

# Validation of the Major Depressive Disorder Subscale (MDDS) of the Revised Child Anxiety & Depression Scale (RCADS) in a Sample of Jamaican and Barbadian Elementary School Children

Garth Lipps<sup>1</sup>, Gillian Lowe<sup>2</sup>, Roger Gibson<sup>2</sup>, Mia Jules<sup>3</sup>

<sup>1</sup>Department of Sociology, Psychology and Social Work  
The University of the West Indies, Mona, Jamaica.

<sup>2</sup>Department of Community Health and Psychiatry,  
The University of the West Indies- Mona, Jamaica.

<sup>3</sup>Department of Education,  
The University of the West Indies- Cave Hill, Barbados

## Corresponding Author:

Gillian A. Lowe, MBBS, DM. (Psych)

Department of Community Health and Psychiatry,  
The University of the West Indies- Mona, Jamaica.  
galowe2000@icloud.com

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## ABSTRACT

**Background:** Research on depression among Caribbean children has been limited by the lack of valid and reliable screening measures of depression.

**Aims:** This project explores the reliability and the validity of the Major Depressive Disorder sub-scale (MDDS) of the Revised Child Anxiety & Depression Scale (RCADS), in a group of students attending elementary schools in Jamaica and Barbados.

**Method:** Students enrolled in grade six ( $n = 759$ ; 50.9% females, 49.1% males; mean age = 10.7 years  $\pm$  0.66) were administered the Revised Child Anxiety & Depression Scale -Major Depressive Disorder sub-scale (RCADS-MDDS) along with the Kutcher Adolescent Depression Scale- 11 (KADS-11), the Adolescent Depression Rating Scale (ADRS) the Visual Analogue Scale – State Anxiety (VAS-SA) and the Visual Analogue Scale – Trait Anxiety (VAS-TA). The study cohort was divided into private and public elementary school students prior to analyses. A cross validation method was utilised to explore the psychometric properties of the scales by first, conducting analyses using the public school students' responses and then replicated using those of their private school peers.

**Results:** Overall, the RCADS-MDDS was found to have an acceptable level of internal consistency reliability ( $\alpha = 0.70$ , public:  $\alpha = 0.76$ , private). The scale also had good concurrent validity as evidenced by strong correlations with scores on the KADS-11 and the ADRS and acceptable discriminant validity as demonstrated by weak correlations with the VAS-SA and the VAS-TA scores.

**Conclusion:** The RCADS-MDDS is a valid screening measure for depression among elementary school children in Jamaica and Barbados.

**Keywords:** Validation, depression scale, Caribbean, elementary school children

## INTRODUCTION

Major depression is the third most common psychiatric disorder faced by school-age children.<sup>1</sup> Depression is one of the main causes of disability and global burden of disease.<sup>2</sup> The consequences of depression for children may include psychiatric morbidity as well as academic and social derailment.<sup>3</sup> Longitudinal follow-up studies of children with depressive disorders have documented high rates of recurrence, progression into chronicity and conversion into adolescent and adult affective disorders.<sup>3</sup>

There has been considerable research on depressive symptoms among North American and European children and adolescents.<sup>3-10</sup> While some research in the English-speaking Caribbean has been conducted on depressive symptoms among adolescents, very little research has been conducted using samples of elementary school age children.<sup>11-18</sup> One factor that has limited research is the lack of valid screening measures of depressive symptoms for children of that age group. This study attempts to fill that gap in the research by presenting evidence for the reliability and validity of one measure of depressive symptoms that may be used with this population.

