

Psychometric Evaluation of the Major Depression Inventory at the Kenyan Coast

INDEPTH Scientific Conference

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Mark Otiende

IHTAS

INDEPTH

Healthy

Transitions to

Adulthood

Study

Outline

1. Background
2. Methods & Measurements
3. Results
4. Limitations
5. Conclusion

Background

- Lack of reliable, valid and adequately standardized measures of mental health for use in SSA is a key challenge for studies on mental health
- There have been efforts to develop, adapt and evaluate measures of mental health for use in Africa.
- There is a scarcity of research evaluating the psychometric properties of relatively easy-to-use, yet adequately standardized psychometric measures.

Objective

To evaluate the psychometric properties, and feasibility of using a computerized version of the Major Depression Inventory

Methods & Measurements

Major Depression Inventory

- Developed to cover the universe of symptoms in DSM-IV major depression and in ICD-10 depression (mild, moderate, severe).

MDI as a diagnostic instrument for DSM-IV Major Depression

How much of the time ...		Diagnostic demarcation line						
		All the time	Most of the time	Slightly more than half the time	Slightly less than half the time	Some of the time	At no time	
Highest score for DSM-IV major depression	1	Have you felt low in spirits or sad?	5	4	3	2	1	0
	2	Have you lost interest in your daily activities?	5	4	3	2	1	0
	3	Have you felt lacking in energy and strength?	5	4	3	2	1	0
	4	Have you felt less self-confident?	5	4	3	2	1	0
	5	Have you had a bad conscience or feelings of guilt?	5	4	3	2	1	0
	6	Have you felt that life wasn't worth living?	5	4	3	2	1	0
	7	Have you had difficulty in concentrating, e.g. when reading the newspaper or watching television?	5	4	3	2	1	0
Highest score	8a	Have you felt very restless?	5	4	3	2	1	0
	8b	Have you felt subdued or slowed down?	5	4	3	2	1	0
Highest score	9	Have you had trouble sleeping at night?	5	4	3	2	1	0
	10a	Have you suffered from reduced appetite?	5	4	3	2	1	0
	10b	Have you suffered from increased appetite?	5	4	3	2	1	0

Total Score (item 1 - 10) : = ___ + ___ + ___ + ___ + ___ =

DSM-IV diagnosis _____

MDI as a diagnostic instrument for DSM-IV Major Depression

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MDI as a diagnostic instrument for DSM-IV Major Depression

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MDI as a diagnostic instrument for DSM-IV Major Depression

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Total Score (item 1 - 10) : = ___ + ___ + ___ + ___ + ___ =

DSM-IV diagnosis _____

Methods & Measurements

Major Depression Inventory

- Developed to cover the universe of symptoms in DSM-IV major depression and in ICD-10 depression (mild, moderate, severe).
- MDI can be used:
 - as a diagnostic scale using the DSM-IV algorithm.
 - via its summed total score to measure depression severity.

Objective

To evaluate the psychometric properties, and feasibility of using a computerized version of the Major Depression Inventory

