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Assessing Stressful Life Events in a Nigerian Context: Adaptation of Holmes and Rahe Stress Scale

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Abstract

Stressful life events have been identified to play significant roles in precipitating psychological disorders. They have consequently become an interesting area of research for clinical psychologists. Thus, appropriate and accurate measurement of stressful life events in particular contexts is very important. This study adapted the Holmes and Rahe Stress Scale for studying stressful life events among Nigerians. Fifty one (51) participants aged 25-68 years (23 women and 28 men) completed a modified version of the Holmes and Rahe Stress Scale and Edna Fox Life Events Questionnaire, which was used to establish the concurrent validity of the former. Results showed that the modified version of the Holmes and Rahe Stress Scale has a concurrent validity estimate of $r = .77$, $df = 49$, $p < .001$ with the Edna Fox Life Events Questionnaire. The Holmes and Rahe Stress Scale also had a test-retest reliability estimate of $r = .79$, $df = 49$, $p < .001$. It was concluded that the Scale is a simple and high performance screening instrument that can be used for studying stressful life events among the Ezza of South-east Nigeria.

Keywords: adaptation, assessment, stressful life events, Nigerian, Holmes and Rahe Stress Scale

Introduction

Individuals interact with the environment in the course of daily living. Understanding how this interaction between humans and their environment affect each other, help to describe and explain age-related behaviour and individual differences. One focus has been to study life events. A life event requires a significant change in the ongoing life pattern of the individual. Life events occur in a variety of domains, such as family, health, and work; and may be age graded, as in school, marriage, and

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retirement; history graded, as marked by war and depression; or non–normative, as in illness and divorce (Chatterjee & Arora, 2005).

The role of stressful life events in the aetiology of various diseases has been a field of research since 1950s. Derived from William B. Cannon's early observations of bodily changes related to emotions and Adolph Meyer's interest in the life chart as a tool in medical diagnosis, the field was first given formal recognition at the 1949 Conference on Life Stress and Bodily Disease sponsored by the Association for Research in Nervous and Mental Diseases. Since then several groups of investigators have adopted this general framework in independent long-term projects (Burrows, 2015). In general, the purpose of life events research is to demonstrate a temporal association between the onset of illness and a recent increase in the number of events that require socially adaptive responses on the part of the individual (Rabkin & Struening, 1976). When investigating stressors, their frequency and intensity are the most important characteristics that are considered (Roohafza et al., 2011).

The impact of stressful life events is presumed to be additive: more events are expected to have greater effect. The assumption here is that such events serve as precipitating factors, influencing the timing but not the type of illness episodes. Not all stressors have the same impact. Some of them have more intense impact on the individual's life, and some have less impact (Sali et al., 2013). The importance of the same stressor can also be different in various societies and cultures. Evaluation of the importance and impact of stressors is a very attractive subject in psychological studies, and many studies have been conducted in this field (Chatterjee & Arora, 2005; Holmes & Rahe, 1967; Roohafza et al., 2011).

Stressful life events can shape individual biographies and affect mental and physical health to a large extent, including premature death as a result of suicide or severe disease. Stress is a process in which environmental demands strain an organism's adaptive capacity resulting in both psychological demands as well as biological changes that could place the organism at risk for illness (Cohen, Kessler & Gordon, 1995). Things that cause psychological stress are called stressors. Stress affects everyone,

young and old, rich and poor. Life is full of stress. Stress is a fact in life that all humans must deal with. It comes in all shapes and sizes; even our thoughts can cause us stress and make the human body more susceptible to illness. That is why the transactional theory of stress suggests that stress responses can serve as new stressors that elicit more intense stress responses. There are three theories or perspectives regarding stress which were assessed by the Holmes and Rahe stress scale: environmental stress, psychological (emotional) stress, and biological stress (Cohen et al., 1995; Fink, 2016). The environmental stress perspective emphasizes assessment of environmental situations or experiences that are objectively related to substantial adaptive demands. The psychological stress perspective emphasizes people's subjective evaluations of their ability to cope with demands presented to them by certain situations and experiences. Finally, the biological stress perspective emphasizes the function of certain physiological systems in the body that are regulated by both psychologically and physically demanding conditions.

