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REVIEW OF LITERATURE

The related literature pertinent to the present study entitled 'Efficacy of Stress Inoculation Training (SIT) in improving the overall well – being of school students' were reviewed and grouped under the following heads.

A. Adolescent stress and stressors - An outlook

B. Re-examining coping perspectives

C. Resilience and stress coping repertoires

D. Stress Inoculation Training (SIT) and its importance

E. Different models of Stress Inoculation Training (SIT)

F. Underpinnings of Stress Inoculation Training (SIT)

G. Training Procedures of Stress Inoculation Training (SIT)

A. ADOLESCENT STRESS AND STRESSORS - AN OUTLOOK

Few constructs in health psychology have been as important, yet at the same time as difficult to define, as the concept of "stress". A common characteristic of all definitions are that they focus on environmental circumstances or conditions that threaten, challenge, exceed, or harm the psychological or biological capacities of the individual (Grant *et. al*., 2004). In this sense, all definitions of stress include an environmental component. However, the definitions differ in the degree to which they emphasize psychological processes that occur in response to the environmental stressor (Grant *et. al*., 2003).

Physician Hans Selye was pioneer who defines stress as a non specific response of the body to any demand characterised by the secretion of glucocorticoids. Glucocorticoids (glucose + cortex + steroid) hormone derives from

their role in the regulation of the metabolism of glucose, their synthesis in the adrenal cortex, and their steroidal structure (Roy, 2010).

Stress has traditionally been conceptualized in three ways; as a stimulus (an event or accumulation of events); as a response (a psychophysiological reaction); or as a transactional process, in which a person and the environment interact to produce an appraisal of threat or loss (Caltabiano, Sarafino and Byrne, 2008).

Lazarus and Folkman (1984) opined that "stress" is used to describe the subjective experience of pressure, implying an evaluation of the outcome of a process. This is in line with the transactional view of stress as a relationship between environmental events or conditions, and the individual's cognitive appraisals of the degree and type of challenge, threat, harm or loss. The most widely accepted definition of stress is the transactional definition offered by Lazarus and Folkman (1984): "Psychological stress involves a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being". According to this definition, stress is subjective by nature, since it involves an appraisal of individual experiences.

Lazarus and Folkman (1984) recognized that people use three kinds of appraisal to assess situations. The individual initially appraises the event itself - defined as ***primary appraisal***. There are three possible ways that the event can be appraised: 1) irrelevant, 2) benign positive or 3) stressful. At the same time that primary appraisal of stressful circumstances is occurring, secondary appraisal is initiated. ***Secondary appraisal*** is the assessment of one's coping abilities and resources: whether they will be sufficient to meet the harm, threat, and challenge of an event. Ultimately, the subjective experience of stress is a balance between primary and secondary appraisal. The third type of appraisal is ***reappraisal***. Appraisals change constantly as new information becomes available. Reappraisal does not always result in more stress; sometimes it decreases stress (Caltabiano *et. al.,* 2008). Whether events are appraised as stressful is influenced

by two types of factors – those that relate to the person and those that relate to the situation.

According to Lazarus (1999), the more confident we are of our capacity to overcome obstacles and dangers, the more likely we are to be challenged rather than threatened and vice versa. An important ingredient in Lazarus's theory of stress is thus the ability or inability to cope with a stressful situation and coping is interwoven with the appraisal process. Whereas at a point of time secondary appraisal is influenced by the persons perceived ability to cope with the event. Over time the actual coping activities and their efficacy play into the appraisal process in an important way. Yet theoretically it is important to keep separate the concept of coping from that of appraisal (Monroe and Kelly 1995).

Adolescence is conceptualized as a transitional period, which begins with the onset of puberty and ends with the acceptance of adult roles and responsibilities. Of all life-stages, except childhood, adolescence is the one most marked by rapid and potentially tumultuous transition (Williams, Holmbeck, and Greenly, 2002). In all societies, adolescence is about growing up, about moving from the immaturity of childhood into the maturity of adulthood, of preparation for the future (Steinberg, 2008). The word adolescence is derived from the Latin verb "*adolescere*", which means "to grow up" or "to grow to maturity" (Lerner & Steinberg, 2009).

Teen stress is an important, yet often overlooked, health issue. We know that the early teen years are marked by rapid changes. Most teens face stress from puberty, changing relationships with peers, new demands of school, safety issues in their neighbourhoods, and responsibilities to their families. The way in which teens cope with this stress can have significant short - and long - term consequences on their physical and emotional health. Difficulties in handling stress can lead to mental health problems, such as depression.

Aiming for effective stress management initially includes the proper recognition of stress, the stressor, the manifestations, and its effect in one's well-

being. For a better understanding of stress and its influence to an individual, psychologists categorize stress into three different types:

- Acute stress,
- Episodic stress,
- Chronic stress (Sincero, 2016).

- **Acute stress**

Acute stress is the most common form of stress. Of all forms of stress, acute stress is the most widely experienced one, since it is typically caused by the daily demands and pressures encountered by every individual. While the word "stress" connotes a negative impression, acute stress is what actually brings about excitement, joy and thrill in our lives. Riding a roller coaster in a theme park, for instance, is a situation that brings about acute stress, yet brings excitement. However, riding a higher and longer roller coaster can bring so much stress that you wish it would end sooner, or that you should have not gone for the ride in the first place. When the long and windy ride is over, you might feel the effects of too much acute stress, such as vomiting, tension headaches, and other psychological and/or physiological symptoms.

Because it is short term, acute stress doesn't have enough time to do the extensive damage associated with long-term stress. The most common symptoms are:

- Emotional distress — some combination of anger or irritability, anxiety and depression, the three stress emotions.
- Muscular problems including tension headache, back pain, jaw pain and the muscular tensions that lead to pulled muscles and tendon and ligament problems.
- Stomach, gut and bowel problems such as heartburn, acid stomach, flatulence, constipation and irritable bowel syndrome.
- Transient over arousal leads to elevation in blood pressure, rapid heartbeat, sweaty palms, heart palpitations, dizziness, migraine headaches, cold hands or feet, shortness of breath and chest pain.

Acute stress can crop up in anyone's life, and it is highly treatable and manageable.

- **Episodic acute stress**

Acute stress that is suffered too frequently is called episodic stress. This type of stress is usually seen in people who make self-inflicted, unrealistic or unreasonable demands which get all clamoured up and bring too much stress in their attempt to accomplish these goals. Episodic stress is not like chronic stress, though, because this type of stress ceases from time to time yet not as frequently as acute stress does.

Episodic stress is also typically observed in people with "Type A" personality, which involves being overly competitive, aggressive, demanding and sometimes tense and hostile. Because of this, the symptoms of episodic stress are found in Type A persons. These include:

- Longer periods of intermitted depression, anxiety disorders and emotional distress
- Ceaseless worrying
- Persistent physical symptoms similar to those found in acute stress
- Coronary heart diseases, or other heart problems

- **Chronic Stress**

Chronic stress is the total opposite of acute stress; it's not exciting and thrilling, but dangerous and unhealthy. Chronic stress tears the life of a person apart his mind, body or spirit.

This type of stress is brought about by long-term exposure to stressors, such as traumatic experiences, stress of poverty, chronic illnesses, relationship conflicts, political problems, and dysfunctional families. These stressful situations seem to be unending, and the accumulated stress that results from exposure to them can be life - threatening, and can even lead a person to resort to violence,

suicide and self - harm. Serious illnesses like stroke, heart attack, cancer, and psychological problems such as clinical depression and post - traumatic disorder can originate from chronic stress. Common physical signs and symptoms of chronic stress are:

- dry mouth
- difficulty in breathing
- pounding heart
- stomach ache
- headache
- diaphoresis
- frequent urination
- tightening of muscles
- sudden irritability
- tension
- problems with concentration
- difficulty in sleeping
- narrowed perception
- frequent feelings of fatigue.

Often, lifestyle and personality issues are so ingrained and habitual with adolescents 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 lifestyle, their patterns of interacting with others, and their ways of perceiving the world as part and parcel of who and what they are.

Every single person will experience both the good and bad stress. With the good stress the individual will experience the optimal amount of energy and motivation which drives him / her to deliver best performance in their endeavours. Good stress promotes a strong flow of motivational drive to cope with the strategies to deal with the challenges, which ultimately contributes to his/her resilience. Everyone is affected by stress and reacts to it in different ways. Stress is a way that the body responds to the demands made upon the individual by the

environment, their relationships, and their perceptions and interpretations of those demands.

