A Life Events Scale for Armed Forces personnel

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ABSTRACT

Background: Armed Forces personnel are routinely exposed to a number of unique stressful life events. None of the available scales are relevant to service personnel.

Aim: To construct a scale to measure life events in service personnel.

Methods: In the first stage of the study open-ended questions along with items generated by the expert group by consensus method were administered to 50 soldiers. During the second stage a scale comprising 59 items and open-ended questions was administered to 165 service personnel. The final scale of 52 items was administered to 200 service personnel in group setting. Weightage was assigned on a 0 to 100 range. For normative study the Armed Forces Medical College Life Events Scale (AFMC LES) was administered to 1200 Army, 100 Air Force and 100 Navy personnel.

Results: Service personnel experience an average of 4 life events in past one year and 13 events in a life-time. On an average service personnel experience 115 life change unit scores in past one year and 577 life change unit scores in life-time on the AFMC LES. The scale has concurrent validity when compared with the Presumptive Stressful Life Events Scale (PSLES). There is internal consistency in the scale with the routine items being rated very low. There is a pattern of uniformity with the civilian counterparts along with differences in the items specific to service personnel.

Conclusions: The AFMC LES includes the unique stresses of service personnel that are not included in any life events scale available in India or in the west and should be used to assess stressful life events in service personnel.

Keywords: Stressful life events, assessment, AFMC LES

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INTRODUCTION

Stress is a normal part of human existence—a double-edged sword, which can help us mobilize and achieve, or physically and psychologically incapacitate us. War is the most dramatic concentration of deliberate physical and psychological trauma that societies can inflict upon each other. Under some combat conditions not only elevated symptom levels but also breakdown in performance became endemic. In a study of 2630 soldiers who had broken down during combat in Normandy campaign in World War II, it was estimated that the onset of combat exhaustion occurred even in previously normal soldiers when about 65% of their companions had been killed, wounded or had otherwise become casualties. The extent to which symptoms produced in extreme situations in previously normal persons are transient and self-limiting is a matter of controversy. Against the background of exposure to the brutalities of Nazi concentration camps, there is strong evidence that not only has severe stress-induced psychopathology persisted in survivors but also that the survivors are more prone to physical illness and early death. Similarly, 17% of the US population outside of New York City reported symptoms of September 11-related post-traumatic stress 2 months after the attacks; 5.8% did so at 6 months. Natural and man-made disasters, fortunately, are rare occurrences whose devastating effects are limited to relatively small populations of exposed persons. Yet psychopathology and somatic disturbances are far from rare in peace-time populations relatively secure from war flood, and other disasters. If stressful situations play an aetiological role in these disorders the events involved must be more ordinary more frequent experiences in the lives of most people—things such as marriage, birth of a first child, and death of a loved one. Based on this hypothesis stressful life events scales have been constructed A large number of published reports attest to the association of life stress and a wide range of physical and psychiatric disorders.
Due to cultural variations the popular stressful life events scales constructed in the West\textsuperscript{3,14} are not valid for other countries and the trend has been to construct life events specifically for different populations including India.\textsuperscript{15,16}

However, these scales have limited utility for measuring life events in armed forces personnel because a number of stressful life events such as fighting against enemies, fighting against terrorists, posting to field or operational areas are unique to service personnel. Obviously, these stressful life events are not present in scales that have been constructed keeping the civilian population in mind. Moreover, certain events considered as stressful, viz. exposure to disasters and mass casualties, frequent change of residence of self and family are commonly experienced by armed forces personnel. It is likely that their appraisal of these events may differ from that of the civilian population. Thus, it is evident that in respect of Indian Armed Forces personnel there is no scale available to measure stressful life events. In view of the above, the present study was undertaken to make available for the first time a suitable scale to measure stressful life events in Indian armed forces personnel.

METHODS

Construction of the Armed Forces Medical College Life Events Scale

A pilot study was conducted on 50 soldiers. Initially items for the scale (n=87) were taken from consensus of experts in the field. Face validity of items was taken into consideration and items were drawn from the common experience of service personnel. After initial analysis some items were excluded from the list. For example, some of the items of routine activities such as physical training, order to come on duty which are daily occurrences in the Armed Forces, were excluded. Some items were grouped. For example death of father, death of mother, death of grandparents was combined to death of near and dear ones. The second version of the scale contained 59+3 items. One item was repeated for internal consistency of the item. At the end 3 open-ended questions were also included to enable respondents to report any other stressful event, which was not included in the scale.

This scale was administered to 165 service personnel drawn from the local garrison. Men belonging to various arms and services, and different trades were randomly selected for the study. The criteria for inclusion were minimum educational level of matriculation, no history of physical illness in the past one year and no life-time history of mental disorders. Confidentiality was ensured by not recording personal identification data such as name, trade and unit. Standard instructions were given for the assessment of life change units. Each individual was asked to give his own assessment of each event irrespective of having experienced the event or not. Next they were asked to mark the event whether it had occurred within a year or earlier in their life-time. They were also asked to mark whether they considered each event as desirable or undesirable. The individuals were approached again after 1 week for reassessment of weightage given to the items to establish reliability. The mean scores assigned to each event by the respondents were the life change unit (LCU) score for that event. Data so generated were statistically analysed to arrive at a weighted mean life change score in respect of each item. The Presumptive Stressful Life Events Scale (PSLES) was administered to all the subjects in the same sitting when the AFMC LES was filled for determining the concurrent validity of the latter.

