ANALYSIS

56(296), August, 2020

ISSN 2278–5469 EISSN 2278–5450

DISCOVERY

Development of a scale for measuring learning stress in lower primary schools in north central Nigeria

Bamidele David ODERINDE[1], **Babatunde Adeniyi ADEYEMI**[2], **Bamidele Abiodun FALEYE**[3]

[1]Department of Early Childhood Education, Kwara State College of Education, Oro, Nigeria; Email: odedhele@yahoo.com
[2]Professor, Institute of Education, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria; Email: adeyemibabs2003@yahoo.com
[3]Professor, Department of Educational Foundations and Counselling, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria; Email: bamidelefaleye@yahoo.com

Article History
Received: 27 May 2020
Reviewed: 28/May/2020 *to* 05/July/2020
Accepted: 08 July 2020
Prepared: 14 July 2020
Published: August 2020

Citation
Bamidele David ODERINDE, Babatunde Adeniyi ADEYEMI, Bamidele Abiodun FALEYE. Development of a scale for measuring learning stress in lower primary schools in north central Nigeria. *Discovery*, 2020, 56(296), 405-416

ABSTRACT

This study developed a scale for measuring learning stress in lower primary schools in North Central, Nigeria. It identified the dimensions of learning stress in lower primary schools and as well determined the validity and reliability of the scale. It examined the relationship between learning stress in public and private schools, and also established the relationship between age and parental socio-economic status and the level of learning stress as measured by the scale. These are with a view to developing a reliable and valid scale for measuring children learning stress in lower primary schools. The study adopted descriptive survey design. The population for the study comprised all teachers in the lower primary schools in North Central Nigeria. The sample comprised 800

teachers selected using multi-stage sampling procedures. Four states were selected out of the six states in the North Central Nigeria, while two out of the three senatorial districts were selected in each state using simple random sampling technique. Also, simple random sampling technique was used to select two Local Government Areas (LGAs) in each senatorial district as well as five primary schools from each of the LGAs. Finally, purposive sampling technique was used to select the head teachers of the sampled schools and nine (9) classroom teachers from each school. An instrument titled Children Learning Stress Rating Scale (CLSRS) was used to collect data for the study. CLSRS consisted of an initial 84 items which were later reduced to 82 items after review, moderation and being subjected to the psychometric procedures of scale means, item-total correlation and Cronbach's Alpha- if-item deleted. The final scale items were then subjected to principal component analysis and other psychometric tests including scree pilot test and eigenvalues greater-than-one criteria. Internal consistency reliability investigation was also conducted while factor loading, average variance extracted and composite reliability were adopted in determining the convergent validity of the CLSRS. Data collected were analysed using frequency and percentage, factor analysis and chi-square statistics. The results showed that the Teacher ($\overline{X}$ =3.12, SD= 0.64), Home ($\overline{X}$ =2.93, SD= 0.46), Peers ($\overline{X}$ =2.79, SD= 0.67), Teaching/Learning ($\overline{X}$ =2.12, SD= 0.45) and Co-curricular factors ($\overline{X}$ =2.06, SD= 0.65) are the five dimensions of learning stress in lower primary schools. The result further showed that CLSRS had convergent validity (AVE ranging from 0.506 to 0.583, and Composite Reliability (CR) ranging from 0.815 to 0.925). The internal consistency reliability of the scale was 0.912 (Guttman) while Cronbach's Alpha was 0.907, and Spearman Split-half was 0.704 ($p< 0.05$). Results also showed that there was no significant relationship between learning stress in public and private primary schools ($\chi^2= 0.171$, df = 2, $p >.05$). The result further showed that a child's age had significant relationship with the level of learning stress ($\chi^2= 12.723$, df= 4, $p<.05$) while parental socio-economic status did not ($\chi^2= 4.863$, df= 4, $p>.05$).The study concluded that the Children Learning Stress Rating Scale developed in this study is capable of providing adequate and reliable information on children's experience of learning stress in lower primary schools in North Central Nigeria.

Keywords: Scale Development, Learning Stress, Lower Primary Schools, Northern Nigeria

1. INTRODUCTION

A child is a young human being, a minor, whose age ranges between the periods of birth to 18. The children are accorded with a wide range of right in the society today. One of such rights of the child is the right to education. Each child is entitled to a basic level of education which has to be passed unto the child preferably through play and the active participation of the child. In the performance of learning activities, the child uses strength and energy but there is an extent to which a child's strength and energy can go, beyond this limits, he experiences stress. According to Scott (2018), a level of stress is good for the development and learning of a child but beyond this limit, the health and development of a child become affected negatively. How do the teachers, the caregivers and parents determine the level of stress that needs to be maintained in the learning process? Children engage in series of activities but they have limited strength. There are casual observations that the extent of activities which they engage in to avoid being greatly stressed.