Stress is the body's response to certain situations. Stress is subjective. Something that may be stressful for one person may not be stressful for someone else. Not all stresses are "bad" either. Graduating from school, for example, may be considered a "good" stress (www.healthline.com). Bad stress occurs when the coping mechanisms are overwhelmed by the stress and they do not function at their best. The same event can affect students in a very individual ways - one person may see a carnival ride as thrilling and another may see it as a major stressor. Stress can become distress when the individual is unable to cope or when he/she believe of not having the ability to meet the challenge. The solution is to adapt, change, and find methods to turn that bad stress into good stress (www.nasponline.org).

The situations and pressures that cause stress are known as stressors. Although S. Hall and others overdramatized the extent of “storm and stress” in adolescence, many adolescents today experience numerous potential stressors throughout the process of growth and development (Compas and Reeslund, 2009). Stressors of both an acute and chronic nature are important in the course of normal as well as disrupted development during adolescence. Stressors are defined according to Grant *et. al*., (2003) as: “Environmental events or chronic conditions that objectively threaten the physical and or psychological health or well being of individuals of a particular age in a particular society”.

The human body responds to stressors by activating the nervous system and specific hormones. The hypothalamus signals the adrenal glands to produce more of the hormones adrenaline and cortisol and release them into the bloodstream. The hormones speed up heart rate, breathing rate, blood pressure, and metabolism. Blood vessels open wider to let more blood flow to large muscle groups, pupils dilate to improve vision, and the liver releases stored glucose to increase the body’s energy. This physical response to stress kicks in much more quickly in teens than in adults because the part of the brain that can calmly assess

danger and call off the stress response, the pre-frontal cortex, is not fully developed in adolescence (www.bradleyhospital.org).

The types of stressors experienced in adolescence can broadly be divided into three categories. These categories are

- normative events,
- non-normative events
- and daily hassles (Suldo, Shaunessy, and Hardesty, 2008).

- **Normative events:** refer to events that are experienced by most adolescents, but usually within a relatively predictable timescale. Examples of these includes internal and external changes related to pubertal development, psychosocial changes related to school, family, peers and academically demands. One important aspect here is that these are events which all young people have to confront, but usually within a relatively predictable timescale (Coleman and Hendry, 1999; Suldo *et. al*., 2008).

- **Non-normative events:** were different in the way that they are events affecting one adolescent or only a smaller group of adolescents, and can occur at less predictable points in the life course (Grant *et. al*., 2003). Such events can include for example divorce of parents, illness, injury or natural disasters.

- **Daily hassles:** differ from major life events in that they are defined as minor, irritating, and frustrating events that are typical of daily interactions between individuals and their environments. Even though these events are minor in scale, the sum and duration of these events may result to have negative impact on adolescents' well-being (Carter *et. al.,* 2006).

Evidence suggests that exposure to stress and the ways individuals cope with stress are of central importance for prevention of mental health and adjustment problems during childhood and adolescence. Coping may be a moderator, or a protective factor, which increases or decreases the probability of developing mental health problems in response to a stressor. Coping may also be a mediator, which is set off by the stressor and accounts for the resulting symptoms (Compas, 2005).

Research had established that overall number of stressors tend to increase from preadolescence to adolescence (Rudolph, 2002). Girls tend to perceive higher levels of stress than boys, especially in relation to interpersonal stressors, e.g. peers, romantic partners, and family relationship (Charbonneau Mezulis, and Hyde, 2009; Hankin, Mermelstein, and Roesch, 2007; Rudolph, 2002; Shih, Eberhart, Hammen, and Brennan, 2006).

A part of the present research study doles out with the rationale of summarizing the relationship between the types of stressors and the stress level and provide evidence of normative events in adolescent's life causing to stress in them. Hence this research study, through an informal observation and interaction with the student population identified seven important stressors namely teacher, money, attitudes and feelings, school work, exam, parents and friends and wanted to find how far the normative events related stressors stress their well - being.

Exposure to stressful events (stressors) represents significant sources of risk to the healthy development of adolescents, and stressors are experienced in different intensities and durations of arousal in adolescence (Compas and Reeslund, 2009). However, when faced with the same stressor(s), the stress process and the impact from stress vary individually and lead to different health outcomes; this depends on individual and environmental vulnerabilities and resources, as well as the ability to cope effectively with the stressors (Compas and Reeslund, 2009).

Understanding the role and nature of stressors in the lives of adolescents, how experience of stress was associated with different health outcomes, as well as identifying potential protective factors in this context was crucial for helping adolescents capitalize on the many changes taking place in their lives, and equip them with tools to make their journey through adolescence a positive growth-oriented experience (Grant *et. al*., 2006). Understanding the role of stress was also important to the identification of those adolescents most in need of early intervention, whereas clarification of factors that promotes health and well-being and moderate the negative health effects of stress could be used to form

interventions to strengthen adolescent development in general, as well as to support those with potential risk (Compas and Reeslund, 2009; Grant *et. al*., 2003).

Hence the present study also collated information from the respondents on the signs and symptoms experienced and the behaviour manifested by them due to stress in three major domains namely physiological symptoms, behavioural symptoms and mental symptoms.

There were several signs and symptoms that we might notice when we are experiencing stress. These symptoms fall into foremost three categories: Physiological symptoms, Behavioural symptoms and Mental symptoms. The following were the common warning signs and symptoms of stress. The more signs and symptoms we notice in our self, the closer we might be to stress overload. The symptoms are presented in the Table - I

TABLE – I

SIGNS AND SYMPTOMS OF STRESS

Physiological symptoms	Behavioural Symptoms	Mental symptoms:
▪ Perspiration/sweaty hands ▪ Increased heart beat ▪ Trembling ▪ Nervous ticks ▪ Dryness of throat and mouth ▪ Tiring easily ▪ Urinating frequently ▪ Sleeping problems ▪ Diarrhoea / indigestion / vomiting ▪ Butterflies in stomach ▪ Headaches ▪ Premenstrual tension ▪ Pain in the neck and/or lower back ▪ Loss of appetite or over-eating ▪ Susceptibility to illness ▪ Aches and pains ▪ Constipation ▪ Nausea ▪ Dizziness ▪ Insomnia ▪ Chest pain ▪ Weight gain or loss ▪ Skin breakouts(hives, eczema) ▪ Frequent colds.	▪ Eating more or less ▪ Sleeping too much or too little ▪ Isolating yourself from others ▪ Procrastinating or neglecting responsibilities ▪ Using alcohol ▪ Cigarettes, or drugs to relax ▪ Nervous habits (e.g. nail biting, pacing) ▪ Teeth grinding or jaw clenching ▪ Overdoing activities(e.g. exercising, shopping) ▪ Overreacting to unexpected problems ▪ Picking fights with others ▪ Stuttering and other speech difficulties ▪ Crying for no apparent reason ▪ Acting impulsively ▪ Startling easily ▪ Laughing in a high-pitch and nervous tone of voice ▪ Being accident prone ▪ Losing your appetite or over-eating.	▪ Low self-esteem, ▪ Fear of failure, ▪ Inability to concentrate, ▪ Easily embarrassed, ▪ Worrying about the future, ▪ Pre-occupation with thoughts/tasks Forgetfulness, ▪ Feeling scared, ▪ Feeling irritable, ▪ Feeling moody, ▪ Memory problems, ▪ Inability to concentrate, ▪ Poor judgment, ▪ Seeing only the negative, ▪ Anxious or racing thoughts, ▪ Constant worrying, ▪ Loss of objectivity, ▪ Fearful anticipation, ▪ Agitation, ▪ Inability to relax, ▪ Feeling overwhelmed, ▪ Sense of loneliness and isolation, ▪ Depression or general unhappiness.

B. RE - EXAMINING STRESS COPING PERSPECTIVES

There is a vast amount of literature on stress and coping. It was diverse in nature due to the fact that stress and adaptation to it have been conceptualized from many points of view. A few of the major perspectives as they had evolved in the literature are:

- Anthropological Perspective
- Biological Perspective
- Cultural Perspective
- and Psychological Perspective

Anthropological Perspectives

Cannon (1942), as cited in Roberson (1985), describes stress reactions as the "fight or flight" reaction that was immediately elicited when an organism was threatened with or confronted by a threatening stimulus. The sympathetic nervous system responds to threat by triggering an emergency discharge of adrenaline which quickens the pulse rate, raises the blood pressure to improve blood circulation to the muscles, and stimulates the central nervous system; temporarily suspends digestion by the stomach and intestines; causes blood to clot more quickly to protect against excessive bleeding; and raises the blood sugar level to supply additional energy to the muscles.

