rimi and FCOE (Technical) Bichi. FCOE (T) Bichi received SDM treatment and SRCOE went through the CR treatment.

The statistical analysis of data collected for this study was adequately discussed. Tables were used in displaying the results which revealed that seven (7) out of nine (9) null hypotheses were rejected. Summary of the major findings of the study were presented, followed by discussion of major findings with the aid of relevant literature to support the findings.

5.3 Contributions of Findings to Knowledge

It was therefore established that:

1. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among single female students in Kano state colleges of education.
2. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married female students in Kano state colleges of education.
3. Cognitive Restructuring technique (CRT) is significantly effective in reducing stress among married female students in Kano state colleges of education.
4. There is no significant effect of CRT on stress among single female students in Kano state colleges of education.

5. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married and single female students of colleges of education in Kano state.

6. There is no significant effect of CRT on stress among married and single female students in Kano state colleges of education.

7. There is significant relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education.

8. There is significant relative effect of SDM and CR techniques on stress among married female students in Kano state colleges of education.

9. There is significant relative effect of SDM and CR techniques on stress among single female students in Kano state colleges of education.

5.4 Conclusion

In the course of this study, it can be observed that there was scanty related literature of SDM in the field of Counselling profession. The reviewed relevant ones on psychological aspects were precisely inclined to physical body images, behavioural changes, life style interventions and dietary. This indication vividly portrays in-availability of adequate related literature on SDM as well as on stress associated studies among female NCE students. Furthermore, none was on their marital statuses nor on any that specifically or exclusively relates to the married or singles in Kano state. Thus, to the best of the researcher's knowledge, the present study is the first of its kind because it has not been conducted previously. In a nutshell, significant relative effects as the study indicated exist between both techniques of SDM and CR on stress reduction among the married and single female students, though SDM was revealed as more effective. Thus, based on the findings, it could be concluded that:

1. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among single female students in Kano state colleges of education.

2. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married female students in Kano state colleges of education.

3. Cognitive Restructuring technique (CRT) is significantly effective in reducing stress among married female students in Kano state colleges of education.

4. There is no significant effect of CRT on stress among single female students in Kano state colleges of education.

5. Sequential Decision Making (SDM) technique is significantly effective in reducing stress among married and single female students of colleges of education in Kano state.

6. There is no significant effect of CRT on stress among married and single female students in Kano state colleges of education.

7. There is significant relative effect of SDM and CR techniques on stress among married and single female students in Kano state colleges of education.

8. There is significant relative effect of SDM and CR techniques on stress among married female students in Kano state colleges of education.

9. There is significant relative effect of SDM and CR techniques on stress among single female students in Kano state colleges of education.

5.5 Recommendations:

Based on the findings of this study, the following recommendations were made.

1. That by enlightenments through the media, workshops, conferences and seminars, the counsellors, psychologists and social workers should endeavour to make use of Sequential

Decision Making technique appropriately to help in reducing stress among single female students in Kano state colleges of education.

2. That provision of such enlightenments should aid them to apply Sequential Decision Making Technique in the treatment of both academic as well as domestic forms of stress among married female students in Kano state colleges of education.

3. That the media should assist in enlightening them on making effective use of Cognitive Restructuring Technique among the married female students in Kano state colleges of education so that they can be able to have their stress reduced.

4. That the media should help them use Cognitive Restructuring Technique effectively among the single female students in Kano state colleges of education since it has significant effect in reducing their stress.

5. That through workshops, they should be guided to apply Sequential Decision Making Technique in order to help in reducing stress among the married and single female students of colleges of education in Kano state.

6. That organized conferences should also enable them utilize Cognitive Restructuring Technique for stress reduction among the married and single female students in Kano state colleges of education.

7. It is recommended that through organized seminars, they should be able to make adequate use of both SDM and CR Techniques since they have significant relative effects on stress reduction among the married and single female students in Kano state colleges of education.

8. It is recommended that the media should assist them in using SDM and CR Techniques in combination, for stress reduction among the married female students in Kano state colleges of education.

9. It is recommended that the media should encourage them employ SDM and CR techniques since significant relative effects of stress reduction exist among the single female students in Kano state colleges of education.

10. It is recommended that regular and appropriate organized workshops and seminars on stress negative effects, precautious measures as well as reduction and coping strategies should be conducted for enhancement of general health and wellbeing among the students.

5.6 Suggestions for Further Studies:

The following are the suggestions for further studies:

1.Since this study was limited to only SDM and CR Techniques, more empirical researches should ideally be conducted using other techniques to determine their effects on stress among female students with regards to health and wellbeing. Thus, techniques like Rational Self Analysis, Stress Inoculation Training, Goal Setting Technique and Problem Solving could be equally employed to find their efficacy on stress reduction.