Observations also exist about the non-availability of indigenous tool for measuring stress among primary school children in Nigeria. When a child starts schooling, he or she becomes involved in series of domestic and learning activities, some of which may exhaust his or her little strength and abilities. Among the activities which the child daily engages in at home in preparation for school include from fetching water, washing, bathing, cleaning the shoes, doing home assignments given to them at school and getting to school on time. All these involve some efforts. On getting to school, there are series of activities to be engaged in. these include, lining up on the assembly ground, singing the national anthem, taking turns and so forth. All these engage the child's physically strength. Besides, the child's mental skill is engaged in learning, doing assignments, tests and terminal examinations. The parents, caregivers, and even the peer groups of a child have certain expectations from them. Sometimes, such expectations are in contrast with the parents or teacher's role and expectations, as a result, stressful situations start to present itself to the school child.

The term, stress, as perceived by Akrani (2011), refers to the various mental and physical pressures which are felt by children. Stress is experienced when a person is confronted with a physical or mental situation which exceeds his or her ability. As a result of their engagement in series of activities, like the adults, children are liable to experience stress, especially at a point beyond exhaustion of their energy, when their physical or mental challenges exceed the individual ability to cope. Considering this definition, it is obvious that children would face a situation which would likely expose them to stress not only at home but also at school.

Stress can be observed in children through certain signs. Such signs according to Goldberg (2016), include headache, fatigue, difficulty in sleeping, difficulty in concentrating, stomach upset, and irritation. However, when stress is not addressed at a short term level, it becomes a long term stress and has more severe signs such as: depression, high blood pressure, abnormal heart beat, hardening of the arteries, heart diseases, heart attack, heartburn, ulcer, irritable bowel syndrome, upset stomach including cramps, diarrhea, weight gain or loss, changes in sex drive, fertility problems, flare up of asthma, arthritis or even skin problems such as eczema or psoriasis (Goldberg, 2016).

One of the reasons for studying and developing a scale for measuring stress is that it has a huge economic impact on people and national development McGill (2012) in her study on work-related stress for the health and safety of executive, found that as much as 10 million work days were lost due to the stress experienced by people in the United Kingdom between years 2009-2010, in the active working population. He opined that measuring enables people to realise the impact of stress on their lifestyle and so make necessary adjustment. In the same vein, Labour Market Reform (2012) believed that it is important to identify a person's level of stress since doing so would help the person to take steps to address it as recommended by experts.

Scales are important tools in determining a behaviour, a feeling, or an action that may not be easy to capture in a single variable item. Besides, the need to develop new scale arises as a result of academic and science advances which bring forth novel research questions. The development of scale is important because of the enormity of the large problems people face in the society. Such problems are numerous and multidimensional such as poverty, healthy environment and gender issues to mention a few. The measurements of these require the construction of scales. Scales are important in the assessment of constructs and variables in not only in behaviour medicine but also in social and biomedical science. Scale development is important in that it provides tools for self-report variables such as mood, daily disability, different types of symptoms, adherence to diet and so forth.

Statement of the Problem

Stress refers to a state of psychological and physiological imbalance that occurs as a result of situational demand and the individual person's ability and motivation to meet the needs (Akrani, 2011). Whena person experiences stress, his body reacts by releasing chemicals into the blood, the chemicals have the tendency to give the person more energy and strength. This can be a good thing when the person experiences a situation wherein he needs more physical strength and energy to get out of the stressful situation especially when he or she is in danger and may need to run, jump, climb or defend self. However, stress can have a negative impact on the human person if the stress he experiences is in response to something emotional and as a result, there is no outlet for using the additional energy and strength released into the body system (Mountain State for Independent Living, 2013).

Learning can be viewed as the activities engage in, or the process of acquiring new, knowledge, attitudes, skills and mode of behaviour that are considered worthwhile in a society. In this context, we refer to the learning that takes place in a school setting. Former school learning has become an important activity to all children, the world over. Indeed, international organisations agreed that all the children need to experience a basic level of free and compulsory education because of the numerous benefits of education. A common practice in the teaching learning situation is to engage the learners in series of meaningful learning activities since active participation is believed to enhance learning as well as memory; hence, better performance in tests and examinations (Kelly, 2018). However, there is a level of stress in the teaching learning situation which is useful motivating peak performances in learners beyond this level, continuous stress would do harm to/ learning (Mountain State for Independent Living, 2013).

Constella and Mcclatchey (2011) observed that it is good to measure the stress level being experienced by an individual in school or at work and that a person does not necessarily need to visit a doctor before his or her stress level can be measured. If there is a level of stress that supports learning, then, the major stakeholders in the teaching-learning setting-the teachers, do not only need to be acquainted with this fact, but also, must be able to determine that level of stress so that they do not expose the learners to a greater level of stress which can otherwise inhibit learning. The challenge of determining what level of stress should go along with learning, using indigenous tool, so that learning goes on smoothly and with a minimum level of stress has resulted in the need to develop an appropriate tool for measuring stress in the teaching learning situation. This research work hopes to proffer solutions to the issues by developing a scale for measuring learning stress in children. This gap is what this study intends to fill.