Onset of psychiatric as well as physical disorders and accidents has been studied in both retrospective and prospective designs within the life events framework (Rahe; Rubin, Gunderson & Arthur cited in Rabkin & Struening, 1976).

To measure stressors, different scales and tools have been developed in developed countries (Dodge & Martin, 1970; Shukla & Srivastaca, 2016). Recently, the developing and use of stress measurement tools has also been the subject of many studies in developing countries as well (Dohrenwend & Dohrenwend cited in Roohafza, et al., 2011). The main practical problem with transactional theories of stress is that there is no good way of measuring stress as a process. Therefore, all common procedures to assess stress are either dominantly stimulus-based, pointing at critical events and demands, or dominantly response based, pointing at symptoms and feelings experienced. Some procedures measure the frequency or intensity of stressors (stimuli), while others measure distress (response), sometimes called "strain." Response-based measures that are available entail symptoms, emotions, illness, and behavioural and physiological changes. Heart rate, blood pressure, immune functioning, illness

records, work absentee statistics, avoidance behaviours, performance data, and self-reports are common ways to obtain stress response indicators (Butjosa et al., 2017).

Some authors have developed "perceived stress scales" that ask people how "stressed" they feel (Weiner & Freedheim. Using such measures to tap the construct of stress can be misleading because individual changes in these variables occur at later stages of a demanding episode. Thus, stress is confounded with its consequences, one cannot clearly identify whether the subjective feeling constitutes stress itself or rather the outcome of stress.

Stimulus-based instruments were developed more than forty years ago when Hawkins, Davies, and Holmes (1957) introduced their Schedule of Recent Experiences (SRE) which later translated into a more refined and better instrument known as the Social Readjustment Rating Scale (SRRS) by Holmes and Rahe (1967). The SRRS contains 43 events that are listed together with their life-change value, ranging from 100 (death of spouse) to 11 (minor violations of the law). Most investigators working in this field have adopted the original or a modified form of the 43-item checklist developed by Holmes and Rahe (1967). The checklist items are intended to represent fairly common situations arising from family, personal, occupational, and financial events that require or signify change in ongoing adjustment. Scores on the first version, known as the Schedule of Recent Experience (SRE), consisted of the number of items checked. Subsequently, weights were assigned to each item based on ratings by a standardization sample of judges who were asked to rate the life events "as to their relative degree of necessary readjustment, the intensity, and length of time necessary to accommodate to a life event". On the Social Readjustment Rating Scale (SRRS), death of spouse, for example, is weighted at 100 (the highest point on the scale), marriage at 50, change in recreation at 19, vacation at 12. The most recent version of the Scale has 41 items. This and comparable checklists, usually covering the previous 6 to 24 months, are typically used as the measurement of stressful life events (Dohrenwend & Dohrenwend, 1974).

Efforts have been expended in improving the scale by readjustment of weights to items (Dohrenwend & Dohrenwend, 1978; Holmes & Masuda, 1974; Ross & Minowsky, 1979, Sali et al, 2013, Roohafzadegan et al, 2011, Bodeumann, Atkins, Schar, & Poffect, 2010, Spurgeon, Jackson & Beach, 2001). Other modifications have been made concerning the issues of undesirability (Hough, Fairbank, & Garcia, 1976; Mueller, Edward, & Yarvis, 1977; Redfield & Stone, 1979; Ross & Minowsky, 1979; Vinokur & Selzer, 1975), breadth of item content, and weighing of subjective impact (Hochstim, 1970; Horowitz, Schaefer, Hiroto, Wilner, & Levin, 1977; Sarason, Johnson, & Siegel, 1978, Dohrenwend, 2006). The present study investigated the reliability and the validity of the Holmes and Rahe Stress Scale and adapted it to incorporate stressful events hitherto not in the Scale but observed to be critical to a sample of Ezza people in South-eastern Nigeria.