2. Since small sample size was used in this study and likewise with short time durations spent for only seven (7) and eleven (11) weeks for the treatment interventions of both SDM and CR, respectively, it is suggested that further studies should be conducted using larger samples and also with increased time durations for the treatments sessions.

3. The present study was carried out using group counseling. It could be beneficial to conduct further related studies through individual counselling.

4. Divorced NCE female students and widows should be used, since only the married and singles were used in this study.

5. Further studies should be conducted on NCE male counterparts since only female NCE students were used in this study.
6. Studies on stress disparities among male and female students should be conducted, since gender was not included in this study.
7. It is suggested that studies on age variations and socio economic status should be conducted because they were not included in this study.
8. It is important to extend further related studies using clients from different educational institutions, since this present one was only carried out on Kano state colleges of education.
9. Further studies on stress comparison between rural/urban settings among students are suggested be conducted so as to find out whether disparities exist between the two environments or which between the two settings are more predisposed to stressful conditions.

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APPENDIX 1

STRESS IDENTIFICATIONCHECKLIST

Marital Status**:**……Institution: ……..…….

Instruction: Please tick ( )'yes' or 'no' against the following listed items from 1-15 according to how each of them applies to you.

S/N	ITEMS	YES	NO
1	I eat three (3) balanced meals every day.		
2	I have adequate clothes to wear.		
3	I have a comfortable accommodation.		
4	I am a healthy person.		
5	I have reliable friends.		
6	I get worried about my hobby.		
7	I worry a lot about the problems of my family and friends.		
8	I get worried because I do not have confidence on my teachers.		
9	I have problem with my course of study.		
10	I get worried because the libraries are usually rowdy and too congested.		
12	I worry about accomplishing my daily household chores.		
13	I do not have much time to accomplish my academic activities.		
14	I worry about getting a reliable job after graduation.		
15	I worry about finding a suitable life partner.		

Source: Adapted from Balarabe, M. (PhD. Edin) (2007)

Stress and its Effects on Adjustment and Performance.

Thanks for your honest responses.

APPENDIX 2
STRESS ASSESSEMENT INVENTORY

Marital Status**:**…… Institution:……..…….

Instruction: Based on a scale of 1-4 directly presented below, please respond by ticking () against each of the following listed items from 1-25 according to how each statement applies to you.

4- Very true
3- True
2- Untrue
1- Very untrue

S/N	**ITEMS**	**VT**	**T**	**UT**	**VU**
1.	I suffer from lack of food.				
2.	I worry about my present mode of dressing.				
3.	I get worried because of the area/location of my accommodation.				
4.	I suffer from lack of adequate provision of water supply.				
5.	I suffer from lack of adequate provision of electricity.				
6.	I suffer from inadequate provision of toilet facilities.				
7.	I suffer from inadequate provision of transportation.				
8.	I get worried because of my critical health condition.				
9.	I get worried whenever I think of getting good medical treatment, if I fall sick.				
10.	I get worried about my hobby.				
11.	Chatting with friends makes me feel very annoyed.				
12.	I get worried about my general safety.				
13.	I suffer from lack of supportive family.				
14.	I get worried about the problems of my family.				
15.	I worry a lot about my domestic assigned responsibilities.				
16.	I suffer from lack of recognition from the community members.				
17.	The course I am doing is difficult for me.				
18.	I suffer from lack of help from the staff members.				
19.	I get worried because of scarcity of learning materials in my course.				
20.	I get worried because I believe that the marks given to me are less than what I earned.				
21.	I suffer because of the insufficient time I have in accomplishing my academic works.				
22.	I suffer because the lecture rooms are often rowdy and too congested.				
23.	I worry about finding a suitable life partner.				
24.	I worry about finding a suitable job after graduation.				
25.	I worry a lot whenever I think about what will happen in the future.				

Source: Adapted from Balarabe, M. (PhD. Edin) (2007)

Stress and its Effects on Adjustment and Performance.

Thanks for your honest responses.

APPENDIX 3:

First Treatment/Intervention: (Sequential Decision Making Counselling Technique).

As the stressed students were identified, the clients of FCE (T) Bichi were exposed to seven (7) weeks counseling sessions.

