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Validating the 10 Item Child Depression Inventory

Findings from YouthSave-Impact Study Kenya

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The need for culturally valid and reliable measurement tools was identified by the National Institute of Mental Health (NIMH) as a primary goal in the Grand Challenges in Global Mental Health. In particular, the Grand Challenges in Global Mental Health emphasized the need to address mental health issues at the earliest point possible by focusing on the prevention and care of mental illness in children (Collins, et al., 2011)



There is a dearth of epidemiological data on mental health disorders in Kenya

- A household survey of 1000 households in Western Kenya found a CMD prevalence rate of 10.8% (Jenkins et al., 2012)
- Cross sectional study of health facilities found that of the 42% with diagnosed CMD only 4.1% received a diagnosis (Ndetei et al., 2009)



The association between poverty and mental health is a well established albeit complex one (Das, et al., 2007; Lund et al., 2010).

- Poverty stressors associated with CMD, (Kagotho & Ssewamala, 2012)
- Poor childhood nutrition associated with poor cognitive functioning (Patel & Kleinman, 2003)
- Poverty associated with risky behaviors such as substance use and misuse (Odejide, 2006)

It is estimated that 49% of the Kenyan population (21.7 million) are poor (KIPPRA, 2015)



- **Child Depression Inventory (CDI)**
 - 27 item CDI published in 1977
 - Several versions available including 10-item short form
 - Designed for children 7-17 years
 - Written at a 7 year old reading level
 - Higher score → higher depressive symptomology

- **The CDI is one of the most commonly used depression assessment scales** (Carr, 2008).
 - Captures the core cognitive features of depression in children
 - Children asked to select one of three statements that describes their mood/feelings e.g.
 - “I am tired once in a while,”*
 - “I am tired many days,”* or
 - “I am tired all the time.”*



- **Child Depression Inventory-short form**
 - 10 items—sadness, pessimism, self-deprecation, self-hate, crying spells, irritability, negative self-image, loneliness, lack of friends, feeling unloved
 - Takes half the time to administer
 - Psychometric properties are comparable to the CDI-27 longer version. But CDI-27 has consistently higher alpha estimates
 - CDI robust to linguistic differences (Sun & Wang, 2015)



– Child Depression Inventory-in SSA

- Suubi Study (2005-2008) CDI-10 item alpha estimate scores at baseline 0.65 (Ssewamala, Neilands, Waldfogel, & Ismayilova, 2012).
- The first two waves of Suubi-Maka (2008-2012) CDI-27 item alpha estimate scores of 0.63 and 0.69 respectively (Han, Ssewamala, & Wang, 2013).
- Bridges to the Future study (2011–2016) using the 27 item CDI also found a moderate Cronbach's alpha of 0.68 (Ssewamala, Nabunya, Ilic, Mukasa, & Ddamulira, 2015)
- A CDI-27 item Tanzanian Kiswahili version established a reliability score of 0.669 (Traube, Dukay, Kaaya, Reyes, & Mellins, 2010).



Establishing the cultural equivalence of mental health instruments:

1. Translation and back translation
2. Use of bi-lingual interviewers
3. Participants given choice of language during interviews
4. Use of statistical methods to validate the scales



Statistical Analysis

- Cronbach's alpha → internal consistency
- Correlations (CDI & BHS) → construct validity
- Ttests/Anova (CDI & pessimism; CDI & health) → concurrent validity
- EFA and CFA → factor structure

CDI-10 item Results

All Children (N=3965)	M (SD)	t-test
Age		-5.19****
9-12 years	1.44 (1.93)	
13+	1.80 (2.23)	
Care About my Future		5.0****
Extremely or very much care	1.52 (2.0)	
Other	2.33 (2.6)	
Like my Future Self		4.28****
Extremely or very like	1.53 (2.01)	
Other	2.21 (2.5)	

