

# Do Concepts of Depression Predict Treatment Pathways? A Closer Look at Explanatory Models Among Clinical and Nonclinical Samples in Uganda

Laura Renee Johnson,<sup>1</sup> Eu Gene Chin,<sup>2</sup> Mayanja Kajumba,<sup>3</sup> Erin Buchanan,<sup>4</sup> Simon Kizito,<sup>5</sup> and Paul Bangirana<sup>5</sup>

<sup>1</sup>University of Mississippi

<sup>2</sup>University of Mississippi Medical Center

<sup>3</sup>Makerere University

<sup>4</sup>Missouri State University

<sup>5</sup>Makerere University

**Objective:** Explanatory models (EMs) are a collection of beliefs about a disorder that can help us understand help-seeking and treatment pathways in diverse contexts. In 2 related studies, we explore EMs about depression held among both clinical and nonclinical samples in Uganda. To explore the potential of EMs to predict help seeking, we assessed the relationship between 2 main aspects of the EM: problem conceptualization and treatment. **Method:** In Study 1, we interviewed and assessed EMs of depression for 135 lay community members and 111 professional practitioners using a vignette. In Study 2, we assessed actual EMs among 33 clinically depressed adults. We transcribed all interviews and analyzed and coded the content. In Study 1, we used logistic regression to examine the relationship of problem conceptualization and stigma to treatment choice; in Study 2, we used Fisher's exact tests to examine the relationship between conceptualization and treatment. Sociodemographics such as age, income, and language were also examined. **Results:** Interviews elicited a diverse range of beliefs about the nature of depression and the types of treatment needed. However, problem conceptualization did not predict treatment in either group. Instead, education and interview language predicted treatment in clinical and nonclinical samples. **Conclusion:** Although EMs can be useful for both exploring mental health and treatment-related beliefs in clinical settings and developing mental health services, contextual factors may be more significant predictors of help seeking. © 2016 Wiley Periodicals, Inc. *J. Clin. Psychol.* 00:1–17, 2016.

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Depression negatively affects individuals, families, and communities and it has grown to be a significant problem worldwide (Marcus, Yasamy, Ommeren, Chisholm, & Saxena, 2012). Studies indicate that depression is especially prevalent in Uganda, where serious social, economic, political, and environmental stressors impinge on communities. Studies of depression in Uganda have reported rates of 14% to 22% (Bolton, Wilks, & Ndogoni, 2004; Ovuga, Boardman, & Wasserman, 2005), with a more recent sample from 14 districts reporting an average of 30% (Kinyanda et al., 2011). Rates as high as 44% (Vinck, Pham, Stover, & Weinstein, 2007) and 49% (Kinyanda et al., 2011) have been reported in the North, which has been affected by decades of war and neglect by the current regime (Kibanya, Kajumba, & Johnson, 2012).

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Please address correspondence to: L. Johnson, Department of Psychology, Peabody Building, University of Mississippi, University, MS 38677. E-mail: [drlaurarjohnson@gmail.com](mailto:drlaurarjohnson@gmail.com)

These rates are based on standardized criteria (e.g., International Classification of Mental and Behavioral Disorders criteria [ICD-10]) and thus may miss out on important cultural variations such as “masked” depression in Uganda, in which the presentation is predominantly somatic or social without sadness or low mood (Ovuga, 1986), and a focus on worry and thinking, as opposed to core affective features (Okello & Ekblad, 2006). Whether or not we take into account culturally relevant symptoms under each diagnosis, it is clear and well recognized among public health professionals that the problem of depression in Uganda deserves serious attention (Ovuga et al., 2001).

Despite the growing concern, the majority of Ugandans rarely obtain treatment for depression (Ndyanabangi, Basangwa, Lutakome, & Mubiru, 2004). Along with a relatively nascent formal mental health sector, the multicultural context of Uganda gives rise to great diversity among beliefs and behaviors regarding depression (e.g., classification, etiology, and treatment). This poses a significant challenge for mental health practitioners who seek to maximize the reach and effectiveness of their clinical assessments and interventions (Johnson, Mayanja, Bangirana, & Kizito, 2009; Verdelli et al., 2003).

Cross-cultural efforts that aim to elucidate treatment pathways of people in Uganda require an integration of etic and emic approaches (Patel, 1995). Explanatory models (EMs; Kleinman, 1980), in particular, have the potential to achieve such a goal. The EM approach involves asking questions that elucidate illness-related beliefs, including problem conceptualization, etiology, perceived effect and social meanings (e.g., stigma), help-seeking preference, and treatment expectations (Kleinman, 1980). These components reflect beliefs held at a particular time as influenced by psychosocial and cultural factors (Cohen, Tripp-Reimer, Smith, Sorofman, & Lively, 1994).

A mixed-methods examination of these components and the relationships between them has the potential to offer tangible and robust recommendations that can improve the reach and quality of mental health service delivery (e.g., McCabe & Priebe, 2004). Also, the use of EMs is consistent with service delivery models that are patient-centered (Williams et al., 1999) and the assertion that it is inappropriate to simply transfer Western-based approaches to countries like Uganda for addressing mental disorders (Johnson, Bastien, & Hirschel, 2009). EM approaches have been applied to a wide variety of populations with different types of presenting problems: diabetic patients in a Midwestern hospital in the United States (Cohen et al., 1994); adolescents with spina bifida in California (Kinavey, 2006); people with schizophrenia in South India (Charles, Manoranjitham, & Jacob, 2007); low-income African American women in a managed health care setting in the Northeastern United States (Waite, & Killian, 2009); both Greek- and Italian-born immigrants living in Australia (Kiropoulos, & Bauer, 2010); and parents of children with autism in Taiwan (Shyu, Tsai, & Tsai, 2010).