First Week

First Session:

Topic: General Introduction and Establishing Counselling Relationship.

i. The session begins with greetings and general introduction by the researcher and clients.

ii. Researcher informs clients about the purpose of conducting the treatment.

iii. Researcher establishes rapport through showing signs of positive regard, compassion and freedom of speech.

iv. Researcher assures clients on the essence of confidentiality with respect to their identities and problems.

vi. Researcher discusses together with clients on the rules and regulations governing the counseling exercise, for successful accomplishment of the program.

vii. Researcher emphasizes on the essence of honesty, cooperation and full commitment, for reliable and effective outcome.

viii. Researcher responds to questions from the clients for clarity.

ix. Researcher commends the clients for their time and efforts.

Second Week

Second Session: Searching/Identifying the Stressful Feelings and Reactions to Determine the Dimension of the Decision (SDM).

i) Researcher starts by discussing the main objectives of SDM technique, being the treatment to be used in the stress treatment.

ii) In order to identify the need for using the SDM self developed format, the researcher requests the clients to:

a) Search the environment- to identify the causes of their stress.

b) Effects of the problems-inclined to their stressful experiences.

iii) In relation to (a & b) above, the researcher proceeds by instructing them to point out the most challenging tasks that they think predispose them to the stressful experiences, both at home and school. Researcher clearly explains to them that these experiences are the psychological (mental), emotional (feelings) or physiological (bodily processes) conditions that result from exposure to the stressors.

v) By identifying these challenging tasks, the researcher further informs them to:

- Indicate these unfavourable feelings using specific words such as-humiliated, regretful, worried, unsure, frustrated, despairing, scared, angry, irritated, sad, irritated, annoyed, guilty, ashamed, confused, hopeless, horrified, intimidated, vulnerable, etc.

vi) Researcher continues by describing the symptoms, risks, types and effects of stress.

vii) To realize the negative effect of stress, the researcher enquires them to narrate their specific stressful feelings associated with the described symptoms listed below:

- **Cognitive Signs**-like cognitive distortions, confusion, Imust perform well, life should'nt be unfair, I must have what I want, others must approve of me and disorientation.

- **Physical Signs-**sweaty palms, racing heart, headache, fatigue, frequent illness, dry mouth, weight loss/gain, sleep pattern changes, loss of sexual drive, infections, dissiness and muscle tension.
- **Behavioural Signs-**perfectionism, poor personal hygiene, isolation, poor job performance, neglect of responsibilities, fidgeting, impaired speech, appetite changes, accident proneness, increased caffeine intake, frequent crying, nail biting and anxiety.
- **Moods Signs**- nervousness and irritable feelings.
- **Thoughts Signs**- worries, catastrophic thoughts and over estimation/underestimation of danger.
- **Psychosocial Signs** - hopelessness and hypersensitivity.
- **Mental Signs**-in-attentiveness, panic attack, decreased memory, indecisiveness and loss of sense of humour.
- **Emotional Signs** -frustration, fists of rage, tearfulness, jealousy, likes, dislikes, shame and embarrassment.
- **Imagery Signs** -helplessness, loosing control and failure.
- **Interpersonal Signs**-competition, putting one's need before own, sycophantic behavior, suspicion, gossips and manipulative tendencies.
- **Biological Signs**-Poor recreation, allergies, chronic fatigue, flu, lowered immune system, arthritis and biologically mental based disorders.

viii**)** The researcher emphasizes on the importance of happiness with regards to health and general wellbeing.

ix) Researcher entertains questions from the respondents for more clarification.

xi) Researcher commends them for their time and efforts.

Third Week

Third Session: Developing and Examining of Potential Consequences.

i) Researcher exchanges greetings with the respondents.

ii) To examine the consequences of processing their SDM format, the researcher guides them to investigate and develop their problem domain and alternatives. Researcher also reminds them to be patient, conscious as well cautious as a result of the procedural nature of the SDM., which is:

- A technique bounded by rationality of human cognition, with a tendency to select 'good enough' favourable outcomes.
- It is also a decision making that ensures considerable type of searching, among some alternatives.
- Therefore, researcher explains that they are all expected to identify and come up with different options/alternatives in order to be able to develop good SDM formats for effective stress treatment.

iii) Thus, researcher informs them to try and think appropriately in order to:

iv) Obtain the best results that fit their goals/objectives, values, desires and so on.

- Write down the ongoing activities on paper in order to ease the situation.
- Be as specific and objective as possible.
- v) To examine and verify the dimensions/scopes and weights or magnitude of these stressful events/tasks (to put more emphasis on priority).
- To ponder on the implications for each course of action intended to be taken for-
  - Themselves.
  - Others who will be affected.

vi) Researcher responds to questions from the clients for more clarification.

vii) Researcher commends them for their time and efforts.

viii) Home Work: Try to develop your SDM format based on the weight or value of your daily tasks and schedules.