### **Depression among elementary school-age children in the Caribbean.**

Depression is reported to be common among English-speaking Caribbean children of elementary school-age.<sup>19</sup> Recognised risk factors for depression among children in this age-group are largely related to long-standing stressors such as parental discord, trauma, abuse and school difficulties.<sup>20</sup> This would include the high level of stress associated with the educational system in the English-speaking Caribbean.<sup>21-22</sup> In both Barbados and Jamaica, children approaching the end of elementary school are required to sit examinations that determine which secondary schools they will attend.<sup>21,23</sup> In both these societies, there is an unofficial ranking system of secondary schools, borne out of the old British eleven-plus educational system, in which older grammar schools were considered prestigious while newer (or modern) secondary schools were mainly viewed as lesser entities that presumably catered primarily to children who fell short of the standard of the older grammar schools.<sup>22,24-25</sup> In Jamaica and Barbados, ideas of identity and self esteem are strongly linked to secondary school

affiliations.<sup>24-25</sup> Additionally, secondary school placements may determine future educational opportunities and career paths through academic tracking.<sup>11,14-19,21,22</sup> There is significant societal pressure, which is associated with depression and other stress related issues, for children to perform well enough on their exit examinations to be placed at the more prestigious secondary schools.<sup>11,14-18</sup>

### **Study Rationale**

To better understand the concerns surrounding the emotional issues such as depression, anxiety and other stress related matters which elementary school children in the Caribbean may be experiencing, it is important to establish the psychometric properties of a scale such as the Revised Child Anxiety and Depression Rating Scale (RCADS) which has both anxiety subscales as well as a major depression subscale.<sup>26</sup>

The purpose of this study is to examine the reliability and validity of the Major Depressive Disorder subscale (MDDS) of the RCADS. The MDDS is designed to screen for depressive symptoms within pre-adolescents and adolescents. It has been translated and used to assess depressive symptoms in a wide range of populations including Hawaiian, Dutch, Danish, Spanish and Australian children.<sup>26-33</sup>

It is hypothesised that the MDDS will have internal consistency reliability, as well as concurrent and discriminant validity, in a sample of the Jamaican and Barbadian students. Consistent with past literature, we expect that there will be no gender difference.<sup>26-34</sup>

Internal consistency reliability assesses the stability of children's responses within a testing session.<sup>35</sup> Concurrent and discriminant validity refer to the extent to which the instrument being examined is similar to (concurrent) or different from (discriminant) other established instruments. Taken together, concurrent and discriminant validity form one part of the larger concept of construct validity.

Construct validity is established through the creation of a network of predicted relationships (a nomothetic network) and the establishment of a series of empirical relationships which support the nomothetic network.<sup>36</sup> This network can be examined through the correlation of the measure to be validated, with established measures of the same construct (a gold standard establishing concurrent validity) and the correlation of the measure with measures which assess similar but conceptually

distinct concepts (discriminant validity). The measures which are used to establish construct validity provide the best evidence, if different methods of assessment are used in the same construct (convergent validity) and different constructs (discriminant validity). Therefore, the use of clinical assessments compared with measures to be validated, is one method of establishing construct validity using convergent validity.<sup>29</sup>

Using established scales as comparators, is another well-established practice in testing the construct validity, by way of concurrent validity of instruments. For example, de Ross et al. validated the RCADS against the Children's Depression Inventory (CDI) using a cohort of Australian children and adolescents, ages 8-18 years old.<sup>32</sup> Other youth depression research have also used similar methodology.<sup>19,33,37</sup> In this study we are comparing the RCADS-MDDS with the Kutcher Adolescent Depression Scale-11 (KADS-11) and the Adolescent Depression Rating Scale (ADRS). This takes into account the fact that children with significant depressive symptoms who may benefit from mental health interventions may fail to fulfil the diagnostic criteria for Major Depressive Disorder. We used the Visual Analog Scale- Anxiety Scale (VAS-AS) as a comparator to test discriminant validity, thereby providing additional evidence for the construct validity.

## METHOD

### Participants

Students attending a cross section of elementary schools in Jamaica and Barbados were invited to participate in this study to obtain preliminary evidence for the reliability and validity of the Major Depressive Disorder subscale (MDDS) of the Revised Childhood Anxiety and Depression Rating Scale (RCADS). Schools were chosen such that a balance of government-funded public schools and privately funded preparatory schools in Jamaica and Barbados were sampled in proportion to their enrolments in each country. A list of each type of school from each country was obtained from the Ministry of Education in each country, and schools for this study were randomly sampled using a table of random numbers. No schools which were sampled in Jamaica or Barbados declined. All grade six classrooms, in each school, were sampled.