Several studies of EMs of depression have also been conducted in Uganda. For instance, Okello and Neema (2007) conducted a qualitative study with a clinical sample of depressed clients in a hospital located in Kampala, the capital city of Uganda. The authors interviewed the participants ( $N = 25$ ) based on an EM protocol to collect information regarding the participant's perception of their own presenting problem. Based on qualitative data, they reported that patients tended to describe their physical pains in the context of their social environment (e.g., conflicts in the family, perceived neglect of the elderly). The effect of depressive symptoms appeared to be most salient when social connections were affected by socially disruptive behaviors, such as suicide attempts. The negative effect and social meaning attached to depression (i.e., stigma) caused patients to spend considerable time thinking about what it means to access psychiatric services. Okello and Neema (2007) suggested that clinicians keep in mind the potential effects of beliefs related to stigma (an EM component) throughout the therapeutic relationship.

Evidence suggests that health and mental health professionals in Uganda are aware of the high levels of stigma attached to patients and their families. Nsereko et al. (2011), for instance, interviewed professional stakeholders in key mental health organizations in Uganda (e.g., health sector, education sector, law and justice sector) and found that many stakeholders highlighted how mental health patients are frequently viewed as being “incapable and stupid” and are often given “derogatory labels” by community members. They also pointed out that this widespread stigma might influence people's willingness to seek appropriate care because families do not want to be associated with the stigma of mental health. The fact that mental health professionals

highlighted this EM component in focus groups suggests they were familiar with the negative social meanings attached to mental health symptoms.

Even though professional practitioners appear to understand how patients are negatively viewed by society, patients and professional practitioners seemingly hold different beliefs in regards to other domains related to depression. In Lusaka, Zambia, for instance, Aidoo and Harpham (2001) reported that mental health professionals frequently described their patient's depressive symptoms as "stress and/or depression" and readily made causal attributions stemming from social factors, stress and depression, and physical symptoms. In contrast, patients tended to use the phrase "problems of the mind" to name their condition and did not readily infer causal links between everyday stresses and mental health symptoms. In addition, mental health professionals were more likely to recommend counseling (and sometimes family planning) as the choice of treatment for depression, while patients suggested alternative treatments, such as traditional healing, religious counseling, painkillers, and prayer.

In another study, Johnson, Mayanja, et al., 2009 compared concepts of depression between lay community members (i.e., "potential patients") and various professional practitioners: There were differences between lay community members and various professional practitioners regarding problem conceptualization, where to get help, and type of treatment for depression between. In terms of problem conceptualization, professionals were more likely to provide terms commonly associated with depression (e.g., depressed mind, unhappy, hopeless) compared to lay community members. In terms of type of treatment, lay community members suggested getting social support and financial along with medication and formal therapy, while mental health practitioners and primary care personnel tended to recommend only the latter.

In determining how to develop an appropriate system of care for depression in countries such as Uganda, the EM framework offers a potentially useful tool. However, EM studies conducted with Ugandans have focused on qualitatively describing the rich details pertaining to EMs of depression and how population characteristics relate to EMs. An aspect of the EM framework that deserves further consideration is the connection between different aspects of the EM and whether it can be used to predict help-seeking behaviors. Thus far, no study has examined if EM components relate to each other in a quantifiable way. In other words, would problem conceptualization predict type of treatment? For example, if it is considered spiritual, then does that imply services from a traditional healer? Would a psychological conceptualization lead to counseling? This information may be important for developing systems of care generally and programmatic efforts to reach underserved communities more specifically (Patel, 1995). Such information would also inform the theory and use of EMs. Specifically, Williams and Healy (2001) have suggested that EMs should be conceptualized as "exploratory maps" instead of "explanatory models." Knowing the extent to which EM components are predictive of one another would help us understand the nature of EM components and how they can be used to advance clinical care.

### *Current Study*

Given differences in beliefs among lay community members, professional practitioners, and clinical patients, we explored how EM components related to each other within each group. The inclusion of professional practitioners in this study in particular is important because mismatches in EM beliefs between practitioners and patients may lead to misdiagnosis, reduced treatment effectiveness, and/or early attrition during the course of treatment (Aponte & Johnson, 2000; Chrisman & Johnson, 1996; Kleinman, 1980; Wohl & Aponte, 2000). Moreover, mismatches between practitioners and lay community members (considered to be potential patients, family members, etc.) may lead to inefficient service delivery and lack of access to appropriate services for underserved populations in Uganda (Weiss & Kleinman, 1988; Gregg & Curry, 1994).

In this article, we report results from two studies conducted with Ugandan adults recruited from urban sites in Kampala and surrounding districts of Mukono, Mpigi and Wakiso in areas considered semiurban (small town or district centers, rather than rural villages). Because there are several methodological differences between the two studies, we do not suggest that the results can be directly compared to one another; however, they are complementary in their underlying

question of whether EM components relate to one another in a coherent manner. Both studies use mixed methods and are based on elicitation of EMs, followed by coding and analysis with parametric and nonparametric statistics.

In Study 1, we interviewed lay community members and professional practitioners regarding EM beliefs about a case of depression in a vignette. We hypothesized that problem conceptualization and stigma would predict of treatment pathway (i.e., beliefs about type of needed treatment). Because there is evidence (e.g., Johnson, Mayanja, et al., 2009) that some demographic characteristics are related to EM components, we also examined how language, education, and socioeconomic status are related EMs. In Study 2, we examined similar relationships among EM components yet with a clinically depressed sample seeking treatment. Similar to Study 1, we hypothesized that problem conceptualization would predict treatment. Results obtained from these exploratory-oriented studies with two different samples can inform the question of whether EMs can be useful for predicting treatment pathways, can be helpful in developing the mental health infrastructure in Uganda, and can inform approaches to treatment and public health education.

## Method

### *Overview*

In this section, we include information corresponding to both studies, followed by further details in areas where each study is unique (participant details, analysis, and results). Both studies benefited from a diverse research and consultative team that aided in the study design; development and translation of the interview; and the data collection and interpretation.

Four authors of this paper (LJ, MK, SK, and PB) conducted interviews, then transcribed and analyzed the data. We chose to explore EMs from different perspectives: lay community and professional practitioners (Study 1) and clinical patients (Study 2). We used purposive sampling to include diverse perspectives from a range of health service settings. Invitation to participate and informed consent procedures were conducted in line with the Code of Ethics of the World Medical Association (Declaration of Helsinki). The study was reviewed and approved by The Uganda National Committee on Science and Technology and the Ministry of Health and the Mukono Traditional Healers Association.

