

Stress Rating of Personal Life Events in IAF : Aircrew

D Mukherji, Kuldip Rai

This questionnaire, conducted amongst the pilots of Indian Air Force, was formulated with a view to ascertain whether events in day to day life interact and cause stress in aviators. There was a broad consensus of opinion, amongst the aviators, as to the amount of stress significant events cause in pilots on a quantitative scale. Based on this, a suggestion is made to keep the pilots off flying for varying periods when the sum total of stressful events exceeds a certain limit as a flight safety measure. At the squadron level, the Squadron Commander, Flight Commander and Squadron Medical Officer can monitor the levels of stress.

Keywords : Social readjustment rating scale (SRRS), inattentional error, accident liability.

Flying is a stressful activity. To be proficient in flying, one has to be stress inoculated, that is to a greater or lesser extent, immunized to stress. Stress inoculation can be achieved by regular exposures to flying under various conditions. An operational pilot is stress inoculated to a certain extent and carries out the job assigned to him to the utmost satisfaction of himself and his superiors. Occasionally, when so called immunity to stress breaks down transiently, proper handling can reverse back the aircrew to complete normalcy. Assessment of stress rating of personal life events is, therefore, one such attempt at increasing the safety of the aircrew and aviation in general.

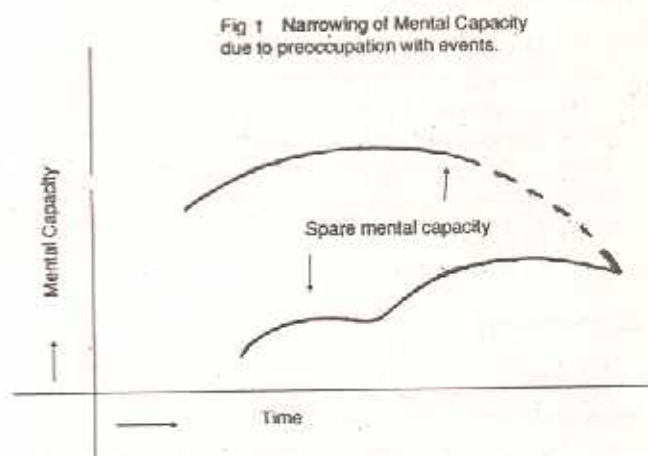
A number of Western countries e.g. UK, USA have formed a Committee of Confidential Human Factors and Incident Reporting Programme (CHIRP) to go into the Human factors pertaining to aircraft accidents¹.

Life stress problems or the stresses of life events is a problem which has been identified by a number of CHIRP reports, and it is postulated that many fatalities could be as a result of life events. Such a monitoring body does not at present exist in Indian Air Force (IAF) or in Indian Civil Aviation.

Statistics of Civil Airports Authority (CAA) in USA show that during a 5 years period from 1967 to 1971, 59 percent of the accidents were

attributable to pilot error². Many reports list the errors as - misuse of engine controls, misuse of brakes, misjudged distance, misuse of flight controls and a host of others^{3,4} but one rarely goes into why an experienced pilot committed this error. These reports are more of a statement of what happened.

Thus large number of CHIRP reports describe errors in automated behaviour, because inappropriate behaviour or motor programme are engaged, or sometimes because an intended point was engaged but proceeded to an unintended point apparently because of insufficient monitoring. It could be predicted that a life stressed individual will have his mental capacity partially devoted to problems of life events⁵ and thus be more likely to commit such a programming or inattentional error as can be seen in Figure 1⁶.



One of the pioneers in the field of study of life events have been Holmes and Rahe⁷, who in 1967, constructed a Social Readjustment Rating Questionnaire (SRRQ) containing a list of life events for which ratings were then assigned by a

group of 400 respondents. The SRRQ has been cross validated by workers in various studies and significant correlations have been found between rise in number of life events and occurrence of diseases like myocardial infarction, bronchial asthma and gastro intestinal disease. This has also been corroborated in studies of patients with psychiatric diseases by various workers⁸. Of late, attempts have been made to corroborate life events with accident liability. Two studies by Connolly⁹ and Selzer and Vinokur¹⁰ have demonstrated a significant correlation between life events and traffic accidents.

