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Development and validation of a Haitian Creole screening instrument for depression

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Abstract

Developing mental health care capacity in post-earthquake Haiti is hampered by the lack of assessments that include culturally bound idioms Haitians use when discussing emotional distress. The current study describes a novel emic-etic approach to developing a depression screening for Partners In Health/*Zanmi Lasante*. In Study 1 Haitian key informants were asked to classify symptoms and describe categories within a pool of symptoms of common mental disorders. Study 2 tested the symptom set that best approximated depression in a sample of depressed and not depressed Haitians in order to select items for the screening tool. The resulting 13-item instrument produced scores with high internal reliability that were sensitive to culturally-informed diagnoses, and interpretations with construct and concurrent validity (*vis-à-vis* functional impairment). Discussion focuses on the appropriate use of this tool and integrating emic perspectives into developing psychological assessments globally. The screening tool is provided as an Appendix.

Keywords

Haiti; depression; measure development; screening; community health workers; global mental health

Since the devastating earthquake in January 2010 there has been widespread international interest in developing mental health care systems in Haiti (e.g., Budosan & Bruno, 2011;

Rose, Hughes, Ali, & Jones, 2011). Although most post-earthquake mental health providers have adhered to the etic—i.e., culture neutral—perspective of the Diagnostic and Statistical Manual, 4th Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) and subsequent 5th Edition (DSM-5; American Psychiatric Association, 2013), several are interested in integrating Haitian emic—i.e., culturally informed—perspectives into their efforts (e.g., Khoury, Fullard, Brewster, Keys et al., 2012). It is likely that in the years following the earthquake depression will be a lasting concern. There is already etic epidemiological evidence to suggest that depression is seen at higher rates than posttraumatic stress disorder (PTSD) in the affected Port-au-Prince region (Cerdá, Paczkowski, Galea, Nemethy, Péan, & Desvarieux, 2013). The current study describes a combined emic-etic approach to developing a Haitian Creole assessment of depression for use in the community health worker program of *Zanmi Lasante* (ZL), the Haitian sister organization of Partners In Health (PIH), an international health care organization currently working in 12 countries.

Local idiomatic expressions of emotional distress pose a fundamental challenge to the global mental health movement. Without accounting for these idioms of distress (Kleinman, 1991), clinical assessment in global mental health at best misses a portion of whatever construct is being measured, and at worst results in the *de facto* imposition of European and North American notions of psychopathology on populations which may have very different values and healing traditions. There is evidence to show that using etic psychological assessments can result in missing a substantial proportion of culturally salient symptoms associated with functional impairment (Khort, Jordans, Tol, Speckman, et al. 2008; Rasmussen, Katoni, Keller, & Wilkinson, 2010). Methods are needed that incorporate emic and etic approaches in order to develop assessment tools that account for local idioms of distress without losing the substantial knowledge represented in European and North American mental health research.

Methods that integrate emic and etic perspectives to develop measures of common mental disorders have been in use for over a decade. Vikram Patel's pioneering work measuring mental health concepts among Shona patients in Zimbabwe (Patel, Simuyu, Gwanzura, Lewis, & Mann, 1997) has been followed by Paul Bolton's prolific use of rapid ethnographic assessment, or "quick ethnography" (Handwerker, 2001), in multiple cultural contexts. Bolton and colleagues have shown that developing instruments tailored to local communities can be done relatively quickly (2–3 weeks; Betancourt, Bolton, & Bass, 2007) and that these instruments can be reliable (Bolton, Wilk, & Ndogoni, 2004), consistent with local mental health constructs (Bolton & Tang, 2004), and account for substantial variance in functional impairment (Bolton, Neugebauer, & Ndogoni, 2002). Variations on this method have included the use of card sorts (Fullard, Kohrt, Keys, Khoury et al., 2012; Rasmussen et al., 2011), focus groups (van Ommeren, Sharma, Thapa, Makaju et al., 1999), and qualitative interviewing with key informants (Miller, Omidian, Qurahisy, Qurahisy et al., 2006) to better define the mental health constructs of interest. In Haiti, ethnographic methods have resulted in identifying idioms of distress that reference the heart (*kè*) and head (*tèt*) disorders that roughly map onto emotional (mood and anxiety) and psychotic problems, respectively (Bolton, Surkan, Gray, & Desmousseaux, 2012; Fullard, Kohrt, Keys, Khoury

et al, in press; Keys, Khort, Fullard, Khoury et al., 2012; Wagenaar, Hagaman, Kaiser, McLean, & Kohrt, 2012).

Developing culturally informed assessments must first and foremost be grounded in a review of the literature specific to the relevant culture and construct. Haitian professional psychiatry has long drawn on emic and etic scholarship and service, best exemplified by its two most important figures: Louis Mars, a Haitian physician and anthropologist trained in French traditions, and Nathan Kline, a United States psychiatrist who collaborated with Mars in 1958 to establish the island nation's premier facility for treating severe mental disorders (Farmer, 1992). Haitian mental health scholarship has been primarily concerned with describing the phenomenology of Haitian psychological experiences (as opposed to developing measures), has focused on severe mental illness. Included in this literature is explicit acknowledgement that European psychiatric nosology does not adequately capture the range within Haitian mental health:

By deepening (our understanding) of the relationship between *culture* and *personality* in the Haitian setting, we came to understand the flimsiness of the French categories that we were using so uncritically, mechanically imposing Western concepts on Haitian reality.” (Mars, 1966; p. 8; cited in Farmer, 1992; p. 251.)