In all, 759 children (50.9% females, 49.1% males; age 10-11 years, median = 11.0 years, mean = 10.7 years  $\pm$

0.66) took part in this research project. Students were enrolled in the sixth grade of the 2014/2015 academic year. Ethical approval for the study was obtained from The University of the West Indies Ethics Committee (Approval Number: ECP 173, 13/14). All parents and children provided their written informed consent and assent for their data to be used in the research prior to the collection of their responses.

### Measures

#### *Major Depression Disorder Sub-Scale Revised Child Anxiety and Depression Scale (RCADS - MDDS)*

The RCADS is a 47-item measure that assesses symptoms of anxiety and major depressive disorder. It was developed at the University of California, Los Angeles.<sup>26</sup> The 10-item major depression disorder subscale (MDDS) consists of items which assess the cognitive, affective and somatic symptoms of depression.<sup>27-28</sup> Children are asked to record their response to each item using a four point Likert scale (Strongly Disagree to Strongly Agree). The RCADS-MDDS has an internal consistency reliability of 0.80 for clinical samples and 0.79 for school-based samples of children 6 to 18 years of age.<sup>27-28</sup> As well, the measure has been able to successfully distinguish students diagnosed with an affective disorder from those without.<sup>28</sup> As such, past research has suggested that the RCADS-MDDS potentially may be used as a screening instrument for major depressive disorder in children and adolescents.<sup>26-33</sup>

#### *Kutcher Adolescent Depression Scale-11 (KADS-11)*

The KADS-11 is an 11-item measure assessing depressive symptoms among students 12 to 17 years of age and was developed at Dalhousie University in Canada.<sup>38-39</sup> The KADS was designed to assess the cognitive, behavioural, affective and somatic symptoms of depression using a series of Guttman rank ordered statements. Responses to each statement are scored from 0 to 3 depending on the severity of the symptom described. The measure has adequate concurrent validity as indicated by a correlation of 0.69 with the Children's Depression Rating Scale.<sup>39-40</sup> Past research has suggested that the KADS-11 has a reasonable degree of internal consistency reliability ( $\alpha = 0.76$ ).

#### *The Adolescent Depression Rating Scale (ADRS)*

The Adolescent Depression Rating Scale is a 10 item measure of depressive symptoms for use with children

ages 13 to 19 years.<sup>40</sup> The ADRS assesses the cognitive, affective and somatic symptoms of depression. Adolescents are asked to indicate whether each item is true or false for them. It was developed using a three-step procedure. First, a review of the literature on adolescent depression was conducted to conceptualise the manifestation of depression among adolescents. Second, separate interviews with child psychiatrists and with depressed adolescents were conducted to identify the depressive symptoms and how they clustered. From this, an initial 44-item self-report depression measure was created for adolescents. A factor analysis of the measure was used to create a ten-item, unidimensional measure of depression. The ADRS was found to have acceptable levels of internal consistency reliability ( $\alpha = 0.74$  to  $0.79$ ) as well as good concurrent validity as demonstrated by fairly strong correlations with the Hamilton Depression Rating Scale ( $0.56$ ), the Beck Depression Inventory - 13 ( $0.82$ ) and the Clinical Global Impression Severity Scale ( $0.52$ ).

#### *Visual Analog Scale –Anxiety Scale.*

The VAS-Anxiety scale is a 100 mm horizontal line which has the two endpoints labelled “no anxiety or fear” and “worst possible anxiety or fear”.<sup>41</sup> Children report on their current level of anxiety by simply marking the spot on the horizontal line between the two endpoints. Scores on the VAS-Anxiety scale are obtained by using a ruler to measure the number of millimetres students' marks are from the left endpoint of the line. The VAS-Anxiety measure has correlated well ( $0.62$  to  $0.69$ ) with established measures of anxiety (State-Trait Anxiety Scale – Children, State-Trait Anxiety Scale – Youth and the Yale Pre-Operative Anxiety Scale) suggesting that it has adequate concurrent validity.<sup>42</sup> Both the current level of anxiety (state anxiety), VAS-SA, as well as the level of anxiety during the last six months (trait anxiety), VAS-TA, are rated.

