

## Does Duration of Residency in the United States Influence Psychological Symptoms and Postmigration Stressors Among Refugees? Potential Implications of Populism for Refugee Mental Health

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After relocation, refugees may experience significant difficulty adjusting to a host culture, and this difficulty may persist even after many years following resettlement. However, the influence of time on postmigration living difficulties (PMLD) and psychological distress has not been extensively investigated. In this investigation, we used regression analyses to examine whether length of residence in the United States would moderate the relationship between psychological symptoms and PMLD in a sample of 52 adult East African refugees. The sample was predominantly male (female  $n = 13$ ) with a mean age of  $\sim 37$  years ( $SD = 20.91$ ) and mean length of residence in the United States of 9.9 years ( $SD = 5.85$ ). The moderating effect of years living in the United States on the depression–PMLD relationship was significant, and explained an additional 9% of variance in PMLD. The relationship between depressive symptoms and PMLD became significantly related at  $\sim 7$  years of residence in the United States, and became more positive as values in the sample approached the longest duration in the United States (30 years). No such moderating effect was found for the association between posttraumatic stress disorder symptoms and PMLD. These results highlight the risk of marginalization as well as the need for early and sustained psychosocial interventions for refugee populations in the United States.

### ***Impact and Implications***

In contrast to global migration trends, protectionist policies in the United States have reduced the number of refugee admissions from predominantly Muslim countries. The present study provides knowledge that could be useful to clinicians looking to identify core factors relevant to psychosocial adaptation following resettlement in settings like the United States, where some populist perspectives on migration have the potential to marginalize refugee groups by de-emphasizing pluralist values. This study also contains information relevant to policymakers evaluating the merits of strategies that specifically facilitate adaptation of Muslim refugees in host countries, those who are newly arriving as well as those who have resided in the host country for many years. The findings and interpretations of the study are consistent with 2016–2030 United Nations Sustainable Development Goals 10.2 and 10.3 aimed at promoting equality and empowerment of all people through inclusive practices and policies.

**Keywords:** Somalia, migration, refugees, psychological trauma, depression

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The United Nations High Commissioner for Refugees (UNHCR, 2018a) recently estimated that there were 68.5 million people forcibly displaced from their homes by the end of 2017, of which ~16.2 million were newly displaced within the calendar year. Included in the overall displacement estimates are the 25.4 million internationally displaced refugees and asylum seekers worldwide. Currently, a majority of the world's refugees are from predominantly Muslim countries (UNHCR, 2017). More specifically, 68% of all refugees from around the world are from the following five countries: (a) Syrian Arab Republic (6.3 million), (b) Afghanistan (2.6 million), (c) South Sudan (2.4 million), (d) Myanmar (1.2 million), and (e) Somalia (986,400). Somali refugees are of particular interest due to protracted socio-political instability, armed conflict, drought, and famine extending from the onset of civil war in Somalia in the early 1990s. The UNHCR (2018b) estimated that 470,000 Somalis were internationally displaced immediately following the outbreak of civil war in 1991. Despite intensive resettlement efforts in recent years, 1.2 million Somalis maintained refugee status as recently as 2015 (UNHCR, 2016).

Mental health risks associated with mass violence and displacement have been well documented (Bäärnhielm, Laban, Schouler-Ocak, Rousseau, & Kirmayer, 2017). Previous research has indicated that refugees encounter psychological risk related to high rates of traumatic exposure, an often harrowing migration process, and psychosocial difficulties encountered while residing in a host country (Carballo & Nerukar, 2001; Laban, Gernaat, Komproe, van der Tweel, & De Jong, 2005; Scholte, van de Put, & de Jong, 2004). In addition to these migration-related risk factors, the sociopolitical environment of the host society may influence the health and well-being of refugee communities (Bäärnhielm et al., 2017). The salience of resettlement context has come into view in the United States as populist and protectionist perspectives have asserted political dominance over the past several years. Since the passage of the Refugee Act of 1980, the United States has received ~3 million refugees (Krogstad & Radford, 2017). However, during the 2017 calendar year, just 33,400 people received refugee status in the United States (UNHCR, 2018a). For comparison, this number represents a 65% reduction as compared with the 96,900 individuals who

resettled in 2016. In the 2018 fiscal year, reception of Muslim refugees in the United States has seen a particular decline—a stark contrast to global trends in displacement from primarily Muslim countries (Connor & Krogstad, 2018). These data document a shift in approach toward processing refugee and asylum claims within the United States. Considering these factors within the context of recent trends in migration and increased international prominence of populist perspectives, research investigating interrelationships among symptoms of psychological distress and postmigration factors (e.g., acculturation, resettlement stressors, duration of residency in the host country) within Muslim refugee communities appears particularly relevant.

### Refugee Mental Health: Trauma Prevalence and Its Secondary Effects

A growing body of literature has demonstrated the long-term deleterious effects of trauma-related stressors on refugees' mental health (Lie, 2002). Previous research has indicated that Somali refugees may be at particular risk for premigration trauma even as compared with other displaced populations (Gerritsen et al., 2006). Indeed, in a previous analysis of data collected from 74 Somali refugees, we found that ~30% of the sample reported experiencing six or more trauma categories and 17.6% of the sample reported experiencing 10 or more categories of trauma (Bentley, Thoburn, Stewart, & Boynton, 2012). Approximately 15% of our sample exceeded cutoff for probable posttraumatic stress disorder (PTSD) on a self-report measure, and nearly 18% met cutoff for probable depressive disorder. Another study found 36% of a Somali refugee sample ( $n = 622$ ) experienced torture either before or during migration (Jaranson et al., 2004). Roodenrijs, Scherpenzeel, and de Jong (1998) were among the first to examine the secondary effects of traumatic exposure among Somali refugees. In their sample of 54 adult participants, 31.5% of participants met the threshold for probable PTSD. Moreover, 36% of participants met cutoff criteria for clinically significant anxiety and 63% met cutoff criteria for probable depression. Approximately 23% of the sample reported clinically significant symptoms for all three of depression, anxiety, and PTSD. Bhui and colleagues (2006) also found high rates of probable

anxiety and depression (33.8%), as well as PTSD (14%), in a sample of 143 Somali refugees in the United Kingdom.