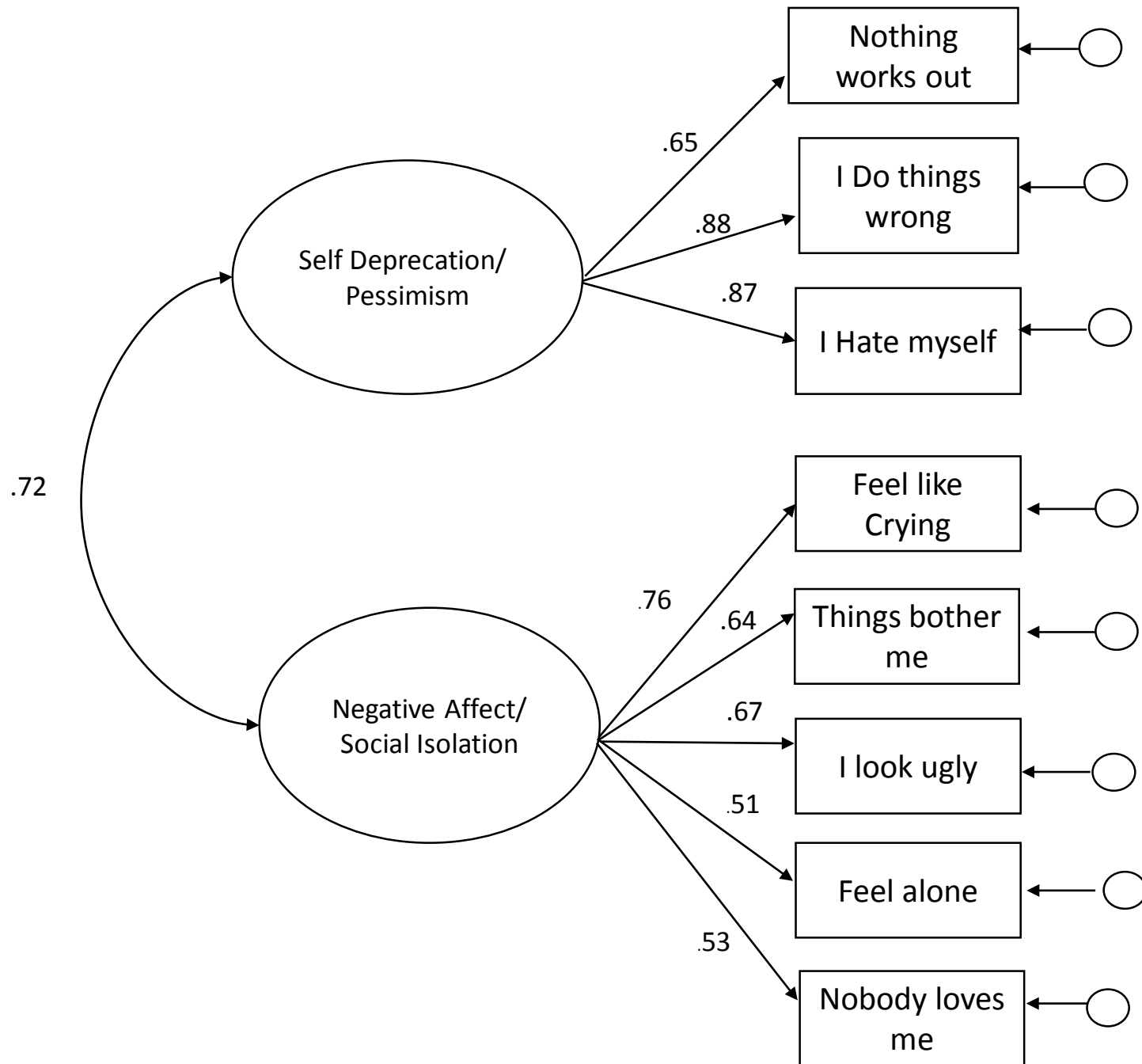
CDI 10 item Results

All Children (N=3965)	M (SD)	F-test	Statistically different groups
Health Satisfied		13.9 *****	
Not satisfied	2.2 (2.4)		1 vs 2
2	1.8 (2.1)		1 vs 3
3	1.5 (1.9)		1 vs 4
Extremely satisfied	1.4 (2.0)		2 vs 4
Energy Levels		13.74*****	
Extremely low	2.41(3.0)		1 vs 2
2	1.57(2.0)		1 vs 3
3	1.76(2.1)		1 vs 4
4	1.39(1.9)		1 vs 5
High energy	1.38(1.8)		



CDI Scale Results

- Marginal internal consistency ($\alpha = 0.62$)
- Construct, concurrent validity established
- A two factor—8 items—interpretable model
 - *Self deprecation/pessimism*
 - *Negative affect/isolation*



CDI-10 item (9-18 years)

- N= 3962
- All coefficients significant at $p < .0001$
- $X^2 = 61.65$, $df = 19$, $p = 0.0001$
- RMSEA=0.024 90% CI [0.017-0.031], CFI=0.998, TLI=0.983



Discussion and Conclusion



CDI-10 item requires further review to determine applicability to children and youth in Kenya.

- Marginal internal consistency
- Related to other theoretically connected instruments (BHS)
- CDI associated with measures of future outlook/pessimism, health outcomes
- Interpretable factor structure



1. Due diligence in cultural equivalence
 - Cognitive interviewing
2. Age invariance testing
3. We encourage additional psychometric testing of the CDI-10 item by other social work researchers who operate in SSA and specifically in the Kenyan context
4. Given the devolution of health services in Kenya, disseminate findings at both the national and county levels



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Thank you!

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