Flying in air is definitely a more hazardous task and if one were able to correlate life events and occurrence of traffic accidents, it would be a very useful tool. Work has already begun in this direction by Mc Carron and Haakonson¹¹ in the Canadian Air Force and Alkov and Borowsky¹² in the US Navy. Work is however very much in the preliminary stages.

However, many of the events applicable to an average American or Canadian would not really be applicable to us and thus the necessity of constructing a new life event scale was thought of with the following aims :

- 1) to construct a questionnaire in changed format valid to IAF aircrew,
- 2) to validate its applicability in an IAF aircrew population,
- 3) to standardize the life event rating scale for IAF aircrew population and
- 4) to evaluate the relationship of time factor to different events.

Methodology

The present study was undertaken as a questionnaire on IAF aircrew with more than 12 years flying experience. An initial pilot study was carried out with a model questionnaire stating the various life events and the aircrew were requested to give their ratings for impact of these events over a period of 4 weeks, 3 months, 6 months and 1 year. The subjects were not only asked to give the ratings for different time frames but were also asked to give their opinions as to the applicability of these events in their milieu of

work. They were also requested to give suggestions for changes/improvements in the questionnaire. The subjects were not required to disclose their identity.

As a result of the feed back from these completed questionnaire and opinions of aircrew, it was felt that this questionnaire was too complicated and a slightly altered format of questionnaire using two time frames i.e. impact of the event upto 3 months and after 6 months, was devised.

A modified questionnaire was prepared based on the feed back and responses obtained. It was again evaluated by getting the questionnaire filled up by 25 aircrew who found it acceptable. It was then decided to distribute the questionnaire either by taking it personally to some of the squadrons/flying stations or questionnaire were mailed to different senior medical officers and commanding officers with a request to get these filled up and sent to IAM.

Some of the stresses mentioned in the questionnaire may not cause significant stress after periods of 1 month, 1 week etc. (shorter periods). Therefore, aircrew were requested to give the stress ratings of the events in the column within 3 months and after 6 months.

All the questionnaires were accompanied by a write up explaining what the individual was supposed to do. Scores were given for two events - death of wife (100 each for both columns) and marriage (50 each for both columns) as reference points. This questionnaire had two time frames for responses to events.

Result and Discussion

A total of 230 questionnaires were sent, out of which 124 were received back and analysed. The findings in the form of mean scores, standard deviation and range of scoring are presented in Tables I and II.

From the Tables I and II, it is obvious that the first eight events in the table showing impact of event upto 3 months are highly stressful, all showing a stress rating of above 60. As a matter of fact, the list of first 17 events all show a rating

above 50. Even after 6 months, events like lack of accommodation at new station, divorce, maladjustment with spouse and supersession have a high stress rating. Events like wife begins or stops work, increase in work hours, receipt of award and news of promotion, hardly have any stress 6 months after the event. Another thing which is obvious, is low standard deviation in all these cases showing a fair amount of concordance on scaling of scores.

Table - I Impact of Events within 3 months

No	Events	Mean	SD	Range
1.	Death of child	88.09	7.63	60-100
2.	Divorce	78.80	13.05	50-100
3.	Court martial	74.69	12.33	40-100
4.	Lack of accommodation in new station	67.18	13.48	40-90
5.	Supersession	66.36	12.98	40-100
6.	Death of brother/sister	64.45	9.66	30-100
7.	Death of father/mother	63.69	12.91	40-75
8.	Maladjustment with spouse	62.14	15.42	30-100
9.	Wife's miscarriage/abortion	58.0	12.60	30-100
10.	Death of close friend	61.06	15.78	30-100
11.	Child's school admission	57.50	12.64	25-90
12.	Ill health of child	53.98	12.55	20-65
13.	Receipt of severe reprimand	53.75	14.04	30-80
14.	Wife's advanced state of pregnancy	53.18	13.75	20-80
15.	Marital reconciliation	52.60	13.17	20-100
16.	Court of inquiry	51.64	12.08	30-100
17.	Continued ill health (self)	51.20	9.35	25-70
18.	Birth of child	48.16	11.72	30-100
19.	Awkward boss	47.13	10.80	30-75
20.	Denial of leave	46.27	13.83	30-80
21.	Wife's ill health	45.64	10.20	30-75
22.	Lack of job satisfaction	45.33	10.80	25-70
23.	Civil court case	49.79	9.34	35-80
24.	DASI inspection	42.85	11.70	30-75
25.	Prior to appraisal time	42.42	11.75	10-90
26.	Engagement	41.25	8.52	20-60
27.	Adoption of child	40.00	12.60	20-70
28.	Impending retirement	32.92	15.92	30-90
29.	Unexpected financial commitment towards family	35.63	14.70	20-80
30.	Receipt of award	32.46	14.89	20-80
31.	New responsibility	33.55	11.46	20-75
32.	Wife begins or stops work	31.69	11.23	10-60
33.	Change of personnel habits	31.09	10.62	10-50
34.	Lack of recreational facilities	29.42	11.00	20-75
35.	Increase in work hours	29.12	7.58	20-50
36.	News of promotion	28.04	15.92	15-75