### Postmigration Living Difficulties

Migration and resettlement stressors have been shown to correlate with symptoms of PTSD and depression (Carswell, Blackburn, & Barker, 2011). The migration process itself may lead to incremental vulnerability due to risk of additional trauma exposure, prolonged displacement, lack of access to educational and health care services, and unemployment (Bentley et al., 2012; Bhugra, 2004; Williams & Berry, 1991). By virtue of forced displacement, refugees face multisystemic psychosocial challenges during and after resettlement in addition to acculturative stress typically generally associated with international migration under less dire circumstances (Kartal & Kiropoulos, 2016). Factors related to the resettlement process have also been identified as introducing mental health risk among Somali refugees (Mohamud et al., 2004; Palmer, 2006; Warfa et al., 2006). Mohamud and colleagues, for example, provided preliminary evidence to suggest that frequency of residential changes within the first 5 years for Somali refugees in the United Kingdom strongly relates to depression, even after controlling for age, gender, and area of residence.

Indeed, postmigration living difficulties (PMLD) have been associated with increased symptoms of depression and PTSD among resettled refugees (Carswell et al., 2011; Schweitzer, Brough, Vromans, & Asic-Kobe, 2011). In a study of current living conditions experienced by 140 Somali refugees residing in the United States, just 51% of the male and 38.5% of female participants reported being employed (Halcón et al., 2004). These findings are generally consistent with previous research linking loss of social status, such as vocational achievement, to increased levels of depression in older Somali male refugees (Silveira & Allebeck, 2001).

Preliminary evidence suggests the possibility of a long-term link between PMLD and psychological distress among Somali refugees. For example, Bhui and colleagues (2003) found higher rates of suicidal ideation among Somalis more than 7 years after resettling, potentially indicative of the incremental influence of PMLD years after relocation. Moreover, person–environment interac-

tions are highly contextualized and subject to evolution over time. As a result, variables such as refugees' perception of their country of origin and misconceptions of the prospective host country have been identified as potential predictors of adjustment among Somali refugee youth (Rousseau, Said, Gagné, & Bibeau, 1998).

### Acculturation, Populism, and Refugee Mental Health

Berry and Kim (1988) provided a model of acculturative stress to assist with conceptualizing cultural and psychological factors that influence associations between acculturation and mental health. Applying this model to the refugee context, Williams and Berry (1991) provided a summary of its components and their relation to one another:

[A]cculturation occurs in a particular situation, and individuals participate in and experience these changes to varying degrees . . . [S]tressors may result from this varying experience of acculturation; for some people, acculturative changes may all be in the form of negative stressors, whereas for others, they may be benign or even serve as opportunities . . . [V]arying levels of acculturative stress may become manifest as a result of acculturation experience and stressors. Individual differences in each of these three phenomena are indicated by the vertical arrows within each of the components. (p. 634)

Contributors to acculturative stress, according to this model, are moderated by a number of factors. Refugee acculturation may be influenced by the mode and phase of resettlement, the orientation of the larger host society toward immigration, and the unique characteristics (e.g., demographic, cultural, social, and psychological) of the acculturating group and individual representatives of it (Williams & Berry, 1991). Williams and Berry drew particular attention to the role of a person's own appraisal of the acculturation process and approach to coping as influential to the degree of acculturative stress encountered.

Consistent with this model of acculturative stress, sociopolitical factors may serve as facilitators or barriers for refugees adapting to life in their host country. Populist ideals and policies may adversely influence refugees' experiences in a host country, which may in turn have deleterious downstream effects on appraisals of their living conditions following resettlement and mental health outcomes alike (Bäärnhielm et al., 2017). Preliminary evidence from recent

experimental studies suggests that negative media representations of Islam and associated populist sentiments may be related to increases in perceived discrimination among Muslims (Saleem & Ramasubramanian, 2017; Schmuck, Matthes, & Paul, 2017). For instance, in a mediation analysis of data collected from 145 Muslim youth as part of a lab experiment, Schmuck and colleagues (2017) found that viewing right-wing populist advertisements increased participants' sense of perceived discrimination, which in turn decreased level of national identification and self-esteem. Similarly, a recent study of Muslim American students found that motivation to assimilate into American culture decreased and avoidance of majority culture increased after being shown videos containing anti-Muslim sentiments (Saleem & Ramasubramanian, 2017). Given that some variants of populist rhetoric emphasize differences and othering, the studies mentioned here would suggest that Muslim refugees are at increased risk for experiencing perceived discrimination and barriers to acculturation.

Acculturation to a host culture and perceived discrimination are strongly associated with psychological and emotional functioning among refugees. Evidence from the Canadian General Social Survey suggests that refugee men are more likely to have experienced discrimination compared with men of other immigration statuses, and that a greater sense of belonging in Canada was associated with better mental health among refugee men (Beiser & Hou, 2017). Similarly, resettlement stressors accounted for 24% of variance in mental health symptoms among Middle Eastern refugees resettled in Sweden, with greater alienation emerging as the strongest predictor of increased symptoms (Lindencrona, Ekblad, & Hauff, 2008). These findings, when considered within the context of prominent theories of acculturation (Williams & Berry, 1991), point toward acculturative and discriminatory experiences as influential to refugee mental health.