Norms for the number of experienced life events: The AFMC LES was administered under supervision of a Graded/ Classified Specialist in Psychiatry to 1200 Army personnel posted in peace and field areas including counter-insurgency operational areas (Pune, Srinagar, Udhampur, Chandigarh, Lucknow, Jodhpur, Binaguri, Tezpur, Guwahati and Jorhat), 100 Air Force personnel (Pune, Bangalore, Guwahati, Tezpur, Srinagar, and Jorhat) and 100 Navy personnel (Pune, Mumbai, Vishakapatnam and Cochin). All subjects were free from medical or psychiatric illnesses. Random sampling procedure was used to extract the sample. Personal identification data such as name, trade and unit of the personnel were not endorsed to ensure confidentiality. The forms were scored centrally at AFMC. Results were tabulated and statistically analysed using SPSS utilizing parametric tests for continuous data and non-parametric tests for ordinal data. Cronbach’s alpha, split-half reliability, test–retest reliability, were calculated using the SPSS software package.\textsuperscript{18}

Factor analysis: With the set of scores on the 52 life change
events, the correlation between them was calculated to yield a correlation matrix. Factor analysis using the SPSS statistical software was used to simplify the correlation matrix and identify the smaller number of factors which could explain the correlation. A component or a factor explains the variance in the intercorrelation matrix, and the amount of variance explained is known as the eigenvalue for the factor. A factor loading is the correlation of a variable with a factor. A loading of 0.3 or more is frequently taken as meaningful when interpreting a factor. In the present study we used a loading of 0.3 or more as significant cut-off value except for one item which had a loading of 0.290. An exploratory factor analysis was carried out by first performing a principal component analysis. The number of factors was determined by using the cut-off eigenvalue = or > 1 and also cross-validated by the scree plot. The analysis was run with rotation of factors using the Varimax method. 

**RESULTS**

Quantification of stressful life events

The mean LCU scores for the 52 events ranged from 83 for spouse having illicit relations to 23 for going on posting (Table 1). The life events deemed to be desirable or undesirable by the majority of service personnel in the study are shown in Table 2.

Cross-cultural comparison of the life events

A comparison of the AFMC LES with Holmes and Rahe's Social Readjustment Rating Scale (SRRS) and the PSLES revealed that life event items of AFMC LES overlap with SRRS and PSLES only to a modest degree. Twenty-nine of the 52 AFMC LES items (55.8%) were not included in the SRRS. Similarly 24 of the 52 AFMC LES items (46.2%) were not included in the PSLES. The mean LCU scores of life events, which are common to the AFMC LES along with the scores on similar items on the PSLES, SRRS, Paykel's New Haven Life Events Measure and Zhou and Lin's scale are shown in Table 3.

Norms of the AFMC LES

Demographic variables of the subjects included in the study are given in Table 4. The mean number of life events (rounded off to the nearest whole number) experienced by service personnel in the past year and in their life-time is 4 and 13, respectively. Norms of the number of life events in past one year and life-time is 4 and 13, respectively. Norms of the number of life events in past one year and in their life-time is 4 and 13, respectively. Norms of the LCU scores for past one year and life-time are given in Tables 7 and 8, respectively. Comparison of life events with age, length of service, rank, marital status and domicile are given in Table 9.

*Comparison of weightage given to each life event in respect of Army, Navy and Air Force personnel: Analysis did not reveal any significant differences in the weightage*