In the preliminary questionnaire of this study, individuals were also asked to give total scores at which they would like to take aircrew off flying duties for shorter or longer periods. No replies to this question were forthcoming. Based on this study and scoring of major events, it seems that any stress rating above 70 should be viewed with concern by the supervisory authority; any rating above 100 can be taken as a factor for the aviators to be more accident prone; above

Table - II Impact of events after 6 months

No	Event	Mean	SD	Range
1.	Lack of accommodation in new station	58.80	12.50	30-80
2.	Divorce	51.98	13.30	30-75
3.	Maladjustment with spouse	49.48	11.98	20-70
4.	Supersession	44.18	9.50	20-60
5.	Child's ill health	37.68	12.55	10-60
6.	Impending retirement	37.05	8.13	25-60
7.	Wife's ill health	37.07	6.90	25-50
8.	Death of brother/sister	36.18	8.02	10-50
9.	Death of father/mother	34.64	6.16	20-40
10.	Death of child	35.14	15.04	20-55
11.	Court martial	32.88	9.25	20-60
12.	Awkward boss	32.29	10.88	20-50
13.	Child's school admission	31.98	12.07	10-60
14.	Continuing ill health (self)	31.66	6.39	25-50
15.	Miscarriage/abortion	27.38	7.79	10-60
16.	Marital reconciliation	27.22	10.57	10-50
17.	Death of close friend	26.81	6.67	10-40
18.	Receipt of severe reprimand	23.66	9.43	10-40
19.	Birth of child	23.52	6.70	10-40
20.	Civil court case	22.80	10.04	10-40
21.	Lack of job satisfaction	19.54	8.03	10-40
22.	Engagement	19.14	5.27	10-40
23.	Denial of leave	16.86	8.82	10-40
24.	Unexpected financial commitment towards family	15.63	7.79	10-40
25.	Adoption of child	14.45	5.64	10-25
26.	DASI inspection	14.15	7.57	10-25
27.	Advanced stage of pregnancy of wife	13.90	8.20	10-20
28.	Change of personnel habits	13.67	5.94	10-40
29.	Court of inquiry	13.59	6.15	10-40
30.	Lack of recreational facilities	13.32	5.29	10-40
31.	New responsibilities	12.96	4.87	10-25
32.	Wife begins or stops work	11.98	3.11	10-20
33.	Prior to appraisal time	11.71	3.45	10-25
34.	Increase in work hours	11.50	4.05	10-15
35.	Receipt of award	11.31	3.61	10-30
36.	News of promotion	10.70	2.14	10-20

150 should be taken off flying duties and given a ground job for one or two months; above 200 it may even be worthwhile considering posting out the aircrew for a ground duty tenure.

The supervisory authority consists of the Flight Commander, Squadron Commander and the Squadron Medical Officer. A Squadron being closely knit, it should be fairly easy to monitor many of the life events which a squadron pilot has undergone. It cannot but be stressed here that the events themselves should be kept in mind e.g. events low down in the scale, even if they add upto a score of 150, may not necessarily be as stressful as the major events high up in the scale adding upto this score or more.

Some stresses can definitely be alleviated e.g. lack of accommodation in a new station is a persistent problem and it is obvious that the aircrew consider it a major life stress. Ways and means to solve this problem must therefore be worked out.

Conclusion

The work done in this study can serve only as a guideline to improve the understanding and measurement of personal stresses of IAF aircrew. A considerable amount of work still requires to be done before the methodology is refined sufficiently to give a correct predictive pattern of stress. Nevertheless, unless we formulate our thought to a plan of action for assessing life stresses and remove individuals who are more accident prone, we can never improve the present unacceptable state.

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