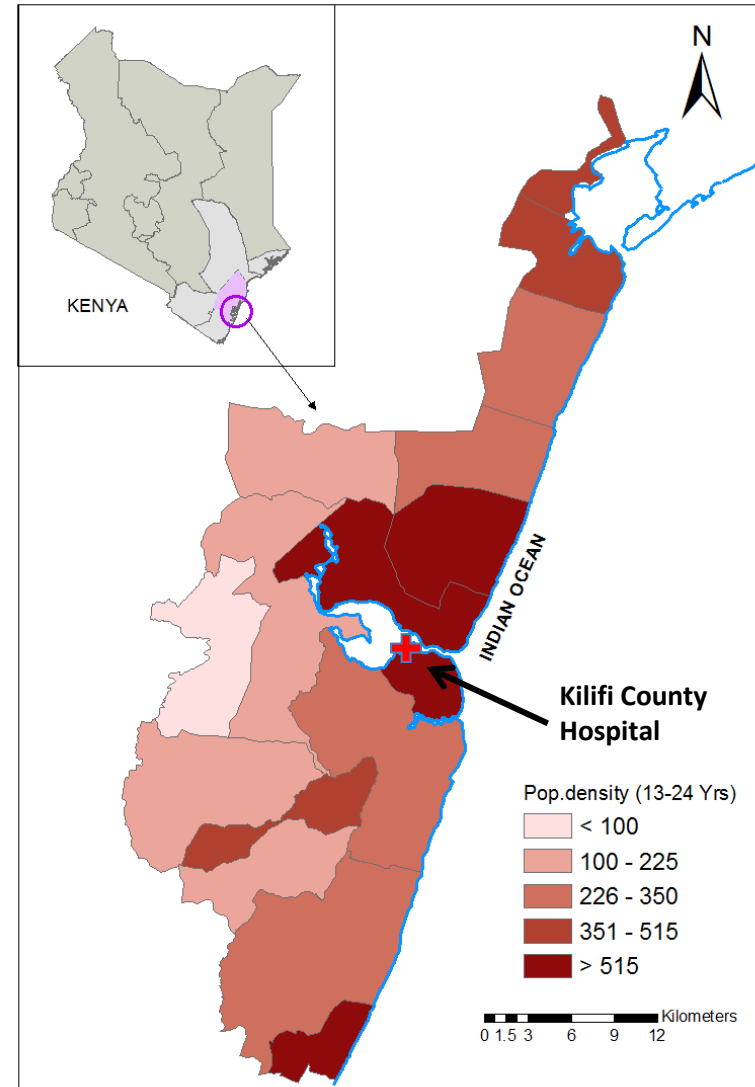
Specifically:

1. Evaluate the internal consistency of the MDI
1. To evaluate if the MDI would present with a single factorial structure that is a measure of depression
1. Evaluate equivalence of these structures across age and sex.
1. Evaluate its discriminative validity.

Methods & Measurements

Study Setting

- KHDSS is located on the Indian Ocean Coast of Kenya.
- Resident population: 280,000.
- Young people (13-24 years) constitute a quarter of this population.



Methods & Measurements

Study design & Sample

- Part of a survey conducted to describe the health and health behaviors of young people (13-24 years)
- A representative sample of 1665 young people was recruited to participate in the survey in 2014.

Data collection

- MDI data , dietary habits, alcohol consumption, bullying, sexual behaviors.
- Measures were selected from the WHO Global School-based Health Survey questionnaire.
- Interviews were administered using ACASI to ensure respondent privacy

Participant using ACASI



Analysis

Objective		Analysis	Assessment
1	Internal Consistency of MDI	<ul style="list-style-type: none"> Cronbach's alpha Omega coefficient 	Review alpha and omega coefficients
2	Factorial structure	<ul style="list-style-type: none"> Exploratory Factor Analysis (EFA) 	Review scree plot & eigenvalues
3	Measurement Equivalence across age & sex	<ul style="list-style-type: none"> Multi-Group Confirmatory Factor Analysis (MGCFAs) 	Review Chi-square statistics, Tucker Lewis Index (TLI) and Comparative Fit Index (CFI)
4	Discriminant Validity	<ul style="list-style-type: none"> Kruskal Wallis test to assess difference in average MDI scores between high-risk and low-risk groups Relative Risk Ratios (RRR) to assess difference in risk of depression between 'high-risk' and 'low-risk groups' 	<ul style="list-style-type: none"> Compare distribution of MDI scores for the different groups of alcohol drinkers and bullying frequencies Review RRR for the different categories of bullying

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Results

Prevalence of Depression

	Mean MDI Score (CI)	MDI Score \geq 20
All (n=1496)	7.3 [6.9 , 7.6]	8.7% [7.3, 10.2]
Females (n=723)	7.8* [7.2 , 8.3]	10.8%* [8.6, 13.3]
Males (n=773)	6.8* [6.3 , 7,2]	6.7%* [5.1, 8.7]

*P<0.05 – significant difference between two groups.