Week Four

Forth Session: Narrow Choice (Selecting Out of a Few but General alternatives or Opinions).

i) Researcher exchanges greetings with the clients.

ii) Researcher informs them that the SDM process is reduced to a 'choice between few but general alternatives'.

iii) Researcher further reminds them of the major features of the SDM process which is learned, developed and refined over time (a gradual process).

iv) As such, the researcher reminds them that it is a challenge for them to determine the significance of priority in relation to developing these sequential formats, especially when the weight or magnitude of two or more events/tasks are of similar importance or value.

v) In order to illuminate the situation, the researcher noted that they can enlist the assistance of a colleague to discuss with, if they think it will benefit them.

vi) Researcher responds to questions from the clients for more clarification.

viii) Researcher commends them for their time and efforts.

Week Five

Fifth Session: Choosing among Courses of Action, (The 'Actual Choice).

i) Researcher exchanges greeting with the clients.

ii) Researcher informs them to select one option out of the rest developed alternatives.

iii) Thus, researcher reiterates on the need to re-enumerate and re-consider the consequences of the options in order to eliminate all those (options) that they feel will not appropriately suit their stressful conditions by:

- Requesting assistance from a colleague to discuss with, if felt is necessary.
- Re-evaluating each of these options.
- Re-assessing the potential consequences.
- Pondering again on the implications of the chosen options on:
    - Themselves.
    - Family.
    - All those expected to be significantly involved.

iv) **Home Work:** By seeking advice from someone, re-assess your individually SDM designed formats to check for amendment.

v) Researcher responds to questions from the clients for more clarification.

vi) Researcher commends them for their time and efforts.

Sixth Week

Sixth Session: Implementation:

i) After greetings between researcher and clients, researcher informs them to implement their courses of action by strengthening their ego to carry out their plan.

ii) Researcher responds to questions from the clients for more clarification.

iii) Researcher commends them for their time and efforts.

Seventh Week

Seventh Session: Wrap up and post-test administration of SAI:

i) Researcher exchanges greetings with the clients.

ii) Researcher goes for follow up because it is a good practice in SDM technique to carry out the evaluation exercise.

iii) Researcher commends them for their time and efforts and then terminates the session.

APPENDIX 4.

Second Treatment/Intervention: (Cognitive Restructuring Counselling Technique)

As the stressed students were identified, the clients of SRCOE were exposed to eleven (11) weeks counseling sessions.

First Week

First Session: Orientation and Establishing Counselling Relationship.

i) Researcher introduces herself and asks respondents to do the same.

ii) Researcher shows signs of positive regard and care i.e building rapport.

iii) Researcher assures the respondents on confidentiality in conducting the whole program.

iv) Researcher further emphasizes on the essence of honesty, cooperation and full commitment, for successful accomplishment of the program.

v) Researcher presents the rules to govern the counseling sessions.

vi) Researcher discusses the benefits of the session with the clients.

vii) Researcher entertains questions and answers for more clarification.

viii) Researcher commends them for their time and efforts and terminates the session.

Second Week

Second Session: Introduction of CR

i) Researcher discusses the major objectives of CR counseling technique, being the one to be used in the treatment after exchanging pleasantries with the clients.

- Identification of the stress causal factors.
- Reacting to reality situations.
- Changing the distorted thought patterns.
- Rationality and validity of the assumptions.

ii) Researcher gives the explanation of stress.

iii) Researcher further describes the major characters of stress.

iv) **Homework:** Researcher asks clients to select the stress characters that match with their behavioral patterns.

v) Researcher entertains questions and answers for more clarification.

vi) Researcher commends them for their time and efforts and terminates the session.

Third Week

Third Session: Identification of the Upsetting Situation (Functional Analysis):

i) Researcher exchanges greetings with the clients and then gives an explanation on stress inclined behaviours after exchanging pleasantries with the clients.

ii) Researcher proceeds by identifying thought patterns that cause stressful behaviours.

- Rational thinking.
- Irrational thinking, each followed by examples.

iii) Researcher directs them to observe the situations/experiences that led them to stress.

iv) Researcher entertains questions and answers for more clarification.

v) Researcher commends them for their time and efforts and terminates the session.