This physiological excitation required some form of discharge. In animals other than humans, the discharge is achieved by automatic, species - specific patterns of motor behaviour that involve either fighting or fleeing. Humans exhibit the same sympathetic excitation when facing a stressor but our complex cultural and institutional norms and rules often prevent direct actions of fight or flight.

Biological Perspectives

The focus of this perspective was the interaction between the physiological and psychological factors that contribute to behaviour. To understand this interaction, a basic understanding of physiology was needed. Until the middle of the 19th century, most humans regarded themselves as very distinct from animals.

Since Darwin's discoveries were published, there had been a general acceptance that humans have evolved from animals, that we have a substantial number of physiological and behavioural characteristics in common, and that we also share much of our genetic make - up with them.

This acceptance has led psychologists to increase research into basic physiological processes as a way of explaining human behaviour. Changes in behaviour could be regarded as arising from an interaction between genetic disposition and environmental factors. Research had frequently, but not exclusively, used the experimental method to investigate behaviour. There were issues that were relevant to the biological perspective, including criticisms that this might involve a reductionist approach and that behaviour exhibited by non - human animals was not always relevant to humans.

There was an increasing awareness, due to the use of brain-scanning techniques, that physiological mechanisms play an important role in the behaviour of individuals in areas as diverse as aggression and stress. The greater insight that researchers have provided into biological processes means that behavioural problems were now often treated using a combination of drug treatment and psychological treatment, to alleviate symptoms caused by psychological disorders.

Selye (1956) had attempted to demonstrate how physical and psychological "stressors" might lead to "diseases of adaptation" by way of a series of "nonspecific" biological responses, called the "General Adaptation Syndrome" (GAS). GAS is the defensive physiological reaction of the organism which was set in motion by a noxious stimulus. There were three stages in its characteristic pattern as explained below.

1. **Alarm Reaction-** This stage marks the organism's reaction when it was suddenly exposed to diverse stimuli to which it was not adapted. This reaction had two phases:

    a. Shock phase: The initial and immediate reaction to the noxious agent. Various signs of injury - such as tachycardia, loss of muscle tone,

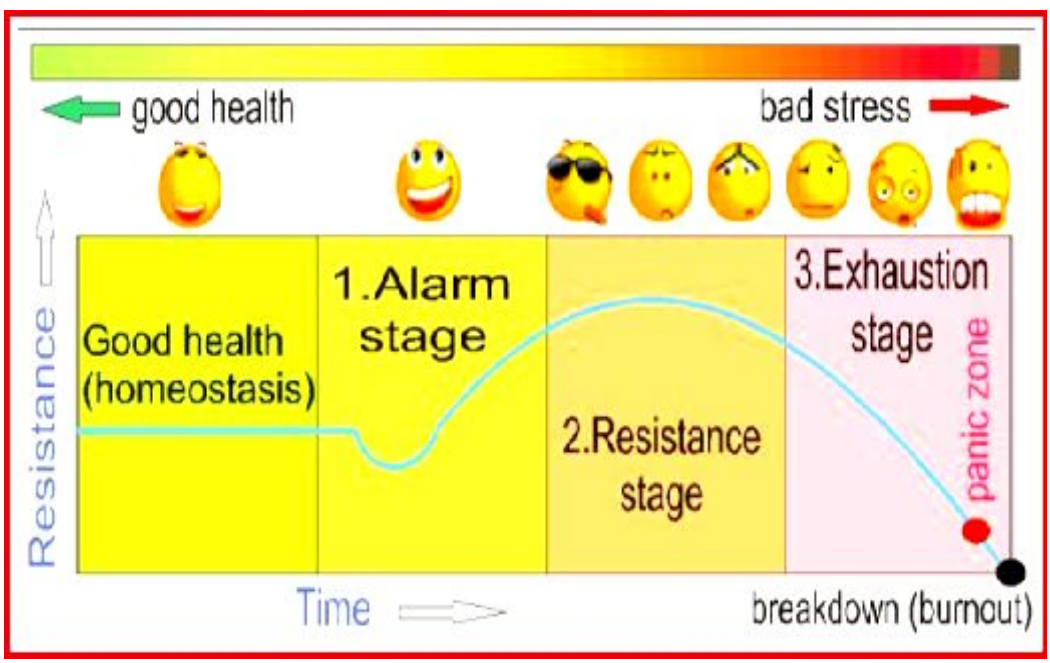
decreased temperature, and decreased blood pressure - are typical symptoms.

b. Counter shock phase: A rebound reaction marked by the mobilization of defensive phase, during which the adrenal cortex was enlarged and secretion of corticoid hormones was increased. (Most of the acute stress diseases correspond to these two phases of the alarm reaction).

2. **Stage of Resistance**- This stage represents the organism's full adaptation to the stressor and the consequent improvement or disappearance of symptoms. At this stage, however, there was a concurrent decrease in resistance to most other stimuli.

3. **Stage of Exhaustion-** Since adaptability was finite; exhaustion inexorably follows if the stressor is sufficiently severe and prolonged. Symptoms reappear and if stress continues unabated, death ensues (Selye, 1974).

STRESS CURVE AND PHASES



Source: jwmatterer.wordpress.com

FIGURE – 1

This sequence does not vary although it may be interrupted if the stressor was terminated early enough. It involves increased secretions of the pituitary gland which stimulates the production of hormones by the cortex or outer shell of the adrenal glands. If the stressor (e.g., cold, heat, psychological threat) persists or was severe, diseases of adaptation (e.g., stomach ulcers, increased susceptibility to infection, etc.) would occur and eventually, if the stressor continues, the organism will die.

Cultural Perspectives

The field of stress and coping emerged more than three decades ago from the recognition of the dynamic interaction between person and environment (Lazarus and Folkman, 1984; Moos, 2002). Over the years, researchers developed a system of objectifying and quantifying people's environment, such as counting the number of major life events or daily hassles that occurred in the past month.

Unfortunately, this system of measuring the environment resulted in a contextualizing the stress and coping research paradigm as it does not give much consideration to the meaning of the events that occur in an idiosyncratic life context. In recent years, the field had been trying to introduce more realism to stress and coping research, as the a contextual research of the last two decades yielded few solid findings that made a difference in people's lives (Somerfield, 2000).

The cultural perspective (Zborowski, 1969) has been updated by Levine and Scotch (1970) whose subjective definition of stress makes it clear that situations were not objectively stressful to all individuals but vary according to how they were seen by the individuals in terms of social and cultural norms. For instance, bereavement or divorce might be subjectively defined as extremely disturbing to the individual but under some circumstances it might be a relief (House, 1974). Levine and Scotch's stress model emphasizes the importance of coping mechanisms. These might be individual (i.e., personal skills, personality traits) or social (i.e., formal institutions, informal groups, social values). It was the

availability and usability of coping mechanisms which determines whether a situation that is perceived as disturbing to the individual would in fact result in stress (Pearlin and Schooler, 1978).

Psychological Perspectives

The psychological perspectives' focus was on meditational processes involving evaluation and judgment which are crucial to the stress reaction. Psychological stress requires a judgment that environmental and/or internal demands strain or surpass the individual's resources for managing them. This judgment and the individual's efforts to manage and shape the stress experience were seen as two interacting processes: appraisal and coping (Lazarus, 1984).

Appraisal refers to the evaluative process that gives a situational encounter meaning for the person. The term refers to our sense that something of importance is at stake, as well as to our evaluation of the ways opposing demands and options, constraints and resources mutes this sense of danger. Appraisals can be separated into those that deal with the recognition, that the individual is in danger (what is at stake)' and those that deal with the evaluation of resources and options available for managing the situation (appraisal of coping). The two processes are highly interdependent but there was a value in drawing attention to different sets of variables that work together in determining stress responses and coping patterns.

