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# Cross-cultural adaptation of the Child and Adolescent Symptom Inventory-5 (CASI-5) for use in central and south-western Uganda: the CHAKA project

**Richard Stephen Mpango[1,2], Eugene Kinyanda[2], Godfrey Zari Rukundo[3], Kenneth D. Gadow[4] and Vikram Patel[5]**

**Abstract**

Our study was to examine the applicability of translating and culturally adapting the Child and Adolescent Symptom Inventory-5 (CASI-5) for use in Uganda. This process followed guidelines recommended by the International Test Commission. A number of the CASI-5 concepts needed to be revised to capture the idioms for emotional, behavioural disorders and individual functioning among children and adolescents in Uganda. Our experience is that before introduction into another culture, psychological assessment instruments should undergo an adaptation process such as as the one used.

**Keywords**

CASI-5, cross-cultural, adaptation, validation, Uganda

## Introduction

Psychiatric disorders among children and adolescents are often challenging to diagnose in geographic regions with few specialists and no culturally adapted diagnostic tools. In sub-Saharan Africa, the Self Report Questionnaire-20 (SRQ-20) has been used to assess global psychological distress, and there is a locally developed ICD-10 alogrithm for Uganda.[1] The Mini International Neuropsychiatric Interview for children and adolescents (MINI KID) was used in Kenya to evaluate DSM-IV-TR psychiatric disorders (PDs).[2] However, to the best of our knowledge, there are no assessment instruments based on the *Diagnostic and Statistical Manual of Mental Disorders* (Fifth edition) (DSM-5) or ICD-11 for use in sub-Saharan Africa.

The Child and Adolescent Symptom Inventory-5 (CASI-5)[3,4] was initially developed for use in the United States to gather information from parents and teachers about the symptoms of DSM-5-defined disorders. CASI-5 requires little prior training and therefore can be readily used by middle-level mental health workers (e.g. psychiatric nurses and psychiatric clinical officers), which form the backbone of mental health services in many sub-Saharan countries including Uganda. This paper describes the process undertaken to adapt the CASI-5 culturally following a methodology recommended by the International Test Commission (ITC)[5] to assess the mental health of HIV-infected children and adolescents in Kampala and Masaka, Uganda (CHAKA study).

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## Methodology

One aim of the CHAKA study was to investigate the prevalence and incidence of PDs. To assess PD symptoms, the CHAKA study chose CASI-5, a behaviour rating scale that had not been previously used in Uganda but which had been used in a similar, large-scale study conducted in the United States. Our study was undertaken at Butabika National Referral Mental Hospital, which is located 10 km east of the capital city, Kampala, in central and southwestern Uganda where the predominantly spoken language is Luganda. Butabika Hospital, the only psychiatric hospital in the country has a department of child and adolescent psychiatry and a child and adolescent HIV clinic, and hence an ideal environement for this translation and adaptation exercise.

CASI-5 is designed for use with caregivers of children and adolescents aged 5–18 years[3,4] and is organised in modules where each consists of symptom statements for 14 of the most common DSM-5-defined PDs (see Table 1; supplementary file A). Additionally, one or two key symptoms of each of other nine disorders are also included (Table 1; supplementary file A).

We employed the methodology recommended by the ITC,[5] which included six stages: (1) instrument translation from the source language into the target language; (2) synthesis of the translated version; (3) a synthesis evaluation by expert judges; (4) instrument evaluation by the target population; (5) back-translation; and (6) a pilot study.[6,7] The translation team initially reviewed all concepts of the original English-language version of the CASI-5 to ensure that these made sense in the Ugandan cultural context. When some idioms did not make sense, the translation team added qualifier statements to make them understandable (Table 2; supplementary file B).

The team then undertook semantic translation of the English-language version of CASI-5 into Luganda ensuring that the original meaning of the items was conveyed. A separate and independent team consisting of three mental health professionals then performed back-translation of the generated Luganda-language version. A consensus team consisting of members of both the translating and back-translating teams then reviewed both English versions and the translated Luganda version to resolve any observed differences between both versions. The guiding principle was to ensure that the meaning of each concept in the original English version was preserved. We then conducted a pilot study of CASI-5 that involved focus group discussions with caregivers and in-depth interviews with mental health experts. A pilot study of the CASI-5, focus group discussions with caregivers and in-depth interviews with mental health experts were undertaken as part of the instrument evaluation process.