#### *Procedure*

Participating schools identified a regular class session during the normal school day for the administration of the instruments. At the start of the session, research assistants provided a brief introduction of the project. The project was described as an investigation into the psychosocial factors associated with mood and social

relationships. Participants whose parents provided their consent were informed that their participation was completely voluntary and they could withdraw from the project at any time. Questionnaires were then distributed for completion. Completed questionnaires were returned, to one of the research assistants, at the end of the session.

#### **Statistical analyses**

Prior to the formal analyses, the sample was divided into public schools and private schools. The sample of public schools was initially used to estimate the psychometric properties of the Major Depressive Disorder subscale of the RCADS (RCADS – MDDS). Following this, the analyses to estimate the psychometric properties of the RCADS – MDDS were repeated using the private schools. The replication was conducted in order to cross-validate the findings of our analyses. This statistical method enhanced the strength of the validation.<sup>43</sup>

A two-stage approach was used to establish the reliability and validity of the Major Depressive Disorder subscale of the RCADS (RCADS – MDDS). First, the internal consistency reliability of the RCADS – MDDS was examined using Cronbach's Coefficient Alpha.<sup>35-36</sup> Following this, the concurrent and discriminant validity of the RCADS – MDDS was examined using Pearson's Product Moment Correlation. Before conducting any analyses, missing values were substituted using an expectation maximization procedure for missing values on individual RCADS – MDDS items and for missing values on the KADS, ADRS, VAS-Trait Anxiety (VAS-TA) and VAS –State Anxiety (VAS-SA) items.

## **RESULTS**

### **Public Schools**

#### *Validity*

Consistent with our expectations, the RCADS – MDDS was found to have an acceptable level of internal consistency reliability ( $\text{Alpha} = 0.70$ ). Similarly, there was evidence supporting the concurrent and discriminant validity of the RCADS – MDDS (Table 1). Scores on the MDDS correlated strongly with the KADS-11 ( $r = 0.59$ ) and with the ADRS ( $r = -0.63$ ) providing evidence for the concurrent validity of the RCADS – MDDS. In contrast, scores on the RCADS – MDDS correlated weakly with

scores on the VAS-SA and VAS-TA scales ( $r = 0.31$  and  $0.28$  respectively) providing evidence for the discriminant validity of the RCADS – MDDS. The coefficient of determination ( $r^2$ ) suggests that a large part of the stable variance underlying the RCADS - MDDS assesses depression (35% to 40%) while a smaller degree of the variability (8% to 10%) measures a conceptually similar but distinct construct.

*Principal Components Analysis of the RCADS - MDDS.*  
An exploratory principal components analysis (PCA) of the RCADS - MDDS items was conducted using a varimax rotation. Based on several criteria (eigenvalues greater than 1, scree plot, total variability accounted for by the solution, simple structure, and psychological meaningfulness), two clear components that accounted for 39.2% of the total variability in children’s scores emerged. Component one consisted of cognitive-affective symptoms of depression while component two consisted of somatic symptoms (Table 2).

**Table 1. Concurrent and Discriminant Validity Coefficients for the Revised Children’s Anxiety and Depression Scale – Major Depressive Disorder Sub-Scale - Public Schools.**

	<b>RCADS MDDS</b>	<b>KADRS</b>	<b>ADRS</b>	<b>VAS-S</b>	<b>VAS-T</b>
RCADS - MDDS	1.00				
KADRS	0.59	1.00			
ADRS	0.63	0.59	1.00		
VAS-S	0.31	0.29	0.25	1.00	
VAS-T	0.28	0.25	0.23	0.27	1.00

Consistent with our hypothesis, there was no significant gender ( $t(737) = 1.73, p > 0.05$ ) difference in depression scores on the RCADS – MDDS ( $19.41 \pm 4.86$  for females, and  $18.81 \pm 4.75$  for males).

