

Symposium: Stress in Aircrew

STRESSORS AND DEFENCE MECHANISMS IN AVIATORS

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Man is capable of existing and thriving under many different conditions. Aviators, however, require development of specific adaptive mechanisms to allow them to deal with stresses inherent in flying. Not all individuals would get pleasure from the thought of flying inverted over a ridge at tree top level at 1000 kmph in a combat manoeuvre. Aviators as a group are recognised as high stress copers. If this were not so, they would find less stressful occupations. Most of them are not only stress copers but also stress seekers. They thrive on the stress of engaging in potentially dangerous tactical sorties and landing high speed fighter or attack aircraft in various weather conditions in day and night. For some stress indeed is the spice of life.

Stressors

Stressors are viewed as factors or stimuli, usually external to the organism, which demand some response or change in behaviour. They highlight the nature of the (mis)fit between the organism and the environmental demands. How the organism interprets an environmental stimulus and the resources for responding to the demand and not the stimulus or response per se determines the stressfulness of the stimulus. Some conditions, like combat, imprisonment, natural disasters, disabling injuries and incapacitating diseases, act as universal stressors. Some, like evaluations in examinations and being rejected or disapproved, are not stressful for everyone. Some stressors, such as wartime

stress and human disasters, evoke diverse responses in different individuals.

Stressors in Aviation

Various stress factors in aviation are discussed below under the headings of environmental stress, acute reactive stress and life stress.

Environmental Stress : Noise, vibration, heat, cold and mild hypoxia are normal concomitants of military flying. High G loads in combat pilots evoke physiological responses. Backache experienced by many helicopter pilots is often related to vibrations, having to hunch over the controls and poor seat design. These stresses are identifiable and mostly measurable. The physiological stresses also produce psychological strain which manifests itself at several levels. The direct perception of pain causes distraction; attention is not completely focussed on the task at hand. At a deeper level the body employs neural and hormonal measures to combat the strain, which have subtle, and not so subtle, effects on the way we carry out our tasks.

Acute Reactive Stress : Various emergency stress factors evoke 'fight or flight' phenomenon. They result in a state of increased autonomic activity in the face of threat of aircraft emergency. The provocative events increase the pilot's arousal level and result in narrowed attention and disorganised behaviour. The experimental evidence in this area is weak as it is difficult both practically and ethically to frighten subjects. However, many twin engine aircraft have been lost after failure of only one of the engines. Some aircraft have been lost after spurious warnings or relatively minor emergencies. The pattern of response in these cases, is sufficiently common to provide reasonable evidence that many pilots lose control of their aircraft as a fairly direct result of an increase in arousal or reactive stress.

display inadequate stress coping mechanisms and more number of pilot error accidents.

c. Avoidance

Avoidance and escape is a form of coping in the face of threatening situation which is perceived as overwhelmingly powerful and dangerous. These reactions may be accompanied by fear, fear may be inhibited in some cases or they may occur without any observable fear in others. Avoidance of flying with or without fear is noted in many aviators.

d. Inaction or Apathy

Certain situations of threat offer absolutely no grounds for hope that harm can be prevented or overcome. In such cases there is no impulse to attack or avoid the harm. Aircrew are known to freeze on the controls under such circumstances. Hijacking and aircraft accidents with post crash fire could be other instances in which people will display inaction or apathy.

Palliative Modes of Coping

a. Identification: Identification with aggressor is a well known Freudian defence against threat. A child identifies with his father as a defence against threat of castration resulting from his hostile impulses towards the father who is a competitor in relation to his mother. Student aviators are known to idealise their instructors and identify with them both at conscious and unconscious levels. They adopt their mannerisms and attitudes. It is known that even subtle disillusionment or confrontation with defects in instructors can affect the progress of their training. This defence mechanism partly helps to alleviate initial anxiety associated with the strange airborne environment.