Purpose of the study

The broad objective of this study is to develop a scale for measuring learning stress in lower primary schools in North Central Nigeria.

The specific objectives of the study are to;

i. Identify the dimensions of learning stress in lower primary school in North Central Nigeria;
ii. Develop a scale for measuring learning stress in lower primary school children;

iii. Determine the validity and reliability of the scale;
iv. Determine the extent of reliability of the scale;
v. Examine the relationship between learning stress in public and private primary schools; and
vi. Examine the relationship between the demographic characteristics (age and parental socio-economic status) and their level of learning stress as measured by the scale.

Research Questions

The following research questions were raised to guide the study.

a What are the dimensions of learning stress experienced by Children in the lower primary school,?
b. What items would likely measure learning stress in Children?
c. What is the validity of the scale?
d What is the reliability of the scale?
e. Examine the relationship between learning stress in public and private primary schools; and
f. Examine the relationship between the demographic characteristics of age and parental socio-economic status and the level of learning stress experienced by children as measured by the scale?

2. METHODOLOGY

The design adopted for the study is the descriptive survey. The survey research design was chosen because it allows a researcher to study a population, collect, select representative samples, analyze data and make predictions based on the response, because it is accepted as a representative of the entire population. The population of the study comprised head teachers and classroom teachers who teach primary 1-3 classes in schools in North Central Nigeria. It includes the teachers in both public and private schools.

The sample of the study comprised 800 teachers who were selected from 80 lower primary schools in four states using the multistage sampling procedure. Four states were randomly selected from six states and the Federal Capital Territory comprising the North Central Nigeria, using simple random sampling technique. In each of the states selected, two out of three Senatorial Districts, two Local Government Areas (LGAs) were selected making a total of 16 Local Government Areas using simple random sampling technique making a total of 80 Primary Schools in all. One head teacher and nine class teachers were purposely selected in each making a total of 80 head teachers and 720 classroom teachers totaling 800 respondents.

The research instrument employed in this study is: Children Learning Stress Scale (CLSS). The items generated were presented to experts in the field of Early Childhood Development, Tests, and Measurement as well as experts in Psychology in order to ensure adequate coverage as well as appropriateness of the items to ensure content validity. Afterwards the items obtained were adopted into the Likert format with four options of SA=Strongly Agree, A=Agree, D=Disagree and SD=Strongly Disagree.

The Children Learning Stress Scale items generated were trial-tested. The items generated were administered on 40 children to ensure that finishing touches were made on the scale. Such include the need to re-arrange some items, grammatical appropriateness and to remove ambiguity in the items. After this, the items were represented to experts in Statistics and English language for their inputs. The final production of the items was then done.

The Children's Stress Scale (CLSRS) was administered on Primary School teachers in the selected schools with the help of the research assistants. Meanwhile the researcher had educated the assistants on how the exercise would be performed. They retrieved the instrument from each school after administering them. Data obtained was analyzed on the basis of research questions. Research question number one was answered through finding the mean and standard deviation of the data collected. To answer Research Question, 2, the measurement scale was developed using psychometric analysis such as Inter-item correlation, Cronbach's Alpha and the Goverts and Gregoire item reduction criteria and the scree plot was constructed. To answer research question 3, the construct validity was determined through the use of Kaiser greater-than-one criterion.

Also, the Exploratory Factor Analysis (EFA) was conducted on the items of each of the factors so as to determine the factor structure of the scale using the eigenvalues greater than one. To answer research question 4, the reliability of the learning stress scale was determined through the use of the Cronbach, Alpha, Spearman Brown Split Half, Gultmann Split Half Coefficient, Common Inter-item Correlation and Item variance reliability procedures. To answer research question 5, the standard deviation and the correlation coefficient were determined, this was also applied to answer research question 6.

3. RESULTS

Research Question 1: What are the dimensions of learning stress in lower primary schools in North Central Nigeria?

To answer research question 1, the 84 items on the first version of Children Learning Stress Rating Scale (CLSRS) that were used in the pilot study were moderated and edited based on expert judgment for content relevance were reduced to 82 items. However, in order to determine the dimensions of the learning stress in lower primary school in North Central Nigeria, responses to the corresponding items were then summed for each dimension and divided by their constituting number of items. This was done to put each factor on equal pedestal as each dimension has unequal number of items. This outcome was then subjected to descriptive analysis of mean and standard deviation. The result is presented in Table 1.

Table 1: Dimensions of the Learning Stress in Lower Primary Schools in North Central Nigeria

Dimensions	Mean	SD	No of Items
Teaching/Learning Factor	2.12	.45	36
Teachers Factor	3.12	.64	6
Home Factor	2.93	.46	28
Co-curricular Factor	2.06	.65	8
Peer Factor	2.79	.67	4
Total			**82**

Table 1 shows the dimensions of the learning stress in lower primary schools in North Central Nigeria. It is shown that stress related to teachers' factors had the highest mean value of 3.12 with SD of 0.64. This is closely followed by stress related to home factors with the mean value of 2.93 and SD of 0.46. Peer factors related stress had a mean value of 2.79 and SD of 0.67 while stress related to teaching/learning and co-curricular activities respectively had mean values of 2.12 and 2.06. The respective SD values are 0.45 and 0.65.