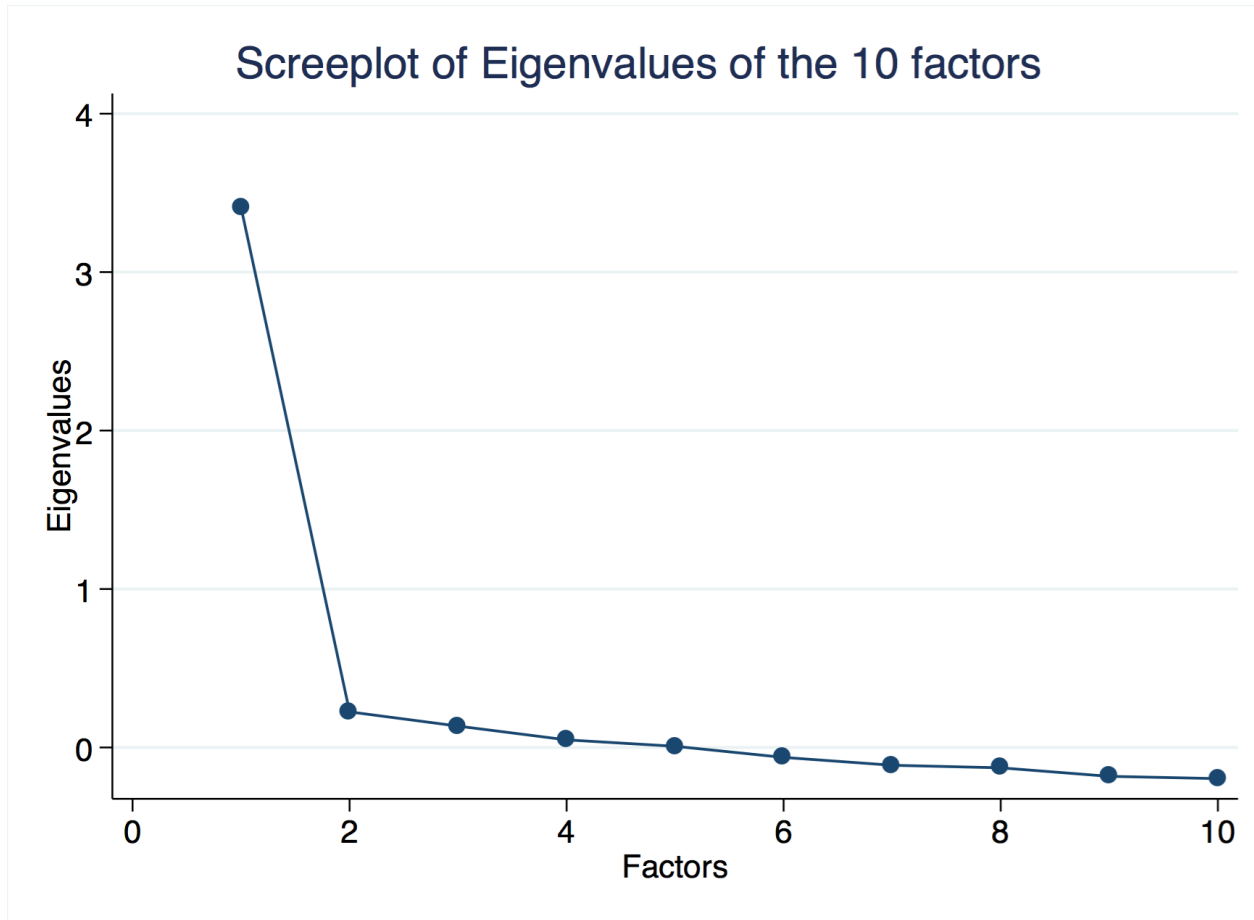
Results

1. Internal Consistency of the depression rating scale

Table 1	Cronbach's Alpha
Overall	0.83
Sex	
Male	0.81
Female	0.85
Language	
Swahili	0.84
English	0.75
Giriama	0.75