| Item No. | Life event | LCU score | Mean SD SEM |
|----------|------------|-----------|-------------|
| 1        | Spouse having illicit relations | 83 | 28.34 | 2.004 |
| 2        | Court martial | 81 | 26.10 | 1.846 |
| 3        | Amputation of body parts | 80 | 24.20 | 1.711 |
| 4        | Divorce | 78 | 22.76 | 1.610 |
| 5        | Going abroad on duty | 72 | 21.33 | 1.508 |
| 6        | Receiving medal for bravery | 71 | 28.68 | 2.028 |
| 7        | Fighting against enemies during war | 69 | 23.42 | 1.656 |
| 8        | Loss of identity card | 69 | 30.69 | 2.170 |
| 9        | Child getting a job | 68 | 26.47 | 1.872 |
| 10       | Getting married | 67 | 28.03 | 1.982 |
| 11       | Hospitalization due to serious illness | 65 | 21.36 | 1.511 |
| 12       | Winning a lottery | 64 | 28.12 | 1.989 |
| 13       | Constructing own house | 63 | 23.15 | 1.637 |
| 14       | Birth of child | 62 | 28.26 | 1.999 |
| 15*      | Going on posting within 48 hours | 62 | 30.14 | 2.132 |
| 16*      | Fighting against terrorist | 61 | 26.71 | 1.889 |
| 17       | Conflict with family members | 59 | 27.32 | 1.932 |
| 18       | Sex related problems | 58 | 32.19 | 2.277 |
| 19       | Sanctioned leave being cancelled | 56 | 31.14 | 2.202 |
| 20       | Demotion | 56 | 29.32 | 2.074 |
| 21       | Red ink entry | 54 | 31.80 | 2.249 |
| 22*      | Family member having illicit relations | 54 | 28.13 | 1.989 |
| 23       | Getting release from service | 53 | 32.73 | 2.315 |
| 24       | Child leaving town for higher education | 53 | 28.27 | 1.999 |
| 25       | Child not getting admission in school | 53 | 27.36 | 1.935 |
| 26       | Spending tenure of high altitude posting | 51 | 26.36 | 1.864 |
| 27       | Completing a tenure in operational area | 50 | 27.81 | 1.967 |
| 28       | Completing a tenure in operational area | 49 | 26.52 | 1.876 |
| 29       | Arranging for a big loan | 49 | 27.32 | 1.932 |
| 30       | Change of trade | 49 | 25.61 | 1.811 |
| 31       | Receiving medals in sports | 47 | 28.69 | 2.029 |
| 32       | Dowry related problems in family | 47 | 26.19 | 1.852 |
| 33       | Not receiving salary because of debit | 46 | 27.43 | 1.940 |
| 34*      | Completing a tenure of field posting | 46 | 29.34 | 2.075 |
| 35*      | Sanction of casual leave | 46 | 27.61 | 1.953 |
| 36       | Sanction of casual leave | 44 | 23.06 | 1.631 |
| 37       | Not getting government accommodation | 43 | 31.44 | 2.183 |
| 38       | Pay fine | 42 | 23.16 | 1.638 |
| 39       | Difficulty with seniors | 40 | 28.13 | 1.989 |
| 40*      | Annual leave not being sanctioned | 39 | 27.16 | 1.921 |
| 41*      | Conflict with friends in unit | 39 | 27.37 | 1.936 |
| 42       | Receiving highest marks in firing | 38 | 26.23 | 1.855 |
| 43       | Black ink entry | 38 | 26.11 | 1.847 |
| 44       | Wife leaving the job | 37 | 21.16 | 1.496 |
| 45       | Lack of son | 37 | 27.46 | 1.942 |
| 46       | Participation in divisional exercises | 36 | 25.34 | 1.792 |
| 47       | Failing in promotion cadre | 36 | 30.21 | 2.137 |
| 48       | Sanction of annual leave | 34 | 26.45 | 1.871 |
| 49       | Going on posting | 23 | 21.72 | 1.536 |

*Life stress items unique to service personnel*
Table 2. List of desirable and undesirable items of the AFMC Life Events Scale

| Desirable life event                                      | Undesirable life event                                      |
|----------------------------------------------------------|-------------------------------------------------------------|
| 1. Getting married                                       | 1. Shifting house many times in same station                |
| 2. Birth of child                                         | 2. Loss of identity card                                    |
| 3. Child getting a job                                    | 3. Child not getting admission in school                    |
| 4. Passing the promotion cadre                            | 4. Wife not conceiving for long duration                    |
| 5. Completing a tenue in operational area                 | 5. Lack of son                                              |
| 6. Participation in divisional exercises                  | 6. Wife/husband having illicit relations                    |
| 7. Completing a tenure of field posting                   | 7. Wife leaving the job                                     |
| 8. Child leaving town for higher education                | 8. Sex-related problems                                     |
| 9. Wife starting a job                                    | 9. Failing in promotion cadre                               |
| 10. Receiving medal in sports                             | 10. Sanctioned leave being cancelled                        |
| 11. Receiving medal for bravery                           | 11. Annual leave not being sanctioned                       |
| 12. Going on posting                                      | 12. Divorce from wife                                       |
| 13. Winning a lottery                                     | 13. Conflict with family members                            |
| 14. Sanction of casual leave                              | 14. Not receiving salary because of debit                   |
| 15. Arranging for a big loan                              | 15. Court martial                                           |
| 16. Spending tenure of high altitude posting              | 16. Black ink entry                                         |
| 17. Change of trade                                       | 17. Pay fine                                               |
| 18. Marriage of daughter                                 | 18. Hospitalization due to serious illness                  |
| 19. Constructing own house                                | 19. Death of a close relative                               |
| 20. Fighting against enemies during war                   | 20. Red ink entry                                           |
| 21. Fighting against terrorists                           | 21. Not getting government accommodation                    |
| 22. Going abroad on duty                                  | 22. Going on posting within 48 hours                        |
| 23. Getting release from service                          | 23. Demotion                                               |
| 24. Receiving highest marks in firing                     | 24. Difficulty with seniors                                 |
| 25. Sanction of annual leave                              | 25. Conflict with friends in unit                           |
|                                                          | 26. Dowry-related problems in family                       |
|                                                          | 27. Amputation of body parts                                |

assigned to different life events by personnel of the three services.