The Ezza form a segment of the Igbo ethnic group which is indigenous to South-eastern Nigeria. The Ezza are found in large areas mostly in Ebonyi State but also inhabit portions of Enugu State and, like the larger Igbo group they belong to, have settled in diverse areas throughout Nigeria. A community of Ezza people was involved in communal strife with their neighbour, Ezillo, in Ebonyi State between 2008 and 2011, resulting to deaths, destruction of property and internal displacement. The authors considered it necessary to determine what constitutes stressful life events for the internally displaced Ezza people in Ebonyi State.

Observation and discussion with the internally displaced persons (IDPs) showed that loss of land, house, and economic tree, which were not part of the Holmes and Rahe Stress Scale, form critical stressful events for the Ezza. The authors therefore included these items in the Scale and revalidated it among samples of internally displaced Ezza people in Ebonyi State.

Method

Participants

Two sets of participants were involved in the study. The first administration involved administration of the Holmes and Rahe Stress Scale twice on 53 participants aged 26-65 years, with the mean age of 41.04 years and a standard deviation of 11.13 years. The sample yielded data which were used for a test-retest reliability estimate. The second administration involved administration of both the Holmes and Rahe Stress Scale and the Edna-Fox Life Events Questionnaire on 51 participants aged 25-68 years, with a mean age of 38.51 years and a standard deviation of 11.52 years. The sample provided data which were used for concurrent validity estimate of the Holmes and Rahe Stress Scale.

The participants were internally displaced people of Ezza-Ezilo crisis of 2008-2011 who were residing with their relations in Umeze-Effium, Ohaukwu Local Government Area of Ebonyi State. In both samples, cluster sampling was used to identify the study population while purposive sampling was used to select the individuals included in the sample. Individuals who were blind, deaf, or dumb were excluded from both samples.

Instruments

The Holmes and Rahe Stress Scale, a 41-item scale on life events was the major instrument used in the study. Items on house, land, and economic tree were added to the scale considering that some of the participants in previous interactions complained of loss in these areas.

Examples of items on the scale include:

Life events   Value   Yr   Total

Death of spouse _____ 100 x   _____ =   _____

Divorce_____73 x   _____ =   _____

Marital separation_____ 65 x _____ = _____

Participants responded by multiplying the events by the number of times they experienced them.

Scoring: Participant's total responses are added to get his or her score and higher scores represent higher stress.

The Edna Fox Life Events Questionnaire, a similar 43 item scale was also administered to estimate the concurrent validity of the Holmes and Rahe Stress Scale. Examples of items on the scale include:

Happened	Rank	Value	Event
_____	1	100	Death of spouse
_____	2	73	Divorce
_____	3	65	Marital separation
_____	4	63	Detention in jail or other institution
_____	5	63	Death of close family member
_____	6	53	Major personal injuries or illness
_____	7	50	Marriage
_____	8	47	Being fired at work

Participants responded by placing a check mark in the column labelled 'Happened' for the events that occurred. Scoring: the event values for items checked are added to get a participant's total score and higher score represents higher stress.

Procedure

The first administration (test1) of Holmes and Rahe Stress Scale was administered on 53 participants, and then re-administered on the same participants after seven days. The participants were contacted through the village head where a cluster was identified. The participants gathered at a primary school in the village where the instrument was administered on them. One of the researchers who administered the instrument on the participants made adequate verbal explanations in addition to

the instructions in the instrument before they responded to the instrument. The maximum of 30 minutes were used to complete the Scale.

The second administration of Holmes and Rahe Stress Scale with Edna Fox Life Events Questionnaire involving 51 participants took place at the same venue following the same process of purposively selecting from the already identified sample. The instrument was translated into Igbo language to enable some of the participants who are illiterates to participate so the instrument has both English and Igbo versions. Verbal explanations were also given before they completed the scales within the maximum of 50 minutes.

Design/Statistic

A cross-sectional design was adopted. The Pearson r, mean and standard deviation were used in data analysis.