Many questions remain regarding refugee adjustment and acculturation over time. As refugees establish new lives in a host country, do experiences of postmigration living stressors change over time? Moreover, do factors like basic living conditions and potential discrimination remain influential years postresettlement? Silove, Austin, and Steel (2007) examined symptoms experienced by 62 asylum

seekers over the course of their residency determination process. The results showed that symptoms of psychological distress were influenced by whether or not asylum seekers appraised their future as being secure or insecure. Individuals whose asylum claims were accepted showed significant improvement in symptoms of depression, anxiety, and PTSD, whereas those who were denied showed higher rates of psychological distress. This finding appears especially salient, as the two groups did not differ based on premigration traumatic exposure or baseline symptom severity. In a meta-analysis of refugee literature, Porter and Haslam (2005) found better postmigration living accommodations to be associated with increased mental health among refugees. This meta-analysis also identified that the more time elapsed between initial displacement and when study data were collected to be associated with better mental health outcomes; however, the median time of 2 years was notably brief in scope. Indeed, refugees who have been resettled for longer potentially experience more symptoms of depression and general psychological distress compared with those resettled for shorter periods of time (Uribe Guajardo, Slewa-Younan, Smith, Eagar, & Stone, 2016). Because refugees are at risk for traumatic exposure and resettlement stressors, symptoms may be expected to persist, if not increase, over time (Marshall, Schell, Elliott, Berthold, & Chun, 2005). Further, there has been some evidence to suggest that a longer amount of time postresettlement may be associated with increased odds of comorbid depression and PTSD (Nickerson, Schick, Schnyder, Bryant, & Morina, 2017).

### **The Adaptation and Development After Persecution and Trauma Model**

Given the unique challenges outlined above, a conceptual model that compliments previous frameworks (Berry & Kim, 1988; Williams & Berry, 1991) while specifically incorporating unique features salient to the refugee experience has been needed. The adaptation and development after persecution and trauma model (ADAPT; Silove, 2013) provides a systems-based conceptual framework oriented around five core psychosocial pillars relevant to refugee mental health: (a) safety/security, (b) bonds/networks, (c) justice, (d) roles and identities,

and (e) existential meaning. These pillars interact with one another to form a multilevel systems perspective of individual-, family-, and community-level factors influencing the well-being of refugees. Table 1 provides descriptions of the five pillars of the model. The five pillars of the ADAPT model are not intended to be viewed as separate, but rather as dynamically interacting with one another to form a multilevel system that considers the individual, family, and community.

The literature reviewed in the previous section described the influence of PMLD on psychological symptoms among refugee populations. However, though previous research has evaluated the role of PMLD on refugees' mental health, no study has investigated the reverse pathway. This may lead to an incomplete view of resettlement stressors. Indeed, in describing the principles underlying the development of the ADAPT model, Silove (2013) stated,

The social world mirrors and interacts with the personal/psychic world, creating a process of recursive, or looped, feedback. A post conflict environment is one of rapid and, at times, unpredictable change, therefore requiring a repeated process of reappraisal in order to understand the dynamic interaction between the individual, the group and the evolving eco/social context. (p. 238)

Therefore, given the recursive relationship between person and environment and the unique

psychosocial dynamics inherent in the refugee resettlement process, evaluation of bidirectional associations between symptoms to PMLD appears warranted.

### Current Study

The current study investigated duration of residence in the host country as a potentially influential third factor in conceptualizing and contextualizing the relationship between psychological symptoms and PMLD. In this study, we investigated duration of residency in the United States as a potential moderator of the relationship between psychological symptoms (e.g., depression; PTSD) and postmigration psychosocial stressors in a Muslim, predominantly Somali refugee sample. Specifically, we hypothesized that (a) emotional distress will be positively associated with self-reported PMLD and (b) more time in host country will exacerbate this relationship. Given the evidence for the potential contributing role of self-reported experiences of discrimination, as described above, we also conducted preliminary and exploratory analyses in which we controlled for the potential contributing role of self-reported experiences of discrimination in the hypothesized associations.

Table 1  
*Five Pillars of the Adaptation and Development After Persecution and Trauma Model*

Pillar	Description
Safety and security	Perception of safety underlies psychological health. Trauma reactions, including those associated with acute and posttraumatic stress symptoms, are normative in response to threat but may become maladaptive over time. Any refugee mental health intervention requires creating a safe environment, emergency protocols, and available services for those with chronic PTSD and comorbidities.
Bonds and networks	Personal and communal attachments directly influence human flourishing. Approaches to addressing grief at the individual- and community level must be considered. Complicated grief, rumination on losses, and attachment difficulties may be a focus of interventions.
Justice	Injustice rests at the core of human rights breaches, by definition. There is need for direct recognition and attention to injustices and natural responses to them (e.g. anger). Preoccupation with injustices of the past may hinder psychological adaptation. Programs and interventions must reinforce a sense of justice, respect, validation, and empowerment. Attention to grief and the effects of multiple losses is central.
Roles and identities	Disruption of social roles and identities are inevitable in the context of displacement. Unemployment and marginalization associated with role disturbance are common upon resettling in the host country. Focus on facilitating role transitions and development or evolution of identities while honoring valued traditions of the culture of origin becomes necessary.
Existential meaning	Core beliefs about the self and world stand in stark contrast to exposure to mass conflict, displacement, and resettlement. Meaning-making becomes a primary task for adaptation, and a necessary component of mental health interventions.

Note. PTSD = posttraumatic stress disorder. The above data are summarized from Silove, 2013.

## Method

### Participants and Procedure

**Participants.** The present study is a secondary analysis of data collected as part of a larger project (Bentley et al., 2011, 2012). Eighty-five participants were recruited in 2010 at two East African community events held in Seattle, Washington. Participants received a \$20 incentive. Three individuals opted to not participate in the study. Three individuals under 18 years of age were also excluded, resulting in a primary sample of 79 participants. Of those, 27 were excluded due to missing data on length of residence in the United States. The final sample for the present study was 52. With regard to demographics, the sample was predominantly Somali (96.1%), as two participants reported being of Ethiopian descent (2.8%). The sample was also predominantly male, with 13 female participants (27.7%). Regarding length of residence in the United States, nine participants (17.1%) had been in the United States for less than 3 years, eight (15.2%) for 3–5 years, 12 (22.8%) for 5–10 years, and 23 (43.7%) for 10 or more years.