All recruitment sites were urban sites in Kampala or the semiurban areas, which are the small towns and developed areas (nonrural) surrounding Kampala and in the districts of Mukono, Mpigi, and Wakiso. No incentives were given for participation. Researchers invited individuals to participate and obtained consent. The selection of the English or Luganda versions of the interview was based on the participant's choice.

### *Participants*

In Study 1, community persons, lay people ( $n = 135$ ), and professional health care providers ( $n = 111$ ) were recruited from a range of settings, including markets, businesses, and health services. In Study 2, the clinical sample, we conducted interviews with 33 individuals meeting criteria for depression and seeking therapy services. The largest group across both studies was majority female, aged 18–29 years, and roughly half Buganda, the dominant tribal group in the area. Reflective of the massive urban migration occurring in Uganda, many regions of the country were represented in Study 1, with a total of 44 home districts in the community and professional group combined. In contrast, Study 2 had clinical participants from 17 districts. The three dominant religious groups in Uganda were represented in both studies—the Church of Uganda, Catholic Church, and Islam. In both studies, the majority of people had electricity at home, but no motorized vehicle or running water. More details describing specific participant details for each sample are presented in Study 1 and Study 2, respectively.

### *Measures*

*Sociodemographic questionnaire.* Participants in both studies completed similar sociodemographic information interviews. Items were based on previous surveys used at the

Makerere University of Social Sciences Research Measurement translation steps are outlined in the translation procedures section. Items assessed were age, gender, income, education, housing situation, vehicle ownership, language(s), tribe, religion, and home district.

**EM interview.** EMs were elicited in a semistructured, open-ended interview based on Kleinman's (1980) questions. These questions have been the basis for open-ended EM interviews in other studies (Gray, 1995; Gregg & Curry, 1994; Patel, 1995; Ying, 1990). In Study 1, the EM was elicited for a case vignette (see below), while in Study 2, the EM was elicited in reference to the client's own depressive symptoms. The EM questions, nearly identical in each group, assessed the name of the condition, its nature, cause, effect, and sources of help or treatment needed. Questions were slightly altered based on the group (e.g., Study 1, "What do you think the name of the condition is?"; Study 2, "What do you think the name of your condition is?"). Both studies used the same coding procedures outlined in the Data Reduction and Analysis Section. Table 1 shows the frequency of EM components that emerged from studies 1 and 2.

**Depression vignette.** In Study 1, we developed a vignette, based on other EM studies with lay samples (Patel, 1995; Ying, 1990), depicting a case of unipolar depression. The sample met ICD-10 for a major depressive episode. Based on cultural consultation, specific idioms meaningful in Uganda such as lack of energy, loss of appetite, and sleep problems were included among the symptoms. Crying was omitted because it could not be included in the male version without evoking strong stigmatizing attitudes and potentially interfering with participation. Thus, the resulting vignette included aspects that were both etic (e.g., universal aspects of depression such as sadness) and emic (e.g., common local symptoms such as lack of energy, and omission of unlikely and stigmatizing features such as a man crying). Identical male and female versions were provided at random to control for gender effects of the person in the vignette (we selected Kizito and Namaganda as common male and female names, respectively). Similar versions of this vignette were developed concurrently and have been used in EM studies in Uganda (e.g., Okello & Ekblad, 2006; Johnson, Mayanja, et al., 2009).

### *Translation Procedures*

A multilingual, multicultural team of researchers and clinicians (which included LJ, MK, PB, and SK, among others) translated, back-translated, and cross-evaluated all materials (i.e., vignette and interview questions for Study 1 and interview questions for Study 2) into Luganda (Butcher, Nezami, & Exner, 1998). A psychology graduate student and a medical sociologist performed the translation and back translations, and the entire team evaluated the vignettes and interviews for conceptual equivalence and cultural appropriateness. Areas of discrepancy were identified, suggestions for revisions were discussed, and changes made based on consensus (see Johnson, Mayanja, et al., 2009).

### *Interview Procedures*

Lay interviews took place in community settings (21%), traditional healer's clinics (20%), primary care clinics (40%), and mental clinics/hospitals (19%). Clinical interviews took place in mental health service settings. In Study 1, researchers read the case vignette of depression, followed by open-ended questions to elicit the participant's EM. After eliciting participant's EM, the interviewer asked each participant if he/she has ever experienced a problem like the person in the vignette. The majority of lay participants ( $n = 68$ ; 50.4% from the entire lay sample) denied ever experiencing such a problem. When time allowed, some lay participants completed the Beck Depression Inventory (BDI; Beck & Steer, 1987). Of those, the majority ( $n = 46$ ; 90.2%) had scores suggesting minimal to no depressive symptoms. None of the professional participants completed the BDI due to time constraints.

In Study 2, we adapted interview procedures and questions to elicit clinical participants' EM (Weiss, 1997). After referral from health service providers, we gave a short diagnostic interview to assess depression, which included ICD symptoms and questions about functioning

**Table 1**

*Frequencies of Explanatory Model (EM) Components That Emerged From Community, Practitioner, and Clinical Samples*