Reliability

Cronbach’s alpha: Internal consistency for the AFMC LES is 0.861, which is quite high. In the item total statistics (Table 10) examining the last column, it is seen that the alpha would drop if any of the items were to be deleted from the scale. That is, all the items contribute to making the internal consistency of the scale high.

Split-half correlation and reliability: Correlation between Half 1 and half 2 were 0.748 and are significant (p<0.01). Equal length Spearman–Brown coefficient was 0.856. Guttman split-half coefficient was 0.855. These are within acceptable limits.

Test–retest reliability: Test–retest reliability of the scale has been calculated by administration of the scale a second time to the same group of subjects after a gap of 7 days. There was a significant positive correlation between the past year scores (rho=0.945, n=200, p<0.01, two-tailed) and life-time scores (rho=0.968, n=200, p<0.01, two-tailed).

Validity

Criterion validity: There is at present no other scale to measure stressful life events in Armed Forces personnel. Hence, the PSLES was used as a predictor of stressful life events. The AFMC LES demonstrated significant correlations with many of the personality factors. On the PSLES, administered to the subjects in the same sitting along with the AFMC LES, the mean number of life events in one year and life-time were 2.82 (S.D. 2.01) and 10.72 (S.D. 3.64), respectively. The AFMC life events scale and the PSLES had a significant positive correlation in life-time scores (Spearman’s rho=0.726, n=200, p<0.01, two-tailed) and also past one year scores (Spearman’s rho=0.49, n=200, p<0.01, two-tailed).

Content validity: No measuring instrument in the behavioral sciences would be of any application unless its contents permitted a fairly representative sample of behavioural characteristics. From this viewpoint the items for the AFMC LES were taken initially from consensus of experts in the field (psychiatrists and clinical psychologists). Face validity of items was taken into consideration and items were drawn from the common experience of service personnel. The favorable opinion of experts argues well for content validity. In addition, in the second version of the scale 3 open-ended questions were included to enable respondents to report any other stressful event, which was not included in the scale. Thus, the respondents were able to suggest new items or modifications to specific items, which were taken into consideration while preparing the final version of the scale.
Table 3. Mean life change unit (LCU) scores of common stressful life events on AFMC LES compared with scores on similar items on other life event scales (Indian and Western)

| Life event                                      | AMC LES | PSLES | SRRS  | Paykel* Zhou & Lin** |
|------------------------------------------------|---------|-------|-------|----------------------|
| Spouse having illicit relations                 | 83      | 80    | –     | –                    |
| Suspension/court martial                        | 81      | 76    | –     | –                    |
| Divorce                                         | 78      | 77    | 73    | 16.00 3.08           |
| Getting married                                 | 67      | 43    | 50    | 5.61                |
| Hospitalization due to serious illness          | 65      | 56    | 53    | 14.61 3.42           |
| Constructing own house                          | 63      | 46    | –     | –                    |
| Birth of child                                  | 62      | 30    | –     | –                    |
| Conflict with family members                    | 59      | 47    | –     | –                    |
| Sex-related problems                            | 58      | 51    | 39    | 2.39                |
| Death of a close relative                       | 58      | 66    | 63    | 17.21 3.51           |
| Demotion                                        | 56      | –     | –     | 15.05               |
| Wife not conceiving for long duration           | 54      | 67    | –     | –                    |
| Getting release from service/retirement         | 53      | 35    | 45    | 9.33                |
| Child leaving town for higher education         | 53      | 55    | 29    | 7.20                |
| Child not getting admission in school           | 53      | –     | –     | 2.55                |
| Arranging for a big loan                        | 49      | 49    | 30    | 12.64               |
| Marriage of daughter                            | 49      | 49    | –     | –                    |
| Change of trade/line of work                    | 49      | –     | –     | 8.84                |
| Dowry-related problems in family                | 47      | 51    | –     | –                    |
| Shifting house many times in same station       | 46      | 39    | –     | 5.14                |
| Wife starting a job                             | 42      | 25    | 26    | –                    |
| Pay fine/minor violation of law                 | 40      | 48    | –     | 6.05 2.66           |
| Difficulty with seniors                         | 39      | 52    | –     | 12.21 2.59           |
| Conflict with friends in unit                   | 38      | 52    | –     | 12.21 2.57           |
| Promotion/outstanding achievement               | 38      | 37    | –     | 5.39                |
| Wife leaving the job                            | 37      | 25    | 26    | –                    |
| Lack of son                                     | 37      | 51    | –     | –                    |
| Failing in promotion cadre/ examination         | 36      | 43    | –     | 13.52 2.84           |
| Going on posting                                | 23      | 33    | –     | 8.52                |

* Life change units scored on a scale of 0–20
** Life change units scored on a scale of 1–5

Factor analysis

The total variance explained by principle component analysis is shown in Table 11. Thirteen distinct clusters (factors) of life events were extracted by factor analysis. These clusters may be characterized according to the nature of the items contained within them. Although not all the items within each cluster relate specifically to these headings, the major contributing items in terms of strengths of their intercorrelations are identified by this nomenclature. The loadings on the subsets of events under each factor are given in Table 12.