Results

2. Factorial Structure of the MDI



Results

3. Equivalence of the depression construct across age and sex

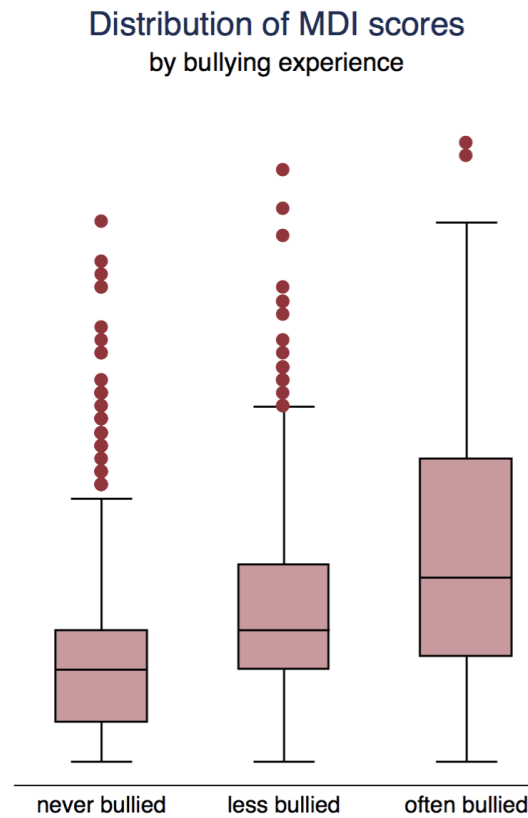
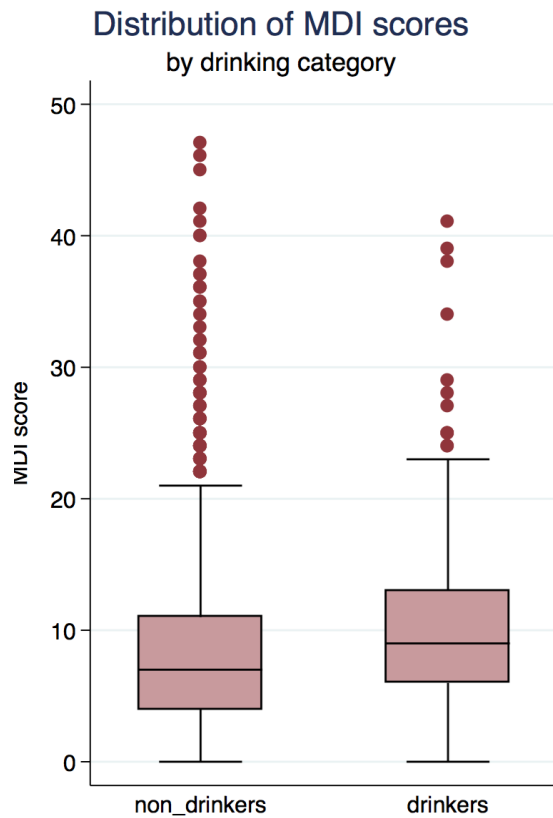
Measurement Invariance of the depression rating scale

Table 2	RMSEA	TLI	CFI
Sex			
Configural	0.045	0.931	0.949
Metric	0.044	0.934	0.945
Scalar	0.044	0.934	0.937
Age			
Configural	0.044	0.901	0.905
Metric	0.043	0.906	0.904
Scalar	0.041	0.913	0.904

1. RMSEA – Root Mean Square Error of Approximation
2. TLI – Tucker Lewis Index
3. CFI – Comparative Fit Index

Results

4. Discriminant Validity



Results

4. Discriminant Validity

Relative Risk ratios for all kinds of depression associated with bullying			
MDI status	RRR	P> z	95% CI
Normal (no depression)	Base Outcome		
Mild Depression			
Never bullied	1		
Less bullied	4.0	<0.001	(2.3, 6.9)
Often bullied	10.9	<0.001	(4.9, 24.2)
Moderate Depression			
Never bullied	1		
Less bullied	1.6	0.263	(0.7, 3.4)
Often bullied	6.4	<0.001	(2.3, 17.8)
Severe Depression			
Never bullied	1		
Less bullied	5.3	<0.001	(2.2, 12.8)
Often bullied	26.1	<0.001	(9.5, 71.7)

Limitations

1. No clinical validation to evaluate the MDI score cut-off sensitivity and specificity.
1. Large margins of error in the RRR – a manifestation of small numbers in the various groups/categories.

Conclusion

The MDI has acceptable psychometric properties and may be a suitable instrument to screen for suspected depression in surveys of young people in our context.

A study comparing the MDI results versus clinical diagnosis of depression at the individual level, preferably by a psychiatrist, is needed to measure the external validity of the MDI.

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