Medical anthropologists have identified several broad disease categories recognized in Haitian folk medicine: *maladi Bondyè* (problems of natural origin), *maladi peyi* (common medical problems), *maladi moun fè mal* (problems with origins in magic “sent” by others who wish harm), and two with supernatural origin, *maladi bon lwa* and *maladi Satan*. (Carranzana, DeToledo, Tatum, Rivas-Vasquez et al., 1999; Kiev, 1961; Sterlin, 2006). Where common mental disorders would fit into this nosology is not obvious. Unlike in the nosology of the DSM-IV-TR, Haitian disease categories are reliant on etiology rather than being defined by a particular set of symptoms (Desrosiers & Fleurose, 2002). Recent work suggests that Haitian mental health concepts can be categorized either as *kè* (“heart”) or *tèt* (“head”) disorders, with *kè* disorders corresponding roughly with anxiety and mood disorders and *tèt* disorders with psychoses (Keys, Kaiser, Kohrt, Khoury, & Brewster, 2012). It should also be noted that these categories are not inviolable. The term *depresyon* is not uncommon in Haiti (Hillel, Desrosiers & Turnier, 1994), having become part of the syncretic emotional landscape. Like most populations in a globalized world, Haitians often hold multiple or hybrid explanatory models for uniform sets of symptoms (World Health Organization, 2010a).

Recent mental health development efforts in Haiti are characterized by practical application of psychological constructs and systematic approaches to scaling up models of care (Belkin, Unützer, Kessler, Verdelli et al., 2011; Raviola, Eustache, Oswald & Belkin, 2012). The community-based mental health model proposed by ZL is one such program (for more detail, see Raviola et al., 2012). Founded in 1983, ZL delivers health care in Haiti's Central Plateau and lower Artibonite with a staff of approximately 5000 providers, including 2500 community health workers, through 11 hospitals in partnership with the Haitian Ministry of Health. ZL's Psychosocial and Mental Health Services Department is designed to address common mental disorders and more severe problems within this framework, consistent with

the World Health Organization's (WHO) recent efforts to make mental health a global health priority, the Mental Health Global Action Programme (mhGAP; WHO, 2002; 2008; 2010b). The current study describes the development of a screening tool for depression for use by ZL community mental health workers and clinicians in Haiti.

In order that both local and international perspectives on common mental disorders informed the development of this measure we used a two-stage study design integrating both emic and etic approaches. All procedures were reviewed and approved by the institutional review boards of ZL and the New York University School of Medicine (where the first author was at the time). In Study 1 Haitian key informants engaged in a card sort of Haitian Creole (*Kreyòl*) idioms of distress and items translated from DSM-based mood disorder inventories. The result of Study 1 was a set of items that were consistently sorted together across informants and parallel to common notions of depression. In Study 2 we reduced this set of items and examined the validity of scores from the resulting measure using a survey of 105 Haitians drawn from clinical and community settings and identified as depressed or not depressed. Results of Study 2 provide information on the reliability of scores of the resulting measures, their concurrent validity, and sensitivity and specificity for depression.

Study 1: Identifying potential depression symptoms

Study 1 Methods

Item pool in Haitian Creole—Consistent with considerable symptom overlap and global variability in common mental disorders, we purposefully took a broad view of the symptoms that might define depression in Haiti. We thus began by compiling a large symptom pool representing common mental illnesses. Symptoms were drawn from both scholarship translating measures of major depression, anxiety, PTSD and somatization developed in the U.S. to measure these constructs among Haitian populations (e.g., Smith Fawzi, Betancourt, Marcelin, Kloppner et al., 2009) and from ethnographic research done in the Haitian Central Plateau identifying idioms of distress associated with a range of psychological constructs (Fullard et al., in press; Keys et al., 2012). The latter included both *tèt* idioms (e.g., *tèt vire* and *tèt cho* – spinning head and hot head, respectively) and *kè* idioms (e.g., *kè sere* and *kè bat fò* – constricted heart and pounding heart, respectively), as well as others (e.g., *de la la*, low energy; Keys et al., 2012). Previously translated measures included the Patient Health Questionnaire – 9-item version (PHQ-9; Kroenke, Spitzer, & Williams, 2001), the Harvard Trauma Questionnaire (HTQ; Mollica, Wyshak, de Marneffe, Khuon et al., 1987; Mollica R. F., Caspi-Yavin, Y., Bollini, P., Truong et al., 1992), the Beck Anxiety Inventory (BAI; Beck & Steer, 1990), and the Brief Symptom Inventory's Somatization subscale (BSI-S; Derogatis & Melisaratos, 1983). Although not validated, Haitian Creole versions of these instruments have been used in Haitian populations in Haiti (e.g., Smith Fawzi, Eustache, Oswald, Surkan et al., 2010) and the U.S. (e.g., Smith Fawzi et al., 2009).

The second author (a Haitian psychologist fluent in both English and Haitian Creole) reviewed all translations of items drawn from U.S. measures for clarity and appropriateness for the less educated, rural Haitians who comprise the bulk of ZL's patient population. In the process items that consisted of several related symptoms were separated into their component clauses (e.g., PHQ-9's "Trouble falling or staying asleep, or sleeping too much"

was split into three items: “Difficulty falling asleep,” “Difficulty sleeping without waking early,” and “Sleeping too much”) and adapted to be culturally or socioeconomically appropriate to the population (e.g., the PHQ-9 item 7’s “reading the newspaper or watching television” was changed to “listening to the radio or attending a ceremony” because of limited literacy and widespread poverty in Haiti’s Central Plateau). Items were then back translated and reviewed by the first and third authors to ensure that they retained meanings consistent with their original forms. The final set of 91 items was written on cards for sorting by key informants.

Card sorts with key informants—We used purposive sampling to identify those individuals who were sought out by locals seeking solutions for emotional and health problems and who would thus have particular insight regarding experiences of depression and the language used to communicate cognitive, emotional, and somatic distress (consistent with contemporary anthropological methods; Bernard, 2005). The authors have ongoing relationships with two health-related nongovernmental organizations, both of which are well established and respected within the communities they serve. Haitian collaborators familiar with the community recommended informants who were well known and respected and who often provided support, counseling, or treatment to community members—these included biomedical and traditional healers, community elders and religious leaders.