**Table 2. Rotated Component Matrix from a Principal Components Analysis of the Revised Children’s Anxiety and Depression Scale – Major Depressive Disorder Sub-Scale - Public Schools.**

	<b>COMPONENT</b>	
	1	2
I feel worthless	.747	
I feel sad or empty	.691	
I cannot think clearly	.638	
Nothing is much fun anymore	.588	
I have problems with my appetite	.433	
I feel like I don't want to move		.701
I feel restless		.638
I am tired a lot		.602
I have trouble sleeping		.514
I have no energy for things		.407

## Private Schools

### Validity

The analyses were repeated using the sample of students attending private schools. Consistent with the findings for public schools, the RCADS – MDDS was found to have an acceptable level of internal consistency reliability (Alpha = 0.76). Additionally, the cross-validation analyses found evidence supporting the concurrent and discriminant validity of the RCADS – MDDS (Table 3). Scores on the MDDS correlated strongly with the KADS ( $r = 0.73$ ) and with the ADRS ( $r = -0.67$ ) providing evidence for the concurrent validity of the RCADS – MDDS. In contrast, scores on the RCADS – MDDS correlated weakly with scores on the VAS-SA and VAS-TA scales ( $r = 0.28$  and  $0.17$  respectively) providing evidence for the discriminant validity of the RCADS – MDDS. The coefficient of determination ( $r^2$ ) suggests that a large part of the stable variance underlying the RCADS - MDDS assesses depression (45% to 53%) while a smaller degree of the variability (3% to 8%) measures a conceptually similar but distinct construct.

### Principal Components Analysis of the RCADS - MDDS.

Unlike the findings for the public schools, the exploratory principal components analysis (PCA) of the RCADS - MDDS items found three components with some items cross-loading on components two and three and components one and three. Further, component three consisted of only two items, making it an unstable

component. We repeated our analyses specifying that two components be extracted. This two-component solution accounted for 39.6% of the total variability in children's scores with items clearly loading on components one and two (Table 4). Consistent with the analyses using public schools, the PCA for private schools found that component one consisted of items measuring cognitive-affective symptoms of depression while component two consisted of items measuring the somatic symptoms of depression.

## DISCUSSION

Across the analyses for public and private schools, the RCADS - MDDS was found to have an acceptable level of concurrent and discriminant validity in this population of respondents. It also had an acceptable level of internal consistency reliability. Additionally, the exploratory PCAs suggested that two clear dimensions underlie the RCADS - MDDS with the first corresponding to the cognitive-affective symptoms of depression and the second corresponding the somatic symptoms of depression. Depression has affective, somatic and cognitive manifestations with the affective symptoms appearing in the earlier stages of the illness followed by the somatic symptoms, while the cognitive symptoms appear much later.<sup>44</sup> A review of research on depression among North American and European pre-pubertal children attending mental health clinics found that children mainly manifest the affective and somatic symptoms of depression.<sup>45</sup>

**Table 3. Concurrent and Discriminant Validity Coefficients for the Revised Children's Anxiety and Depression Scale – Major Depressive Disorder Sub-Scale - Private Schools**

	RCADS	KADRS	ARDS	VAS-S	VAS-T
RCADS—MDDS 1.00					
KADRS	0.73	1.00			
ARDS	0.67	0.73	1.00		
VAS-S	0.28	0.31	0.24	1.00	
VAS-T	0.17	0.19	0.29	0.35	1.00

Consistent with our hypothesis, there was no significant gender ( $t(737) = 0.54, p > 0.05$ ) difference in depression scores on the RCADS – MDDS ( $19.66 \pm 5.01$  for females, and  $19.24 \pm 4.95$  for males).

**Table 4. Rotated Component Matrix from a Principal Components Analysis of the Revised Children’s Anxiety and Depression Scale – Major Depressive Disorder Sub-Scale - Private Schools.**

	COMPONENT	
	1	2
I feel worthless	.744	
I feel sad or empty	.722	
I cannot think clearly	.648	
Nothing is much fun anymore	.584	
I have problems with my appetite		.648
I feel like I don't want to move		.646
I feel restless		.635
I am tired a lot		.492
I have trouble sleeping		.464
I have no energy for things		.356