**Table 1.** The most common DSM-5-defined psychiatric disorders in the CASI-5.

| No. | Most common DSM-5 psychiatric disorders |
|---|---|
| 1 | Attention-deficit/hyperactivity disorder |
| 2 | Oppositional defiant disorder |
| 3 | Conduct disorder |
| 4 | Generalised anxiety disorder |
| 5 | Social anxiety disorder |
| 6 | Separation anxiety disorder |
| 7 | Disruptive mood dysregulation disorder |
| 8 | Major depressive episode |
| 9 | Manic episode |
| 10 | Dysthymic disorder |
| 11 | Schizophrenia |
| 12 | Autism spectrum disorder |
| 13 | Anorexia nervosa |
| 14 | Bulimia nervosa |
| | Other DSM-5 psychiatric disorders |
| 15 | Post-traumatic stress disorder |
| 16 | Obsessive-compulsive disorder |
| 17 | Specific phobia |
| 18 | Panic disorder |
| 19 | Selective mutism |
| 20 | Trichotillomania |
| 21 | Motor tics |
| 22 | Vocal tics |
| 23 | Substance abuse |

A pilot study was undertaken which involved interviewing 30 children and adolescents and their respective caregivers attending the general Child and Adolescent HIV Clinic at Butabika Hospital. These were carried out by trained research assistants (i.e. psychiatric nurses and psychiatric clinical officers) participating in the CHAKA study. The interviews involved explaining study procedures to the participants, obtaining informed consent and then administration of CASI-5. Subsequently, a meeting between the research team and the psychiatric research assistants was held to review experiences of administering the CASI-5.

Focus groups consisted of ten caregivers of children and adolescents who were grouped into five pairs. Each pair was asked to read the concepts in the Luganda-language version of CASI-5 and note problems of comprehension, language and cultural relevance. Items were read to participants who could not read. The findings from these interviews were recorded.

Both the original and translated versions of CASI-5 were then given to a group of mental health experts that included two psychiatrists, one developmental psychologist, one clinical psychologist, one psychiatric

**Table 2.** Example of words (idioms) in the original CASI-5 version that had to be explained to make them understandable in the Ugandan context.

| CASI-5 module* | Original rendering in the CASI-5 (items/words that had to be explained) | Words (idioms) used to explain word that were difficult to understand in the Ugandan context |
|---|---|---|
| (A10) Attention-deficit / hyperactive disorder | Fidgets | Move restlessly |
| (A10) Attention-deficit / hyperactive disorder | Squirms | To twist about |
| (A12b) Attention-deficit / hyperactive disorder | Jittery | Being in a tense state |
| (A14) Attention-deficit / hyperactive disorder | 'Driven by a motor' | 'Powered by some external force' |
| (B26) Oppositional defiant disorder | 'Tries to get even' | Tendency to revenge |
| (C27) Conduct disorder | Truant | One who stays out of school without permission |
| (D49) Generalised anxiety disorder | Edgy | Easily irritated |
| (E59) Motor tics | Grimacing | Twisted expression on person's face |
| (K89) Major depressive episode | Very self-conscious | Excessively and uncomfortably conscious |
| (M107) Autistic spectrum disorder / Asperger's disorder | Odd facial expressions or gestures | Facial expressions that are out of social context |
| (Q136) Peer conflict scale | Give a dirty look | A look expressing disapproval |

*CASI-5 reproduced with the permission of Checkmate Plus, publisher of the Child and Adolescent Symptom Inventory-5.

clinical officer, five psychiatric nurses and one lay person. In-depth interviews were then conducted regarding whether the translated version had retained the original meaning of the CASI-5 and whether it was capturing the local expressions of symptoms. The results from the pilot study, focus groups, and the in-depth interviews were discussed by the research team with the composite translation team (consisting of members of both the translation and back-translation team) and where appropriate, changes were made.

Synthesis evaluation of the translated CASI-5 involved three expert judges (a professor of psychiatry from Medical Research Council, the lead psychiatrist and a senior clinical psychologist from Mulago Hospital/Makerere University) and the developer of the CASI-5 (Professor K Gadow). Judges reviewed the different versions of the CASI-5 and the reports generated at each of the translation and adaptation stages. Areas assessed included semantic, idiomatic, conceptual, linguistic and contextual differences, with the aim of creating a single version. Throughout this process, the committee (judges and authors) assessed the compatibility between the translated version and the original CASI-5. During the evaluation, experts assessed the structure, layout, responses, instructions, and both the scope and adequacy of expressions contained in this inventory.