Our final sample consisted of six Voodoo priests/priestesses (five men, or *houngan*, one woman, or *manbo*), one herbalist (*doktè fey*, a man), one sacristan (a man), one primary care doctor (a man), two teachers (both men), and two respected community members (both women). *Houngan* and *manbo* are “male and female specialists in serving the spirits” (Brodwin 1996; p. 109). Their role includes divining the cause of illnesses associated with *lwa* (familial spirits) and *ekspedisyon* (sicknesses sent via spirits), as well as performing healing rituals. Although most Haitians do not practice Voodoo on a regular basis, many view mental health problems through its cosmological perspective, and Voodoo priests are often called upon for help. *Doktè fey* (literally “leaf doctor”) are herbalists who provide treatment through teas prepared with various dried leaves. In Roman Catholicism, the sacristan is the individual charged with the care of the church and sacred vessels. In Haiti, this role holds high respect within the community. This diverse group of key informants was unified by their standing as figures called upon to address problems that psychologists would label as mental health constructs. These participants were informed of the purpose of the study, and asked for their consent to participate.

Key informants were asked to participate in a card sort activity. In order to account for variations in literacy, symptom cards were read aloud. Each person was asked to place cards into categories of problems that people complain of when they come to them for help, and then asked to name and describe these categories. In order to allow participants to categorize symptoms according to their own taxonomy, they were not told how many categories to create, nor that categories should correspond to diseases, mental health syndromes, or any other particular taxa. Analysis involved an iterative qualitative procedure of noting symptoms commonly placed together and separately, examining categories across participants’ implicit nosologies, and noting parallelism between categories and depression-like syndromes.

Study 1 Results

The 13 key informants grouped symptoms into many categories and labeled them with several different labels. Seven categories contained more than nine symptoms (or 10% of the 91 cards) and were potentially psychological (i.e., described as being related to emotions, behavior, or interpersonal relationships). These categories were: *fou* (“crazy”; also labeled *moun fou*, *maladi foulay*, *foli*, or *troub mantal*), comprised of psychotic-like and several emotional numbing symptoms (the latter from the HTQ); *stres* (or *mizè*), *soufrans*, *chagren*, *demambre*, *domine*, and *anemi*,¹ all of which were comprised of some combination of symptoms of anxiety and mood disorders – i.e., common mental disorders. Idioms of distress were clustered across categories. With the exception of *tèt vire* (“spinning head or dizziness”) and *tèt chaje* (“loaded head”), *tèt* idioms were placed within *fou* categories, whereas *kè* (“heart”) idioms appeared within the categories more representative of common mental disorders. Other problems identified (i.e., not in the categories above) included cardiac pain, *criz* (epilepsy), *feblès* (weakness), and laziness.

In order to focus on depression-like symptoms, we eliminated *fou* categories and more closely examined common mental disorder categories. Several of these categories included the same symptoms but were labeled differently. For example, the category *domine* for the first *houngan* (Voodoo priest) we interviewed was comprised of a similar set of symptoms as the category *demambre* for the *manbo* (priestess). We noted parallelism across participants’ categories and identified three primary clusters: a large group of symptoms related to fear and cognitive problems; a group related to somatic experiences of anxiety; and a group composed of sadness, psychomotor retardation and loss of interest in daily activities. The third cluster best approximated depression, and thus we chose the symptoms within it for testing in Study 2. This cluster was comprised of several idioms of distress and most of the items adapted from the PHQ-9. In order to make sure that we did not ignore important depression-related symptomology noted in other studies with Haitians (Desrosiers & St. Fleurose, 2002; Nicolas, Desilva, Subrebst, Breland-Noble, et al., 2007), we included the psychomotor agitation- and appetite-related symptoms from the PHQ-9 and our list of heart-related idioms not included in the cluster in Study 2 as well. The English translation of the final set of 26 items is presented in Table 1.

Study 2: Developing the brief screening measure

Study 2 Methods

Recruitment—The sample frame consisted of Haitians attending seven rural health clinics in the Central Plateau and Lower Artibonite. At the seven study sites clinicians designated as site coordinators were asked to identify 8–10 depressed and 8–10 not depressed individuals (see below for description of diagnostic procedures) who would be willing to participate in research, and invite them to participate in the study. We chose specifically not to attempt a random sampling strategy because of concerns that doing so with the records available would result in small subsamples. The resulting sample was thus a convenience sample drawn from rural health clinics, designed to over-sample cases of depression. Recruitment

¹Literally “anemia;” here the term was used to describe fatigue as well as negative affect.

was not tied to receiving services, and site coordinators were told that they would not be interviewing participants that they recruited.

Sample—The sample consisted of 105 participants, ages 14–75 ($M = 34.5$; $SD = 12.2$), of whom 75 (71.4%) were female. Participation at each site was as follows: Cange, 19 (18.1%); Hinche, 24 (22.9%); Lascahobas, 11 (10.5%); Mirebalais, 19 (18.1%); Petite Riviere de l'Artibonite, 13 (12.4%); Thomonde, 8 (7.6%); and Verettes, 11 (10.5%).

Interview staff—Interviewers were all Haitian clinicians working in ZL's Psychosocial and Mental Health Services Department. Nine were BA-level psychologists (three women and six men) and two BA-level social workers (one woman and one man). All had received their education at Université D'Etat D'Haiti, and had worked in their fields for one to six years ($M = 2.73$ years). During their employment at ZL (1–6 years, $M = 2.27$) they had participated in monthly day-long training sessions with the second author. These included training in psychological theories, clinical assessment and psychotherapy. Training in assessment emphasized eliciting symptoms of major mental disorders and observing affect to guide them in making diagnoses (as opposed to relying on patients' reports of clinical history alone). Diagnoses were based on the DSM-IV-TR (all staff had French copies) with attention to Haitian Creole idioms of distress and local socioeconomic contextual influences drawn from their experiences in the field and reviewed in monthly training sessions. Their clinical work was focused primarily on addressing psychosocial issues related to HIV and tuberculosis (among which depression is central), considered by ZL as key entry points for access to general healthcare in low-income countries. This work included pre- and post-test counseling; pre- and postoperative counseling; treatment adherence counseling; general psychotherapy; and, since the January 2010 earthquake, trauma-focused counseling and gender-based violence prevention. PIH psychiatrists (the third and fifth authors, trained and board certified in the U.S.) provided clinical accompaniment for evaluation and treatment of individuals with more severe mental disorders such as psychotic disorders and epilepsy. For the current project, interviewers participated in an additional seven hours of training (over two days) by the first author focusing on the purposes of mental health screening, research ethics, research design, and survey administration. This training included didactic, interactive and role-playing segments.