b. Displacement: Frustration of our motives and needs can be satisfied by expression of the motivational force into

new channels permitting their gratification in a different form. Sublimation is one form of displacement in which our sexual and aggressive impulses are gratified into socially acceptable forms and expressed in creative activities like painting, music, literature and scientific curiosity. In a typical situation, a person is frustrated by another who is more powerful. Under these conditions, the frustrated individual may inhibit the expression of aggression towards the powerful adversary but displays it toward a less powerful one.

c. Denial: In a situation where nothing or little can be done, there is value in use of denial or intellectualisation for maintaining detachment, and even deceiving oneself in order to feel better and maintain hope and a sense of self worth. It, however, interferes with coping situations where constructive action is possible. It is especially appropriate in circumstances where there is built-in likelihood of a favourable outcome. If the stress is likely to abate on its own, then the person has little to lose from not attending to it. This defence mechanism may be a matter of life style by the so called dare devil pilots.

d. Intellectualisation: This helps a person to gain detachment from a threatening event so as to remain emotionally untouched. A pathologist examines diseased tissue as though it were merely a neutral object of study rather than part of a suffering, dying fellow human. In the case of aircrew, this mechanism helps to minimise acute reactive stresses associated with dangerous sorties and emergencies.

By definition defence is distortion of reality. In flying there is a place for direct action as well as palliative or defensive action in the mediation of stress responses. Ignorance is bad or immoral but in situations where nothing constructive can be done, it can really be blissful. The defensive mechanisms may have varying degree of success which can be evaluated in terms of stress reactions.

Life Stress: A pilot, who on a given day had been up most of the night with a sick child, has had a row with his wife, broken the breakfast plates, received bad news from home, is facing financial difficulty and bumped the car on the way to work, may well feel that he was having a bad day and was making a number of errors.

Various life events in the areas of health, work, home and family, and personal, social and financial aspects have been investigated in terms of short term accident liability. Individuals who are experiencing a high life stress index display difficulties in attention, perception and processing of information. Such skills are critical to the effective and efficient functioning of a pilot and any impairment is likely to increase the probability of human error resulting eventually in an accident. When the social readjustment rating scale based on life events was applied to aviators, it was found that they regularly functioned at a level of life change units (LCUs) that would predict illness in the non-aviator population.

Defence Mechanisms

Stress coping is not simply a response to an event that has happened but instead is an active process in shaping what has happened and what will happen. Person's choice of life-style contributes to the likelihood of encountering demanding events.

Stressors can be handled by external resolution or internal resolution. External resolution relates to any behavioural effort by the person to deal with harm, threat or challenge by altering his troubled relationship with environment. On the other hand, internal resolution refers to palliative measures directed at reducing, eliminating or tolerating the distressing motor or affective features of a stress emotion once it has been aroused by troubled interaction with the environment.

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Direct Actions

a. *Preparing against harm*

If the danger is external, persons can often take active steps to eliminate or reduce it by addressing themselves directly to the threatening circumstances and taking the action that is suitable to meet them. Successful handling of the danger results in positive emotional reactions whereas failure of such attempts produces stress emotions like depression, shame, guilt, anger, anxiety or fear. Coping strategies are as varied as the nature of the danger itself, viz., programmes of study against examination, conforming to social norms and expectations against social criticism and expectancies, etc. Preparing against harm offers the best remedy in the event of stress.

Flying is basically a stress-prone profession. It should include the understanding and practice of various components of stress inoculation training. Incorporation of these methods will need conceptual change in our flying training procedures and syllabi.

b. *Aggression*

Aggression is often a useful way of handling danger when such danger is the result of an external enemy of some kind, such as a predator or someone who wishes one harm. It can take place in three forms, viz., aggression with anger, anger without aggression when behavioural expression is inhibited, or attack without anger as in sports activities and military combat.

Military aviators are generally characterised as aggressive and non-introspective. Frustrations tend to evoke aggressive responses in them which are directed at other people or objects rather than turning inwards to become self-destructive or depressive. Such behaviour leads to problems in interpersonal relationships. Such aviators have been found to

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