Ethical and scientific clearance for this study was sought and obtained from the Science and Ethical Committee of the Uganda Virus Research Institute, the Uganda National Council of Science and Technology and the Science and Ethical Committee of the London School of Hygiene and Tropical Medicine. It was made clear to all participants (children, adolescents and caregivers) that refusal to participate in this study would not have any negative impact upon their treatment and care. Due to the anticipated psychological distress, which some of the interview questions were likely to create, all research staff who were directly involved with study participants received training about how to administer interviews and handle situations in which sensitive information was disclosed or emotional distress observed. Participants found to have a psychiatric disorder were managed in the Children/Adolescent Mental Health Clinic of Butabika Hospital childrens' ward. In cases of psychiatric emergencies, e.g. highly suicidal individuals or individuals with severe depression, research staff (who were all mental health workers) provided emergency intervention and referral to a specialised child/adolescent mental health staff.

Overall, there was broad agreement between the original CASI-5 English-language version and the back-translated version. However, there were some differences between the two versions which the consensus team resolved. Table 3 lists items for which there was a difference between the original English-language version and the back-translated version and how the consensus meeting resolved these differences. For example, item C.31 in the CASI-5 which read 'starts

**Table 3.** Items where there were differences between the original English version and the back-translated version and how the consensus meeting resolved these differences.

| Item no. | Items in original CASI-5 English version (with explanatory phrase where necessary) | Back-translated English version | Final phrase adopted by the consensus meeting |
|---|---|---|---|
| A10 | Fidgets (moves restlessly) with hands or feet or squirms (twists about) in seat | (S)he is hyperactive with his hands or feet or does not stay in one place | (S)he is hyperactive with his hands or feet or does not stay in one place |
| A14 | Is 'on the go' or acts as if 'driven by a motor' ('powered by some external force') | S/he is anxious and acts as if there is something prompting/distracting him | S/he is anxious and acts as if there is something prompting(driving) him/her |
| B.20 | Argues with adults | S/he argues with older people | Argues with adults |
| B26 | Takes anger out on others or tries to get even (tendency to revenge) | S/he takes out his/her anger on others and s/he tries to revenge | S/he takes out his/her anger on others and s/he tries to revenge |
| C27 | Is truant (stays out of school without permission) from school | S/he misses school without reason | S/he stays away from school without reason |
| C.31 | Starts physical fights | S/he starts up quarrels | Starts physical fights |
| C40 | Has been physically cruel to people | S/he tortures others | S/he tortures others |
| C.41a | Has been preoccupied with or involved in sexual activity | S/he engages a lot in adulterous behaviour | Has been obsessed with sex or involved in sexual activity |
| C.41b | Has forced someone into sexual activity | S/he forces others to sleep with them (s/he rapes) | Has coerced someone into sexual activity |
| CZ1 | Does not appear to feel guilty after doing something wrong | S/he does not seem apologetic when s/he does something wrong | Does not appear to feel guilty after doing something wrong |
| D51 | Is extremely tense or unable to relax | S/he is anxious and cannot calm down | S/he is anxious and cannot calm down |
| E55 | Cannot get distressing thoughts out of his/her mind (worries about germs or doing things perfectly, etc.) | S/he is not able to get over negative thoughts (e.g. fear of germs or fear of not being able to do perfect work, etc.) | S/he is not able to get over distressing thoughts (e.g. fear of germs or fear of not being able to do perfect work, etc.) |
| E60 | Makes vocal sounds for no apparent reason (coughing, throat clearing, sniffling, grunting, etc.) | S/he makes noises without reason (e.g. coughing, clearing his throat, sniffing, snuffling in regret) | S/he makes noises without reason (coughing, throat clearing, sniffling, grunting, etc.) |
| E61 | Complains about physical problems (headaches, upset stomach, etc.) for which there is no apparent cause | S/he often complains about illnesses (e.g. headache, abdominal pain, etc.) | S/he often complains about illnesses (e.g. headache, abdominal pain, etc.) for which there is no apparent cause |
| F63b | Is more anxious in social situations than most other youths | S/he gets too nervous more than would be expected when s/he is with other people | Is more anxious in social situations than most other youths |
| J81a | Does extremely odd things (excessive preoccupation with fantasy friends, talks to self in a negative way, etc.) | S/he does certain things excessively (thinking too much about friends who do not exist, talking negatively about himself, etc.) | Does extremely odd things (excessive preoccupation with fantasy friends, talks to self in a negative way, etc.) |
| J81b | Behaves in extremely strange ways (unpredictable outbursts, acts as if in slow motion, seems to forget how to take care of self, etc.) | S/he behaves in a weird manner which deviated from the normal (unexpected mood changes, slowing, as if s/he has forgotten to care for himself / herself, etc.) | S/he behaves in a weird manner which deviated from the normal (unexpected mood changes, slowing, as if s/he has forgotten to care for himself / herself, etc.) |