EM domain and category	Community (N = 135) n (%)	Practitioner (N = 111) n (%)	Clinical (N = 33) n (%)
Problem conceptualization			
Psychological	64 (47.4)	67 (60.4)	13 (39.4)
Biomedical	39 (28.9)	21 (18.9)	6 (18.2)
Others (e.g., traditional/cultural, social/contextual, poverty)	32 (23.7)	23 (20.7)	14 (42.42)
Cause of condition			
Mental/psychological	30 (22.2)	21 (18.9)	7 (21.2)
Biomedical	39 (28.9)	38 (34.2)	5 (15.2)
Social	32 (23.7)	28 (25.2)	10 (30.3)
Others causes (e.g., poverty, poor conditions, environmental stress, traditional/cultural, do not know)	31 (23.0)	24 (21.6)	11 (33.33)
Missing	3 (2.2)	0 (0.0)	0 (0.0)
Stigma			
Shame	83 (61.5)	76 (68.5)	N/A
No shame	52 (38.5)	35 (31.5)	N/A
Treatment expectations			
Psychological	48 (35.6)	44 (39.6)	3 (9.1)
Physical symptom relief	20 (14.8)	13 (11.7)	10 (30.3)
Performance (e.g., able to work, manage household)	12 (8.9)	6 (5.4)	4 (12.1)
Social benefit	11 (8.1)	6 (5.4)	4 (12.1)
Others (e.g., being able to recover, general symptom amelioration)	40 (29.6)	42 (37.8)	12 (36.4)
Missing	4 (3.)	0 (0.0)	N/A
Treatment location			
Mental health clinic or ward	17 (12.6)	14 (12.6)	N/A
Health clinic or hospital	54 (40.0)	54 (48.6)	N/A
Traditional healer	14 (10.4)	21 (18.9)	N/A
Family/community/NGO	39 (28.9)	22 (19.8)	N/A
Missing	11 (8.1)	0 (0.0)	N/A
Type of treatment			
Formal counseling	39 (28.9)	40 (36.0)	4 (12.1)
Modern medicine	41 (30.4)	43 (38.7)	10 (30.3)
Traditional medicine	11 (8.1)	16 (14.4)	15 (45.5)
Other treatments (e.g., informal social supports, financial help)	40 (29.6)	12 (10.8)	3 (9.1)
Missing	4 (3.0)	0 (0.0)	1 (3.0)

Note. N/A = not available. NGO = nongovernmental organization. Although the clinical sample had no information on places to get treatment, the study did collect data on the location in which participants were currently getting treatment: mental health clinic/hospital,  $n = 15$  (45.5%); traditional healer,  $n = 15$  (45.5%); missing,  $n = 3$  (9.1%).

(Primary Care Checklist -10; World Health Organization, 1992, 1997) and oral administration of a measure of depression (BDI; Beck & Steer, 1987). These measures were chosen because they had been previously translated into Luganda and were used among practitioners in the area (Johnson, Mayanja, et al., 2009). Participants meeting criteria for major depression (and not excluded due to bipolar or psychosis) were invited to continue with the interview to elicit

their EM of symptoms ( $n = 33$ ). Clinical participants answered EM prompts based on their own actual experience of depressive illness. Patients were asked about treatment history, current treatments, and benefits. We did not ask if they felt stigmatized, but instead we asked an open-ended question about the effects of the problem in their life. Table 1 shows the frequency of EM components that emerged from the clinical sample.

### *Data Reduction and Coding*

We transcribed audiotapes from studies 1 and 2 verbatim and analyzed the content. We reviewed initial transcripts as they came in and then identified content themes for coding. Although some themes were chosen a priori, our categories expanded and collapsed to account for the data (Miles & Huberman, 1994). This recursive coding process allowed for a richer and more nuanced spread of qualitative content (more detail with greater categories) and the ability to collapse categories into larger themes when needed (for conceptual understanding and statistical analysis).

For problem conceptualization, we expected (i.e., a priori) and found psychological, biomedical, traditional/cultural, and social or contextual conceptualizations to emerge as category themes (Aidoo & Harpham, 2001). Poverty, on the other hand, was a theme that emerged frequently among participants—this was added as a stand-alone category under problem conceptualization. For stigma, we expected responses to be categorized into a binary category: ashamed or embarrassed, or not ashamed or embarrassed, wherein the former category should be more frequently endorsed (Nsereko et al., 2011). However, a third category (i.e., mixed views on stigma) arose from participants and was subsequently added to this EM domain. For type of treatment, we expected a range of treatments to be recommended such as herbal and spiritual remedies (Ovuga, Boardman, & Oluka, 1999), as well as informal social supports, counseling, and modern medicine (Okello & Neema, 2007). Financial help arose as a stand-alone category because participants frequently suggested this type of help.

Researchers were trained in the coding system and reliability checks were performed before quantitative analyses. A coding sheet was used as a guide and these categories were used as the basis for reliability analyses. The kappa statistic for problem conceptualization (.88) was based on six categories; stigma (.88) was based on three categories; and treatment type (.95) was based on six categories.<sup>1</sup>

We used the most detailed level of categorization possible for describing the data and broader themes (collapsed codes) for inferential statistics. For instance, although the number of traditional or cultural names was small in the problem conceptualization category, we retained this category for initial coding and descriptive analysis; whereas in inferential statistics (e.g., regression), this category was collapsed into “other category” due to small cell sizes. The third category under stigma (i.e., mixed views on stigma) was collapsed into the ashamed or embarrassed category for a similar reason. Financial assistance as a treatment for depression is another example of a more detailed category that was its own category in the initial coding and descriptive analysis but then was collapsed into other category to maximize power in inferential statistics.

### *Overall Analytic Approach*

Frequency counts were calculated and used as a basis for quantitative data analysis for both studies. In Study 1, we ran separate regression models for the lay community and professional practitioner groups. In Study 2, we examined relationships among EM components for clinically depressed patients based on their actual experiences with depression (vs. a vignette). Similar to Study 1, we hypothesized that problem conceptualization would predict type of treatment pathway (i.e., treatments they were currently receiving). Because of the discrete nature of the data,

<sup>1</sup>We did not recalculate reliability indices for the collapsed categories because kappa statistics should mathematically be similar (or better) compared to the more detailed categories used in the qualitative analysis.

nonparametric tests were used, including logistic regression and FET. See individual studies for details on participants, specific analytic procedures, and results.

### Study 1: Predicting Beliefs Among Lay and Professional Participants

#### *Participant Details*

Most lay and professional participants were between 18 and 29 years of age. There was, however, a larger proportion of middle-aged adults in the professional sample (32%) compared to the lay sample (19%). Moreover, most of the participants in the professional sample (52%) were married, while most in the lay sample (51%) were single. Half of the lay participants had finished some high school education, and 13% of them were unemployed. In contrast, the majority of the professional participants had some type of tertiary education (62%) and none were unemployed. Regarding income, there was a larger proportion of participants with monthly incomes greater than \$70 in the professional sample (32%) compared to the community sample (19%). Last, the majority of the professional participants (58%) opted to conduct their interviews in English, while the majority of lay participants opted to conduct their interview in Luganda (70%).