Research Question 2: What items would be adequately measure learning stress inlower primary school children?

In order to answer this research question, the 82 items on pilot-tested version of the Children Learning Stress Rating Scale (CLSRS) were then subjected to psychometric analyses. These items of the second version were then grouped into five subscales as presented in Table 2.

Table 2: The Children Learning Stress Rating Scale (CLSRS) second version subscale and corresponding items

SN	SUBSCALE	ITEMS
1	Teaching/Learning Factor	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
2	Teachers Factor	37, 38, 39, 40, 41, 42
3	Home Factor	43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70
4	Co-curricular Factor	71, 72, 73, 74, 75, 76, 77, 78
5	Peer Factor	79, 80, 81,

The item means of the 83 items was 2.529 while the inter-item correlation was 0.120 with a Cronbach's Alpha coefficient of 0.917. In the second stage of reduction process, the Goverts and Gregoire (2008) item reduction criteria was adopted. Goverts and Gregoire (2008) suggested that any item affected by the three or any two of the reduction criteria should be expunged. These reduction criteria are:

1. Item with Low Item Mean (LIM) 1.988 or less
2. Item with Low Item total Correlation (LITC) of 0.150 and below
3. Item having a High Cronbach's Alpha if Item Deleted (HCAID) of 0.897 or more.

Consequently, all items that are affected with at least two of these three criteria were removed. This led to the removal of 23 items from the 82-item version of the CLSRS. The affected items were presented in Table 3.

Table 3 shows the that 23 items (1, 10, 11, 12, 13, 14, 16, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 50, 77 and 78) were affected by the reduction criteria and thus were deleted from the CLSRS. The remaining items on CLSRS after the removal of the affected items were grouped into five dimensions as presented in Table 4.

Table 4: The CLSRS Third version subscale and corresponding items

SN	SUBSCALE	ITEMS
1	Teaching/Learning Factor	2, 3, 4, 5, 6, 7, 8, 9, 15, 17, 18, 22, 31, 34, 35, 36
2	Teachers Factor	37, 38, 39, 40, 41, 42
		43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60,
3	Home Factor	61, 62, 63, 64, 65, 66, 67, 68, 69, 70
4	Co-curricular Factor	71, 72, 73, 74, 75, 76
5	Peer Factor	79, 80, 81, 82

Table 4 showed that the 'Teaching/Learning Factor' subscale has 16 items, Teachers Factor has 6 items, Home Factor has 27 items, Co-curricular Factor has 6 items while peer factor has 4 items. Finally, the 59 items that were retained on the CLSRS as presented in Table 5 were considered as items adequate for measuring learning stress in lower primary school in North Central Nigeria.

Research Question 3: What is the validity of the Children Learning Stress Rating Scale (CLSRS)?

In order to answer this research question, the construct and convergent validity of CLSRS was determined. The construct validity of CLSRS was determined using two methods, namely: Kaiser or eigenvalues greater-than-one criterion (K1), Kaiser, 1970). Only the factors with an eigenvalue of 1.0 and above are to be retained for further analysis. The eigenvalue of a factor represents the amount of the total variance that can be explained by that factor (Pallant, 2011). Also, Cattell's (1966) scree test was adopted. Catell's scree test involves plotting of the eigenvalues of the factors and inspecting the plot to find a point at which the shape of the curve changes direction and becomes horizontal. As recommended by Catell, all factors above the elbow, or break in the plot are to be retained. To determine this, an Exploratory Factor Analysis (EFA) was employed via the principal components factor analytic model. Also, an oblique rotation was adopted since the CLSRS dimensions were hypothesized to be correlated. The results presented in Tables 6 and 7 show the eigenvalues greater-than one criterion and standardized item loadings of CLSRS respectively.
As shown in Table 6, five factors of Children Learning Stress Rating Scale (CLSRS) emerged and accounted for 65.2% of the total scale variance on CLSRS.

Determination of the Convergent Validity of the CLSRS

Convergent validity is an indication of the extent to which each item of a construct shares a high proportion of variance and converges in comparison to indicators measuring other construct. The Convergent validity of the items on CLSRS was determined using three criteria: (1) Factor loading. As proposed by Hair, Money, Samouel, and Page (2007), the factor loading for the constituting items should be greater than 0.50. (2) The composite reliability for each construct should exceed 0.70, and (3) the Average variance extracted (AVE) for each constructs should not be less than the recommended cut-off 0.50 (Fornell & Larker, 1981). AVE is equivalent to the communality of a construct and it is measured as the sum of square loadings of indicators associated with a construct divided by the number of indicators (i.e. numbers of items measuring each construct). Therefore, the convergent validity statistics of items on CLSRS is presented in Table 8.

Research Question 4: What is the reliability of the Children Learning Stress Rating Scale (CLSRS)?