Unlike these findings, our research using samples of children from the elementary school population suggests that Jamaican and Barbadian children may be suffering quietly with depression for a longer period of time without recognition. This is indicated by our finding that the depression clusters in our population of children were mainly cognitive-affective symptoms (which appear later in the course of the illness after the somatic symptoms). As we expected, and consistent with the clinical manifestation of depression in children, we did not find a gender difference in RCADS-MDDS depression scores. Mean differences between male and female participants were small and non-significant ( $p > 0.05$ ). Based on this sample of pre-adolescent children, many of whom may not have attained the hormonal changes of puberty, we can conclude that the lack of a gender difference seems to hold true on the RCADS-MDDS scores such that girls reported similar scores to boys. Future research will examine the role that parenting practices, academic school performance and neighbourhood factors and socioeconomic status may play on levels of RCADS-MDDS depression scores.

**Limitations**

This study was conceptualised to highlight the emotional stress which students experience when transitioning from elementary to high schools in two English speaking Caribbean nations where high-stakes, critical-competence

elementary school exit examinations are compulsory. One limitation of the current project is the use of elementary school students in the sixth grade, as the sample, which is not representative of the full age range of school children in Jamaica and Barbados. Additionally, the study population is not representative of the wider ethnic or sociocultural student populace across the Caribbean. As such, the findings of this validation study for the RCADS-MDDS may not be generalisable to all age groups and Caribbean nations.

**CONCLUSION**

The present study provides preliminary evidence for the concurrent and discriminant validity of the RCADS-MDDS, among Jamaican and Barbadian elementary school children. Based on our findings, it appears that the RCADS-MDDS is a valid and reliable measure that may be useful to clinicians as a screening tool for depression, among elementary school children in Jamaica and Barbados.

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**Ethical Approval statement:** Ethical approval for the study was obtained from The University of the West Indies Ethics Committee. (Approval Number: ECP 173, 13/14).

**Conflict of Interest statement:** None declared

**Informed Consent statement:**

Written informed consent was obtained from the Ministries of Education in both Jamaica and Barbados, as well as the principals (of the schools involved) and the participants' parents, prior to the days of data collection. We also obtained written informed assent from the students who took part in our study.

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**Authors' Contributions**

Professor Lipps, Dr Lowe, Professor Gibson and Dr Jules conceptualization, as well as collected and analyzed the data for the current manuscript. All of the authors contributed to the final manuscript and they are accountable for all aspects of the work. The research was conducted, following the ethical guidelines of the Faculty of Medical Sciences, The University of the West Indies – Mona.

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**REFERENCES**

- 1.Ghandour RM, Sherman LJ, Vladutiu CJ, Ali MM, Lynch SE, Bitsko RH, et al. Prevalence and Treatment of Depression, Anxiety, and Conduct Problems in US Children. *The Journal of Pediatrics*. 2019;206:256-67.e3.
- 2.Andrews G, Szabo M. Preventing major depression in young people. *British Journal of Psychiatry*. 2002;181:460-2.
- 3.Lewinsohn, Rohde P, Seeley J, Klein D, Gotlib I. Natural Course of Adolescent Major Depressive Disorder in a community sample: Predictors of recurrence in young adults *American Journal of Psychiatry*. 2000;157:1584-91.
- 4.Byrne BM, Baron P, Balev J. The Beck Depression Inventory: Testing for its factorial validity and invariance across gender for Bulgarian adolescents. *Personality and Individual Difference*. 1996;21:641-51.
- 5.Byrne BM, Baron P, Larsson B, Melin L. Measuring depression for Swedish nonclinical adolescents: Factorial validity and equivalence of the Beck Depression Inventory