Forth Week

Forth Session: Positive Thought Patterns

i) After exchanging pleasantries with the clients, the researcher enquires the respondents to describe the situations/experiences they thought predisposes them to the observed stressful conditions.

a) Researcher guides them to relate their realistic interpretations of the negative events precisely by identifying the specific unfavourable feeling words indicated as sad, irritated,

annoyed, angry, enraged, anxious, guilty, ashamed, humiliated, regretful, bewildered, confused, flustered, swamped, frustrated, hopeless, despairing, scared, frightened, horrified, intimidated, vulnerable, uneasy, worried or unsure.

b) Researcher proceeds by explanation on the relationship between 'thinking and feeling behavior.

ii) Researcher discusses on unwanted reactions and behaviour that cause stress.

iii) Researcher further asks them about their numerous life experiences in order to identify their positive responses to the stressful experiences.

iv) **Homework:** Researcher tells them to list at least fifteen (15), out of the numerous habitual negative thoughts that they think they make (upsetting false sentences).

v) Researcher entertains questions and answers for more clarification.

vi) Researcher commends them for their time and efforts and terminates the session.

Fifth Week

Fifth Session: Focus on Realistic Interpretations of Events:

i) After exchanging pleasantries with the clients, the researcher discusses on identifications of common cognitive distortions-

- Mental filter: Dwelling on the negatives and ignore the positives.
- Overgeneralization: Viewing the negative event as never-ending patterns of defeat, while ignoring evidence to the contrary.
- All-or-nothing thinking: Looking at things in absolute black-and-white categories, complete success or total failure.
- Magnification or minimization (catastrophizing): Magnifying/exaggerating or minimizing/shrinking the importance of things inappropriately/out of proportion.

- Discounting the positives: Maintaining the belief that positive qualities and life accomplishments are only achieved out of luck and not by one's efforts.
- Emotional reasoning: Reasoning based on feelings and ignoring contrary evidence.
- Rigid Rules/Perfectionism ("Should statements"): Criticizing self or others with "shoulds" or "shouldn'ts," "Musts," "oughts," and "have tos".
- Unfair Judgments: Holding self personally responsible for events that are not entirely under one's control or blaming others or otherwise overlooking ways in which he/she might have also contributed to the problem.
- Labelling: Fixed generalized identification of one's shortcomings and also to others.
- Name Calling: Is an extreme form of magnification and minimization.
- Personalisation and Blame: Attribution of personal responsibilities, causal role or blame for events over which one has no control on.
- Jumping to conclusions:

  (A) Mind reading–This is where one assumes people as reacting negatively towards one when there is no definite evidence for this.

  (B) Fortune-telling –Anticipation of negative feelings that things will turn out badly and also feeling convinced that the prediction is an already established fact. It often involves:

  - Over-estimating the probability of danger.
  - Exaggerating the severity of the consequences, should the feared event occur.
  - Understanding one's ability to cope, should the event occur.
- Tunnel Vision: This is a situation where only the negative aspects of events are seen.

ii) Researcher discusses the ABC strategies of Rational Emotive Therapy.

iii) Researcher again discusses the rational and irrational thoughts associated with their stressful experiences with examples.

iv) **Homework:** Researcher instructs them to write down some tips on changing negative thoughts and also guides them on how to use these tips appropriately.

v) Researcher entertains questions and answers for more clarification.

vi) Researcher commends them for their time and efforts and terminates the session.

Week Six.

Sixth Session: How to Change Negative Thinking

i) Researcher exchanges greetings with the clients and then starts the session by guiding them on how to understand negative thinking styles and also how to untwist these faulty thinking patterns thorough:

- Thinking In Shades of Grey.
- Examining the evidence.
- Application of double standard method.
- Application of experimental technique.
- Application of survey method.
- Defining the terms.
- Using semantic method.
- Using re-attribution.
- Using cost benefit analysis.

i) Researcher discusses on how to stop thinking negatively.

ii) Researcher proceeds by discussing on how to gain control over these emotional stressful reactionsby allowing the thinking part of the brain to take over.

iii) How to recognize the distorted thoughts and replace them with realistic ones.

iv) Researcher enquires them to be writing down these thoughts on daily basis and accordingly before the next session.

v) Researcher entertains questions and answers for more clarification.

vi) Researcher commends them for their time and efforts and terminates the session.

Week Seven.

Seventh Session: Modifying Negative Thoughts.

i) Researcher discusses on how to modify the clients' identified automatic thoughts that seem to perpetuate the stress symptoms, after exchanging greetings with the clients.

ii) Researcher explains how internal influences i.e how thoughts cause feelings and behaviours.

iii) Researcher explains on learning how to interpret their environment positively.

iv) Researcher entertains questions and answers for more clarification.

v) Researcher commends them for their time and efforts and terminates the session.

Week Eight.