Results

Table 1

Holmes and Rahe Stress Scale Correlation (r) on First and Second Administration and with Edna Fox Life Events Questionnaire

	Age[n1]	Holmes and Rahe Scale_retest[n1]	Edna Fox Questionnaire[n2]
Holmes and Rahe Scale_test[n1]	.20[#]	.79[*]	.77[*]

[n1]: $n = 53$;   [n2]: $n = 51$;   [*]: $P < .001$;   [#]: $P = .16$

Table 1 shows that the test-retest reliability estimate of the Holmes and Rahe Stress Scale is $r = .79$, $df = 51$, $P < .001$, which is considered a good reliability estimate for the instrument. The relationship between the scores obtained with the Holmes and Rahe Stress Scale and scores on the Edna Fox Life Events Questionnaire was r = .77, $df = 49$, $P < .001$. This was considered a good concurrent validity estimate for the Holmes and Rahe Stress Scale. Age was not a significant factor in correlation between age and life events in the Holmes and Rahe Stress Scale scores for test2: $r = .20$, $df = 51$, $P = .16$ ($> .05$).

Table 2

Mean Statistics per Item on the Holmes and Rahe Scale

Item	N	Minimum	Maximum	Mean	Std. Deviation
1. Death of spouse	53	0	200	20.75	45.40
2. Divorce	53	0	146	2.75	20.06
3. Marital separation	53	0	130	2.45	17.86
4. Jail term	53	0	126	2.38	17.31
5. Death of close family member	53	0	378	121.25	104.73
6. Major personal injury or illness	53	0	159	37.00	41.03
7. Marriage	53	0	150	44.34	34.89
8. Fired from work	53	0	94	2.66	14.32
9. Marital reconciliation	53	0	90	19.53	35.86
10. Retirement	53	0	90	3.40	14.90
11. Major change in health of family member	53	0	132	51.47	44.62
12. Pregnancy	53	0	200	30.94	54.15
13. Sex difficulty	53	0	156	16.92	40.12
14. Gain of new family member	53	0	195	43.42	57.57
15. Major business readjustment	53	0	117	25.02	37.54
16. Major change in financial state	53	0	152	55.92	41.23
17. Death of close friend	53	0	296	87.47	76.94
18. Change to different line of work	53	0	72	6.11	16.91
19. Major change in number of argument with spouse	53	0	105	5.94	21.42
20. Mortgage over ₦100, 000	53	0	93	2.92	13.95
21. Fore closure of mortgage or loan	53	0	60	2.26	9.93
22. Major change in responsibilities at work	53	0	58	13.68	20.98
23. Son or daughter living home	53	0	87	13.13	25.16
24. Trouble with in-laws	53	0	58	13.13	20.95
25. Outstanding personal achievement	53	0	84	12.68	23.02
26. Spouse begins or stops work	53	0	52	7.85	14.94
27. Begin or end school	53	0	52	13.25	18.82
28. Major change in living conditions	53	0	50	27.83	21.18
29. Revision of personal habits	53	0	96	5.43	16.74
30. Trouble with boss	53	0	46	4.34	11.98
31. Major change in work hours or conditions	53	0	80	14.34	22.66
32. Change in residence or school	53	0	60	25.28	16.24
33. Major change in recreation	53	0	57	13.98	15.88
34. Major change in church activities	53	0	57	18.28	17.06
35. Major change in social activities	53	0	72	16.64	16.12
36. Mortgage or loan less than ₦10, 000	53	0	68	5.77	14.89
37. Major change in sleeping habits	53	0	48	11.77	14.43
38. Major change in number of family get-togethers	53	0	45	13.30	12.71
39. Major change in eating habits	53	0	45	0.85	6.18
40. Vacation, Christmas	53	0	52	15.21	13.18
41. Minor violations of the law	53	0	33	1.87	6.38
42. Loss of house	53	0	140	71.68	21.23
43. Loss of land	53	0	210	63.57	32.47
44. Loss of economic trees	53	0	250	72.98	43.05
total Stress Score	53	246.00	2101.00	1068.77	484.23

Table 2 shows that death of close family member had the highest mean score (Mean = 121.25), followed by death of a close friend (Mean = 87.47). The mean score of the added items were higher than many of the original items in the scale, showing how critical they were to the participants. For instance, loss of economic tree had a mean score of 72.98, which was the third highest mean.