In the present research apart from all kinds of perspectives psychological perspective has made a contribution to an understanding of acute stress effects on performance by the school students. Thus this research study focussed on how the students might be trained to respond more effectively in these circumstances. The major purpose of this study was to review the literature of psychological perspectives as it relates to the study. There were many studies to document the effects of stress on psychological perspectives and most indicate stress effects to be adverse.

Typically, nevertheless, these studies compare only two conditions, stress and no stress. Outside of the clinical literature, there were very few studies

that examine stress over a wide range of values. This itself was surprising in view of the fact that most theoretical accounts of stress effects in psychology invoke that there was some optimal level of stress (or arousal) for performance in any task. To verify this, literature was limited in still other ways. Although there were many experiments to document that psychological perspectives does influence performance, there were very few that assess ways to prepare for or to countervail the effects of stress.

Hence Stress Inoculation Training was taken to inoculate the performer against stress. There was some literature on training to manage stress when it occurs, but only a few of these studies touch on the benefits of stress management for cognition or performance. Thus, SIT outcome, came out clear after well-documented depiction and this study successfully examined stress over a wide range of values.

C. RESILIENCE AND STRESS COPING REPERTOIRES

Resilience was defined as a process whereby people exposed to severe levels of stress, trauma, and adversity were able to thrive and survive despite their difficulties. Initially, the concept of resilience emerged serendipitously from clinical observations and an attempt to further understand a diverse range of psychological profiles among those deemed more vulnerable to stress (Juster, 2013).

In essence, resilience means being able to bounce back from difficult times and cope well with challenges (Werner, 1995). As was true for physical health, mental health encompasses more than the absence of disorders. Researchers have considered a number of dimensions of positive mental health, one of which was “resilience” (Murphey, 2013).

Resilience had been defined as “the ability of an individual to function competently in the face of adversity or stress.” An adolescent who was resilient was likely to enter adulthood with a good chance of coping well - even if he or she has experienced difficult circumstances in life. Factors that promote resilience

among adolescents include having caring relationships with adults, an easygoing disposition, cognitive skills, confidence, and strong internal values (Masten, 1998).

The real origin of resilience goes back several decades now. The word resilience was coined at the beginning of the 17th century, taking its roots from Latin. As Anaut, 2008 said, *Resilientia* was defined as a "material's resistance to shock and its ability to absorb kinetic energy without breaking apart".

Eugen Bleuer was one of the first to investigate the concept of resilience in humans using real life situations. In 1972, he studied individuals afflicted with schizophrenia from Zurich, Switzerland. He discovered that among children of mothers with schizophrenia, many were a lot better off than people would have expected.

In the beginning of the 1970s, inspired by Bleuer's study, Garmezy , 1974 wanted to build the theoretical foundations needed to deepen research of those he called 'stress - resistant'. He did not like the concepts of *vulnerability* and *invulnerability.* Instead of some steady trait working every time in every situation, he believed in an efficient process for specific situations that might not work every time for every situation. Without calling it *resilience,* Garmezy was a pioneer in the domain. In 1985, Garmezy and his colleague Ann S. Masten stated three conclusions based on their studies:

(1) Stress - resistance is relative;

(2) Stress - resistance is due to both genetic and environmental factors and finally;

(3) Stress - resistance depends on the situation.

In 1982, Emmy Werner published the results of her study started in 1955. She studied 700 children from Kauai, one of the Hawaiian Islands. Among them, 201 lived in adverse social and emotional environments with four or more risk factors such as poverty or negative parental relationships. Following this cohort for several years, the research team observed that one child out of three managed to get by quite well. They did not have the problems expected to emerge systematically for everyone exposed to such adversity. Previously, very influential

psychologists like John Bowlby had argued that events during critical periods in childhood would have inevitable repercussions during the entire lives of the individual exposed.

Among the studies done on resilience, this one by Werner was still one of the most cited today. In this study, it was found that a significant proportion of human beings can face important adversity and yet, go through life without any problems and even with a better way to manage stress. The concept of resilience was definitely born after this important study, and was now a very important concept in the field of stress research (Bourdon, 2013).

The 3 – Rs' of stress responses

Stress responses are diverse and span the spectrum from adaption to maladaptation. Karatsoreos and McEwen, (2011) outline the 3 – Rs' as given below.

(1) Resilience,

(2) Resistance, and

(3) Recovery.

Resilience was defined as an organism's ability to 'rebound' from adversity when one's ability to function has been tampered with in some negative way. The tampering comes from tolerable stress, but the person was ultimately able to adapt by activating allostasis that can promote resistance.

Resistance was defined as an organism's ability to withstand adversity and face future stressors with little or no stress response. One way to think of *resistance* was like a vaccination: as a kid, most of us dreaded them, but in the long - term, vaccinations immunized us to certain diseases. The term "stress inoculation" had been used to describe this process whereby a little bit of stress builds up our resistance to future stressors. Using monkeys as subjects, David Lyons and Karen Parker at Stanford University in California have shown that early life stressors that were successfully overcome enhances emotional adaptation, self - control, willingness to explore novel situations, and decrease

stress responsively. Because resistance was a kind of immunity, we might almost need to go through specific sets of stressors at least once to help build our resilience.

And lastly, ***recovery*** was defined as an organism's ability to chill and stops the stress response and other related biological activities back to baseline levels. In the context of the 3 – Rs', recovery can also be thought of as the processes of treatment and rehabilitation for individuals who were not resistant or resilient. Individuals were considered vulnerable when they were extremely sensitive to specific stressors and experience intense stress responses to them. Vulnerable individuals were generally believed to be at greater risk of experiencing stress - related conditions like depression, anxiety, burnout, and substance abuse that contribute to allostatic load. There was, however, often a light at the end of the dark tunnel.

Extremely stressful and traumatic situations, especially if they occur early in life, have long been thought to render individuals indefinitely vulnerable. The dogma in psychology and medicine has often assumed that brain development was embedded in the frame of these stressful circumstances, so a lack of resistance and a need for recovery. But the concept of resilience suggests that this was not always the case for everyone, since people were constantly learning ways to cope and adapt. Considering the great psychological and psychiatric advances made in mental health care, vulnerable individuals could effectively recover from and resist stress. At the heart of this paradigm shift driven by the concept of resilience is pioneering neuroscience research demonstrating just how flexible our brains are, and not just when we're young!

Although there was no consensus about what characteristics might help someone to become resilient, it seems like resilience was facilitated by protective factors. These factors can transform and improve a person's response to life's adversities and predict better physical and psychological adjustment.

Sometimes, the protective factor might simply be an innate characteristic like one's sex or genes. For instance, girls were more affected than boys by

depression once puberty hits. On in the other, autism affects more boys than girls. This example highlights how being a man or a woman might influence resiliency to certain mental conditions.

In the field of psychological stress and resiliency, research shows that exposure to small doses of stress can improve resistance to a greater subsequent stressor. This phenomenon is called *stress inoculation.* A child who receives a vaccine for a specific disease will boost his / her immune system. In the same way, exposition to small adversities can boost our stress system resilience.

Pioneering resilience researchers have identified many factors that help overcome difficult situations like positive cognitive appraisals, optimism, altruism, quality parental presence during childhood, life meaning when faced with adversity, proactive coping mechanisms, strong social support, efficient emotional regulation, and a positive self concept.

Stress coping repertoires

Adolescence is the transition between childhood and young adulthood during which young people experience physiological, cognitive and social changes (Dumont and Provost, 1999; Murberg and Bru, 2004). The age bracket for adolescence varies according to different literature (De Anda *et. al*., 2000; Spirito, Stark, Grace and Stamoulis, 1991). Williams and McGillicuddy - De Lisi (1999) suggest that during this transition, young people have difficulty adjusting and often struggle with unfamiliar issues.

Stress was a concept that cannot be explained using a static definition thus it is important to be aware that different descriptions exist in both recent and seminal literature. Delahaij, Dam, Gaillard and Soeters (2011) explained stress using a biopsychosocial approach, suggesting that stressful reactions affect the emotional, physiological and cognitive state of an individual. This definition describes stress as a reaction. Alternatively, Caltabiano, Sarafino and Byrne (2008) viewed stress as a discrepancy. They state that stress occurs when there is a perceived discrepancy between the demands of a situation and an individual's resources available to deal with that demand (Caltabiano *et. al*., 2008). Greater

discrepancy between resources and demand therefore causes a greater stressful reaction (Caltabiano *et. al.*, 2008). The act of handling this response is referred to as coping.