DISCUSSION

An extensive literature, varying from anecdotal reports, intensive psychoanalytic studies, controlled comparisons, to large-scale surveys, attest to the importance that is generally assigned to life events in the genesis of many diseases. In fact, researchers have established a positive relationship between stressful life events and a number of physical and psychiatric illnesses. 15,19–21

Life events questionnaires have in recent times been widely used as potential indices of presumptive stress. It is assumed that people seldom forget major life events and usually do not deny them. Memories of external events are not as prone to distortion as are assessments of subjective mood, emotion or capacity to function. A quantitative measure of presumptive
Table 7. Life change unit (LCU) scores in past one year

| Sample          | n   | Mean (SD) | 25th percentile | Median | 75th percentile |
|-----------------|-----|-----------|-----------------|--------|-----------------|
| Army-Field      | 600 | 119.11 (99.17) | 46              | 102    | 171             |
| Army-Peace     | 600 | 118.26 (99.23) | 46              | 100    | 165             |
| Air Force      | 100 | 89.90 (102.70) | 40              | 64     | 78              |
| Navy           | 100 | 99.37 (61.16) | 62              | 100    | 153             |
| Armed Forces   | 1400| 114.68 (96.28) | 46              | 100    | 171             |

KW test: No significant differences between scores of Army personnel in field and peace. Scores of Army personnel in peace and field significantly more than Air Force and Navy. No significant differences between Air Force personnel and Navy personnel. No significant difference between Army personnel in field and peace.

Table 8. Life change unit (LCU) scores in life-time

| Sample          | n   | Mean (SD) | 25th percentile | Median | 75th percentile |
|-----------------|-----|-----------|-----------------|--------|-----------------|
| Army-Field      | 600 | 650.03 (387.52) | 356             | 551    | 892             |
| Army-Peace     | 600 | 513.67 (243.90) | 332             | 493    | 668             |
| Air Force      | 100 | 619.11 (235.39) | 467             | 683    | 799             |
| Navy           | 100 | 480.02 (178.35) | 217             | 434    | 470             |
| Armed Forces   | 1400| 576.46 (297.57) | 341             | 503    | 781             |

KW test: Scores of Army personnel in field significantly more than Army personnel in peace and Navy. Scores of Army personnel in field not significantly different from Air Force, but significantly more than Army personnel in peace and Navy personnel. Scores of Air Force personnel significantly more than Army personnel in peace and Navy personnel. Scores of Army personnel in peace significantly more than Navy personnel.

Table 9. Comparison of life events and demographic variables

| Variable | n   | Life events in past year Mean (SD) | Life events in life-time Mean (SD) |
|----------|-----|-----------------------------------|-----------------------------------|
| Age      |     |                                   |                                   |
| ≤ 35 years | 4.00 (3.02) | 11.03 (5.73) |
| > 35 years | 3.86 (3.43) | 14.70 (5.15)* |
| Length of service |     |                                   |                                   |
| ≤ 10 years | 4.23 (3.21) | 9.84 (5.32) |
| > 10 years | 3.62 (3.16) | 14.06 (5.13)* |
| Rank     |     |                                   |                                   |
| Sepoy/Lance Naik | 3.71 (2.32) | 11.16 (6.12) |
| Naik     | 4.16 (3.87) | 13.68 (5.91) |
| Havaldar | 3.82 (3.16) | 13.87 (6.00) |
| Junior commissioned officer/officer | 4.05 (3.00) | 13.16 (4.07) |
| Marital status |     |                                   |                                   |
| Married | 3.85 (3.27) | 13.26 (5.65)* |
| Unmarried | 3.95 (2.76) | 8.33 (4.10) |
| Domicile |     |                                   |                                   |
| Rural | 3.99 (3.50) | 11.91 (5.63) |
| Urban | 3.66 (2.99) | 11.51 (5.09) |

*Mann–Whitney test: p<0.05, significant
stress can be derived. Each event can be assigned a weight and the weights can be summed to measure the quantity of stress that an individual has undergone. As indicated in the results, 29 of the 52 AFMC LES items (55.8%) were not included in the SRRS, while 24 of the 52 AFMC LES items (46.2%) were not included in the PSLES. An inspection of these items shows that they help to capture unique aspects of military life that are particularly likely to produce stress in service personnel. This is a major strength of the AFMC LES. During the construction of the AFMC LES open-ended questions were also utilized to obtain suggestions about new items from respondents. The use of open-ended questions has been recommended by several authorities and made the construction of our scale methodologically sound.