Eighth Session: Construction of Realistic Balanced Thoughts.

i) Researcher exchanges greetings with the clients and then starts by explaining the negative effects of using negative statements such as 'I wouldn't', 'I can't' or 'never'.

ii) Researcher proceeds by discussing on the connection between emotion and negative thought.

iii) Researcher continues by explaining on how to construct more realistic objectives.

iv) Researcher proceeds by explaining on how they can choose realistic or positive explanations.

v) Researcher further informs them to acknowledge what they are grateful for.

vi) Researcher emphasizes on the importance of considering each new blessed day as an opportunity for achieving their appropriate life goals.

vii) Researcher concludes by emphasising on the need for accepting situational changes in life.

viii) Homework: Researcher informs them to record their thoughtful experiences and feelings when conducting their daily tasks.

ix) Researcher entertains questions and answers for more clarification.

Researcher commends them for their time and efforts and terminates the session.

Week Nine.

Ninth Session: Construction of Realistic Balanced Thoughts (cont).

i) Researcher exchanges greetings with the clients and then proceeds by telling them to write down the situations which triggered the negative thoughts.

ii) Researcher informs them to identify the moods they felt in the situations.

iii) Researcher proceeds by telling them to write down the automatic thoughts they experienced in those moods, like.

- 'I'm just occupying the position of a house-maid'.
- 'I'll not participate in the school group discussion, etc.

iv) Researcher further tells them to identify the evidence that support these thoughts. For example-

- ' I feel like a house-maid due to accumulation of the tedious household chores'.

- I'll not participate in the school group discussion because I did not have the chance to read either at home or school and my colleagues will think of me as a good for nothing', etc.

v) Similarly, to identify the evidence that does not support these thoughts.

vi) Also to identify the positive/fair balanced thoughts about the situations.

vii) Researcher finally asks them to observe their present moods and to think about what they are going to do.

viii) Researcher entertains questions and answers for more clarification.

ix) Researcher commends them for their time and efforts and terminates the session.

Week Ten.

Tenth Session: Stress Reduction

i) Researcher explains on the causes of stress after exchanging pleasantries with the clients.

ii) Researcher proceeds by explaining on the effects of negative stress.

iii) Researcher continues on the effects of negative thoughts on stress.

iv) Researcher narrates tips on prevention and coping mechanisms of stress.

v) Researcher further explains the importance of general health and wellbeing.

vi) Researcher commends them for their time and efforts.

vii) Researcher entertains questions and answers for more clarification.

viii) Researcher commends them for their time and efforts.

Week Eleven

Eleventh Session: Evaluating the Re-structuring Process:

i) Researcher exchanges greetings with the clients before explaining on interpretation of positive self-talk, (internal dialogue which runs in peoples' heads) and then guides them to compare them with their previous distorted thoughts.

ii) Researcher similarly talks on how to interpret, explain and also judge the situations encountered and their impacts on their stressful behaviours.

iii) Researcher tells them on how to go about changing these habitual thought patterns by beginning with an honest acknowledgement of the realistic negative aspect of the situation, followed by realistic positive consideration of the situations. For example:

- 'Though it seems as if I'm occupying the position of a house-maid as a result of the accumulated house chores, BUT' I know that (among others) God will reward me abundantly'.
- 'It's certain that I didn't have time to read for the exams BUT my colleagues will understand my exceptional case, so I may earn good grades as a result of joining the group discussioninstead of earning low grades or failing woefully in the exams, etc.

iv) Researcher further discusses on how to improve the realistic positive considerations of their life situations.

v) How to become generally aware of their faulty thinking patterns.

vi) How to appropriately challenge these faulty thoughts.

vii) Researcher entertains questions and answers for more clarification.

vii) Researcher commends them for their time and efforts and terminates the session.

APPENDIX 5

Nonparametric Correlations

Correlations

		TEST	RETEST
Kendall's tau b	TEST Correlation Coefficient	1.000	.694
	Sig. (2- tailed)	50	0.001
	N		50
	RETEST Correlation Coefficient		1.000
	Sig. (2- tailed)		
	N		50
Spearman's rho	TEST Correlation Coefficient	1.000	0.856
	Sig. (2- tailed)	50	0.001
	N		50
	RETEST Correlation Coefficient	0.856	1.000
	Sig. (2- tailed)	0.001	50
	N	50	

** Correlation is significant at 0.01 level (2-tailed).

APPENDIX 6

PRETESTS ANALYSIS OF FEMALE STUDENTS EXPOSED TO SDM AND CRT

[DataSet0]