Stress and coping literature identified an extensive range of coping strategies that young people adopt (de Anda *et. al*., 2000; Moskowitz, Stein and Lightfoot, 2013; Skinner and Zimmer-Gembeck, 2006; Williams and McGillicuddy-De Lisi, 1999). Some examples of emotion-focused coping include relaxation, distraction, escape, helplessness and withdrawal (Caltabiano *et. al*., 2008; de Anda *et. al*., 2000; Skinner and Zimmer-Gembeck, 2006). Examples of problem - focused coping include problem-solving and support - seeking (Skinner and Zimmer-Gembeck, 2006).

An individual's ability to handle stress is determined by the relationship between personal attributes such as cognitive, emotional and behavioural development (Delahaij *et al*., 2011; Skinner and Zimmer-Gembeck, 2006). The highly influential work of Lazarus (1966) as cited by Folkman, Tedlie and Moskowitz (2004), emphasised the role of cognitive interpretation in both stress perception and coping.

Folkman *et al*., (2004) suggested that how an individual appraises a situation determines the level of stress experienced. Williams and McGillicuddy-De Lisi's (1999) study on stress also focused on the role of cognitive development in appraisal and coping. Results indicated that due to having a wider coping repertoire, older adolescents utilized more adaptive strategies than those younger (Williams and McGillicuddy-De Lisi, 1999). This suggested that experience with stress prepares adolescents for certain problems, thus allowing the individual to cope adaptively (Williams and McGillicuddy-De Lisi, 1999). It was important to note however that the data was gathered over a short time and from a sample of predominantly white, middle-class students. This allows little room for generalisation to the wider population, however effectively demonstrates the role of cognition in stress coping.

Visconti, Sechler and Kochenderfer-Ladd (2013) suggested that emotional attributes such as self - esteem were what influenced the coping strategies

individuals utilize. Visconti *et. al.,* (2013) hypothesized that children with low self - esteem would lack the confidence to deal with life stressors independently, thus were likely to engage in emotion - focused coping. Unfortunately this hypothesis was unsupported.

Dumont and Provost's (1999) study of adolescent coping however supported the relationship between low self - esteem and unhealthy coping strategies. The results demonstrate a negative correlation between avoidant coping and self - esteem levels, indicating that those lacking positive coping methods also lack healthy self - esteem (Dumont and Provost, 1999). It was unknown however, whether this correlation was bidirectional. Despite these limitations, results suggest that those who think highly of themselves would be more capable and confident to handle problems in a positive manner (Dumont and Provost, 1999).

During the stressful transition of adolescence, young people were at risk of engaging in dangerous behaviour such as alcohol and drug use, as an attempt to deal with increased stress levels (Rose and Bond, 2008). Caltabiano *et. al*., (2008) support this notion and indicate that older adolescents were more likely to engage in these types of maladaptive emotion - focused coping. Rose and Bond (2008) also suggested that adolescents lacking healthy coping skills and exposed to stressful environments were at a higher risk of substance abuse. This study however emphasized that cognitive appraisal and perception of the stressful situation is what determines the level of risk (Rose and Bond, 2008).

Conversely, Fromme and Rivet (1994) contend that an adolescent's coping repertoire was what determines the likelihood of using destructive behaviour to cope. This study argued that young people that lack any form of coping strategies, regardless of maladaptive or adaptive nature, have a greater likelihood of using substance abuse to cope with stress (Fromme and Rivet, 1994). This research emphasized the importance of promoting healthy coping skills in young people.

De Anda *et. al*., (2000) research on adolescents disagreed with Fromme and Rivet (1994), and Rose and Bond (2008). This study found that very few

respondents of the adolescent sample reported using drugs and alcohol as a coping strategy. The results however failed to identify a coping method with a frequency higher than moderate. Despite this limitation, adolescents reported using adaptive coping methods most often, with reading a book, watching television or listening to music scoring the highest on frequency and effectiveness (de Anda *et. al*., 2000). These findings indicate that not all young people turn to dangerous behaviour to cope with life stressors. Hence the present study, looking into all angles of coping skills, considered a suitable intervention by which the beneficiaries could enhance their resilient ability and possess a gamut of stress coping repertoires.

D. STRESS INOCULATION TRAINING (SIT) AND ITS IMPORTANCE

Stress Inoculation Training helps distressed individuals become aware of how they can engage in behaviours that could maintain and exacerbate their distress. SIT helps clients to construct a more narrative 'meaning', and engage in more adaptive direct - action problem solving and palliative, emotional-regulation, accepting and coping skills. SIT was not only in the business of teaching coping skills and enhancing the clients' confidence and sense of efficacy in applying these coping skills; the SIT was also in to the business of helping clients construct new life stories that move them from perceiving themselves as "victims" to becoming "survivors" , if not indeed "thrivers" (Meichenbaum, 2007).

Stress inoculation training was a flexible individually tailored multifaceted form of cognitive-behavioural therapy. Given the wide array of stressors that individuals, families and communities experience, SIT provides a set of general principles and guidelines for treating stressed individuals, rather than a specific treatment formula or a set of 'Canned' interventions. In order to enhance individuals' coping repertoires and to empower them to use already existing coping skills, an overlapping three phase intervention is employed.

1. A conceptual educational phase
2. A skill acquisition and skills consolidation phase
3. An application and follow-through phase

The ways that these SIT phases were implemented would vary depending on both the nature of stressors and the resources and coping abilities of the clients. The treatment goals of SIT were to bolster the clients' coping repertoire, as well as their confidence in being able to apply their coping skills in a flexible fashion that meets their appraisal demands of the stressful situations. Some stressors lend themselves to change and can be altered or avoided, whereas other stressors were not changeable. Thus some stressful situations do not lend themselves to direct – action problem solving coping efforts, because resolutions were not always attainable. In such instances, an emotionally palliative and accepting set of coping response were most appropriate. SIT demonstrates that that there was no one correct way to cope with the diversity of stressors. The following section details the three phases of SIT.

1. Conceptualization Phase

This was the initial phase, wherein a collaborative relationship was established between the clients and the therapist (Trainer). This phase was educational and conceptual in nature. The client and therapist form a warm, collaborative, Socratic relationship. This Socratic – type exchange (i.e., the SIT trainer uses curious questions to promote the clients' processing) was used to educate clients about the nature and impact of stress and the role of both appraisal processes and the transactional nature of stress (i.e., how clients may inadvertently, unwittingly and perhaps even unknowingly, exacerbate the level of stress they experience). This relationship provides the basis or the 'glue' that allows and encourages clients to confront stressors and implement the variety of coping skills, both within the training sessions and in vivo, that constitutes the needed inoculation exposure trials.

Norcross (2004) had underscored the critical importance of therapy relationship factors that contribute to the change processes. Besides working on the formulation and maintenance of a therapeutic alliance, the second objective of this initial phase of SIT was to enhance the clients' understanding and awareness of the nature and impact of their stress and coping resources. A variety of clinical techniques were used to nurture this educational process.

Typically Schachter's two - factor theory of anxiety was integrated into the discussion – that was, that anxiety consists of heightened physiological arousal and anxiety engendering thoughts and images. From this understanding naturally flows a treatment process that emphasizes relaxation coping skills to lower heightened arousal and cognitive coping skills to alter anxiety - laden thoughts and images. Clients were encouraged to view perceived threats and provocations as problems to be solved and to identify those aspects of their situations and reactions that are potentially changeable and the perceived demands of the stressful situation (Folkman *et.al*., 1991). The clients were taught how to breakdown global stressors into specific, short term, intermediate and long term coping goals.

As a result of a variety of clinical techniques like Socratic discovery - based interviewing, psychological testing with constructive feedback about deficits, styles of responding and 'strengths' or signs of resilience, client self - monitoring and reading materials, the clients' stress response was reconceptualised as being made – up of different components that go through predictable phases of preparing, building up, confronting and reflecting upon their reaction to stressors.

The specific reconceptualisation that was offered is individually – tailored to the client's specific presenting problem (e.g.,anxiety, anger, physical pain etc.). As a result of a collaborative process a more hopeful and helpful model was formulated; a model that lends itself to a more facilitative reconceptualisation of the clients' stressful experiences and reactions was formulated. Rather than conceiving their stressors as being overwhelming, uncontrollable, unpredictable, debilitating and hopeless, the SIT trainer would help the client develop a sense of 'learned resourcefulness' (Meichenbaum, 2007).