(continued)

**Table 3.** Continued

| Item no. | Items in original CASI-5 English version (with explanatory phrase where necessary) | Back-translated English version | Final phrase adopted by the consensus meeting |
|---|---|---|---|
| J82 | Laughs or cries at inappropriate times or shows no emotion in situations where most others of same age would react | S/he laughs or cries inappropriately or s/he does not show concern in a circumstance where others would normally be concerned | S/he laughs or cries inappropriately or s/he does not show any change in emotions where others of the same age would normally behave |
| K87 | Feels worthless or guilty | S/he feels useless / worthless or feels as if s/he has committed a crime | Feels worthless or guilty |
| K89 | Has little confidence, feels inferior to others, or is very self-conscious (excessively and uncomfortably conscious) | S/he does not believe a lot in himself(herself), has low esteem, s/he feels less important than others, s/he is timid because of his/her status | S/he does not believe a lot in himself (herself), has low esteem, or overly concerned about own appearance |
| K90 | Feels that things never work out right | S/he feels that things are not going on well | S/he feels that things never go on well |
| K94 | Has experienced a big change in his/her ability to concentrate or make decisions | S/he has had a marked change in his/her abilities, in concentration and planning | S/he has had a marked change in his/her abilities to concentrate or decide |
| K96 | Has become more sensitive or more tearful than usual | S/he easily gets upset or s/he easily cries than usual | S/he easily gets hurt or s/he easily cries than usual |
| L99 | Is much more irritable or explosive than usual | S/he easily get annoyed or s/he is more easily upset than usual | S/he easily gets annoyed or s/he is more easily bursts-out than usual |
| L100 | Becomes much more active or busy than usual | S/he is more active or more hard working than usual | Becomes much more active or busy than usual |
| L106 | Believes that s(he) has special abilities or can do things that are obviously unrealistic | S/he admits to having a special talent or the potential to do incredible things | Believes that s(he) has special abilities or can do things that are obviously unrealistic |
| M107 | Has peculiar way of relating with others (avoids eye contact, odd facial expressions or gestures, etc.) | S/he has unusual social behaviour when s/he is with others (s/he avoids eye contact, his regard is unusual, s/he uses body language, etc.) | S/he has unusual social behaviour when s/he is with others (s/he avoids eye contact, odd facial expressions, s/he uses body language, etc.) |
| M110 | Is unaware or takes no interest in other people's feelings | S/he doesn't know or doesn't care what others feel | S/he doesn't know or doesn't care about how other people feel |
| M113 | Talks in a strange way (repeats what others say; confuses words like 'you' and 'I'; uses odd words or phrases, etc.) | S/he has unusual speech (s/he repeats what others say, s/he asks questions like you? and Me?, s/he uses unusual or words/phrases that do not construct meaningful conversations | S/he has unusual speech (s/he repeats what others say, confuses words like 'you' and 'I'; s/he uses unusual or words/phrases that do not construct meaningful conversations, etc.) |
| M116 | Gets very upset over small changes in routine or surroundings | S/he quickly changes mood/loses focus by slight changes in the daily routines | Gets very upset over slight changes in daily routines or surroundings |
| M118 | Has strange fascination for parts of objects | S/he is unusually attentive to details of items | S/he is unusually attracted to parts of objects |
| P131 | Uses other illegal drugs (cocaine, glue, speed, LSD, etc.) | S/he uses drugs (cocaine, marijuana, gasoline, paint / sadolin, petroleum, etc.) | S/he uses drugs (cocaine, glue, marijuana, LSD, etc.) |

(continued)

**Table 3.** Continued

| Item no. | Items in original CASI-5 English version (with explanatory phrase where necessary) | Back-translated English version | Final phrase adopted by the consensus meeting |
|---|---|---|---|
| Q136 | Gives dirty looks (looks expressing disapproval) or makes threatening gestures to other youths | S/he looks at others badly or s/he does things to cause fear in fellow youths | S/he looks at others badly or s/he does things to cause fear in fellow youths |
| P137 | Curses at or teases other youths to provoke conflict. | S/he threatens others or bullies them with an intention of causing conflicts / misunderstandings | Curses at or teases other youths to provoke conflict |
| Q139 | Hits, pushes or trips other youths | S/he threatens to harm fellow youths | S/he beats, pushes or mistreats fellow youths |
| Q142 | Annoys other youths to provoke them | S/he does annoying things to provoke others | Annoys other youths to provoke them |

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physical fights' was back translated as 's/he starts up quarrels', and the consensus was to maintain the item in the original CASI-5 as 'starts physical fights' (Table 3; Supplementary file B).