**Procedures.** The principal investigator (Bentley) collected data with the help of trained Somali research assistants, who also facilitated participant recruitment by describing the purpose of the study and informed consent. All communication and written documentation were available in both English and Common Somali. Somali research assistants administered all measures in an assisted self-report format due to low rates of literacy in any language within the community. Due to Somali cultural norms on gender, research assistants and participants were gender matched whenever possible. All materials and procedures were approved by the university institutional review board.

### Measures

**Depression symptoms.** The Depression subscale of Hopkins Symptom Checklist (HSCL-25; Hesbacher, Rickels, Morris, Newman, & Rosenfeld, 1980) is a 15-item self-report measure of depressive symptoms experienced in the past week. Items are rated on a 4-point scale ranging from 1 (*not at all*) to 4 (*extremely*). Cultural adaptations of the HSCL-25 have demonstrated strong psychometric properties across many refugee groups

(Kuittinen et al., 2017; Lavik, Hauff, Solberg, & Laake, 1999; Mollica, Wyshak, de Marneffe, Khuon, & Lavelle, 1987). Cronbach's  $\alpha$  for the HSCL-25 in the current study was .87.

**PTSD symptoms.** PTSD symptoms were assessed using the Posttraumatic Symptoms subscale of the Harvard Trauma Questionnaire—Revised (Mollica, McDonald, Massagli, & Silove, 2004). The Posttraumatic Symptoms subscale consists of 16 items that query PTSD symptoms in the previous week on a 4-point scale with responses ranging from 1 (*not at all*) to 4 (*extremely*). The symptoms subscale of the measure has a strong validity and reliability profile across multiple cultural groups (Wind, van der Aa, de la Rie, & Knipscheer, 2017). Cronbach's  $\alpha$  for the Harvard Trauma Questionnaire—Revised in the current study was .96.

**Postmigration living difficulties.** The 24-item Post-Migration Living Difficulties checklist (PMLD; Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997) assessed relocation and resettlement stressors experienced within the past 12 months. Items capture a variety of stressors including “fears of being sent home,” “poor access to medical care,” “worries about family back home,” “discrimination,” “no permission to work,” and “poor access to traditional foods.” The measure uses a 5-point scale with ratings ranging from 1 (*no problem at all*) to 5 (*very serious problem*). Higher cumulative scores are indicative of increased exposure to postmigration stressors. An initial principal component analysis indicated a five-factor structure accounting for 69.8% of the variance in the scale (Silove, Steel, McGorry, & Mohan, 1998). In our sample, Cronbach's  $\alpha$  for these PMLD subscales were as follows: Refugee Determination Process (.76), Health, Welfare, and Asylum Problems (.84), Family Concerns (.79), General Adaptational Stressors (.77), and Social and Cultural Isolation (.82). Internal consistency for the entire PMLD was  $\alpha = .90$ . All of our analyses related to discrimination are based on the single item from the PMLD.

**Time in the United States.** The length of residence in the United States was assessed via self-report, quantified continuously in years, and defined as the amount of time between arrival in the United States and completion of the questionnaire.

## Data Analysis

Before analysis, we screened the data for missing values and violation of assumptions. The outlier analysis included evaluating for violation of linearity, normality, independence, and homogeneity of variance assumptions before conducting regression analyses. Potential outliers were identified by reviewing leverage parameters, as well as Mahalanobis and Cook's distances. Scatterplot and histogram analysis yielded no visual indication that any of the participants' scores problematically differed from the rest of the sample. One participant had scores that exceeded cutoff on two of the three outlier metrics—the Cook's and leverage statistics. To assess for undue influence, we conducted regression analyses both including and excluding this case. Results did not differ on the basis of inclusion or exclusion of the participant; as a result, we included the case the final analyses.

All data analyses were performed in SPSS 25. Moderation analyses were conducted using 5,000 bootstrap resamples through the PROCESS macro for SPSS (Hayes, 2017). Bootstrapping is a nonparametric approach to estimating effect sizes that does not require assumptions of normal distribution to be met (Preacher & Hayes, 2004; also see Efron & Tibshirani, 1993; Mooney & Duval, 1993). This approach has been used as a means of managing statistical power and sampling distribution limitations. Preacher and Hayes (2004) emphasized that bootstrapping “also produces a test that is not based on large-sample theory, meaning it can be applied to small samples with more confidence” (p. 722). As such, bootstrapping procedures appear robust to power limitations sampling distribution issues inherent to small samples. Independent variables were mean-centered as part of the PROCESS analyses, and corrections for heteroscedasticity were also provided by the macro. PROCESS automatically creates interaction terms between independent and moderator variables for all moderation analyses. All analyses were conducted using Model 1 for simple moderation. In the depression model, we first controlled for age and PTSD symptoms. To investigate the moderating effect of time in the United States on the relationship between depression symptoms and PMLD, PMLD scores were regressed on depression symptoms in the first step, followed by duration of

U.S. residency in the second step. The interaction term of depression scores and duration of U.S. residency was added in the third step. In the PTSD model, we controlled for age and depressive symptoms. In the moderation analyses, PMLD scores were regressed on PTSD symptoms in the first step, followed by duration of U.S. residency in the second step. The interaction term of PTSD symptoms and time in the United States was included in the third step. For both models, simple slope analysis evaluated for interaction effects at 1 *SD* below, at the mean, and 1 *SD* above the mean of the moderator variable. We reviewed Johnson-Neyman regions of statistical significance to identify patterns in the hypothesized moderation effects.