2. Skill acquisition and rehearsal

This second phase follows naturally from the initial conceptualization phase, focuses on helping clients acquire coping skills and on consolidation of those coping skills that they already possess, and on removing any intra and interpersonal barriers that might exist. The coping skills that were taught and

practiced primarily in the training setting were then gradually rehearsed in vivo and then tailored to the specific stressors clients might have to deal with (e.g. chronic illness, traumatic stressors, job stress, competition etc.).

The specific coping skills include information collection about the anxiety arousing situations, emotional self - regulation, self - soothing and acceptance, relaxation training, task oriented self - instructional training, cognitive restructuring of absolutist, over generalized catastrophic self - statements, problem solving, interpersonal communication skills training, attention diversion procedures, using social support systems and fostering meaning - related activities. A major focus of this skills training phase was the emphasis placed on following guidelines to achieve generalization and maintenance of the treatment effects. Therapists cannot merely 'train and hope' for generalizations. SIT trainers need to explicitly build the technology of generalization training into the treatment protocol. In order to foster generalization of these coping skills, they are translated into specific statements for use as cognitive counter responses to stress (Meichenbaum, 2007).

3. Application and follow-through

This phase provided opportunities for the clients to refine, apply and transfer the variety of coping skills across increasing levels of stressors (inoculation concept as used in medical immunization or in social psychology to prepare individuals to resist the impact of persuasive messages). Such techniques as imagery and behavioural rehearsal, modelling, role - playing and graded in vivo exposure in the form of 'personal experiments' were employed. In order to further consolidate these skills individuals may even be asked to help others with similar problems (Fremouw and Zitter, 1978; Meichenbaum, 2007).

Relapse prevention procedure (i.e., identifying high risk situations, warning signs and ways to coping with lapses), attribution procedures (i.e., ensuring clients take credit for and appropriate ownership by putting into their own words the changes that have taken place), and follow-through (i.e., booster sessions) are built into SIT (Marlatt and Gordon, 1988; Witkiewitz and Marlatt, 2004). The SIT

trainer explores with clients the variety of possible high - risk stressful situations that they may experience (e.g., interpersonal conflicts and criticisms, social pressures, reminders etc.). Then the clients rehearse and practice in a collaborative fashion with the trainer the various coping techniques that might be employed

As skills are consolidated and integrated within sessions, they were actively transferred to the external world through graded homework assignments and contracted behavioural experiments – for example, approaching a moderately stress - arousing situation, employing the coping skills and reporting back to the therapist. Skills were further refined based on the feedback and discussion. As part of the relapse prevention intervention, clients are taught how to view any lapses, should they occur as 'learning opportunities' rather than as occasions to 'catastrophize' and relapse. The follow - through features of SIT are designed to extend training into the future by including booster training sessions, active case management, engagement of significant others, and environmental manipulations (Meichenbaum, 2007).

Over time, SIT has integrated greater emphasis on *cognitive processes* and cognitive *structures (*Meichenbaum, 1985) that have significant implications for resistance to intervention efforts and for generalization and maintenance of treatment effects.

Cognitive processes refer to the ways individuals' process information. They include how individuals appraise events, selectively attend to and recall events, and seek information consistent with their beliefs (Taylor and Crocker, 1981). Cognitive processes tend to operate at an automatic "unconscious" level, to shape appraisals in a mood-congruent fashion (Bower,1981) and to contain a confirmatory bias (Snyder,1981) through which information is selected and processed to be congruent with prior experience.

For example, Sarason (1975) and Wine (1980) have reported that when anxious, anxiety-prone individuals become more self - centered than task - centered and deflect their attention from the task that contributes to their

selectively perceiving, remembering, and interpreting experiences so as to filter out information that disconfirms their cognitive set and experience. Thus the anxious individual who does well at a task – for example, an exam, job interview was likely to employ causal explanations that discount the importance of the event or to reframe positive outcomes in a negative way. Attributions such as "I just got lucky," or "They were only being nice to me because they knew how anxious I was" abound. Moreover, the anxiety-prone individual is likely to call forth many similar examples from the past and take them as being representative of a class of "failures due to anxiety."

Cognitive structures refer to the assumptions, beliefs, commitments, and meaning systems that influence the way the world and the individual are constructed. They are the "core organizing principles" that influences what was attended to, how information was structured, and what importance is attached (Markus, 1977; Meichenbaum and Gilmore, 1984). They function to set behaviour in motion, to guide the choice and direction of particular sequences of thought, feeling and action, and to determine their continuation, interruption, or change of direction. In a sense, cognitive structures control the "scripts" for internal dialogues, feelings, and behaviour.

Although SIT procedures had increasingly incorporated cognitive processes and structures into the model and explored how these influence issues such as client resistance and relapse prevention, most of the outcome research involves the simpler version of SIT that focused primarily on cognitive events. With this limitation in mind, the results for SIT are encouraging. Although SIT had been effective with numerous client groups - for example, pain patients, individuals with anger control problems, and victim groups (Meichenbaum, 1985), it has been applied most frequently to various anxiety or stress problems.

For example, academic problems such as test anxiety (Meichenbaum, 1972; Deffenbacher and Hahnloser, 1981) and academic attrition (Wernick, 1984); performance anxieties such as speech (Fremouw and Zitter, 1978; Altmaier *et. al.,*1982) and music performance (Sweeney and Horan, 1982) interpersonal anxieties such as social phobias (Butler *et. al.,* 1984) and

unassertiveness (Kaplan, 1982); and anxiety states such as panic and generalized anxiety disorders (Barlow *et. al.,* 1984; Clark, Salkovskis and Chalkey, 1985) have been successfully treated with SIT.

SIT effectively lowered stress in various populations - for example, high schools seniors undergoing developmental transitions (Jason and Burrows, 1983), anxious or stressed adults (Long, 1984), and stressed occupational groups such as teachers (Forman,1982; Sharp and Forman, 1985). SIT also has shown promise with anxiety-related medical problems, demonstrating effectiveness with dental phobias (Moses and Hollandsworth, 1985), Type A behaviour (Levenkron *et al.,* 1983), tension headaches (Anderson, Lawrence, and Olson, 1981), low back pain (Turner,1982), and stress stemming from surgical (Wells *et al.,* 1986) and dental (Siegel and Peterson, 1980) procedures.

In addition, SIT was at least as effective as other interventions with some studies showing that SIT produced significantly greater positive change on some variables than systematic desensitization (Meichenbaum,1972), relaxation coping skills (Deffenbacher and Hahnloser, 1981; Sweeney and Horan, 1982; Turner,1982), cognitive coping skills (Deffenbacher and Hahnloser, 1981), skill training (Sharp and Foreman,1985), and group therapy (Levenkron *et. al.,*1983). Thus SIT appears to be a promising intervention for many different anxious or stressed groups with which counselling psychologists work.

Stress Inoculation Training has been conducted with individuals, couples, small and large groups. The length of intervention has varied from being as short as 20 minutes for preparing patients for surgery (Langer, Janis and Wolfer, 1975) to 40 one hour weekly and biweekly sessions administered to psychiatric patients or to patients with chronic medical problems (Turk, Meichenbaum and Genest, 1983; Meichenbaum, 1993).

E. DIFFERENT MODELS OF STRESS INOCULATION TRAINING (SIT)

A number of models of stress have been produced to explain and describe what happens to an individual in a stress state. Technically speaking, modelling procedure brings a person under a different kind of stimulus control. In the other

words, instead of being controlled by one's own experience, the individual was under the control of discriminative stimuli of other people's behaviour. Once this had been accomplished, these stimuli were used to alter his / her future behaviour. The following models of stress in relation to SIT were discussed below

- Physiological model
- Arousal model
- Psycho – social model
- Transactional model
- Interactional model
- General face model

- **Physiological Model**

Physiological changes in response to stress were similar, although not identical, in all individuals. These changes were identified by Selye (1956), who called them the General Adaptation Syndrome (GAS). He identified three stages of response. When a stressor occurs, the body's resistance initially drops, then rises sharply. It stays high throughout the second stage of the response, but ultimately can be sustained no longer and falls in exhaustion. If a second stressor is added to the first, resistance is lower throughout and exhaustion reached sooner.