The expert judges, upon reviewing the different versions of the CASI-5 and the reports generated at each of the translation and adaptation stages, discussed the following issues. First, they recommended that the last criterion in each symptom category which relates to impairment ('How often do the symptoms and behaviours [in that module] interfere with the youth's ability to do schoolwork or get along with others') be changed to read ('How often do the symptoms and behaviours [in that module] interfere with the youth's ability to do schoolwork, get along with others, or perform house chores or work outside the home?'). The developers of the CASI-5 had left out 'work' because in the United States many youths do not work. Also, parents typically do not see how their child/adolescent performs at work other than whether they actually go to work. Because many youths in Uganda work, including participating in chores at home, including 'work' in the impairment question was considered a cultural adaptation for Uganda. The culturally adapted impairment question was agreed upon by all parties and was included in the translated version.

A second issue that was considered by the expert judges was whether to include the response 'I don't know' to the existing CASI-5 responses (Never, Sometimes, Often and Very Often). However, the developer indicated that the respondent is supposed to answer the question to the best of their ability, but they are not supposed to know the truth. Thus, if they 'don't know', they would answer 'never' because they have never seen the symptom or behaviour or simply leave the question blank. A third issue that was considered was whether to include a skip rule at the end of each module so as to facilitate the administration of the questionnaire. The developer advised against this saying that this would affect the validity of the CASI-5. The fourth issue that was considered was whether to include a subtitle so as to identify each symptom module by name. This was rejected because it could bias responses from the parent/caregiver.

## Discussion

The present study translated and culturally adapted the CASI-5 into the Luganda language and Uganda culture for use in the CHAKA study following the methodology recommended by the International Test Commission.[5] Some words or phrases were difficult to translate, and as such required the use of alternative conceptual equivalent terms. The challenges

experienced in translating the CASI-5 into the Luganda language are not unique and are noted by others.[8] Research has shown that culture affects the presentation and understanding of most mental disorders[9] but there is no published evidence from Uganda to suggest that the symptoms of certain disorders are actually different. Not surprisingly, the use of culturally adapted measures of mental health problems enhances the detection and diagnosis.[10] In the present study, 34 items in the original version of the CASI-5 were adapted to suit the local culture.

Of the six experts who were involved in the forward translation, two had studied Luganda through formal trainings at school and their translations differed somewhat from those without such training. Although a consensus was reached, there would likely have been better agreement had all the six translators had the same formal training in Luganda.

Synthesis and evaluation of the translated CASI-5 by expert judges was a difficult process because each expert had his/her own experiences, knowledge, skills, theoretical orientation, bias and occasionally required negotiation to achieve consensus. The compatibility between the translated and original versions of the CASI-5 was assessed incuding the scope and dequacy of expressions which were more related to the American English idioms, though this could be challenged as well. The experts pondered whether the terms or expressions were a good fit for the entire Luganda-speaking Ugandan population.

According to the CASI-5 developer, the time required for administration is approximately 15–25 min, but in the present study, it was in the range of 30–45 min. This difference is likely the result of the differences in methodology. In the United States, the parent typically completes the CASI-5 by herself/himself at home versus the present study where an interviewer happens to read each question, which is characteristic of Ugandan settings. A second pilot study may be needed to ascertain the actual time required for administration in Uganda.[11]

The study had some limitations. Findings may not be generalisable to the entire Luganda-speaking population because there may have been a bias in the selection of the expert team involved in translation and cultural adaptation. The CASI-5 was pilot-tested with parents/caregivers of children/adolescents with multiple difficulties who were receiving care from Butabika National Referral Hospital and therefore results may not apply to the general population.

In conclusion, our experience of this process is that psychiatric assessment instruments before introduction in another cultural should be evaluated using a cultural adaptation process such as the one suggested by the International Test Commission.

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