#### *Data Analysis*

We conducted two multinomial logistic regression analyses (one for the lay community sample and another for professional practitioner sample) to examine how problem conceptualization and stigma would predict beliefs on needed treatment when accounting for education level, language of choice, and socioeconomic status (SES). This approach is advantageous compared to running several chi-squares and allowed us to account for the effects of other variables of interest, such as education, language, and SES, when predicting the dependent variable (DV), as well as constructing a model that can predict group membership in the DV. This approach is also advantageous compared to discriminant function analysis because it does not have to assume normality, linearity, or homoscedasticity. Type I error was corrected with Sidak-Bonferroni for two logistic regressions at  $\alpha = .025$ .

This is the first study to integrate qualitative and quantitative methods to explore how EM components, contextual factors, and treatment pathways relate to one another. Moreover, the recruitment of ecologically valid samples limited the number of participants. Thus, although post hoc power levels were less than desirable, most values fell within the .60 range (values ranged from .37 to .76). The predictors were included in the models so we could to begin to understand the complex relationships between these variables. In addition to statistical significance, we also provided measures of effect sizes such as odds ratios and Nagelkerke  $R^2$  values to give the reader a sense of practical importance for the included variables.

#### *Results*

*Lay community members.* In each multinomial logistic regression model, we entered problem conceptualization, stigma, education level, SES (as measured by vehicle ownership)<sup>2</sup>, and language of the interview simultaneously in the regression model as instrumental variables (Table 1 shows the frequency of EM components). Problem conceptualization comprised three categories: psychological (reference category, which is coded as "0" in the regression); biomedical; and other conceptualizations (e.g., poverty, interpersonal problems, bewitching, do not know). Stigma comprised two categories: yes ( $n = 83$ ) and no ( $n = 52$ ).

<sup>2</sup>We used ownership of a motorized vehicle as a proxy of socioeconomic status because of high amounts of missing data for household income, presence of electricity at home, and running water at home (e.g., 13% missing data of household income, 33% of missing data for electricity at home, and 33% of missing data for running water at home for community sample).

**Table 2**  
*Logistic Model Results for Lay Community Sample*

			$\chi^2$	df	p	
<b>Overall model</b>			<b>49.78</b>	<b>18</b>	< .001	
Stigma			5.23	3	0.16	
Education			5.71	3	0.13	
Vehicle			5.75	3	0.13	
<b>Language</b>			<b>11.45</b>	<b>3</b>	<b>0.01</b>	
Problem conceptualization			8.65	6	0.19	
Traditional medicine vs. formal counseling (DV)	B	SE	$\chi^2$	df	p	Odds Ratio
Stigma	-2.10	1.14	3.40	1	0.07	0.12
Education	-0.25	0.23	1.17	1	0.28	0.78
Vehicle	0.59	0.41	2.14	1	0.14	1.81
Language	0.10	0.94	0.01	1	0.92	1.10
Other vs. psychological	0.55	1.12	0.24	1	0.62	1.73
Biological vs. psychological	-0.99	0.93	1.13	1	0.29	0.37
Modern medicine vs. formal counseling (DV)						
Stigma	-0.28	0.52	0.30	1	0.59	0.76
Education	-0.33	0.15	4.90	1	0.03	0.72
Vehicle	0.30	0.34	0.75	1	0.39	1.35
Language	0.75	0.59	1.64	1	0.20	2.12
Other vs. psychological	0.63	0.76	0.70	1	0.40	1.89
Biological vs. psychological	0.38	0.55	0.48	1	0.49	1.46
Other vs. formal counseling (DV)						
Stigma	-0.08	0.53	0.02	1	0.88	0.93
Education	-0.12	0.15	0.61	1	0.43	0.89
Vehicle	-0.46	0.49	0.85	1	0.36	0.63
<b>Language</b>	<b>2.11</b>	<b>0.69</b>	<b>9.26</b>	<b>1</b>	< .01	<b>8.23</b>
Other vs. psychological	0.86	0.72	1.43	1	0.23	2.37
Biological vs. psychological	-0.73	0.63	1.32	1	0.25	0.48

Note. df = degree of freedom; DV = dependent variable; SE = standard error. Statistically significant predictors are bolded. Type I error was controlled with Sidak-Bonferroni at  $\alpha = .025$  at the overall regression model.

Education level was collapsed into none ( $n = 34$ ), S1–S6 ( $n = 69$ ), and university/technical college ( $n = 32$ ). SES was measured by vehicle ownership, indicated by no vehicle ( $n = 114$ ), a motorbike ( $n = 9$ ), one car ( $n = 9$ ), and two or more cars ( $n = 3$ ). Both education level and SES were treated as semicontinuous variables for this analysis, to conserve power with small  $n$  in each category, and variables were conceptualized as interval in nature. Language of the interview was either Luganda ( $n = 96$ ) or English ( $n = 39$ ). The dependent variable—beliefs related to needed treatment (i.e., treatment pathway)—comprised four categories: formal counseling (reference category), traditional medicine, modern medicine, or other treatments (e.g., social, financial).

Table 2 includes the parameter estimates, odds ratios, and fit for this model. The overall model in predicting group membership was significant,  $p < .001$ , Nagelkerke  $R^2 = 0.34$ . We then assessed each individual predictor as an overall predictor of group membership. Language of the interview was a significant predictor overall,  $p < .01$ . Next, we examined each equation used to calculate the overall model for predictors that were significant in distinguishing between formal counseling as the reference category and traditional medicine, modern medicine, and

other treatments. Multinomial logistic regression does not give individual significance levels for each equation because they are combined into one overall prediction ability; instead, each predictor is assessed at the overall model equation level.