The reliability statistics of items on CLSRS is presented in Tables 9 and 10.

Table 9: Internal Consistency Estimates of the CLSRS

Scale Items	Guttman Coefficient	Cronbach Alpha	Spearman Brown Split Half	Guttman Split Half Coefficient	Common inter-item correlation	Item Variances
N=82	0.906	0.917	0.511	0.511	0.120	0.881
N=59	0.912	0.907	0.704	0.704	0.145	0.901

As shown in Table 9, the reliability coefficient of the final 59 items on CLSRS is higher than the initial 82-items for Guttman coefficient but lower for Cronbach Alpha value. It is however higher in Spearman Brown Split Half as well as for Guttman Split Half.

The inter-items correlation value for the 59 items also revealed a higher value than the initial 82 items and likewise for the item variances values for the two versions. The obtained reliability value for the 59 items on CLSRS is considered very reliable in terms of the internal consistency of constituting items.

Table 10: Children Learning Stress Rating Scale Sub-scales' Reliability

Sub-Scale	Cronbach Alpha	No of Items
Home Factor	0.917	22
Teaching/Learning Factor	0.820	12
Teachers Factor	0.791	8
Co-curricular Factor	0.821	8
Peer Factor	0.824	9

The result as shown in Table 10 is an indication that CLSRS sub-factors estimated reliability is very high. This further shows that the items were internally consistent in measuring the construct and as a result, can be used to measure children learning stress.

Research Question 5: What is the relationship between learning stress in public and private primary schools?

In order to answer this research questions, the responses to 59 items on CLSRS were scored and the obtained scores were used to categorize the levels of stress into low, moderate and high. The minimum and maximum scores obtainable from the responses respectively were 59 and 236. However, the mean and SD values obtained were 163.43 and 22.11. In categorizing the scores, the scores of the minimum obtainable score (i.e. 59) to one standard deviation below the mean score (59 - 141) were categorized as low level of learning stress, score of 142 to one standard deviation above the mean score (142-186) were categorized as moderate level while scores of 187 to 236 were categorized as high level of learning stress. These outcomes were then cross tabulated with the school type variable. The result is presented in Table 11.

Table 11: Relationship between Level of Learning Stress in Public and Private Primary Schools

School Type	Level of Learning Stress			Total	χ^2	df	p
	Low	Moderate	High				
Public	56(7.0%)	382(47.8%)	62(7.8%)	500(62.5%)			
Private	32(4.0%)	233(29.1%)	35(4.4%)	300(37.5%)	.171	2	.918
Total	88(11.0%)	615(76.9%)	97(12.1%)	800(100.0%)			

The results on table 11 shows that there is no significant relationship between learning stress in public and private primary schools (χ^2= 0.171, df= 2, p>.05).

Research Question 6: What is the relationship between age and parental socio-economic status and the level of learning stress as measured by the scale?

In order to answer this research question, the level of learning stress was cross tabulated with the corresponding data on pupils' age and the socio-economic status of their parents. The result is presented in Table 12.

Table 12: Relationship between Age and Parental Socio-economic Status and Level of Learning Stress

	Age	Level of Learning Stress			Total	χ^2	df	p
		Low	Moderate	High				
Child's Age	<7yrs	10(1.3%)	97(12.1%)	8(1.0%)	115(14.4%)			
	7-9yrs	64(8.0%)	446(55.8%)	85(10.6%)	595(74.4%)	12.723	4	0.013
	>9yrs	14(1.8%)	72(9.0%)	4(0.5%)	90(11.3%)			p < .05
	Total	88(11.0%)	615(76.9%)	97(12.1%)	800(100.0%)			

Parental Socio-	Low	17(2.1%)	89(11.1%)	13(1.6%)	119(14.9%)			
Economic Status	Average	54(6.8%)	438(54.8%)	73(9.1%)	565(70.6%)	4.863	4	.302
	High	17(2.1%)	88(11.0%)	11(1.4%)	116(14.5%)			p > .05
	Total	88(11.0%)	615(76.9%)	97(12.1%)	800(100.0%)			

Table 12, showed that child's age has a significant relationship with the level of learning stress (χ^2= 12.723, df= 4, p<.05), parental socio-economic status does not (χ^2= 4.863, df= 4, p>.05). In other words, there is a significant relationship between child's age and the level of learning stress while there is no significant relationship between parental socio-economic status and the level of learning stress.

4. DISCUSSION OF FINDINGS

One of the findings of the study revealed five distinguishable dimensions of learning stress in lower primary schools in North Central Nigeria. These dimensions include learning stress related to teacher factors, home factors, peer factors teaching/learning and co-curricular factors. In other words, the sources of learning stress among the lower primary school pupils in the North Central Nigeria are attributable to these identified areas. This finding is consistent with what Kaplan (2017) and the Brightmont Academy (2019) considered as the sources of learning stress in pupils. The finding further corroborates the findings of Middle brooks and Audage (2008) that attributed the causes of stress to both internal and external influence.

