

Spring 6-21-2021

## Longitudinal Trauma Treatment Outcomes in an Immigrant and Refugee Sample

Shuen-En Ho  
*Seattle Pacific University*

Follow this and additional works at: [https://digitalcommons.spu.edu/cpy\\_etd](https://digitalcommons.spu.edu/cpy_etd)



Part of the [Community Health Commons](#), [Mental Disorders Commons](#), [Psychiatric and Mental Health Commons](#), and the [Quality Improvement Commons](#)

---

### Recommended Citation

Ho, Shuen-En, "Longitudinal Trauma Treatment Outcomes in an Immigrant and Refugee Sample" (2021). *Clinical Psychology Dissertations*. 68.  
[https://digitalcommons.spu.edu/cpy\\_etd/68](https://digitalcommons.spu.edu/cpy_etd/68)

This Dissertation is brought to you for free and open access by the Psychology, Family, and Community, School of at Digital Commons @ SPU. It has been accepted for inclusion in Clinical Psychology Dissertations by an authorized administrator of Digital Commons @ SPU.

Longitudinal Trauma Treatment Outcomes in an Immigrant and Refugee Sample

Shuen-En Ho

A dissertation submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

In

Clinical Psychology

Seattle Pacific University

School of Psychology, Family, & Community

Approved by:

Jacob Bentley, Ph.D., ABPP  
Associate Professor of Clinical Psychology  
Dissertation Chair

Lynette Bikos, Ph.D., ABPP  
Professor of Clinical Psychology  
Committee Member

Keyne C. Law, Ph.D.  
Assistant Professor of Clinical Psychology  
Committee Member

Reviewed by:

Jacob Bentley, Ph.D., ABPP  
Chair  
Department of Clinical Psychology

Keyne C. Law, Ph.D.  
Director of Research  
Department of Clinical Psychology

Katy Tangenberg, Ph.D.  
Dean School of Psychology,  
Family, & Community

## ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my advisor Jacob Bentley, Ph.D. for his continual support throughout my doctoral education journey. His guidance and mentorship have been invaluable. I would also like to thank my dissertation committee: Lynette Bikos, Ph.D. and Keyne Law, Ph.D., for the advice, recommendations, and questions that helped the continued development and deepening of understanding to my research question.

## TABLE OF CONTENTS

ACKNOWLEDGMENTS .....	ii
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
ABSTRACT.....	viii
CHAPTER I – INTRODUCTION.....	10
Purpose.....	10
Posttraumatic Stress Disorder .....	12
Immigrant and Refugee Population.....	12
Conceptualization of PTSD in Immigrant and Refugee Population .....	13
Service Gaps and Treatment Barriers.....	17
Treatment Effectiveness.....	18
Current Study .....	20
CHAPTER II – METHODS .....	23
Sample and Participant Selection.....	23
Participants .....	23
Procedure.....	23
Measures and Covariates .....	24
Data Analytic Plan.....	25
CHAPTER III – RESULTS.....	29
Preliminary Analysis.....	29
Data Preparation .....	29

Descriptive.....	29
Hypothesis 1A: Individuals in different income status, prior mental health history, and social support groups may present with different baseline PTSD symptoms and treatment results .....	29
Hypothesis 1B: Number of counseling visits will predict treatment outcome .....	30
Hypothesis 2: Baseline PTSD Symptom .....	30
Hierarchical Linear Modeling Analysis .....	31
Post Hoc Analyses.....	33
Income Status .....	33
Social Support for the Traumatic Event .....	34
Distress Symptoms in Refugee/Immigrant Group.....	34
CHAPTER IV – DISCUSSION.....	37
Group Differences in Sociocultural Factors.....	37
Baseline Symptom as Predictor .....	38
Longitudinal Analyses.....	38
Social Support and Marginalized Group .....	39
Post-Hoc Analyses .....	40
Language and Cultural Barriers to Care .....	42
Clinical Implications .....	43
Candidacy Framework.....	43
Limitations .....	47
Future Directions.....	47

Conclusion.....	49
REFERENCES .....	51

## LIST OF TABLES

Table 1. Number of participants at different time points. ....	27
Table 2. Means and Standard Deviations of Baseline PTSD Symptoms for Different Groups.....	29
Table 3. Evaluating the Fit of Linear and Quadratic Growth Models on Distress Symptoms. ....	35
Table 4. Evaluating the Fit of Immigrant or Refugee Status as the Between-Person Variable. ....	35
Table 5. Evaluating the Fit of Linear and Quadratic Growth Models on PTSD Symptoms in Immigrant/Refugee Sample. ....	36
Table 6. The Seven Stages of Candidacy (van der Boor & White, 2020).....	46

## LIST OF FIGURES

Figure 1. Longitudinal View of Change in PTSD Symptoms Over Time Comparing Immigrant/Refugees to General Population.....	21
Figure 2. Longitudinal View of Change in PTSD Symptoms Over Time Comparing Language in Immigrant/Refugee Group. ....	22
Figure 3. Longitudinal View of Change in PTSD Symptoms Over Time Comparing Different Groups and Education Levels. ....	22
Figure 4. Organization of Hierarchical Linear Modeling with the Within-Person Variables at Level 1 and Between-Person Variables at Level 2.....	28