Descriptives

STRESS								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
PRETEST CRT SINGLE	7	68.7143	7.58758	2.86784	61.6969	75.7316	59.00	80.00
PRETEST CRT MARRIED	7	70.8571	6.06709	2.29314	65.2460	76.4683	63.00	79.00
PRETEST SDM MARRIED	7	69.2857	9.55186	3.61027	60.4517	78.1197	55.00	80.00
PRETEST SDM SINGLE	7	68.7143	7.45462	2.81758	61.8199	75.6087	60.00	82.00
Total	28	69.3929	7.37533	1.39381	66.5330	72.2527	55.00	82.00

ANOVA

STRESS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.536	3	7.179	.119	.948
Within Groups	1447.143	24	60.298		
Total	1468.679	27			

Post Hoc Tests

Multiple Comparisons

STRESS

Scheffe

(I) VAR00003	(J) VAR00003	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PRETEST CRT SINGLE	PRETEST CRT MARRIED	-2.14286	4.15065	.965	-14.6130	10.3273
	PRETEST SDM MARRIED	-.57143	4.15065	.999	-13.0416	11.8987
	PRETEST SDM SINGLE	.00000	4.15065	1.000	-12.4702	12.4702
PRETEST CRT MARRIED	PRETEST CRT SINGLE	2.14286	4.15065	.965	-10.3273	14.6130
	PRETEST SDM MARRIED	1.57143	4.15065	.986	-10.8987	14.0416
	PRETEST SDM SINGLE	2.14286	4.15065	.965	-10.3273	14.6130
PRETEST SDM MARRIED	PRETEST CRT SINGLE	.57143	4.15065	.999	-11.8987	13.0416
	PRETEST CRT MARRIED	-1.57143	4.15065	.986	-14.0416	10.8987
	PRETEST SDM SINGLE	.57143	4.15065	.999	-11.8987	13.0416
PRETEST SDM SINGLE	PRETEST CRT SINGLE	.00000	4.15065	1.000	-12.4702	12.4702
	PRETEST CRT MARRIED	-2.14286	4.15065	.965	-14.6130	10.3273
	PRETEST SDM MARRIED	-.57143	4.15065	.999	-13.0416	11.8987

Homogeneous Subsets

STRESS

Scheffe

VAR00003	N	Subset for alpha = 0.05
		1
PRETEST CRT SINGLE	7	68.7143
PRETEST SDM SINGLE	7	68.7143
PRETEST SDM MARRIED	7	69.2857
PRETEST CRT MARRIED	7	70.8571
Sig.		.965

Means for groups in homogeneous subsets are displayed.

APPENDIX 7

HYPOTHESIS 1: T-Test ANALYSIS OF PRE AND POSTTEST STRESS SCORES OF MARRIED FEMALE STUDENTS EXPOSED TO SDMT

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
STRESS	POSTTEST SDM MARRIED	7	41.7143	5.46852	2.06691
	PRETEST SDM MARRIED	7	69.2857	9.55186	3.61027

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STRESS	Equal variances assumed	1.883	.195	-6.628	12	.000	-27.57143	4.16006	-36.63543	-18.50743
	Equal variances not assumed			-6.628	9.552	.000	-27.57143	4.16006	-36.89994	-18.24291

HYPOTHESIS 2 T-Test ANALYSIS OF PRE AND POSTTEST STRESS SCORES OF SINGLE FEMALE STUDENTS EXPOSED TO SDMT

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
STRESS	POSTTEST SDM SINGLE	7	49.8571	7.77664	2.93930
	PRETEST SDM SINGLE	7	68.7143	7.45462	2.81758

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STRESS	Equal variances assumed	.080	.782	-4.631	12	.001	-18.85714	4.07164	-27.72848	-9.98581
	Equal variances not assumed			-4.631	11.979	.001	-18.85714	4.07164	-27.73024	-9.98405

HYPOTHESIS 3: T-Test ANALYSIS OF PRE AND POSTTEST STRESS SCORES OF MARRIED FEMALE STUDENTS EXPOSED TO CRT

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
STRESS	POSTTEST CRT MARRIED	7	57.7143	7.56559	2.85952
	PRETEST CRT MARRIED	7	70.8571	6.06709	2.29314

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STRESS	Equal variances assumed	1.073	.321	-3.586	12	.004	-13.14286	3.66543	-21.12914	-5.15657
	Equal variances not assumed			-3.586	11.459	.004	-13.14286	3.66543	-21.17114	-5.11458

HYPOTHESIS 4: T-Test ANALYSIS OF PRE AND POSTTEST STRESS SCORES OF SINGLE FEMALE STUDENTS EXPOSED TO CRT

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
STRESS	POSTTEST CRT SINGLE	7	60.2857	6.89720	2.60690
	PRETEST CRT SINGLE	7	68.7143	7.58758	2.86784