Children are known to be products of two environments and the learning stress experience they acquire is traceable to their experiences in the two environments. The home plays significant roles in a child's development and there are certain developmental tasks expected of any child at each developmental stage in life. Likewise, the kind of interaction existing at the home front of a child will go a long way in influencing their stress experience since learning activities do take place at homes just like in the school environment. Another important environment that shapes children's lives is the school. Children's experiences in school can be discussed under three main relationships or interactions. Children have to cope with the teachers, teaching/learning tasks and activities and as well conform to their peer expectations. These three identified aspects of school interactions are inseparable and each has its challenges. As a result, children's experience and learning results from their interactions with the teachers, teaching/learning tasks and peers. There is a possibility for children to experience stress in the course of his or her interactions with these interwoven interrelated factors.

Another findings of this study revealed that 59 items out of the initial 82 items of CLSRS were found adequate in measuring learning stress in the lower primary school in North Central Nigeria. The development of items on CLSRS started with generated 84 items; however, after the items were pilot-tested on 40 teachers, the items were reduced to 82 items. These 82 items were then reduced to 59 items based on the reduction criteria suggested by Govaerts and Gregoire (2008). These reduction criteria had also been adopted by Diyan and Adediwura (2016) in developing a Rating Scale for Measuring Teacher Classroom Autonomy in Secondary Schools in Southwestern Nigeria. The 59 items on CLSRS were further subjected to an Exploratory Factor Analysis (EFA) using Principal Component approach. With an eigenvalue greater than one, five (5) factors emanated from 59 items on CLSRS which is confirmed with the outcome of scree plot recommended by Cattell's (1966). These five factors or dimensions are Teaching/Learning factors subscale with 16 items, Teacher factors with 6 items, Home factors with 27 items, Co-curricular factors with 6 items and Peer factors with 4 items.

The findings of this study further revealed that the 59 items on CLSRS were valid measures of children learning stress. Considering the important criteria for meeting validity of a measuring instrument, the findings revealed that 59 items on CLSRS were valid. Five factors emerged from the 59 items and these factors accounted for 65.2% of the total scale variance on CLSRS. The standardized factor loading for each items on CLSRS was statistically significant at p <.05. Also, only the factors with an eigenvalue of 1.0 and above as recommended by Kaiser (1970) as well as factors above the elbow, or break in the plot according to Cattell's (1966) scree test criterion were retained for further analysis. Furthermore, the 59 items on CLSRS revealed adequate convergent validity as none of the items on each factor of CLSRS has factor loading less than 0.50 as well as average variance extracted. In addition, composite reliability coefficient for each factor was found to be greater than 0.70 cut off value as proposed by Hair, Money, Samouel, and Page (2007).

The findings of this study also revealed that the 59 items on CLSRS are adequately reliable in terms of internal consistency of each item in measuring the subscales as well as in measuring the whole construct. The overall reliability coefficient of the 59 items on CLSRS was found to be good and high enough for the scale to be considered adequate in measuring learning stress (Guttman coefficient= 0.912, Cronbach's Alpha coefficient = 0.907, Spearman Brown Split Half coefficient = 0.704, and Guttman Split Half

coefficient of 0.704). The internal consistency of the items on CLSRS was further buttressed by the Cronbach Alpha coefficient value of each factor on CLSRS (Home factor = 0.917, Teaching/Learning factor = 0.820, Teacher Factor = 0.791, Co-curricular factor = 0.821, and peer factor = 0824). The reliability coefficient values of items on CLSRS are in consistent with Rossiter's (2002) suggestions that construct reliability coefficients should all exceed the 0.70 lower limits.

Furthermore, the findings of this study revealed that there was no significant relationship between learning stress in public and private primary schools. In other words, it cannot be empirically established with the outcome of this study that there is a tendency for pupils in public schools to experience higher stress than their counterparts in private schools or vice versa. The findings however contradict the findings of Valizadeh, Farnam, and Farshi (2012) who reported that there was a significant correlation between school type and stress symptoms such as worry, feeling weird and weakness. Nevertheless, the difference in this outcome might be that while the present study treats stress as a construct, Valizadeh, Farnam, and Farshi 's (2012) study examined the symptoms of stress in children.

Finally, the findings of the study also revealed that while there was a significant relationship between a child's age and the level of learning stress, no significant relationship was found between parental socio-economic status and the level of learning stress. In other words, the outcome of this study suggests that age might be a determinant factor in the level of stress experienced by school children. This outcome can be justified in the sense that individual resistance to stressor as well as stress coping ability increase with an increase in age. Therefore, a younger child does have less ability to either resist stressors or cope with stress when compared with older children. This finding is supported by that of Valizadeh, Farnam and Farshi (2012) who reported that there was a significant correlation between age of the child and certain stress symptoms such as madness, worry, thinking about death, desire to hit someone and feeling sad. Also, this finding is inconsistent with the outcome of a study by Nijboer (2007) which suggests that younger children experience different stressors than older children.