When predicting formal counseling against traditional medicine, no significant predictors were found (with Type I error correction  $\alpha = .025$ ). Similarly, when predicting formal counseling against modern medicine, education was the only predictor that approached significance ( $p = .03$ ), suggesting that there may be a slight trend for participants to choose counseling over modern medicine as education levels increased. When comparing formal counseling to other types of treatment, interview language was a significant predictor of group membership,  $p < .01$ . This finding indicated that those who chose to interview in Luganda were more likely to choose other types of treatment (e.g., social, financial), while the participants who selected English as their interview language were more likely to select formal counseling. Overall, the model correctly classified 42.95% of participants (i.e., average percent correct across categories in beliefs related to needed treatment): 53.80% formal counseling, 9.10% traditional medicine, 43.90% modern medicine, and 65.00% other types of treatment.

*Professional practitioners.* In the professional sample multinomial logistic regression model, the same analytical strategy was used to predict beliefs related to treatment. In this group (Table 1 shows the frequency of EM components), problem conceptualization comprised three categories: psychological (reference category, coded as "0" in the regression); biomedical; and other conceptualizations. Stigma was considered dichotomous, yes versus no, while education (none  $n = 13$ , S1–S6  $n = 29$ , university or technical college  $n = 69$ ), and SES (no vehicle  $n = 83$ , motorbike  $n = 11$ , one car  $n = 12$ , two or more cars  $n = 5$ ) were again considered semicontinuous variables. The language of the interview was Luganda ( $n = 42$ ) or English ( $n = 69$ ). The dependent variable—beliefs related to needed treatment—comprised four categories: formal counseling (reference category), traditional medicine, modern medicine, or other treatments. Table 3 portrays the overall model, parameter estimates, and odds ratio statistics for this regression.

The overall model predicting group membership was significant,  $p < .001$ , Nagelkerke  $R^2 = 0.59$ , indicating better prediction of membership than chance alone. In this model, education ( $p < .01$ ) and language ( $p < .001$ ) were significant predictors of group membership, with vehicle ownership for SES indicating a marginally significant prediction ( $p = .03$ ). When distinguishing between traditional medicine and formal counseling, education was the only significant predictor,  $p < .01$ , indicating that participants with a higher education level were more likely to pick formal counseling over traditional medicine. All other predictors were nonsignificant for this individual equation.

Language was a significant determinant for modern medicine versus formal therapy,  $p < .01$ , wherein participants who interviewed in Luganda were more likely to choose formal counseling over modern medicine. Last, both education ( $p < .01$ ) and SES ( $p = .01$ ) were predictors of counseling versus other types of treatment. As education level increased, counseling was chosen over other treatments, as seen with traditional medicine and counseling. As economic status (number of vehicles) increased, participants were more likely to suggest other forms of treatment over formal counseling. Overall, the model correctly classified 50.63% of participants (i.e., average percent correct across categories in beliefs related to needed treatment): 50.00% formal counseling, 43.80% traditional medicine, 83.70% modern medicine, and 25.00% other types of treatment category.

## Study 2: Predicting Treatment for Clinical Patients

### *Clinical Participants*

Most clinical patients (52%) were between 18 and 29 years of age and single (43%). Roughly half of the clinical sample was Baganda, with the majority of them being women (58%). Sixteen home districts were represented in this group, and the three dominant religious groups in this sample were the Church of Uganda (33%), Catholic Church (36%), and Moslem (21%). In both groups, the majority of people had electricity at home (58%), but most people did not have

**Table 3**  
*Logistic Model Results for Professional Sample*

			$\chi^2$	df	p	
<b>Overall model</b>			<b>86.42</b>	<b>18</b>	< .001	
Stigma			3.25	3	0.36	
<b>Education</b>			<b>14.56</b>	<b>3</b>	< .01	
Vehicle			9.19	3	0.03	
<b>Language</b>			<b>22.59</b>	<b>3</b>	< .001	
Problem conceptualization			9.38	6	0.15	
Traditional medicine vs. formal counseling (DV)	B	SE	$\chi^2$	df	p	Odds Ratio
Stigma	-0.21	0.87	0.06	1	0.81	0.81
<b>Education</b>	<b>-0.63</b>	<b>0.23</b>	<b>7.32</b>	<b>1</b>	<b>0.01</b>	<b>0.53</b>
Vehicle	0.53	0.50	1.14	1	0.29	1.70
Language	1.52	0.97	2.44	1	0.12	4.55
Other vs. psychological	0.68	0.82	0.69	1	0.41	1.98
Biological vs. psychological	-0.04	1.14	0.00	1	0.97	0.96
Modern medicine vs. formal counseling (DV)						
Stigma	0.77	0.53	2.12	1	0.15	2.16
Education	-0.36	0.25	2.01	1	0.16	0.70
Vehicle	-0.31	0.30	1.09	1	0.30	0.73
<b>Language</b>	<b>-2.86</b>	<b>1.02</b>	<b>7.93</b>	<b>1</b>	<b>0.01</b>	<b>0.06</b>
Other vs. psychological	-1.69	0.93	3.31	1	0.07	0.19
Biological vs. psychological	0.62	0.65	0.93	1	0.34	1.87
Other vs. formal counseling (DV)						
Stigma	0.78	0.91	0.75	1	0.39	2.18
<b>Education</b>	<b>-0.81</b>	<b>0.28</b>	<b>8.59</b>	<b>1</b>	< .01	<b>0.45</b>
<b>Vehicle</b>	<b>1.32</b>	<b>0.54</b>	<b>6.03</b>	<b>1</b>	<b>0.01</b>	<b>3.73</b>
Language	2.20	1.37	2.57	1	0.11	9.05
Other vs. psychological	-0.50	1.00	0.25	1	0.62	0.61
Biological vs. psychological	-0.13	1.19	0.01	1	0.91	0.88

Note. df = degree of freedom; DV = dependent variable; SE = standard error. Statistically significant predictors are bolded. Type I error controlled with Sidak-Bonferroni at  $\alpha = .025$  at the overall regression model.

a motorized vehicle (88%) or running water at home (67%). Approximately one third of the clinical participants had no formal education and 36% of them were unemployed. The majority of participants (33.4%) earned approximately \$17 to \$70 per month. Most clinical participants (61%) chose to conduct the interview in Luganda.