- across gender. *Scandinavian Journal of Psychology*. 1996;37:37-45.
- 6.Hamilton S, Fagot BI. Chronic stress and coping styles: a comparison of male and female undergraduates. *Journal of Personality and Social Psychology*. 1988;55(5):819-23.
- 7.Hammen CL, Cochran SD. Cognitive correlates of life stress and depression in college students. *Journal of Abnormal Psychology*. 1981;90(1):23-7.
- 8.Hammen CL, Padesky CA. Sex differences in the expression of depressive responses on the Beck Depression Inventory. *Journal of Abnormal Psychology*. 1977;86(6):609-14.
- 9.Vredenborg K, O'Brien E, Krames L. Depression in college students: personality and experimental factors. *Journal of Counselling Psychology*. 1988;35(4):419-25.
- 10.Byrne BM, Campbell TL. Cross-cultural comparisons and the presumption of equivalent measurement and theoretical structure: A look beneath the surface. *Journal of Cross-Cultural Psychology*. 1999;30(5):555-74.
- 11.Lipps, Lowe, Morris A, Halliday S, Clarke N, Wilson RN. School factors associated with depression in a Jamaican high school cohort. *Journal of Black Psychology*. 2010;36(3):369-80.
- 12.Lipps, Lowe GA. Validation of the Brief Screen for Depression in a Jamaican cohort. *West Indian Medical Journal*. 2006;55(6):425-9.
- 13.Lipps, Lowe GA, Halliday S, Morris A, Clarke N, Wilson RN. The Association of Academic Streaming to Depressive Symptoms in Adolescents Across Three Caribbean Countries. *Child & Adolescent Mental Health*. 2010;4(16):1-10.
- 14.Lowe, Lipps G, Gibson R, Halliday S, Morris A, Clarke N, et al. Neighbourhood Factors and Depression among Adolescents in Four Caribbean Countries. *PLOS One*. 2014;9(4).
- 15.Lowe, Lipps G, Halliday S, Morris A, Clarke N, Wilson RN. Depressive symptoms among fourth form students in St. Kitts and Nevis high schools. *Scientific World Journal*. 2009;28(9):149-57.
- 16.Lowe, Lipps GE, Halliday S, Morris A, Clarke N, Wilson RN. Depressive Symptoms among Fourth Form Students in St. Kitts and Nevis High Schools. *The Scientific World Journal: Child Health & Human Development*. 2009;9:149-57.
- 17.Lowe, Lipps GE, Young R. Factors Associated with Depression Among Students of the University of the West