The other aspects of these findings however revealed that there is no significant relationship between parental socio-economic status and the level of learning stress. Though, there exists a dearth of literature that examines the relationship between parental socio-economic status and level of learning stress in children; nevertheless, this outcome tends to contradict the outcome of related studies on the influence of parental socio-economic status and child development. The study of Moos, (2004) suggests that family support and structure are associated with better adaption to stress and that the quality of children's relationships with their mother or father moderated or reduced the potential negative effect of acute and chronic stressors. Parental socio-economic status can determine the level of support or quality of relationship between parents and children. There are tendencies that parents who are well to do adequately meet the needs of their children and as a result reduces the children's level of exposure to stressors. The inability of parents with low socio-economic status to adequately meet the needs of their wards can exacerbate anxiety provoking situations, thereby increasing the level of stress experienced by such a child.

5. CONCLUSION

The study concludes that the dimensions of learning stress in the lower primary schools in the North Central Nigeria include Teaching/learning, the teacher, the home, co-curricular activities and peer influence. The outcome of the statistical data obtained on the 59 items on CLSRS presented a substantial evidence to judge the items as a valid and reliable measure of children learning stress. The study also concludes that there is no significant relationship between learning stress in public and private primary school and that there is no significant relationship between age and parental socio-economic status and the level of learning stress as measured by the scale.

Recommendations

Classroom teachers should pay attention to how children's experiences both at home and school could result to stress. This knowledge becomes imperative if the children are to make the most of learning opportunities provided in the classrooms, parents should be educated on how some interactions at home front can constitute stress to their wards learning and on the need to be proactive in making learning activities to be more conducive as less stressful to their children, both parents and teachers need to acknowledge the existence of stress in school children and the idea that it is only the adults that experience stress. The teachers should pay special attention to the physiological and psychological needs of the young children so as to reduce the level of learning stress which children experience. Seminars on effective stress management and coping strategies should be provided to the teachers.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Data and materials availability

All data associated with this study are present in the paper.

APPENDIX

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE.
FACULTY OF EDUCATION
INSTITUTE OF EDUCATION

QUESTIONNAIRE ON DEVELOPMENT OF A SCALE FOR MEASURING LEARNING STRESS IN CHILDREN (FINAL VERSION)

Dear Respondent,

The items on this scale are designed to gather information about children learning stress. You are please implored to respond to each of the items on the questionnaire sincerely by putting a tick (✔) against the alternative which you consider to be most appropriate. Your response would be treated with utmost confidentiality.

Thank you.

SECTION A: BACKGROUND INFORMATION

Please put a tick (✔) against the item you consider to be most appropriate among the options in each item.

Name of School: .....

State: .....

School Type: Private ( ) Public ( )

Age:-Less than 21yrs ( ) 21-40yrs ( ) 41-60yrs ( ) Above 60 years ( )

Gender: Male ( ) Female ( )

Class: Primary 1 ( ) Primary 2 ( ) Primary 3 ( )

Status in School: Classroom Teacher ( ) Head Teacher ( )

Age of the Child: .....

Parents socio-economic status (i) low ( ) (ii) medium ( ) (iii) high ( )

SECTION B:

Please put a tick (✔) against the alternative you consider to be most appropriate SA means Strongly Agree, A means Agree, D means Disagree while SD means Strongly Disagree

S/N	STATEMENTS	SA	A	D	SD
1	Noise disturbance is a cause of stress in the classroom				
2	Preparing for tests makes children to experience stress.				
3	Heavy workload makes school children to experience stress				
4	Participating in daily class activities do cause stress in learners				
5	Leaving assignment to the last minute before doing it causes stress in learners				
6	Close assignment deadlines is a cause of stress in primary school children				
7	Giving learners too much homework cause stress in learning				
8	Constant bullying is a cause of stress in learning				
9	Afternoon lessons is a cause of stress in school				
10	Tests cause stress in learners				

11	Examinations cause stress in learners				
12	Mathematics (Numeracy) lessons cause stress in learners				
13	French lessons is a cause of stress in learners				
14	Arabic lessons a is cause of stress in learners				
15	Overcrowding in class is a cause of stress in learners				
16	Changes in school routine do cause stress in learners				
17	Poor teacher-learner relationship brings stress to learners				
18	Poor class organization is a cause of stress in school children				
19	Increased difficulty in class work causes children to be stressed				
20	Inadequate learning facilities make learning difficult and make learners to experience stress.				
21	Uninteresting teaching method employed by some teachers causes stress in learners				
22	Organizing work poorly by teachers make learners to experience stress				
23	Studying while on holidays cause school children stress				
24	Poor housing facilities cause stress for school children at home				
25	Poor sleep schedule can cause stress in learners				