Discussion

This study was conducted in order to adapt the Holmes and Rahe 1967 stress scale for studying stressful events in Nigeria. The result of the study displayed good reliability and validity, which supported the use of the scale for studying stressful life events among the Ezza people of Nigeria. Generally, the modified Holmes and Rahe Stress Scale first administration showed high test-retest reliability. Out of the 44 items for which the mean scores were calculated, 1 item recorded a mean score of 121.25, 3 items recorded mean scores between 71.68 and 87.47, 3 item recorded mean scores 51.47 and 63.57, 4 items recorded mean scores between 30.94 and 44.34, 4 items recorded mean scores between 20.75 and 27.83, 14 items recorded mean scores between 11.77 and 19.53, 14 items recorded mean scores between 1.87 and 7.85, and 1 item recorded a mean score of 0.85. Though this could mean very high to very low intensities of the stressful life events, it described the fact that on the average the participants responded to each of the 44 items on the modified Holmes and Rahe Stress Scale. That also indicated that some of the items with very low mean scores are not perceived as stressful by most Nigerians. For instance, item 39-major change in eating habit with mean score of .85 and item 41-minor violations of the law with a mean score of 1.87 indicated that only few Nigerians would perceive them as stressful. However, despite the fact that many items on the scale had low mean scores, the total item correlation showed the Pearson r correlation of .79, df = 51, $p < .001$ which is a very high reliability.

The second administration showed a high concurrent validity of the modified Holmes and Rahe Stress Scale administered with the Edna Fox Life Events Questionnaire. Out of the 44 items on the scale for which mean scores were calculated as well, 1 item recorded a mean score of 156.49, 5

items recorded mean scores between 71.63 and 88.31, 2 items recorded 65.47 and 67.49 respectively, 4 items recorded between 53.06 and 55.80, 1 item recorded 42.77, 6 items recorded between 30.59 and 39.00, 10 items recorded between 20.71 and 26.16, 14 items recorded between 10.14 and 19.00, and 1 item recorded 9.33. This would as well mean very high to very low intensities of stressful life events but it better described the fact that participants responded to each of the items on the two scales thus indicating their relevance in the context. Item 36 (mortgage or loan less than ₦10, 000 with the least mean score of 9.33 indicated that few Nigerians perceive such as stressful. However, that does not mean that it is not a good measure of stress, it is rather a matter of individual differences. Furthermore, irrespective of the fact that many items on the scales recorded low mean scores, the Pearson r item correlation of .77, df = 49, $p < .001$ was very high. Comparing the mean scores in Table 2, it can be seen that death of close family member (item 5) recorded the highest mean score. This is not a deviation from Holmes and Rahe (1967) rating of death of spouse as the most stressful life event, the fact is that this modified version requires the respondent to indicate the number of times such stressful life events occurred and as such it is possible for one to have recorded death of numerous close family members against few spouses as the case may be which inflated the mean score on this item. Item 39 (major change in eating habit) recorded the lowest mean score on reliability table of means where as item 36-mortgage or loan less than ₦10,000 recorded the lowest mean score on the validity table of means. The variation here may be attributed to the fact that two participants dropped during the second administration (validity estimate) which might have influenced the distribution. Moreover, item 41 (minor violations of the law) was next to the lowest on the two tables of means where as item 17 (death of close friend) was as well next to the highest mean score on the two tables of means also. The three items on loss of house, loss of land, and loss of economic trees followed the same pattern, loss of economic trees recorded highest mean scores followed by loss of house and loss of land recorded lowest on both tables of means.

Conclusion

The result obtained show that the Holmes and Rahe Stress Scale is relevant for assessing stressful life events in the Nigerian context, especially among the Ezza, since it yielded high reliability and validity results. This implies that its use in Nigeria will be a guide to a better understanding of Nigerians' notion and perception of stress. It can thereby be effectively utilized in establishing true stress ill-health connections. It is therefore recommended for assessing stressful life events and their intensities among the Ezza people of Nigeria.

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