Measures—The study protocol included depression diagnoses; age and gender; the screening instrument composed of the item pool from Study 1; and the World Health Organization Disability Assessment Schedule, 2nd Edition (WHODAS-II; World Health Organization, 2000).

Depression diagnoses were made by site coordinators based upon culturally informed interpretations of DSM-IV-TR criteria for major depressive disorder, and indicators of functional impairment (based on site coordinators' clinical training and experience described above). Given the low socioeconomic status of most people in the Central Plateau, considerable attention was paid to potential confounds between lack of resources and functional impairment due to poor mental health. For example, appetite changes and weight loss were considered more in line with notions of depression when food was available to the patient rather than in situations where food insecurity governed food intake and influenced

weight change. Similar attention was paid to questions of anhedonia, where engagement in pleasurable activities might be influenced by economic means. These clinicians' standard clinical diagnostic procedures were considered more ecologically and culturally appropriate for ZL's clinical reality than structured diagnostic instruments (e.g., SCID) that have not been translated into Haitian Creole or validated among Haitians. Given the monthly training of this group of clinicians and individual supervision and observation by the team's psychiatrists, we felt that diagnostic procedures would not suffer from problems of criterion drift that threaten reliability in most designs that rely on clinicians' judgment alone.

The screening instrument was comprised of the set of items identified in Study 1, which were read aloud to participants. These were preceded by a prompt asking participants to state how frequently a particular symptom had bothered them in the previous two weeks. The items were scored on a four point, 0–3 scale intended to measure the frequency of distress in the past two weeks, from “not at all” (*Di tou*), “for a few days” (*Pandan kèk jou*), “more than one week” (*Plis pase yon semèn*), to “almost every day” (*Preske chak jou*). Because scales can be confusing for some low literacy participants, interviewers were instructed to follow all nonzero responses (i.e., responses that were not “not at all”) with a prompt repeating how frequently the particular symptom had bothered them and a repetition of the three nonzero response options. Similar methods have been used successfully in study designs in comparable settings (Weobong, Akpalu, Doku et al., 2009).

The WHODAS-II is comprised of 13 scaled items and three open-ended items concerning difficulty with activities of daily living in the past month. Items are scored on a 0–4 scale, from “not at all difficult” (*Pa difisil menm*) to “very difficult” (*Difisil anpil*). Items are intended to measure individual-, family-, and community-level domains of functioning. For analytic purposes, the first 12 items are averaged; other items are for descriptive purposes only. The WHODAS-II was developed internationally, and has been piloted and used to measure functional impairment in many countries worldwide (Deconnick, 2003; Mogga, Alem, Kebede et al, 2006). For the current study items were translated and back translated according to standard practice.

Procedures—The protocol was administered in private locations at each study site. All participants were read a standardized informed consent script in Haitian Creole that included the purpose of the study, risks and benefits of participation, and their right to refuse participation without consequences. In order to keep interview staff blind to participants' clinical diagnoses, interview staff were not allowed to interview participants at their own clinical placement sites, and participants' diagnoses were not discussed prior to administration. Interviewers read prompts and items aloud and recorded participants' responses on paper, as well as recording any other comments participants made during administration. Responses were double entered into an Excel spreadsheets, checked for errors, reviewed, and converted to SPSS for analyses. At the end of the study, participants were paid the equivalent of five U.S. dollars for transportation and potential work time lost while participating.

Analyses—Item selection began by examining written comments made during administration in order to eliminate items that were difficult for respondents to understand.

Association between gender, age, and functional impairment were also used to judge item appropriateness (positive association with impairment, null association with gender and age). Item mean differences between depressed and not depressed groups were examined using *t*-tests and Cohen's *d* values (below 0.3 considered small, 0.3–0.7 moderate, and greater than 0.7 large; Cohen, 1988). Once a smaller subset of discriminating items was identified, Cronbach's alpha was used to examine internal reliability and exploratory factor analysis (EFA) to examine the potential construct validity (confirmatory analyses were not an option due to sample size). The diagnostic accuracy of the final item set's total score was measured by examining the area under the curve (AUC) in a receiver operating curve (ROC) analysis. Sensitivity and specificity of a set of scores were examined by comparing their ability to identify true positive and true negative cases based on clinical diagnoses.

Study 2 Results

Clinical depression diagnoses—Slightly less than half of the sample was diagnosed as depressed by clinician site coordinators ($n = 48, 45.7\%$). Depression was associated with female gender ($\chi^2 = 6.14, p = .01$), such that the odds of depression among women in the sample were three times that of men (OR = 3.14, 95% CI: 1.24, 7.95). Among participants in both depressed and non-depressed groups, there were individuals with other clinically significant problems as well. Clinically significant anxiety (i.e., generalized anxiety disorder) was the most common problem among both depressed ($n = 7$, or 7.1% of the sample) and non-depressed groups ($n = 18, 18.2\%$), followed by psychotic features secondary to depression ($n = 2, 1.9\%$) and bipolar disorder ($n = 1, 0.9\%$) in the depressed group.