- Indies - Mona. *West Indian Medical Journal*. 2009;58(1):21-7.
- 18.Lowe, Lipps GE, Abel W. Depression Among Fourth-Form Students in Three High Schools in Kingston, Jamaica. *Caribbean Journal of Psychology*. 2005;2(1):32-49.
- 19.Lowe G, Lipps G, Gibson R, Jules M. Kutcher S. Validation of the Kutcher Adolescent Depression Scale in a Caribbean Student Sample. *CMAJ: Open*. 2018;6(3):E248-E53.
- 20.Charles J, Fazeli M. Depression in children. *Australian Family Physician*. 2017;46(12):901-7.
- 21.Evans H. Streaming and its effects on students. In: Evans H, editor. *Inside Jamaican Schools*. Kingston, Jamaica University of the West Indies Press; 2001: 90-104.
- 22.Miller E. *Jamaican Society and High Schooling*. Kingston: United Cooperative Printers; 1990.
- 23.Best T. *Achieving Excellence in Education: John Cumberbatch Memorial Lecture Barbados: Union of Teachers*; 2008.
- 24.Applewhaite C. Is the Common Entrance Examination in Barbados Valid in the 21st Century in Light of Issues of Male Underachievement? *Journal of Education and Development in the Caribbean*. 2018;17(1):193 - 216.
- 25.Broome P. National Advisory Commission on Education (NACE) Report. *Educating In the New Century - Transforming Education for Sustainable Development a National Consultation on Education in Barbados*. Bridgetown Barbados: The University of the West Indies, Cave Hill, February 2010.
- 26.Chorpita BF, Yim L, Moffitt C, Umemoto L, Francis S. Assessment of symptoms of DSM-IV anxiety and depression in children: A Revised Child Anxiety and Depression Scale. *Behaviour Research and Therapy*. 2000;38:835-55.
- 27.Ebesutani C, Reise SP, Chorpita BF, Ale C, Regan J, Young J, et al. The Revised Child Anxiety and Depression Scale-Short Version: Scale reduction via exploratory bifactor modeling of the broad anxiety factor. *Psychological assessment*. 2012;24(4):833-45.
- 28.Kieling C, Baker-Henningham H, Belfer M, Conti G, Ertem I, Omigbodun O, et al. Child and adolescent mental health worldwide: evidence for action. *Lancet*. 2011;378:1515-25.
- 29.Klaufus L, Verlinden E, van der Wal M, Kösters M, Cuijpers P, Chinapaw M. Psychometric evaluation of two short versions of the Revised Child Anxiety and Depression Scale. *BMC Psychiatry*. 2020;20(1):47.
- 30.Kösters MP, Chinapaw MJ, Zwaanswijk M, van der Wal MF, Koot HM. Structure, reliability, and validity of the revised child anxiety and depression scale (RCADS) in a multi-ethnic urban sample of Dutch children. *BMC Psychiatry*. 2015;15(1):132.
- 31.Sandín B, Valiente RM, Chorot P. RCADS: evaluación de los síntomas de los trastornos de ansiedad y depresión en niños y adolescentes. *Revista de Psicopatología y Psicología Clínica*. 2009;14(3):193-206.
- 32.de Ross RL, Gullone E, Chorpita BF. The revised child anxiety and depression scale: a psychometric investigation with Australian youth. *Behaviour Change*. 2002;19(2):90-101.
- 33.Esbjørn BH, Sømhøvd MJ, Turnstedt C, Reinholdt-Dunne ML. Assessing the Revised Child Anxiety and Depression Scale (RCADS) in a national sample of Danish youth aged 8–16 years. *PLoS One*. 2012;7(5):e37339.
- 34.Kofler MJ, McCart MR, Zajac K, Ruggiero KJ, Saunders BE, Kilpatrick DG. Depression and Delinquency Covariation in an Accelerated Longitudinal Sample of Adolescents. *Journal of Consulting and Clinical Psychology*. 2011;79(4):458-69.
- 35.Cronbach L. Coefficient Alpha and the Internal Structure of Tests. *Psychometrika*. 1951;16(3):297-334.
- 36.Cronbach L J, Meehl P E. Construct validity in psychological tests. *Psychological Bulletin*. 1955; 52(4):281–302. <https://doi.org/10.1037/h0040957>
- 37.Lipps GE, Lowe GA, Young R. Validation of the Beck Depression Inventory-II in a Jamaican University Student Cohort. *West Indian Medical Journal*. 2007;56(5):404-8.
38. Brooks S.. The Kutcher Adolescent Depression Scale (KADS). *Child & Adolescent Psychopharmacology News*. 2004;9(5):4-6.
- 39.Brooks S, Krulewicz SP, Kutcher S. The Kutcher Adolescent Depression Scale: assessment of its evaluative properties over the course of an 8-week pediatric pharmacotherapy trial. *Journal of Child and Adolescent Psychopharmacology*. 2003;13(3):337-49.
- 40.Revah-Levy A, Birmaher B, Gasquet I, Falissard B. The Adolescent Depression Rating Scale (ADRS): a validation study. *BMC Psychiatry*. 2007;7(2):1-10.
- 41.Aitken RC. Measurement of feelings using visual analogue scales. *Proceedings of the royal society of medicine*. 1969;62(10):989-93.

42. Bringuier S, Dadure C, Raux O, Dubois A, Picot M, Capdevila X. The Perioperative Validity of the Visual Analog Anxiety Scale in Children: A Discriminant and Useful Instrument in Routine Clinical Practice to Optimize Postoperative Pain Management. *Anesthesia & Analgesia*. 2009;109(3):8.
43. de Rooij M, Wooda W. Cross-Validation: A Method Every Psychologist Should Know. *Advances in Methods and Practices in Psychological Science*. 2020;3(2):248-63.
44. Lewinsohn, Rhode P, Klein DN, Seely JR. Natural course of adolescent major depressive disorder, I: continuity into young adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1999;38:56-63.
45. Ryan ND, Puig-Antich J, Ambrosini P, Rabinovich H, Robinson D, Nelson B, et al. The Clinical Picture of Major Depression in Children and Adolescents. *Archives of General Psychiatry*. 1987;44(10):854-61.