## Results

### Frequencies and Correlations

Table 2 provides means, standard deviations, and bivariate correlations. The PMLD most frequently endorsed as a *moderately serious to very serious problem* were “worries about family back home” ( $n = 29$ ; 55.1%), “separation from family” ( $n = 22$ ; 41.8%), “unable to return home in an emergency” ( $n = 16$ ; 30.4%), and “poverty” ( $n = 16$ ; 30.4%). Frequencies for responses on the PMLD checklist can be seen in Table 3. The most frequently reported depressive symptoms, which were *quite a bit* or *extremely*, were “feeling everything is an effort” ( $n = 10$ ; 19.2%), “worrying too much about things” ( $n = 7$ ; 14%), “difficulty falling asleep, staying asleep” ( $n = 7$ ; 14%), and “feelings of worthlessness” ( $n = 6$ ; 11.8%).

The following items from the PMLD checklist were correlated with the HSCL-25 depression total sum score: communication difficulties,  $r = .31$ ,  $p = .02$ , discrimination,  $r = .31$ ,  $p = .03$ , no permission to work,  $r = .56$ ,  $p < .001$ , not being able to find work,  $r = .28$ ,  $p = .04$ , bad job conditions,  $r = .35$ ,  $p = .01$ , delays in processing application,  $r = .33$ ,  $p = .02$ , fears of being sent home,  $r = .35$ ,  $p = .01$ , worries about not getting treatment for health problems,  $r = .32$ ,  $p = .02$ , poor access to medical care,  $r = .29$ ,  $p = .04$ , little government help with welfare,  $r = .36$ ,  $p = .01$ , poverty,  $r = .30$ ,  $p = .03$ , poor access to foods you like,  $r = .41$ ,  $p < .01$ , loneliness and

**Table 2**  
*Correlations Between Symptoms, Duration of Residency in the United States, and Postmigration Living Difficulties Among East African Refugees (N = 52)*

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	37.25	20.91	—	—	—	—	—	—	—	—	—	—
2. HSCL-25 Depressive symptoms	19.67	5.89	-.23	—	—	—	—	—	—	—	—	—
3. HTQ-R PTSD symptoms	21.85	10.12	.13	.54**	—	—	—	—	—	—	—	—
4. PMLD	19.44	17.16	-.04	.35*	.27**	—	—	—	—	—	—	—
5. PMLD–Determination process subscale	2.14	3.42	-.14	.24	.10	.56**	—	—	—	—	—	—
6. PMLD–Health Welfare, and Asylum Problems subscale	6.04	6.84	-.20	.26	.22	.87**	.35*	—	—	—	—	—
7. PMLD–Family Concerns subscale	4.92	4.38	.19	.09	.12	.69**	.11	.50**	—	—	—	—
8. PMLD–General Adaptation Stressors subscale	4.64	5.41	.05	.40**	.37**	.82**	.40**	.57**	.52**	—	—	—
9. PMLD–Social and Cultural Isolation subscale	1.71	2.59	.02	.32*	.12	.72**	.45**	.62**	.39**	.42**	—	—
10. Years in the United States	9.9	5.85	-.04	-.30*	-.06	-.16	-.07	-.11	-.08	-.22	-.06	—

*Note.* HSCL-25 = Hopkins Symptom Checklist-25; HTQ-R = Harvard Trauma Questionnaire–Revised; PTSD = posttraumatic stress disorder; PMLD = Post-Migration Living Difficulties checklist.  
 \*  $p < .05$ . \*\*  $p < .01$ .

boredom,  $r = .38$ ,  $p = .01$ , and isolation,  $r = .31$ ,  $p = .03$ . The discrimination item of the PMLD was correlated with the sum of all other items on the PMLD checklist,  $r = .58$ ,  $p < .001$ , the other items of the PMLD General Adaptational Stressors subscale,  $r = .51$ ,  $p < .001$ , the PMLD Health, Welfare, and Asylum Problems subscale,  $r = .51$ ,  $p < .001$ , the PMLD Family Concerns subscale,  $r = .50$ ,  $p < .001$ , and the HSCL-25 total score,  $r = .32$ ,  $p = .02$ , but not duration of residence in the United States,  $r = .04$ ,  $p = .79$ .

**Regression and Moderation Analyses**

Table 4 displays the regression results for the depressive symptoms model. With regard to the moderation analyses, as hypothesized, depression had a direct effect on PMLD such that higher self-reported depression was associated with increased self-reported PMLD, and time in the United States significantly moderated this relationship while explaining an additional 9% of model variance. The moderation was statistically significant at the mean,  $t(46) = 2.63$ ,  $b = 1.62$ ,  $p = .01$ , and 1 SD above the mean,  $t(46) = 2.76$ ,  $b = 2.84$ ,  $p < .001$ . These findings are represented in Figure 1, which depicts that the strength of relationship between depression symptoms and PMLDs is stronger for those residing in the United States longer. Figure 1 shows a slightly positive but nonsignificant

slope between depression and PMLD at low levels (1 SD below the mean) of time in the United States, but this relationship becomes more positive at the mean and at high levels of time in the United States. This is further articulated by the Johnson-Neyman analysis, which demonstrated that time in the United States became a significant moderator at ~7 years of residency,  $t(46) = 2.01$ ,  $b = .99$ ,  $p = .05$ , and the strength of this relationship continued to increase through ~15 years at which point it began to plateau,  $t(46) = 2.76$ ,  $b = 2.68$ ,  $p = .008$ . Time in the United States remained a statistically significant moderator at the highest value in the sample (30 years),  $t(46) = 2.60$ ,  $b = 5.79$ ,  $p = .01$ . After controlling for discrimination, the omnibus depression-PMLD model remained statistically significant,  $F(5, 46) = 8.04$ ,  $p < .001$ . However, depressive symptoms did not have a main effect on PMLD,  $t(46) = .17$ ,  $b = .09$ ,  $p = .87$ , and time in the United States also did not moderate this relationship,  $t(54) = .83$ ,  $b = .06$ ,  $p = .41$ , after controlling for discrimination.

The overall PTSD model was not statistically significant,  $F(5, 46) = 2.23$ ,  $p = .07$ . PTSD symptoms did not have a main effect on PMLD,  $t(46) = 1.02$ ,  $b = .28$ ,  $p = .32$ , and time in the United States did not moderate this relationship,  $t(54) = 1.80$ ,  $b = .08$ ,  $p = .08$ .