WHODAS-II scores—WHODAS-II scores evinced good internal reliability (Cronbach's alpha = .88). The distribution of WHODAS-II scores was skewed towards zero, with 50% of the sample scoring 1.00 or less (within a range from 0.00 to 3.50), and a mean value of 1.12 (SD = 0.86), equivalent to “mild” functional impairment (*Yon ti jan difisil*). Depressed participants ($M = 1.39, SD = 0.89$) had on average half a point greater functional impairment than those in the not depressed group ($M = 0.89, SD = .78$), a moderate and statistically significant difference ($t = 3.07, df = 102, p = .003; d = .60$).

Item selection

Item analyses: Mean responses for items (on the 0–3 scale) ranged from 0.33 (for “Sleeping too much”, *Dòmì twòp*) to 2.13 (for “Thinking too much”, *Kalkile twòp*). Item distributions were varied, indicating variation in item difficulty. The most common comments (that were not responses) recorded by interviewers had to do with participants' understanding of items. Three items stood out with regards to misunderstanding: “Feeling like you ‘are going down’” (an idiomatic expression for dying soon, *Santi ou prale*), “Feeling like you are detached or cut off from other people” (*Santi ou detache ou byen koupe net ak lòt moun yo*), and “Being so restless that you are moving around a lot more than usual.” (*Fè mouwman tèlman anpil, ke wap vire ron, plis pase jan ou kon fè sa*). In discussion with interviewers, whether or not “Feeling like you ‘are going down’” was understood seemed to relate to the tone of voice used when administering the item. The Creole *Santi ou prale* was best understood when read with a rising tone on the last syllable of *prale*. In addition, it was

noted that this phrase was almost always used in the first person in normal speech (*Santi m'prale*), and therefore sounded odd when read to someone in the second person. Most comments related to “Feeling like you are detached or cut off from other people” concerned the figurative content of the item. Comments related to psychomotor agitation concerned pathologizing rapid movement; i.e., it seemed unclear to several participants why rapid movement would be a problem. Several comments related to other items concerned lack of resources (e.g., “Doesn’t have money to eat too much” as explaining why someone was not “Eating more than you used to”). Finally, we eliminated “loaded head” because of face validity concerns apparent in participants’ comments and its theoretical association with *fou* (“crazy”).

Association with gender, age, and functional impairment: In order to examine the effects of demographic characteristics (in order to minimize their effects in the final screening), we used t-tests. Mean differences between men and women were not statistically significant for 23 of the 26 items in the study. Exceptions included “pounding heart” (*kè bat fò*; $t = 2.70$, $df = 103$, $p = .01$), “jumping heart” (*kè sote*; $t = 2.57$, $df = 101$, $p = .01$), “spinning head or dizziness” (*tèt vire*; $t = 2.34$, $df = 103$, $p = .02$), and “You feel you’ve lost the taste for doing anything” (*preske pa pran gou nan fè aktivite*; $t = 2.03$, $df = 100$, $p = .05$), for which women reported higher mean levels than men.

Items’ association with age and WHODAS-II functional impairment scores are presented in the far right columns of Table 1. Age results showed that four items were weakly associated with age, with older participants expressing more frequent problems. Three of these are symptoms were associated with the aging process: “Difficulty sleeping without waking early” (*Gen difikilte pou dòmi pandan lontan*), “Feeling tired or having little energy” (*Santi ou fatigue ou byen ou manke fòs*), and “Feeling like you ‘are going down’” (an expression for dying soon, *Santi ou prale*). Almost all items were positively associated with WHODAS-II functional impairment scores. “Sleeping too much” was an exception, and “Eating more than you used to” was only weakly associated, suggesting that these items’ interpretations lack the external validity the others have. Other items that were moderately associated (between .25 and .35) concerned thinking too much, having a “loaded head” (*Tèt chaje*), neglecting one’s family, and psychomotor agitation.

Item differences across depressed and not depressed groups: Table 1 presents item means, standard deviations, and difference statistics (*t*-tests and Cohen’s *d* effect sizes) between depressed and not depressed participants. Most differences were in the moderate range, suggesting that most items were good candidates for the final measure. Items with Cohen’s *d* values below .3 were eliminated from consideration.

Internal construct validity: Following the elimination of items due to poor comprehension, and low or non-significant mean differences, or small effect size differences, exploratory factor analysis (EFA) was used to examine the potential latent constructs represented by the 15 remaining items. Initial results showed that there were three factors, with one group that seemed best described as a general “depressed mood” factor, another that consisted of vegetative symptoms, and a third that consisted of “pounding heart” (*kè bat fò*) and “jumping heart” (*kè sote*), symptoms that seemed to describe palpitations. Given that the

latter two items seemed more likely to relate to anxiety (among other things), they were eliminated from the final selection.

Final item selection and scale statistics: The final set of items appears in English in Table 2 and the final instrument in Haitian Creole in Appendix A. Screening scores were obtained by summing item responses. The mean for the full sample was 17.43 ($SD = 9.72$), and range 0 to 39 (equivalent to the full potential range of the 0–3 scale across 13 items). Cronbach's alpha (measuring internal reliability) was .89; scale statistics indicated that no item could be eliminated to improve this value. On average, depressed participants ($M = 21.43$, $SD = 8.31$) scored higher than not depressed participants ($M = 14.05$, $SD = 9.60$; $t(103) = 4.17$, $p < .001$), a statistically significant and large effect (Cohen's $d = 0.82$).

Total scores were strongly associated with functional impairment (WHODAS-II scores), $r = .71$ ($p < .001$). In the full sample, total scores were not associated with gender. Among not depressed participants, there was a statistically significant difference between men and women ($t(55) = 2.11$, $p = .04$), with higher scores observed among women ($M = 16.11$, $SD = 9.28$) than men ($M = 10.77$, $SD = 9.40$). Among depressed participants there were no differences between men and women ($t(46) = 1.54$, $p = .13$).