### Measurement of stress over different time periods

In view of the findings that recall of events in recent time period is better than relatively remote events and also the problem of retrospective contamination, it was decided to follow the method adopted by Singh et al. and keep 2 time scales: (i) life-time, and (ii) past one year. Time scale of one year was chosen and not 6 months as it is indicated in many studies that with 6 months as cut-off period it would be difficult in many psychiatric disorders to differentiate between the event being a symptom or result of the disorder in contrast to the event being a cause of the disorder, e.g. loss of job can be a cause of depression and sometimes depression can result in loss of job. The total number of stressful life events being experienced in past year and life-time in the present study are higher when compared to PSLES. Service personnel undergo more number of life events in past one year (n=4) and in total life-span (n=13) as compared to civilian counterparts. The probable explanation may be that a number of items such as sanction of casual leave, divisional-level exercises being common occurrences could have influenced the score. Concurrent validity is evident from the fact that the mean scores on present scale were highly correlated with PSLES scores.
Table 12. Results of a principal component factor analysis with varimax rotation of AFMC LES

| Item No. | Items | Loading | % of variance |
|---------|-------|---------|---------------|
| Factor 1. Severe domestic and job crises | 26. Divorce from wife | 0.772 | 15.049 |
| | 27. Conflict with family members | 0.569 | |
| | 28. Not receiving salary because of debit | 0.528 | |
| | 29. Arranging for a big loan | 0.557 | |
| | 30. Court martial | 0.820 | |
| | 31. Black ink entry | 0.621 | |
| | 32. Pay fine | 0.574 | |
| | 33. Hospitalization due to serious illness | 0.591 | |
| Factor 2. Operational stress | 8. Completing a tenure in operational area | 0.688 | 7.167 |
| | 9. Participation in divisional exercises | 0.636 | |
| | 10. Completing a tenure of field posting | 0.721 | |
| | 38. Spending tenure of high altitude posting | 0.673 | |
| | 46. Fighting enemies during war | 0.405 | |
| | 47. Fighting terrorists | 0.677 | |
| Factor 3. Separation from significant others | 5. Child getting a job | 0.533 | 4.636 |
| | 11. Child leaving town for higher education | 0.420 | |
| | 19. Receiving medal for bravery | 0.471 | |
| | 44. Marriage of daughter | 0.724 | |
| | 48. Going abroad on duty | 0.688 | |
| | 49. Release from service | 0.404 | |
| Factor 4. Change in employment status of family members | 14. Spouse having illicit relations | 0.442 | 3.549 |
| | 15. Wife starting a job | 0.631 | |
| | 16. Wife leaving the job | 0.691 | |
| | 22. Winning a lottery | 0.540 | |
| Factor 5. Family formation and promotion at work | 1. Getting married | 0.767 | 3.341 |
| | 2. Birth of child | 0.798 | |
| | 7. Passing promotion cadre | 0.514 | |
| | 45. Constructing own house | 0.357 | |

Consistency of scale

An important issue for this scaling is the amount of variablility. If this scale is to be suitable for wider application there must be at least a moderate consensus between individuals as to the perceived stressfulness of events. One way of evaluating the degree of consensus is to consider the variability of event judgement in the total sample. In the AFMC LES the standard deviations of LCU of life events ranged from extremes of 32.73 to 21.16; most were between 25 and 31. When compared with the scale range these standard deviations appear moderate in magnitude. They certainly indicate good confidence limits for the population means.

Quantification of stressful life events

Measurement of the magnitude of life events is a major methodological problem in life events research. An apparently simple solution to this problem was offered in the SSRS. A simple form of this procedure, magnitude estimation, involves designating a modulus with an assigned value and asking judges to rate other stimuli in relation to this modulus. Holmes and Rahe designated ‘marriage’ as the modulus, assigned it a value of 500, and obtained quantitative judgements about the amount of change or readjustment in relation to it for each of the other 42 events on their list. LCU scores based on these ratings have been presented as a measure of the stressfulness of the rated events. If we weigh events in terms of their different LCU scores and pay attention to how these weights add up when a series of events occurs, the risk of illness attached to the events will vary directly with the magnitude of LCU scores. Holmes in particular has emphasized the high level of consensus about the amount of change associated with each life event. He refers to correlations in the 0.80s and 0.90s between the mean ratings for each event obtained from such diverse status groups as blacks and Japanese as well as whites. This is contrary to our findings. Holmes’ argument for the universalism of perception of the stressfulness of particular life events, however, has been
sharply criticized. Two of Holmes’ collaborators have pointed out that considerable group differences are masked by the reported correlations. Ratings secured in Sweden were consistently higher than Holmes’ American ratings. Certain differences in ratings of events by Japanese and American judges seemed to be related to differences between the two cultures. Other researchers have also reported cultural contrasts. Sharp differences were found in the way rural sample and urban sample ranked such events as ‘marriage’. In the urban sample, for example, marriage is ranked 4th in contrast with 21st in the rural sample in terms of the amount of change involved. These differences are meaningful in terms of contrasts in the norms and customs of the two samples. Zheng and Lin from China also reported that the rank order of stressfulness of several stressful life events differed significantly across cultures. The findings of the above studies are in agreement with our findings.