### *Analysis and Results*

We conducted four Fisher's exact tests (FETs) to examine how problem conceptualization, education level, SES, and language might predict type of current treatment for the clinical sample. Because of our small clinical sample size ( $N = 33$ ) and sparsely populated tables (i.e., expected values in several cells less than 5), a FET is advantageous compared to a chi square analysis for this particular sample. In the first FET, we examined the relationship between problem conceptualization and type of current treatment. In the second FET, we compared the relationship between education level and type of current treatment. In the third FET, we compared the relationship between the number motorized vehicles owned (i.e., proxy of socioeconomic status) and type of current treatment. Last, we compared the relationship between language of choice for the

**Table 4**  
*Observed Proportions for Language and Current Treatment for Clinical Sample*

Problem conceptualization	Type of current treatment				Other treatments (e.g., social, financial)
	Traditional medicine	Modern medicine	Formal counseling		
English	2	3	4		3
Luganda	13	7	0		0

*Note.* According to the hypogeometric distribution, the sum of probabilities of all tables, which have more extreme proportional deviations, is marginally significant at  $p = .001$  (two-tailed test), indicating a significant relationship between language and type of current treatment.

interview and type of current treatment. We corrected for Type I error with Sidak-Bonferroni for four FETs at  $\alpha = .0127$ .

There was a significant relationship between language and type of current treatment ( $p < .001$ , two tailed-test). Specifically, the majority of patients who chose to interview in Luganda were currently receiving traditional medicine. No person that completed the interview in Luganda was currently receiving formal therapy. On the other hand, patients who chose to interview in English appeared to be evenly distributed between traditional medicine, other services (e.g., financial assistance), modern medicine, and formal counseling (see Table 4 for frequency breakdown). On the other hand, there were no statistically significant relationships between type of current treatment and other variables: problem conceptualization ( $p = .06$ , two tailed-test); education level ( $p = .29$ , two tailed-test); and number of motorized vehicles owned ( $p = .07$ , two tailed-test).

## Discussion

The majority of individuals in the lay, professional, and clinical samples cited multiple problem conceptualizations, and among lay and professional participants, most people indicated that more than one type of treatment would be best. This result supports and is consistent with clinical recommendations for the use of EMs: EMs can include incredibly diverse beliefs held by patients, professionals, communities, and other stakeholders and are thus useful for increasing cultural competence among providers (Bhui & Bhugra, 2002; Johnson, Bastien, et al., 2009).

Contrary to our hypotheses, however, neither problem conceptualization nor stigma was predictive of treatment in Study 1 and conceptualization was not associated with treatment in Study 2. This was surprising given that a number of previous studies (Nsereko et al., 2011; Okello & Neema, 2007) highlight the deleterious effects of negative social meanings attached to depressive symptoms and associated treatments (e.g., psychiatric help). It may be possible that socially disruptive behavior, which causes shame and embarrassment, triggers the *initial* process of seeking help from formal mental health avenues (e.g., modern medicine; Okello & Neema, 2007). As the help-seeking process unfolds, contextual factors may have a stronger influence (compared to stigma and problem conceptualization) on the types of treatments one has access to. Thus, while eliciting EM-related beliefs at a single time point brings to light the diversity of treatment-related beliefs, our results also point to their inability to reliably predict treatment pathways, such as help-seeking beliefs and behaviors.

Instead of beliefs about conceptualization, it was contextual factors that appeared predictive of treatment pathways. Among community participants, individuals who completed the interview in Luganda were more likely to choose other services (e.g., social assistance, financial aid) over formal counseling as their treatment of choice. Among clinical participants, all of those who used Luganda were receiving traditional medicine over formal counseling. Taken together, these results suggest a more nuanced picture of how language relates to treatment preference and language as a major barrier to help seeking. Regardless of education, income, and belief

regarding what depression is, speaking Luganda may predict a high likelihood of seeking out social and financial assistance as part of their initial help-seeking repertoire before ending up with traditional healing as the treatment that is actually received. Outreach efforts, then, may be most needed among Luganda-speaking communities compared to English-speaking communities.

Given the diversity of opinions about the cause, consequences, and treatment of depressive symptoms among Ugandan communities (Johnson, Mayanja, et al., 2009), ongoing consultative work could be done with local leaders (i.e., those who have idiographic knowledge of local social networks and culture; Rogers, 2003) to determine the best ways to disseminate information about formal counseling treatments in local communities, generate interest about these treatments, and collaborate with diverse stakeholders (e.g., hospital administrators, traditional healers).

The difference in spoken language between practitioners and lay people has been noted to be a barrier toward treatment initiation in Uganda. For instance, many health workers who provide treatment for cervical cancer in Uganda often speak English, turning away the majority of patients (mostly from rural areas) who do not speak or are not comfortable communicating in English (Mwaka, Okello, & Orach, 2014). We see a similar trend in our sample as well: The majority of our community participants opted to interview in Luganda, while the majority of our professional sample opted to interview in English. This suggests the importance of building a diverse workforce that is able to serve patients in different languages and educating health workers about difficulties faced by patients who come from rural settings. In addition, hospitals and/or mental health clinics might consider hiring translators trained in mental health issues and/or trained paraprofessionals from the client's culture who can serve as a translator and culture broker (American Psychological Association, 2010; Johnson, Bastien, et al., 2009).

Ultimately, contextual barriers or facilitators of treatment seeking may play a larger and more important role than mental conceptualizations. For example, it is easy to imagine someone having a belief but because of a lack of availability (e.g., language), he or she would seek out a treatment that is more readily accessible or "known." Among lay community and clinical participants, language appears to be the predominant contextual factor that determines the type of treatment desired and, ultimately, type of treatment received. Among professional practitioners, however, a wider variety of contextual factors (i.e., education, language, and income) predict the type of recommended treatment.