In order to examine the latent constructs of the final 13 items, a second EFA was done. The factor structure of the remaining 13 items is presented in Table 2. Six participants did not respond to all items, and therefore the EFA $n = 99$. Two factors, general depressed mood and vegetative symptoms, accounted for 51.8% of the variance in scores. Factor loadings indicated that the vegetative symptom factor was most strongly defined by sleep problems, whereas the relatively even values for items in the depressed mood group (eight out of ten in the .511-.702 range) indicated no dominant symptoms for this factor. Three items (related to appetite loss, low energy, and psychomotor retardation) loaded on both factors.

Identifying depressed cases using total scores—ROC analysis predicting clinical diagnoses from total scores indicated moderate levels of predictive accuracy. The AUC was .71 (95% CI .61, .81). A range of total scores was examined in order to identify an acceptable balance of sensitivity and specificity. A score of six obtained 100% sensitivity but also classified 70% of not depressed cases as depressed, a specificity of 30%. More balanced options are presented in Table 3 for five potential scores: 11, 12, 13, 14, and 15. The score 13 was selected as the most appropriate value for screening in depression cases, with a sensitivity of 85.4% and a specificity of 50.9%. In order to examine the effect of other diagnoses on these results ($n = 25$ once missing data was accounted for), we removed cases that had other diagnoses, and re-ran ROC analyses and recalculated sensitivity and specificity. The AUC was .70 (95% CI .58, .83), and the second column of Table 3 suggests that 13 remained the preferred cut-off score.

Discussion

To our knowledge this study is the first attempt to develop a brief screening measure in Haitian Creole that indicates caseness for depression and is specific to Haitians living in Haiti. The combined emic-etic approach privileges the knowledge of Haitians sought out by

individuals in distress while at the same time drawing upon the depression research base of European and North American mental health. The result is the *Zanmi Lasante* Depression Symptom Inventory, or ZLDSI, a 13-item screening measure in Haitian Creole of depressed mood and vegetative symptoms. ZLDSI scores are internally reliable and have an interpretation with good construct validity both in terms of coherence with local symptom categories and factor analytic models of depression in other global mental health research (e.g., Ghassemzadeh, Mojtabai, Karamghadiri, & Ebrahimkhani, 2005), and concurrent validity in terms of functional impairment. The ZLDSI appears in Appendix A. As presented, items are scored on a four point, 0–3 scale intended to measure the frequency of distress in the past two weeks, from “not at all” (*Di tou*), “for a few days” (*Pandan kèk jou*), “more than one week” (*Plis pase yon semèn*), to “almost every day” (*Preske chak jou*). As in our Study 2 protocol, interviewers using the ZLDSI should follow all nonzero responses with a prompt repeating how frequently a particular symptom is a problem and a repetition of the three nonzero response options. In order to anchor responses further, we have included the number of days each point on the response scale represents. Community mental health workers and clinicians throughout Haiti are encouraged to utilize the ZLDSI to screen for depression and measure change in symptom severity over time.

Our findings indicated that scores between 12 and 14 have sensitivity well within the range of measures of depression in U.S. contexts (e.g., Lustman, Clouse, Griffith, Carney & Freedland, 1997), but do less well regarding specificity. Good specificity could not be obtained in the current study without unacceptable losses in sensitivity. Given that the primary use of the measure is as a screening and tracking tool within a system of mental health care (and not as a diagnostic instrument) we were less concerned with identifying false negatives, and so feel that the use of 13 to indicate referral for depression is justified. However, the specificity of the instrument is a limitation in contexts in which further diagnostic procedures are not available. The authors welcome the use and adaptation of the ZLDSI to increase its specificity, and encourage researchers who do such research to disseminate results liberally.

The validity of the ZLDSI is bolstered by the use of culturally informed clinicians’ systematic clinical judgments as the gold standard for depression diagnoses in Study 2. This is common emic-etic practice in situations for which no culturally validated structured clinical interviews for depression exist (e.g., Lhewa, Banu, Rosenfeld, & Keller 2007; Hinton, Du, Chen, Tran et al., 1994; Mollica, Wyshak, de Marneffe, Khoun et al 1987), but it should not be used as an excuse to avoid validating interpretations of such clinical instruments. The need for emic structured clinical interviews for all mental health diagnoses remains. Developing standard Haitian Creole clinical interviews would help to advance the standardization of high-quality diagnoses across Haiti and the Haitian Diaspora, as well as help to refine such measures as the ZLDSI. Rather than simply translating and back-translating standard DSM-IV-based instruments (e.g., a Creole SCID-I), efforts should be made to model the best culturally informed Haitian clinicians’ judgment and account for adapting clinical inquiries to fit the ethnocultural context.

The ZLDSI includes three Haitian Creole idioms of distress – *de la la* (low energy), *kè sere* (constricted heart), and *kalkile twòp* (thinking too much) – and their inclusion and the

exclusion of others may contribute to the literature on Haitian Creole idioms of distress. Fullard and colleagues (in press) suggest that *de la la* may be related to losing control (*dekontwole*), and that *kè sere* may be associated with appetite loss. *Kè* (“heart”) idioms in general are common representations of emotional states (Keys et al., 2012); that they were differentially associated with each other in the EFA findings may suggest that differences within the set of *kè* idioms reflect different emotional states. *Kalkile twòp* and synonyms *reflechì twòp*, *maladi kalkilasyon* and *zaminem* reflect what seems to be a worldwide concern for excessive negative cognition. Versions of “thinking too much” have been reported in distressed populations in Zimbabwe (Patel, Simunyu, & Gwanzura, 1995), Ghana (Avotri & Walters, 1999), Sudan (Rasmussen et al., 2010), Uganda (Bolton, Abbo, Okello, Ekblad, Waako, & Musisi, 2008; Betancourt, Rubin-Smith, Beardslee, Stulac et al., 2011), Cambodians in the U.S. (Hinton, Hinton, Eng, & Choung, in press), and among South Asians living in Britain (Fenton & Sadiq-Sangster, 1996) and the U.S. (Karasz, 2005) – and even previously among Haitians in Haiti (as *moun yo panse anpil*; Bolton et al, 2012). In Haiti, “thinking too much” is strongly associated with sadness and, if allowed to persist, is thought to potentially lead to psychosis (Fullard, 2012). The common cross-cultural use of this term is likely due to its nonspecific nature. In some cases it may represent the rumination common to mood and anxiety disorders, in others the intrusive memories characteristic of post-trauma phenomenology.