**Table 3**  
*Moderately Serious to Very Serious Postmigration Living Difficulties Reported by East African Refugees (N = 52)*

Item	n	%
Worry about family back home	29	55.1
Separation from family	22	41.8
Unable to return home in case of emergency	16	30.4
Poverty	16	30.4
Not being able to find work	14	26.6
Poor access to dentistry care	14	26.6
Little help with welfare from charities	14	26.6
Little government help with welfare	14	26.6
Poor access to counseling services	12	22.8
Worries about not getting treatment for health problems	11	20.9
Poor access to long-term medical care	11	20.9
Delays in processing your application	11	20.9
Discrimination	10	19.0
Loneliness and boredom	10	19.0
Poor access to the foods you like	10	19.0
Bad job conditions	9	17.1
Communication difficulties	9	17.1
Poor access to emergency medical care	7	13.3
Isolation	7	13.3
No permission to work	6	11.4
Conflict with immigration officials	6	11.4
Fears of being sent home	6	11.4
Being in detention	5	9.5
Interviews by immigration	4	7.6

**Post Hoc Analyses**

**PMLD to depressive symptoms.** Post hoc analyses evaluated an alternative model for depression and PMLD. In this reversed the model, PMLD was entered as the independent variable and depressive symptoms as the dependent variable. The direct effect of PMLD on depression was not statistically significant,  $t(46) = 1.31$ ,

$b = .06, p = .20$ , and time in the United States did not moderate this relationship,  $t(46) = .02, b = .00, p = .98$ .

**Moderation of PMLD subscales.** Our post hoc analyses also looked at potential moderation of the five PMLD subscales. Post hoc analysis of the PMLD subscales indicated a moderating effect of time in the United States for the Family Concerns and General Adaptational Stressors factors only. The Family Concerns subscale of the PMLD is composed of three items querying stressors associated with separation from family, worries about family back home, and inability to return home in case of emergence. In evaluating for moderation, depression did not have a direct effect but the interaction term with time in the United States did have a moderating effect that accounted for an additional 9% of model variance. This moderating effect was only statistically significant at more than 1 SD above the mean according to the Johnson-Neyman test. This effect became significant at ~18 years of residence in the United States,  $t(46) = 2.02, b = .66, p = .05$ , and remained stable through the highest value in the sample (30 years),  $t(46) = 2.11, b = 1.27, p = .04$ .

The six-item General Adaptational Stressors subscale of the PMLD was calculated based on responses to questions about difficulties with communication, discrimination, no permission to work, not being able to find work, bad job conditions, and poverty. In investigating item-level correlations between the Depression subscale of the HSCL-25 and General Adaptation Stressors subscale of the PMLD, the strongest item correlations were with feelings of worthlessness,  $r = .48, p < .01$ , worrying too much about things,  $r = .45, p < .01$ , poor appetite,

**Table 4**  
*Time in the United States Moderating the Relationship Between Depressive Symptom Severity and Postmigration Living Difficulties*

Step	Variable	b	R <sup>2</sup> /ΔR <sup>2</sup>	p	95% CI
Controls	Age	-.02	.00	.80	[-.25, .19]
	HTQ-R PTSD symptoms	.05	.08	.86	[-.51, .61]
1	HSCL-25 Depression symptoms**	1.62	.05	.01	[6.92, 36.12]
2	Time in United States	-.04	.01	.93	[-.87, .79]
3	Depression × Time*	.21	.09	.02	[.03, .39]

*Note.* CI = confidence interval; HTQ-R = Harvard Trauma Questionnaire-Revised; PTSD = posttraumatic stress disorder; HSCL-25 = Hopkins Symptom Checklist-25. Age and PTSD symptoms are entered as covariates.  
\*  $p \leq .05$ . \*\*  $p < .01$ .

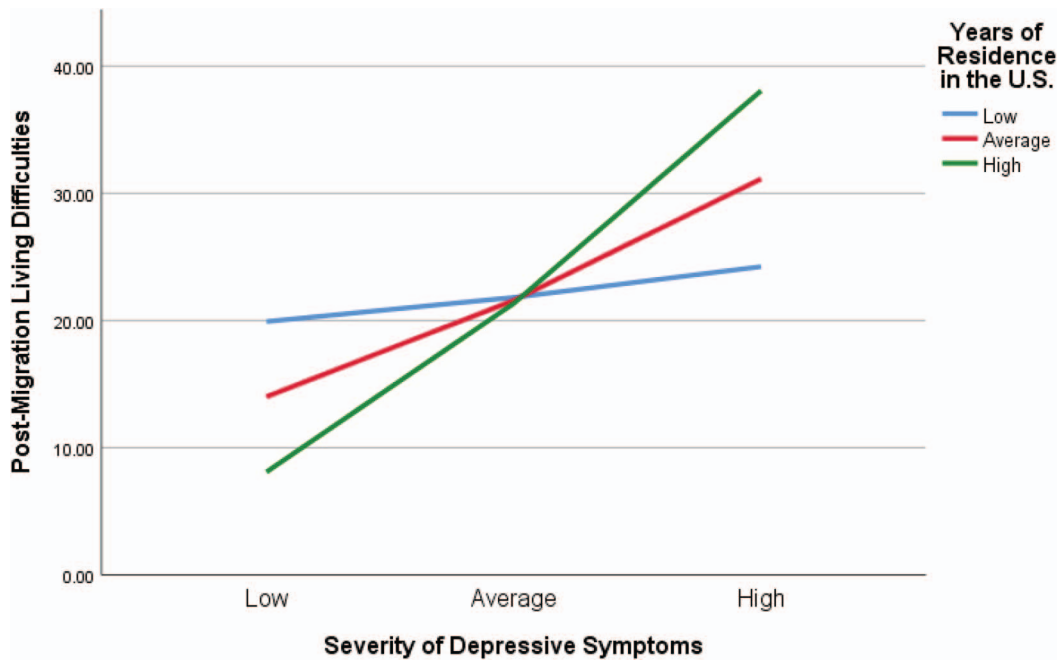


Figure 1. Simple slopes of the moderator, duration of residency in the United States (in years), at levels of the predictive relationship between depressive symptoms and postmigration living difficulties. See the online article for the color version of this figure.