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
STRESS	Equal variances assumed	.264	.616	-2.175	12	.050	-8.42857	3.87562	-16.87282	.01567
	Equal variances not assumed			-2.175	11.892	.051	-8.42857	3.87562	-16.88130	.02415

Hypothesis 5: T-Test

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Sequential Decision Making Single	7	49.8571	7.77664	2.93930
	Sequential Decision Making Married	7	41.7143	5.46852	2.06691

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
POSTTEST	Equal variances assumed	.781	.394	2.266	12	.043	8.14286	3.59327	.31380	15.97191
	Equal variances not assumed			2.266	10.768	.045	8.14286	3.59327	.21329	16.07242

Hypothesis 6: T-Test

[DataSet0]

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Cognitive Restructuring Single	7	60.2857	6.89720	2.60690
	Cognitive Restructuring Married	7	57.7143	7.56559	2.85952

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
POSTTEST	Equal variances assumed	.689	.423	.665	12	.519	2.57143	3.86947	-5.85942	11.00228
	Equal variances not assumed			.665	11.899	.519	2.57143	3.86947	-5.86738	11.01024

Hypothesis 7: One way

Descriptives

POSTTEST								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Cognitive Restructuring Single	7	60.2857	6.89720	2.60690	53.9069	66.6646	48.00	68.00
Cognitive Restructuring Married	7	57.7143	7.56559	2.85952	50.7173	64.7113	49.00	68.00
Sequential Decision Making Single	7	49.8571	7.77664	2.93930	42.6649	5 7.0493	42.00	64.00
Sequential Decision Making Married	7	41.7143	5.46852	2.06691	36.6567	46.7718	34.00	50.00
Total	28	52.3929	9.90450	1.87178	48.5523	56.2334	34.00	68.00

Test of Homogeneity of Variances

POSTTEST

Levene Statistic	df1	df2	Sig.
.516	3	24	.675

ANOVA

POSTTEST					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1477.536	3	492.512	10.093	.000
Within Groups	1171.143	24	48.798		
Total	2648.679	27			

Post Hoc Tests

Multiple Comparisons

POSTTEST

Scheffe

(I) GROUPS	(J) GROUPS	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Cognitive Restructuring Single	Cognitive Restructuring Married	2.57143	3.73392	.923	-8.6467	13.7896
	Sequential Decision Making Single	10.42857	3.73392	.076	-.7896	21.6467
	Sequential Decision Making Married	18.57143*	3.73392	.001	7.3533	29.7896
Cognitive Restructuring Married	Cognitive Restructuring Single	-2.57143	3.73392	.923	-13.7896	8.6467
	Sequential Decision Making Single	7.85714	3.73392	.246	-3.3610	19.0753
	Sequential Decision Making Married	16.00000*	3.73392	.003	4.7818	27.2182
Sequential Decision Making Single	Cognitive Restructuring Single	-10.42857	3.73392	.076	-21.6467	.7896
	Cognitive Restructuring Married	-7.85714	3.73392	.246	-19.0753	3.3610
	Sequential Decision Making Married	8.14286	3.73392	.219	-3.0753	19.3610
Sequential Decision Making Married	Cognitive Restructuring Single	-18.57143*	3.73392	.001	-29.7896	-7.3533
	Cognitive Restructuring Married	-16.00000*	3.73392	.003	-27.2182	-4.7818
	Sequential Decision Making Single	-8.14286	3.73392	.219	-19.3610	3.0753

*. The mean difference is significant at the 0.05 level.

Hypothesis 8: T-Test

[DataSet0]

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Cognitive Restructuring Married	7	57.7143	7.56559	2.85952
	Sequential Decision Making Married	7	41.7143	5.46852	2.06691

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
POSTTEST	Equal variances assumed	2.084	.174	4.535	12	.001	16.00000	3.52831	8.31247	23.68753
	Equal variances not assumed			4.535	10.925	.001	16.00000	3.52831	8.22774	23.77226

Hypothesis 9: T-Test

Group Statistics

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
POSTTEST	Cognitive Restructuring Single	7	60.2857	6.89720	2.60690
	Sequential Decision Making Single	7	49.8571	7.77664	2.93930

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
POSTTEST	Equal variances assumed	.289	.601	2.654	12	.021	10.42857	3.92879	1.86848	18.98866
	Equal variances not assumed			2.654	11.831	.021	10.42857	3.92879	1.85492	19.00223