The ZLDSI is a practical measurement option for mental health workers in Haiti that produces reliable scores with culturally valid interpretation. However, although it was developed using emic as well as etic perspectives, our work does not guarantee that folk practitioners will agree that the disease category presented in the ZLDSI is necessarily psychologically grounded. In other words, although our key informants consistently categorized symptoms into a depression-like category (though they used different labels for this category) and the ZLDSI represents this category symptomologically, this does not mean that relying on the measure to represent the Haitian ethophysiology of depression avoids committing Kleinman’s category fallacy (Kleinman, 1977). Indeed, given that Haitian mental health disease categories are reliant on etiology rather than being defined by particular sets of symptoms (Desrosiers & Fleurose, 2002), it is likely that interpretations of the meanings of the sets of symptoms on the ZLDSI will vary. That key informants used different names for similar sets of symptoms in Study 1 may be a reflection of this. Whether the ZLDSI’s set of symptoms falls under *maladi Bondyè*, *maladi peyi*, or supernatural disease categories (see Sterlin, 2006) is unclear from our data; we refer readers to other emic work exploring these topics in depth (Fullard et al, in press; Keys et al., 2012). That the ZLDSI may not mirror folk practitioners’ disease categories should not be taken to mean that the construct the ZLDSI measures is not a problem among those it purports to serve, and should certainly not be used as an excuse not to evaluate programs that target depression in Haiti. It does suggest that more ethnographic work would be useful in understanding this collection of symptoms from the Haitian ethnocultural perspective.

The studies reported here are not without their limitations. Study 1 relied on a limited number of key informants; it may be that a larger pool of such participants would have provided somewhat different information. In addition, although we attempted to include as

many local idioms of distress, Study 1 could have included others from the literature on Haitians living outside of the Central Plateau (e.g., Nicolas et al., 2007). The design of Study 2 did not include measures of other forms of psychopathology (e.g., PTSD), and therefore can be criticized for lacking an investigation of discriminant validity. However, given that measures with culturally valid interpretations of other forms of psychopathology do not exist for Haitians, it is difficult to imagine how discriminant validity might have been established. We call upon interested researchers to develop such tools and share them freely (as we do here) in order to facilitate culturally informed studies of discriminant validity (as well as fill clinical needs). The use of convenience sampling was also a limitation, and one that might be remedied in future work by random sampling of depressed and non-depressed patients within larger healthcare or community-wide populations. Given age differences in onset and expression of depression found elsewhere (Gallo, Anthony & Muthen, 1994; Hammen, Brennan, & Keenan-Miller, 2008; Kessler, Birnbaum, Bromet, Hwang et al., 2010), studies of Haitians in different age groups might be undertaken in order to identify particular age-related needs of depressed people in Haiti. Finally, our study did not examine education differences; this too should be included in future research.

These studies should be contextualized within the background of renewed interest in mental health in Haiti in the wake of the January 2010 earthquake (e.g., Budosan & Bruno, 2011; Rose et al., 2011). Similar efforts include developing screenings that integrate Haitian Creole idioms of distress with DSM-IV-TR based symptom inventories (Fullard et al., in press; Wagenaar et al., 2012) and using Haitian Creole idioms of distress to facilitate primary care doctors' referrals to mental health services (Keys et al., 2010). Although still grossly under-resourced, mental health care for common mental disorders is becoming a greater priority for healthcare in Haiti (Raviola et al., 2012). Haiti is not alone; the past decade has seen concerted efforts to make mental health a development priority globally (Patel, Boyce, Collins, Saxena & Horton, 2011; Patel & Prince, 2010; Prince, Patel, Saxena, Mai et al., 2007; Raviola, Becker, & Farmer, 2011). It is our hope that researchers contributing to this field will integrate emic perspectives developing assessment tools, so that global perspectives are sensitive to local cultural variation.

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Appendix A. Zanmi Lasante Depression Symptom Inventory (ZLDSI), pilot version

Pandan 15 jou ki sòt pase la yo, konbyen fwa yon nan pwoblèm sa yo te fatige ou?	Di tou	Konbyen fwa yon nan pwoblèm sa yo te fatige ou ?	Pandan kèk jou(1–5 jou)	Plis pase yon semèn (6–9 jou)	Preske chak jou (10-15 jou)
1 Santi ou de la la.	0	-----	1	2	3
2 Santi kè sere.	0	-----	1	2	3
3 Kalkile twòp.	0	-----	1	2	3
4 Kriye oubyen anvri kriye	0	-----	1	2	3
5 Preske pa pran gou nan fè aktivite.	0	-----	1	2	3
6 Santi ou kagou, dekouraje ak lavi, oubyen pèdi espwa nèt ale.	0	-----	1	2	3
7 Gen difikilte pou dòmi pran ou.	0	-----	1	2	3
8 Santi ou fatige oubyen ou manke fòs.	0	-----	1	2	3
9 Ou pa gen apeti.	0	-----	1	2	3
10 Ou santi lavi-w pase mal oubyen ou santi-w pa alèz ak tèt-w.	0	-----	1	2	3
11 Fè mouvman oubyen pale tèlman dousman, menm lòt moun wè sa.	0	-----	1	2	3
12 Ou di nan tèt ou: Pito-w te mouri, oubyen ou gen lide pou fè tèt-w mal.	0	-----	1	2	3
13 Gen difikilte pou dòmi san-w pa reveye bonè.	0	-----	1	2	3