$r = .41, p < .01$ , and feeling as though everything is an effort,  $r = .40, p < .01$ . Aside from poor appetite, these items all seem to represent a demoralization component of depression that is strongly related to PMLDs. In the moderation analyses, depression had a direct effect on the General Adaptational Stressors subscale after controlling for age and PTSD symptoms. Time in the United States significantly moderated this relationship and explained an additional 8% of model variance. The moderation was statistically significant at the mean,  $t(46) = 2.56, b = .48, p = .01$ , and 1 *SD* above the mean,  $t(46) = 2.70, b = .84, p < .001$ . The Johnson-Neyman analysis indicated that the moderation became significant at approximately seven and a half years of time in the United States,  $t(46) = 2.14, b = .33, p = .04$ . The pattern of this relationship mirrored findings from the overall PMLD scale described above in that it plateaued at ~15 years,  $t(46) = 2.71, b = .79, p = .008$ , and remained a statistically significant moderator through the longest duration of residence in the United States (30 years),  $t(46) = 2.56, b = 1.72, p = .01$ . However, with discrimination

entered as a covariate, depressive symptoms did not have a main effect on PMLD,  $t(46) = 1.10, b = .15, p = .28$ , and time in the United States did not moderate this relationship,  $t(46) = .30, b = .01, p = .77$ .

## Discussion

Refugees experience stressors associated with their initial displacement, migration, and the process of resettlement in host country. Previous research has indicated that a multitude of factors influence postmigration living conditions experienced by refugees (e.g., attitudes of the host culture toward immigration; characteristics of those acculturating group and its individual representative; Berry & Kim, 1988; Williams & Berry, 1991). In an effort to better understand the relationship between psychological distress and postmigration psychosocial stressors within a Muslim refugee sample, we utilized archival data to evaluate the potential moderating effect of duration of residency in the host country. In the following paragraphs, we will attempt to interpret our preliminary find-

ings within the context of relevant theory while identifying potential future directions in research. Though our data were collected in 2010, before the most recent rise in populist rhetoric regarding immigration and asylum seeking in the United States, we will also identify potential implications of populist perspectives on the results of the study.

This was a correlation-based study that found a number of notable associations. As shown in Table 3, participants reported a wide range of PMLD types spanning multiple life domains. When considering correlations between postmigration stressors and overall depression symptom scores, a few themes emerge. At the item level, in addition to correlations with other employment-related factors, “no permission to work” had the strongest correlation with HSCL-25 Depression subscale scores. This finding is consistent with broader literature indicating barriers to employment as an influential factor in refugee mental health (Posselt, Eaton, Ferguson, Keegan, & Procter, 2018; Wells, Steel, Abo-Hilal, Hassan, & Lawsin, 2016). Underemployment may place refugees at risk for distress resulting from poverty, while also reducing access to health care services (Franks, Gawn, & Bowden, 2007). The employment items are part of the General Adaptational Stressors subscale of the PMLD. With regard to individual items from the HSCL-25 as correlated with this PMLD subscale, the strongest correlations were “worrying too much about things,” “feeling as though everything is an effort,” and “feelings of worthlessness.” Taken together, these correlational results suggest that symptoms associated with demoralization and depressive rumination may be strongly associated with indicators of basic postresettlement psychosocial precarity.

Consistent with the meta-analytic study of Porter and Haslam (2005) that found greater time between resettlement and data collection positively correlated with mental health symptoms in refugees (median: 2 years), our findings indicated a similar pattern in which we found time since resettlement negatively correlated with depressive symptoms when looking across the entire sample. Although not statistically significant, time negatively correlated with PTSD symptoms and PMLD. Such findings would seem to indicate a pattern of improved mental health in refugees as time elapses in a host country, but

further the interrelationships among these variables need to be further contextualized.

Our moderation analyses were intended to provide additional context in the association between depressive symptoms and PMLD. The results indicated that depressive symptoms became associated with PMLD after ~7 years of residence in the United States, even after controlling for age and PTSD symptoms. That is, depression symptoms were not significantly associated with increased PMLD for refugees who had been in the United States for less than 7 years, but for refugees residing in the United States for more than 7 years, increased depression symptoms were associated with increased PMLD. This relationship was stronger for those who had been in the United States for longer, and although the strength of the relationship began to plateau for those who had been in the United States for 15 years or more, the relationship remained significant at 30 years in the United States. These findings are especially interesting when considering the overall negative correlations between symptoms and time in the United States described above. Additional research is needed to differentiate pathways and trajectories in the relationship between depressive symptoms and postmigration stressors over time, while also further evaluating the potential role of influential acculturative stressor such as perceived discrimination.

Nineteen percent of our sample reported experiencing moderately serious to very serious difficulties with discrimination in the last 12 months. As a result, we conducted exploratory analyses to preliminarily investigate whether our model remained significant after controlling for discrimination. The relationship between depression and PMLD became nonsignificant after removing the discrimination item from the PMLD checklist and entering it as a covariate in the model. Our ability to draw conclusions from this finding is extremely limited, as we did not conduct any analyses otherwise modeling discrimination, and thus must be careful to not overinterpret. However, revisiting the model of acculturative stress presented by Berry and colleagues (Berry & Kim, 1988; Williams & Berry, 1991) in conjunction with more recent literature on reactions to perceived discrimination and the findings of the current study, may yield some important opportunities for future research. The model of acculturative stress sug-

gests that appraisals influence an individual's orientation to their personal sense of agency over the acculturation process, while also providing valenced interpretations of their experiences (e.g., change as opportunity vs. change as threat). Moreover, Berry and colleagues described appraisals and coping behaviors as person-level characteristics influential to one's experience of acculturative stress. In the context of recent research indicating that exposure to populist sentiments contributes to increased perceived discrimination (Schmuck et al., 2017) and disengagement from majority culture (Saleem & Ramasubramanian, 2017), our preliminary findings raise further questions about the potential consequences of populist sentiments on refugee mental health and experiences of discrimination.