It is unclear why such a distinction exists between practitioners, community, clinical populations, but we can speculate possible reasons. For instance, the effects of education and language could be explained by one's specific profession and the education related to that profession. For example, practitioners who prefer formal counseling over traditional medicine and social or financial assistance may be mental health professionals and primary care staff, while those with lower formal education may be traditional healers. They may be more likely to use Luganda because of a lack of formal education, because it is the language preferred by their patients, and/or because of the match in the professional nomenclature (diagnoses, treatments, rituals, methods) of their practice. Future research could examine whether profession type might interact with education and language in predicting treatment pathways. We hesitate to comment on possible mechanisms that could explain the relationship between SES and treatment preference among practitioners because SES in the overall model was only marginally significant ( $p = .03$ ) after controlling for Type I error. For now, we recommend future studies attempt to replicate this trend with the inclusion of profession type in the model.

This speaks to the importance of expanding current mental health services in accordance with Uganda's decentralization scheme (Ovuga et al., 2001) and for the need to develop systems of care that will meet diverse needs and expectations of depressed patients. Similar to EM findings (e.g., Ying, 1990), many would like counseling and advice combined with other supports (such as money, increased social support, medicine, herbal treatments). Desired treatments do not necessarily fit with sought treatments and it is likely that contextual factors (e.g., language, education levels) play a key role. Indeed, in this study we found EMs informative in terms of eliciting diverse EM beliefs but restricted in their predictive ability regarding treatment pathways. While a useful and illuminative tool, perhaps, the concept of the "exploratory map," rather than explanatory model (Williams & Healy, 2001), is a more accurate descriptor of how EM components should be used.

Williams and Healy (2001), in particular, made a cogent case for this idea and the malleability and fluid nature of the belief components outlined in Kleinman's (1980) EM framework. Specifically, people who face mental health problems actively shape their understanding of the presenting issue. Consequently, their efforts to understand and address their mental health condition is more akin to a map of possibilities rather than a set of predictive beliefs. It is important to note that Kleinman's own use of the term and concept of EMs was never meant to imply that EMs were static, congruent, or necessarily predictive. Instead, works that have been published since then, such as Williams and Healy's (2001), merely expounded upon the malleable properties of EMs (i.e., change in belief strength and stability across time) and the importance of conducting an ongoing assessment of these factors. Thus, EMs may be a useful heuristic for understanding diverse concepts of depression throughout the treatment duration (Johnson, Bastien, et al., 2009). However, contextual factors, such as language and education, may be more predictive of treatment pathways. Sources of information from both EMs and relevant contextual factors are needed to inform efforts to improve the reach and effectiveness of current systems of mental health care in Uganda.

### *Strengths and Limitations*

The strength of our study lies in the inclusion of diverse samples (clinical, professional, and community) and the integration of etic and emic approaches (Patel, 1995) in exploring treatment pathways. While previous EM studies with Ugandan samples have mostly described the diversity of EM components and examined how EM components relate to demographic characteristics, this is the first study to integrate qualitative and quantitative methods to examine the differential predictive abilities of different EM components, enabling us to explore the extent to which EM components relate to one another when accounting for contextual factors (i.e., language, SES, and education level). Future research could further examine the relationships between EM components and treatment pathways with the inclusion of longitudinal-related information (e.g., EM-related belief strength and stability), other EM components, and contextual factors.

Limitations of this study include those common to cross-cultural research, selection bias, a lack of directly comparable methods between studies 1 and 2, and limited sampling of EM components. Great care was taken to follow best practice in translation, interviewing, and data integrity, yet issues related to the use of an imported construct, such as depression, are always in danger of fusing symptoms or syndromes, separating or categorizing an illness into irrelevant categories, and ignoring more important concerns (cf. Canino, Lewis-Fernandez, & Bravo, 1997). Our multicultural team, approach to generating data, and initial open coding of data helped to address such concerns.

Another limitation is that samples were drawn from urban and semiurban areas and so EMs presented here may not reflect those from more rural areas or other regions. Purposive sampling of participants from different settings (i.e., traditional clinics, health, and mental health settings) was conducted to tap, as much as possible, an array of potentially different EMs. Relatedly, although we lacked information (due to time constraints, privacy, and stigma concerns) on whether any of our lay community or professional practitioner participants was experiencing a major depressive episode or engaged in treatment, the majority of individuals in Study 1 denied ever experiencing symptoms such as those in the vignette, and they endorsed minimal to no depressive symptoms on the BDI.

Another limitation is the lack of directly comparable methods for studies 1 and 2, with clinical participants answering about their own disorder and other participants answering about their beliefs related to a vignette. However, our aim was not to directly compare the results from both studies, but to inform the larger question of whether EM components behave akin to "explanatory models" or "exploratory maps." A related concern is that "beliefs related to needed treatment" and "current treatment" variables were not precise enough to distinguish between treatment initiation and engagement. However, purposive sampling among clinical participants enabled us to sample a range of patients with different treatment engagement histories.

Finally, our study limited analysis to three EM components (problem conceptualization, stigma, and type of treatment) and looked at them at a single time point with less than desired

power (with most values ranging in the .60 range). Thus, a lack of statistically significant findings between these EM components does not preclude the possibility (a) that other EM components not examined (e.g., cause of condition, treatment expectations, location for getting help) would relate to one another in a linear fashion or (b) that they would predict EM-related beliefs and treatment pathways at another time point (Williams & Healy, 2001). This is highlighted by the medium effect sizes of several EM components (e.g., stigma, biological vs. psychological, others vs. psychological) in the current set of analyses.

## Conclusion

In this study, we examined the relationship between problem conceptualization and treatment pathways among community, professional, and clinical participants. We also examined stigma in the community sample. Contrary to our hypothesis, concepts of depression and stigma were not predictors of treatment when we account for language, education level, and SES. Instead, language was a consistent predictor of treatment pathways for community, professional, and clinical participants. Thus, although EMs can be a useful framework or heuristic for exploring diverse treatment-related beliefs, EM components may not be related or “logically flow” in a way that predicts help-seeking behavior when measured at a single time point. Our results suggest the important role of contextual factors, including language and education, in help-seeking and treatment pathways for depression.

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