Table 1

Mean item responses for depressed and not depressed respondents and association with age and functional impairment

Item	N	Missing	Depressed		Not depressed		Cohen's		Pearson correlations	
			M (SD)	M (SD)	M (SD)	M (SD)	d	t	Age	WHODAS-II ^a
1 Feeling like you are going to faint.	102	3	0.80 (0.89)	0.55 (0.85)	1.45	0.29	.05	.40**		
2 Low energy.	104	1	1.51 (1.12)	1.12 (1.12)	1.73	0.34	.09	.52**		
3 Feeling like you "are going down."	100	5	1.24 (1.14)	0.80 (1.07)	2.00*	0.40	.21*	.40**		
4 Feeling you have a constricted heart.	105	0	1.85 (1.09)	1.30 (1.10)	2.59*	0.50	-.05	.44**		
5 Thinking too much.	105	0	2.52 (0.79)	1.81 (1.17)	3.58**	0.71	.06	.34**		
6 Pounding heart.	105	0	1.56 (1.18)	1.12 (1.21)	1.87	0.37	.10	.48**		
7 Jumping heart.	103	2	1.36 (1.07)	0.98 (1.10)	1.76	0.35	-.01	.43**		
8 Loaded head.	105	0	2.15 (0.97)	1.53 (1.20)	2.93**	0.57	.17	.32**		
9 Spinning head or dizziness.	105	0	1.33 (1.14)	1.11 (1.18)	0.31	0.19	.10	.53**		
10 Crying or feeling like crying.	105	0	1.54 (1.13)	1.11 (1.11)	1.99*	0.38	-.05	.42**		
11 Feeling like you are detached or cut off from other people.	103	2	1.47 (1.21)	0.98 (1.12)	2.11*	0.42	-.02	.45**		
12 Feeling you've lost the taste for doing anything.	103	2	1.37 (1.16)	0.96 (1.15)	1.76	0.35	.18	.42**		
13 Feeling little pleasure in doing things.	102	3	1.30 (1.20)	0.71 (1.03)	2.67**	0.53	-.05	.49**		
14 Feeling down, discouraged or totally hopeless.	104	1	1.70 (1.12)	1.14 (1.13)	2.54*	0.50	.08	.40**		
15 Difficulty falling asleep.	105	0	1.92 (1.25)	1.23 (1.15)	2.94**	0.57	.13	.46**		
16 Difficulty sleeping without waking early.	105	0	1.69 (1.30)	1.05 (1.08)	2.75**	0.54	.21*	.57**		
17 Sleeping too much.	105	0	0.40 (0.92)	0.28 (0.80)	0.69	0.14	-.15	.10		
18 Feeling tired or having little energy.	105	0	1.85 (1.05)	1.49 (1.14)	1.69	0.33	.21*	.55**		
19 Having no appetite.	104	1	1.38 (1.24)	0.88 (1.14)	2.17*	0.42	.06	.59**		
20 Eating more than you used to.	105	0	0.71 (1.13)	0.25 (0.64)	2.52*	0.50	.07	.22*		
21 Feeling you are a failure or feeling bad about yourself.	105	0	2.15 (1.13)	1.05 (1.13)	4.95**	0.97	.09	.47**		
22 Feeling that you have neglected your family.	104	1	1.15 (1.22)	0.82 (1.12)	1.41	0.28	.20*	.32**		
23 Trouble concentrating on things, such as listening to the radio or attending a ceremony.	103	2	0.83 (1.07)	0.75 (1.01)	0.39	0.07	-.14	.39**		

Item	N	Missing	Depressed		Not depressed		Cohen's		Pearson correlations	
			M (SD)	M (SD)	M (SD)	M (SD)	d	t	Age	WHODAS-II ^a
24 Moving or speaking so slowly that people have noticed.	99	6	1.21 (1.19)	0.73 (1.04)	2.13*	0.43	2.13**	-.03	.43**	
25 Being so restless that you are moving around a lot more than usual.	100	5	1.02 (1.11)	0.75 (1.03)	1.27	0.25	1.27	.02	.29**	
26 Thoughts that you would be better off dead, or of hurting yourself in some way.	104	1	1.26 (1.17)	0.63 (1.05)	2.87**	0.57	2.87**	.00	.48**	

Note.

^aWHODAS-II: World Health Organization Disability Assessment Schedule, 2nd Version

* $p < .05$;

** $p < .01$

Table 2

Factor structure of the 13 items of the Zanmi Lasante Depression Symptom Inventory (ZLDSI) (Exploratory Factor Analysis, Varimax Rotation; N = 99)

Item	Depressed mood	Vegetative symptoms
5 Thinking too much.	.702	--
14 Feeling down, discouraged or totally hopeless.	.682	--
26 Thoughts that you would be better off dead, or of hurting yourself in some way.	.682	--
21 Feeling you are a failure or feeling bad about yourself.	.666	--
12 Feeling you've lost the taste for doing anything.	.653	--
4 Feeling you have a constricted heart.	.639	--
19 Having no appetite.	.527	.452
10 Crying or feeling like crying.	.511	--
18 Feeling tired or having little energy.	.477	.508
2 Low energy.	.430	.468
24 Moving or speaking so slowly that people have noticed.	--	.626
16 Difficulty sleeping without waking early.	--	.861
15 Difficulty falling asleep.	--	.840

Table 3

Sensitivity and specificity for total scores of 11–15

Total Score	Full sample (<i>n</i> = 99)		With other diagnoses removed (<i>n</i> = 74)	
	Sensitivity	Specificity	Sensitivity	Specificity
11	91.7%	45.6%	92.5%	44.1%
12	89.6%	47.4%	92.5%	47.1%
13	85.4%	50.9%	87.5%	52.9%
14	81.3%	52.6%	82.5%	55.9%
15	79.2%	54.4%	80.0%	20.0%