- **Arousal Model**

The concept of arousal was also applied as a non - specific model of stress. Arousal was viewed as being beneficial to the individual's performance, up to an optimum level, but extremes of arousal produced stress and a corresponding decrement in performance. Performance increases up to an optimum level of arousal; if arousal continues to increase, performance declines. Stress may occur.

A higher level of arousal was necessary for a simple, boring task, while a slightly lower level of arousal was better for a more complex task. Arousal levels vary between individuals. We might have noticed this phenomenon our self: if we become too highly stressed before an exam, perhaps because we are desperate to do well, our performance is likely to be lower than the expectation. The non

specific idea of arousal would suggest that all stimuli would produce the same pattern of arousal; in real life, researchers have not found this to be so. As a model of stress, the concept of arousal has limited use.

- **Psycho - social Stimuli Model**

Kagan and Levi (1975) suggested that psycho - social stimuli, such as life changes, prepare an individual for coping with stress. The extent to which they do so was influenced by genetic differences and learning experiences, which were subsequently reflected in the physiological stress response identified by Selye. However, even the authors admitted that this was a simple model; many facets began to be recognized as being implicated in stress.

- **Transactional Model**

Cox and Mackay (1976), as cited in http://course.sdu.edu.cn, suggested that stress was due to a dynamic transaction between the individual and the environment. Important to this model was the individual's cognitive assessment of the perceived demands made on him or her, and that individual's perceived capability to deal with those demands. Stress was the result of the perceived demand outweighing the perceived capability. For example, an individual may perceive that the demand of taking four A levels in two years outweighs his or her capability. If the individual is pressured to do so, stress may result. This perception was influenced by a number of factors, such as personality, situational demands, previous experiences and any current stress state already existing.

- **Interactional Model**

The view of stress proposed by Lazarus (1976) included the suggestion that the individual's perception of capability interacted with cognitive appraisal of the threat. Again, a mismatch of the two resulted in stress. Lazarus so looked at the role of frustration and conflict within the individual, in exacerbating stress.

- **General Facet Model**

Beehr and Newman (1978) identified more than 150 variables involved in stress, giving recognition to the complexity of the problem. Their model was

largely based on occupational stress. The organization referred to in the model was the workplace. This model gives recognition to changes occurring over time and feedback to the individual, which then results in personality and other changes. This was important in that subsequent reactions to stress may be influenced by these changes.

Considering, the pros and cons of every model, the investigator collected information on various stress coping interventions and its outcome. Accordingly, a great deal of literature has been conducted to distinguish other stress intervention and Stress Inoculation Training.

The primary goal of any stress intervention is skill acquisition and retention. Therefore, most intervention sessions takes place under conditions designed to maximise learning in a quiet classroom, the practice of task procedure under predictable conditions, uniformity of presentations and so forth. In this manner, the traditional classroom or lecture format, supplemented with skill practice, typically is satisfactory for promoting initial skill acquisition.

However, the Stress Inoculation Training focuses on tasks that must be performed in conditions quite unlike those encountered in the training classroom. For example, high stress environments include specific task conditions (such as time pressure, ambiguity, increased task load, distractions) and require specific responses (such as the flexibility to adapt to novel and often changing environmental contingencies). In brief, the primary purpose of other stress interventions was to ensure the acquisition of required knowledge, skills and abilities, whereas Stress Inoculation Training (SIT) prepares the individual to maintain effective performance and sustain it in high stress environment. Therefore SIT was defined as an intervention to enhance familiarity with the criterion environment and teach the skills necessary to maintain effective task performance under stress conditions.

F. UNDERPINNINGS MODEL OF STRESS INOCULATION TRAINING

Theories that focus on the specific relationship between external demands (stressors) and bodily processes (stress) can be grouped in two different

categories: approaches to ‘systemic stress' based in physiology and psychobiology (Selye 1976) and approaches to `psychological stress' developed within the field of cognitive psychology (Lazarus 1966, 1991, Lazarus and Folkman 1984, McGrath 1982).

a) Systemic Stress: Selye's Theory

As already stated the popularity of the stress concept in science and mass media stems largely from the work of the endocrinologist Hans Selye. In a series of animal studies he observed that a variety of stimulus events (e.g., heat, cold, toxic agents) applied intensely and long enough are capable of producing common effects, meaning not specific to either stimulus event. (Besides these nonspecific changes in the body, each stimulus produces, of course, its specific effect, heat, for example, produces vasodilatation, and cold vasoconstriction.) According to Selye, these *non - specifically caused changes* constitute the stereotypical, i.e., *specific*, response pattern of systemic stress. Selye (1976) defines this stress as `a state manifested by a syndrome which consists of all the nonspecifically induced changes in a biologic system.'

Although Selye's work influenced a whole generation of stress researchers, marked weaknesses in his theory soon became obvious. First of all, Selye's conception of stress as a reaction to a multitude of different events had the fatal consequence that the stress concept became the melting pot for all kinds of approaches. Thus, by becoming a synonym for diverse terms such as, for example, anxiety, threat, conflict, or emotional arousal, the concept of stress was in danger of losing its scientific value (Engel, 1985). Besides this general reservation, specific critical issues have been raised. One criticism was directed at the theory's core assumption of a nonspecific causation of the GAS.

Mason (1971, 1975) pointed out that the stressors observed as effective by Selye carried a common emotional meaning: they were novel, strange, and unfamiliar to the animal. Thus, the animal's state could be described in terms of helplessness, uncertainty, and lack of control. Consequently, the hormonal GAS responses followed the (specific) emotional impact of such influences rather than the influences as such.

In accordance with this assumption, Mason (1975) demonstrated that in experiments where uncertainty had been eliminated no GAS was observed. This criticism lead to a second, more profound argument: unlike the physiological stress investigated by Selye, the stress experienced by humans was almost always the result of a cognitive mediation (Arnold 1960, Janis 1958, Lazarus 1966, 1974). Selye, however, fails to specify those mechanisms that may explain the *cognitive transformation* of `objective' noxious events into the subjective experience of being distressed. In addition, Selye does not take into account *coping mechanisms* as important mediators of the stress - outcome relationship. Both topics are central to psychological stress theories as, for example, elaborated by the Lazarus group.

A derivative of the systemic approach is the research on *critical life events*. An example was the influential hypothesis of Holmes and Rahe (1967), based on Selye's work, that changes in habits, rather than the threat or meaning of critical events, was involved in the genesis of disease. The authors assumed that critical life events, regardless of their specific (e.g., positive or negative) quality, stimulate change that produces challenge to the organism. Most of this research, however, has not been theoretically driven and exhibited little empirical support for this hypothesis (Thoits, 1983).

b) Psychological Stress: The Lazarus Theory

Two concepts are central to any psychological stress theory: (i) *appraisal*, i.e., individuals' evaluation of the significance of what is happening for their well - being, and (ii) *coping*, i.e., individuals' efforts in thought and action to manage specific demands (Lazarus 1993).

Since its first presentation as a comprehensive theory (Lazarus 1966), the Lazarus stress theory has undergone several essential revisions (Lazarus 1991, Lazarus and Folkman 1984, Lazarus and Launier 1978). In the latest version (Lazarus 1991), stress is regarded as a *relational* concept, i.e., stress is not defined as a specific kind of external stimulation nor a specific pattern of physiological, behavioural, or subjective reactions. Instead, stress is viewed as a

relationship transaction between individuals and their environment. `Psychological stress refers to a relationship with the environment that the person appraises as significant for his or her well being and in which the demands tax or exceed available coping resources' (Lazarus and Folkman 1986). This definition points to two processes as central mediators within the person - environment transaction: *cognitive appraisal* and *coping*.

i) Cognitive Appraisal

The concept of *appraisal*, introduced into emotion research by Arnold (1960) and elaborated with respect to stress processes (Lazarus 1966, Lazarus and Launier 1978), was a key factor for understanding stress - relevant transactions. This concept was based on the idea that emotional processes (including stress) are dependent on actual expectancies that persons manifest with regard to the significance and outcome of a specific encounter.

This concept was necessary to explain individual differences in quality, intensity, and duration of an elicited emotion in environments that are objectively equal for different individuals. It was generally assumed that the resulting state was generated, maintained, and eventually altered by a specific pattern of appraisals. These appraisals, in turn, were determined by a number of personal and situational factors. The most important factors on the personal side were motivational dispositions, goals, values, and generalized expectancies. Relevant situational parameters are predictability, controllability, and imminence of a potentially stressful event.