S/N	ITEMS	SA	A	D	SD
26	Inadequate sleep schedule can cause stress in a learner				
27	Hunger makes learner to feel stressed.				
28	Movement to school is a cause of stress for school children				
29	Movement back home after school causes stress in school children				
30	Family separation can cause stress in the ability of children to learn				
31	Divorce in the family is a cause of stress in learning				
32	Death of a family member is a cause of stress in learning				
33	The arrival of a new sibling can cause a child to be stressed				
34	Poor family finances can cause stress in school learning				
35	Too many domestic activities can cause stress in learning				
36	Preparation for school is a cause of stress in learners				
37	The fear of insecurity is a cause of stress in learners at school				
38	Parents separation is a cause of stress in primary schools				
39	Transfer of parents from one place to another is a cause of stress in learning				
40	Negative peer influence is a cause of stress in learning				
41	Poor nutrition is a cause of learning stress				
42	Unhealthy eating habit is a cause of learning stress				
43	Sibling rivalry can cause stress in primary schools learning				
44	Physical abuse is a cause of stress in primary schools				
45	Mental abuse is a cause of stress in primary schools				
46	Poor self-esteem is a cause of stress in primary schools				
47	Having too little time to relax makes learners to feel stressed				
48	Inadequate support by parents is a cause of stress in learning.				
49	Adjusting to a new environment as a result of relocation by parents is a factor of stress in learners				
50	Meal times make school pupils to be stressed at school				
51	School club programmes make pupils to be stressed at school				

S/N	ITEMS	SA	A	D	SD
52	School societies programmes make pupils to be stressed at school				
53	Excursion causes stress in primary school learners				
54	School concerts cause stress in primary school learners				

55	Sporting events cause stress in primary school learners				
56	Peer pressure causes stress in school learning				
57	Bullying by peer groups can cause stress in learning				
58	Unhealthy competition among learners is a cause of stress				
59	The need to be accepted by learner's peers causes stress in school				

REFERENCES AND NOTES

1. Akrani, G. (2011). What is stress? Meaning, definition and causes of stress.Retrieved from http://www.whatisstress.
2. Brightmont Academy (2019).Nine things that cause stress at school. Available at: https://www.brightmontacademy.com/blog/9-things-that-cause-stress-at-school
3. Catell, R. B. (1966). The screen test for number of factors. *Multivariate Behavioural Research*, *1*, 245–76.
4. Constella, T.D & Mcclatchey C. (2011). Is measuring stress a good Idea. London: BBC Retrieved from https://www.bbc.com
5. Diyan, R. O. & Adediwura, A. A. (2016). Development of a rating scale for measuring teacher classroom autonomy in secondary schools in southwestern Nigeria. *International Journal of Education and Practice*, 4(4), 134-137.
6. Fornell, C., & Larker, D. (1981).Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50
7. Goldberg, Y. (2016). A Primer on neural network models for natural language processing. *Journal of Artificial Intelligence Research*, *57*, 345-420.
8. Hair, J. F., Money, A. H., Samouel, P., and Page, M. (2007).*Research Methods for Business*. West Sussex, England: John Wiley & Sons
9. Kaiser, H. (1970). A second generation Little Jiffy. *Psychometrika*, *35*, 401–15
10. Kaplan T.P (2017) 6 ways to decrease stress from studying-Kaplan test prep. Retrieved from https://www.Kaptest.com.>study>gmat.
11. Kelly, J. (2018). 16 simple ways to relieve stress and anxiety. Retrieved from Https://www.16 simple ways to relieve stress and anxiety.
12. Labour Market Reform, (2012). A first assessment of the 2012 labour market reform in Spain. Retrieved from https://www./ /eurofound.europa.eu
13. McGill University (2012). Social work (SWRK), Faculty of social work. .Retrieved from http://www.mcgill.ca
14. Middlebrooks, J.S.; Audage, N.C. (2008). The effects of childhood stress on health across the Lifespan. *Atlanta, Georgia: centers for disease control and prevention, national center for injury prevention and control. Retrieved from the original (PDF) on 2016-02 05.* Retrieved from https://www.stacks.cdc.gov.
15. Moos, R. H. (2004). Life stressors, social resources, and coping skills in youth: Application to adolescents with chronic disorders. *Journal of Adolescent Health*, 30 (4), 22-29.
16. Mountain State Centre for Independent Living (2013).*Understanding and dealing with stress.* Retrieved from Https:// mtscil.org/skills/stress.
17. Nijboer, J. M. (2007). *Childhood stress: Stressors, coping, and factors.* An unpublished research master human behaviour in social contexts, university of Groningen. Retrieved from https://www.rug.nl/research/portal/files/14620341/childhoodstress_def.pdf
18. Pallant, J. (2011). *SPSS Survival Manual: A step by step guide to data analysis using SPSS for windows*. Australia: Allen and Unwin
19. Rossiter, J. R. (2002). The C-OAR-SE procedure for scale development in marketing. *International Journal of Research in Marketing*, 19, 305– 335.
20. Scott, E. (2018). Stress and Your memory. Retrieved from https://www.very wellmind.com.
21. Valizadeh, L., Farnam, A. and Farshi, M. R. (2012).Investigation of stress symptoms among primary school children. *Journal of Caring Sciences*, 1(1), 25-30.