The highest weightage of 83 LCUs in the present study was assigned to ‘wife having illicit relations with other person’. This finding differs from western studies but concurs with the finding of PSLES as Indian civilians in that study also gave a high weightage of 82. Next highest LCU score of 80 was assigned to court martial followed by amputation of body parts and divorce from wife (Table 1). Court martial is probably the most undesirable event in the life of service personnel and apart from loss of face among the peer group may involve punishment and even also loss of job. The assessment of the service personnel on items of divorce from wife, sexual problems, marriage of a daughter is very similar to the PSLES (Table 2). Lack of son was given a mean stress score of 51 in PSLES while our soldiers have given it a lesser mean score of 37. Probably more awareness of gender equality in respect of children is imbibed by them through education in the services.

Another interesting observation is that trouble with seniors is again having a lesser mean score as compared to civilian counterparts. The soldiers mean score on this item is 39 whereas the PSLES mean score is 52 (Table 2). This is probably because in the Armed Forces conflict is generally resolved within the members of the unit by the superiors. The item death of a close relative in the present study was given a mean stress score of 58. In the PSLES, the item has a higher mean score of 66. Sudden unexpected deaths of comrades are not perceived as having much stressfulness of several stressful life events differed across cultures. The findings of the above studies are in agreement with our findings.

Categorization of life events

Scale items were further categorized into desirable items (n=25) and undesirable items (n=27). There was no significant difference in the stress experienced on desirable items (mean=57.89; SD=7.55) compared to undesirable items (mean=53.42; SD=14.99). This observation is not in agreement with the findings of Singh et al. The probable reason for this is that while the PSLES contained 10 desirable and 32 undesirable items, the present scale is balanced and contains almost equal number of desirable and undesirable events, which is again an improvement on the PSLES.

Demographic characteristics of the subjects

It is apparent from Table 4 that the samples drawn from Army, Air Force and Navy differ in certain respects. The age and service of Navy sample is less than that of the others. Of the Navy sample, 29% are bachelors compared to about 15% of the rest. Army sample appears to be predominantly rural (36%–37%) while the Air Force and Navy sample is predominantly urban (56%–57.5%). However, the distribution according to rank was similar in all three samples. The aims of the present study were the construction of a stressful life events scale and standardize it on a sample of service personnel. Therefore, these differences in demographic characteristics do not vitiate the results of the present study.

Number of life events experienced in past year and life-time

Norms as obtained in the present study for male armed forces personnel of life events for one year are 3.86±3.17 and for lifetime it is 12.56±6.84. These norms are much higher than the norms of PSLES of 1.90±2.62 for one year and 10.34±5.40 for life-time. It is obvious that the present scale reflects the
increased number of life events experienced by service personnel. In addition, there were no significant differences in the number of life events experienced in past year and lifetime by personnel from Army, Navy and Air Force. It indicates that the scale can be applied to personnel from all the three services.

Norms for LCU scores in past year

There was no significant difference in LCU scores between Army personnel in field (LCU=119.11) and peace (118.26). The LCU scores of Army personnel were significantly more than those for Air Force and Navy personnel probably due to the fact that at present the major burden of operational deployment is on the Army personnel. No significant differences were observed in LCU scores in past year of Air Force personnel and Navy personnel (Table 7).

Norms for LCU scores in life-time

Army personnel in field have significantly higher LCU scores in life-time compared to Army personnel in peace and Navy personnel but not Air Force personnel (Table 8). The reason for this is not very clear. It may be related to the way the samples were collected or it may reflect the fact that life in the Navy is less stressful. It must be mentioned here that the small sample size of Air Force and Navy personnel in the present study precludes a firm conclusion that has to await a larger study.

There was no significant difference in number of life events in past year experienced by service personnel 35 years of age and less compared to those more than 35 years of age (Table 9). This is probably due to the fact that all service personnel are facing similar environment. However, those more than 35 years of age experienced statistically significantly more life-time events as compared to those aged 35 years and less (Table 9). This probably is a reflection of accumulation of life events with age and is in agreement with the findings of Zheng and Lin. Individuals with more than 10 years of service had significantly more life events in their life-time compared to those with service of 10 years or less though there was no statistically significant difference between the two groups in the life events in the past year (Table 9). This finding is probably a reflection of accumulation of life events with age. There was no statistically significant difference in the scores of life events in past year experienced and in life-time by all ranks (Table 9). This indicates that all personnel are facing the same stressors.

Married individuals experienced less life events in past one year than unmarried subjects, but the difference was not statistically significant (Table 9). On the other hand, married subjects experienced significantly more life events in life-time as compared to the unmarried (Table 9). It is seen that marriage and the life events related to spouse and children occur only in married personnel. Hence the fact that the number of life events in life-time is significantly more in married personnel is expected. Life events experienced in past year and life-time by subjects from a rural background was somewhat more than those from the urban background (Table 9). However, the difference was not statistically significant. This again is a reflection of the fact that all personnel are sharing the same environment with similar stressors.