Given that our data were collected in 2010, future prospective studies will be needed to directly explore those relationships within the context of contemporary rises in populism. However, we believe findings of the current study have the potential to assist with future hypothesis development. For example, one hypothesis may be that populist messaging, particularly messages construed as negative toward specific groups (e.g., Muslims; immigrants; refugees), activates negative appraisal systems among some members of that group, which in turn influences coping behaviors enacted in response to the perceived acculturative stressor. Considering the high base rate of depression and other indicators of emotional distress among refugees (Steel et al., 2009), a negative feedback loop may be created between depressive symptoms and acculturation stressors such as discrimination. Such a conceptualization would fit with behavioral models of depression (Lejuez, Hopko, & Hopko, 2001). For example, as indicated by the study by Schmuck and colleagues (2017), refugees experiencing depressive symptomology may react to perceived discrimination by disengaging from the host society. For some refugees, the outcome of this behavioral coping pattern may be a recursive and self-sustaining negative loop between depression symptoms and experiences of PMLD.

The ADAPT model (Silove, 2013) also provides a conceptual framework for further interpreting these findings within the broader refugee experience and developing hypotheses for future research, clinical practice, and policy de-

velopment. For example, reflecting on the bonds/networks pillar specifically, Silove (2013) argues that the loss of interpersonal and social bonds disturbs the functioning of individuals affected by persecution and trauma. Such losses, when responded to maladaptively, may result in preoccupation with the past and a chronic grief reaction (Silove, 2013). Considering this pillar, it is possible that our finding that depressive symptoms relate to PMLD reflects an extended, complicated, and unresolved grief process. Developing the hypothesis from the previous paragraph a bit further, as acculturative stress increases and opportunity for reinforcing experiences decreases due to disengagement from host culture, internalized reflection on the life and family left behind potentially increases. This appears particularly plausible given that worries about family back home, separation from family, and concerns about being unable to return home in an emergency were the most frequently endorsed items from the PMLD checklist in this sample. Such an interpretation would be consistent with previous refugee research showing that complicated grief accounted for 31% of the variance in adverse mental health outcomes (Craig, Sossou, Schnak, & Essex, 2008).

### Limitations

There are several limitations to note. First, these data were collected in 2010 before the most recent rise of right-wing populism in the United States. From a conceptual standpoint, even though many relevant challenges encountered by refugees have been longstanding, we are unable to make inferences about the influence of the current political climate in the United States. From a statistical standpoint, this study is based on a secondary analysis of data collected as part of a larger project primarily focused on other variables. This partially explains the notable degree of missing data within our sample for participants' length of residence in the United States, as 27 of 79 participants did not answer this question. The small sample size for our analyses was a secondary effect of this missing data, thereby limiting our statistical power as well as our ability to generalize these findings. However, we did employ a bootstrap resampling procedure in all analyses to address this limitation, which has been demonstrated to

mitigate some power limitations (Hayes, 2017; Mooney & Duval, 1993). We recognize that our approach has not fully mitigated statistical and methodological challenges associated with small sample sizes, but also acknowledge that smaller sample sizes are common among refugee mental health studies that utilize a community-based sampling paradigm. Thus, our sample size is consistent with many previously published studies into refugee mental health but represents a notable limitation nonetheless.

Generalizability is also limited because cross-sectional design of this study. Therefore, the conclusions we are able to draw from this study are limited, especially when investigating length of residence in the United States as a primary variable of interest. Our use of time as a moderating variable is also a conceptual limitation, as there is distinct ambiguity as to what refugees within this sample may have experienced throughout their time in the United States. It may be that length of residence in the United States is serving as a proxy for other influential factors such as increased opportunities to experience acculturative challenges, postmigration challenges more broadly, or other psychosocial experiences. Therefore, we cannot conclude that length of residence itself is a determinant factor in the relationship between depression symptoms and PMLD. Longitudinal data and analyses are needed to truly delineate the role of length of residence in the United States, and it seems imperative to also extricate the longitudinal influences of discrimination, acculturation, and related constructs on postmigration stress. We did not collect data on these constructs. Although our post hoc analyses paint a coarse picture of the influence of discrimination, we can only provide hypotheses for future consideration until these constructs are explicitly measured and investigated in relation to depression and postmigration stress.

## Conclusion

Within the United States, there has been a dramatic rise in populist sentiments arguing to reduce immigration and providing asylum to those seeking refuge and asylum, and the tendency of some populist paradigms to emphasize difference and otherness has been readily apparent in recent political rhetoric (Bäärnhielm et al., 2017; Jacobs, 2016; Kopan, 2015). Recent

studies have evaluated the effects of that type of messaging and found that these populist sentiments may be associated with increases in perceived discrimination among Muslims. Though our data were collected before the recent increase in populist rhetoric, the current study provides a novel perspective on the potentially mutual influence between depressive symptoms and PMLD to be considered in reference to prominent populist principles. These data contribute a call to action for the promotion of humane policies and practices regarding reception and investment in the sustained well-being of displaced populations. The Universal Declaration of Universal Human Rights (United Nations, 1948) states that “[E]veryone has the right to a standard of living adequate for the health of himself and of his family, including food, clothing, housing and medical care and necessary social services.” Muslim refugees are at particular risk for marginalization, and there is need for further investigation into the effectiveness of programs that attempt to promote healing by integrating evidence-based principles into culturally accessible formats (Zoellner et al., 2018).

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