In his monograph on emotion and adaptation, Lazarus (1991) developed a comprehensive emotion theory that also includes a stress theory (Lazarus 1993). This theory distinguishes two basic forms of appraisal:

- Primary appraisal and
- Secondary appraisal

These forms rely on different sources of information. Primary appraisal concerns whether something of relevance to the individual's well being occurs, whereas secondary appraisal concerns coping options (Lazarus 1966).

- Primary Appraisal:

Within *primary appraisal*, three components are distinguished: *goal relevance* describes the extent to which an encounter refers to issues about which the person cares. *Goal congruence* defines the extent to which an episode proceeds in accordance with personal goals. *Type of ego - involvement* designates aspects of personal commitment such as self - esteem, moral values, ego - ideal, or ego - identity.

- Secondary Appraisal:

Likewise, three *secondary appraisal* components are distinguished:

- *Blame or credit* results from an individual's appraisal of who is responsible for a certain event.
- *Coping potential* means a person's evaluation of the prospects for generating certain behavioural or cognitive operations that will positively influence a personally relevant encounter.
- *Future expectations* refers to the appraisal of the further course of an encounter with respect to goal congruence or incongruence.

Specific patterns of primary and secondary appraisal lead to different kinds of stress. Three types were distinguished: harm, threat, and challenge (Lazarus and Folkman 1984). *Harm* refers to the (psychological) damage or loss that has already happened. *Threat* means the anticipation of harm that may be imminent. *Challenge* results from demands that a person feels confident about mastering. These different kinds of psychological stress are embedded in specific types of emotional reactions, thus illustrating the close conjunction of the fields of stress and emotions.

Lazarus (1991) distinguishes 15 basic emotions. Nine of these were negative (anger, fright, anxiety, guilt, shame, sadness, envy, jealousy, and disgust), whereas four were positive (happiness, pride, relief, and love). However, two more emotions, hope and compassion, have a mixed valence.

At a molecular level of analysis, the anxiety reaction, for example, was based on the following pattern of primary and secondary appraisals: there must be some goal relevance to the encounter. Furthermore, goal incongruence was high, i.e., personal goals are thwarted. Finally, ego - involvement concentrates on the protection of personal meaning or ego - identity against existential threats. At a more molar level, specific appraisal patterns related to stress or distinct emotional reactions were described as *core relational themes*. The theme of anxiety, for example, was the confrontation with uncertainty and existential threat. The core relational theme of relief, however, was 'a distressing goal-incongruent condition that has changed for the better or gone away' (Lazarus, 1991).

ii. Coping

Coping was intimately related to the concept of cognitive appraisal and, hence, to the stress relevant person-environment transactions. Most approaches in coping research follow Folkman and Lazarus (1980), who define coping as `the cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands and conflicts among them.'

This definition contains the following implications. (a) Coping actions are not classified according to their effects (e.g., as reality-distorting), but according to certain characteristics of the coping process. (b) This process encompasses behavioural as well as cognitive reactions in the individual. (c) In most cases, coping consists of different single acts and is organized sequentially, forming a coping *episode*. In this sense, coping is often characterized by the simultaneous occurrence of different action sequences and, hence, an interconnection of coping episodes. (d) Coping actions can be distinguished by their focus on different elements of a stressful encounter (cf. Lazarus and Folkman 1984). They can attempt to change the person - environment realities behind negative emotions or stress (*problem - focused coping*). They can also relate to internal elements and try to reduce a negative emotional state, or change the appraisal of the demanding situation (*emotion - focused coping*).

SIT adopts a transactional view of stress and coping as espoused by Lazarus and Folkman (1984). Their model proposed that stress occurs whenever the perceived demands of a situation tax or exceed the perceived resources of the system (individual, family, group or community) to meet those demands, especially when the system's well - being is judged or perceived as being stake. This relational process – oriented view of stress emphasises the critical role of cognitive affective appraisal process and coping activities.

According to the transactional perspective, stress is neither a characteristic of the environment nor a characteristic of the person alone. Instead stress is defined as a particular type of transactional, bidirectional, dynamic relationship between the person and the environment in which the individual or group perceives the adaptive demands as taxing or exceeding their perceived available coping resources to meet those demands. Like beauty, stress is in large part, 'in the eye of the beholder' (Meichenbaum, 2007).

Early stress inoculation training (Meichenbaum, 1972; Meichenbaum and Turk, 1976) focussed on cognitive-emotional theory of anxiety and learning approaches for the development of cognitive and relaxation coping skills for anxiety reduction. Subsequently, SIT was broadened to include many other strategies for anxiety reduction based on the developments in the area of cognitive psychology (Meichenbaum, 1985). Later Stress inoculation training emerged out of an attempt to integrate the research on the role of cognitive and affective factors in coping processes with the emerging technology of cognitive behaviour modification (Meichenbaum, 1996). SIT had been employed on a treatment basis to help the individuals cope with the aftermath of exposure to stressful events and on a preventative basis to inoculate individuals to future and ongoing stressors.

G. TRAINING PROCEDURES OF STRESS INOCULATION TRAINING (SIT)

A meta - analysis was conducted by Saunders *et al*., (1996) to identify conditions that may moderate the effectiveness of Stress Inoculation Training approach. The results of this meta-analysis served as a strong base of the proposed study of inoculating school students against stress. The following were

the observations made by the meta - analysis on various moderators of the SIT approach on reducing the stress levels and increasing the performance of the subjects.

- Type of population – separate analysis of the effects of stress Inoculation Training was conducted for those studies using a high - anxious subject population versus a normal anxiety subject population. SIT was shown to be effective stress intervention for both high anxious and normal anxiety subject population.
- Number of training sessions – the beneficial effect of SIT on reducing stress increases with increasing training sessions. However the data suggest that even a minimal training intervention of one session was likely to produce positive effects. The overall positive effect of Stress Inoculation Training on enhancing performance was not moderated by the number of training sessions.
- Training setting – the results of this analysis indicate that the effects of SIT on reducing stress are as strong in the field as in the experimental laboratory.

- Type of practice – separate analysis was conducted of the effectiveness of SIT interventions utilizing imagery versus behavioural skills practice. It was found out that SIT incorporating imagery practice was more effective in reducing stress. However the behavioural practice of coping skills was more effective for enhancing performance.
- Group size – SIT becomes more effective at reducing performance related stress as the size of the group increases. Therefore SIT is shown to be effective in reducing performance related stress in a group setting of moderate size (approximately 7 - 8 trainees), although it becomes more effective as the size of the group increases.
- Experience of the trainer – SIT was shown to have a significant impact on reducing stress and enhancing performance whether the training was conducted by a more experienced or a less experienced trainer. However,

surprisingly, the data indicate that less experienced trainers were more effective than more experienced trainers.

Hence, this meta - analysis has concluded that the examination of moderators such as the experience of the trainer, the type of setting in which training was implemented and the type of trainee population revealed no significant limitations on the applications of SIT to normal training environments. With the outcomes of the meta-analysis, the present study was conducted as per the training norms presented in Table-II in relation to the observations of Saunders *et. al.,* (1996).

TABLE – II

RESULTS OF THE META – ANALYSIS AND THE TRAINING PROCEDURE OF THE PRESENT STUDY

S.No	Results of the Meta – analysis	Justification for the training procedure of the present study
1	SIT is more effective for normal subjects than it is for high anxiety trainees.	Hence the student population who are just very normal in perceiving stress as something dangerous was considered to find the impact of SIT intervention.
2	SIT is a relatively robust intervention, and of special interest to those in applied training environments in which time and resources are often limited.	Therefore, the current research planned to conduct a one day orientation, three days of skill training and two half a day follow - up sessions as the time is limited.
3	The analysis of the type of setting in which training took place (laboratory versus field settings) revealed that SIT is not a hothouse phenomenon.	For that reason, the training environment of the present intervention was just a small auditorium of the school that could allow around 50 students to spread out and partake in the activities.
4	The impact of SIT on reducing stress increases with increasing group size.	Thus the SIT approach of this particular study gets highly suitable for the school students of 40-50 in a group.
5	The analysis signifies the effectiveness of less experienced trainers when compared with more experienced trainers.	As a consequence the current study employed the investigator along with a special trainer trained in conducting stress management classes for more than seven years to conduct SIT sessions with school students.