The 13 factors identified in the present study may be used as a stepping-stone for the development of multiple scale inventories of life events. By increasing the number of events quite reliable scales could be developed for each specific content domain. Also, by careful selection of events under each category, one may increase the representativeness and generalizability of the scales. The sampling of events should consider such factors as the life stage of the individual being assessed, fateful versus personal failure events, desirable versus undesirable events, objective versus subjective events. It is likely that separate norms should be used for individuals stratified by age, marital status, and social class. Thus, by carefully increasing the number of events in each homogeneous category multiple scale inventories could be developed.

LIMITATIONS

The sample of the present study included only male personnel. With ladies joining the services in increasing numbers, future studies should include female armed forces personnel also. The Army, Air Force and Naval personnel were not matched for age. Further, only normal personnel were studied and patients with various stress-related physical and psychiatric disorders were not studied. The future direction of the study is to include Paramilitary Force and Police Force personnel of both sexes to evaluate the applicability of the scale to all security force personnel.

CONCLUSION

The AFMC LES includes the unique experiences of service personnel that are not included in any life events scale available in India or the west. It was observed that certain life events are common to service personnel and civilian counterparts. The scale has adequate reliability and validity. There is internal consistency in the scale with the routine items being rated very low. On the AFMC LES, normal service personnel face about 4 life events in past one year and about 13 life events in life-time. Normal service personnel face about 114.68 LCUs in past one year and about 576.46 LCUs of stress in life-time.

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### APPENDIX A

**AFMC LIFE EVENTS SCALE**

| Domicile: Rural/Urban | Name: | Rank: | Age: | Sex: | Education: | Date: | Total service: | Trade: | Marital status: | No. of children: | boys/ girls |
|----------------------|-------|-------|------|------|------------|-------|---------------|-------|----------------|----------------|-------------|

**Directions**

A list of common events which occur in our life is given below. Please read the events carefully and tick those items which have occurred in the past year in the 'Past one year' column. Some items may have occurred sometime in your life-time. Please tick against those items in the 'Life-time' column.

| Item No. | Life event                                      | Past one year | Life-time |
|----------|------------------------------------------------|---------------|-----------|
| 1.       | Getting married                                 |               |           |
| 2.       | Birth of child                                  |               |           |
| 3.       | Shifting house many times in same station       |               |           |
| 4.       | Loss of identity card                           |               |           |
| 5.       | Child getting a job                             |               |           |
| 6.       | Child not getting admission in school           |               |           |
| 7.       | Passing the promotion cadre                     |               |           |
| 8.       | Completing a tenure in operational area         |               |           |
| 9.       | Participation in divisional exercises           |               |           |
| 10.      | Completing a tenure of field posting            |               |           |
| 11.      | Child leaving town for higher education         |               |           |
| 12.      | Wife not conceiving for long duration           |               |           |
| 13.      | Lack of son                                     |               |           |
| 14.      | Wife/husband having illicit relations           |               |           |
| 15.      | Wife starting a job                             |               |           |
| 16.      | Wife leaving the job                            |               |           |
| 17.      | Sex-related problems                            |               |           |
| 18.      | Receiving medal in sports                       |               |           |
| 19.      | Receiving medal for bravery during war          |               |           |
| 20.      | Failing in promotion cadre                      |               |           |
| 21.      | Going on posting                                |               |           |
| 22.      | Winning a lottery                               |               |           |
| 23.      | Sanctioned leave being cancelled                |               |           |
| 24.      | Sanction of casual leave                        |               |           |
| 25.      | Annual leave not being sanctioned               |               |           |
| 26.      | Divorce from wife                               |               |           |
| 27.      | Conflict with family members                    |               |           |
| 28.      | Not receiving salary because of debit           |               |           |
| 29.      | Arranging for a big loan                        |               |           |
| 30.      | Court martial                                   |               |           |
| 31.      | Black ink entry                                 |               |           |
| 32.      | Pay fine                                        |               |           |
| 33.      | Hospitalization due to serious illness          |               |           |
| 34.      | Death of a close relative                       |               |           |
| 35.      | Red ink entry                                   |               |           |
| 36.      | Not getting government accommodation            |               |           |
| 37.      | Going on posting within 48 hours                |               |           |
| 38.      | Spending tenure of high altitude posting        |               |           |
| 39.      | Change of trade                                 |               |           |
| 40.      | Demotion                                        |               |           |
| 41.      | Difficulty with seniors                         |               |           |
| 42.      | Conflict with friends in unit                   |               |           |
| 43.      | Dowry-related problems in family                |               |           |
| 44.      | Marriage of daughter                            |               |           |
| 45.      | Constructing own house                          |               |           |
| 46.      | Fighting against enemies during war             |               |           |
| 47.      | Fighting against terrorists                     |               |           |
| 48.      | Going abroad on duty                            |               |           |
| 49.      | Getting release from service                    |               |           |
| 50.      | Amputation of body parts                        |               |           |
| 51.      | Receiving highest marks in firing               |               |           |
| 52.      | Sanction of annual leave                        |               |           |