## ABSTRACT

Shuen-En Ho  
350

Refugee and immigrant populations are at an increased risk of having posttraumatic stress disorder (PTSD) and exhibit a significant amount of variance in trauma treatment outcomes that may be impacted by sociocultural factors. This study examines the impact of demographic variables on treatment outcome and trajectory of PTSD symptoms in a clinic setting with trauma-focused treatments in refugee/immigrant and general populations. Data was collected from the electronic medical record at the Harborview Center for Sexual Assault and Traumatic Stress. A total of 817 participants completed intake, 58 of which self-identified as immigrant/refugee. One-way ANOVAs were conducted to examine group differences of sociocultural factors including income status, prior mental health history, and social support. Significant differences in baseline symptom and last symptom monitor were found for different sociocultural factors. Hierarchical multiple regression was conducted to examine effect of counseling visits on treatment outcome while controlling for baseline PTSD symptom. PTSD baseline symptom was significant in predicting 19.2% of variance in treatment outcome ( $R^2 = 0.19$ ;  $p < 0.001$ ) while counseling visits did not add significant variance to the model. One-way ANOVA was conducted to examine the baseline symptoms between immigrant/refugee and non-immigrant/non-refugee groups. No significant difference was found for baseline symptoms between groups, but difference was found with last symptom monitor where immigrant/refugee group had higher mean symptom score ( $\bar{x} = 26.03$  for immigrant/refugee and  $\bar{x} = 21.65$  for others). Hierarchical linear modeling was used to analyze the trend of symptom progression. Results showed decrease of symptoms with flattening of the curve over time with no difference in progression for immigrant/refugee group. Distress level was different at baseline for different

language groups. No significant differences were found in symptom progression with different language or education groups. Post-hoc analyses were conducted with results showing different symptom trajectory for income groups. Different baselines were found with different social support groups. For immigrant/refugee group, different trajectory was found in different language groups. Overall, sociocultural factors impact the trajectory of treatment differently. Addressing access to care with different barriers including language, social support network, and income status is important when considering treatment provision for immigrant/refugee.

## CHAPTER I – INTRODUCTION

### **Purpose**

The number of immigrants has consistently grown in the U.S. and the number of international refugees has increased due to international conflicts (Migration Policy Institute, 2019). In 2017, more than 44.5 million immigrants resided in the U.S., which is an increase of almost two percent from the previous year (Migration Policy Institute, 2019). According to the United Nations High Commissioner for Refugees (UNHCR, 2018), there are 68.5 million people around the world who have been forced to leave their homes in search of safety; nearly 25.4 million of these people are international refugees. As will be described in the paragraphs below, immigrant and refugee groups experience an increased risk of traumatic exposures and difficulty accessing mental health care.

For the purposes of this paper, the term “immigrant” is operationalized as a person with no U.S. citizenship at birth but admitted as a lawful permanent resident (U.S. Department of Homeland Security, 2019). This group includes refugees and asylees. Immigrants and refugees consist of diverse and varied groups, but they share the common experience of migration and resettlement. Refugees are a unique subgroup that were forced to leave their home country due to conflicts, therefore likely have experienced a traumatic migration process. There are various challenges and stressors in the process of migration and resettlement. These may include adapting to a new environment, processing past traumatic experience, lack of healthcare access, separation from family, and discrimination or social isolation in the new environment (Steel et al., 2006; Straimer, 2011; Tingvold et al., 2015). Compared to the general population, immigrants face challenges in fear of losing their legal status to stay in the host country and experiencing cultural barriers. The experience of being an immigrant

or refugee significantly impacts mental health, and both of these groups are often in need of accessible psychological services (Hall & Cuellar, 2016).

Despite their increased need for psychological care, refugees and immigrants face more difficulty in accessing mental health care (Hollifield et al., 2013; Batista et al., 2018). Some contributors to this service gap include lack of knowledge regarding available services, fear of deportation due to mental illness, culture-based stigma towards mental health services, and financial burdens. Even when these individuals obtain treatment, cultural difficulties such as language barriers and social norms can complicate psychological assessment and therapy (Palic et al., 2016). Palic and colleagues (2016) stated that mental health is conceptualized in unique ways within the refugee and immigrant community which may further impair the construction of effective, evidence-based treatments for this population.

With a growing immigrant and refugee population in need of services, mental health service care disparities and limited understanding of how to adapt and develop evidence-based assessment tools and interventions for the underserved populations is of critical concern (Nickerson et al., 2011). A clearer understanding of mental health in immigrant and refugee populations and, accordingly, factors affecting treatment is important. Accordingly, my dissertation focuses on different factors in the system including social support, income status, number of counseling visits, and prior mental health history and the potential impact on treatment outcome for trauma. The first purpose of this study is to gain a more detailed understanding of specific predictors of treatment within immigrant/refugee groups. The second purpose of this study is to examine how the trajectory of treatment outcome for trauma may differ in an immigrant/refugee group as compared to the general population. The following introduction briefly reviews research regarding posttraumatic stress disorder and

conceptualizing trauma in the immigrant/refugee population.

### **Posttraumatic Stress Disorder**

Posttraumatic stress disorder (PTSD) is a psychological disorder that 8-14% of US adults experience at some point in their life (Le et al., 2014; Schumm et al., 2015; Watts et al., 2016), and it is estimated to be present in approximately 30% of all refugees in the U.S. (Steel et al., 2009). According to the *Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM-5)* (American Psychiatric Association, 2013), PTSD is the reaction to direct or indirect exposure to actual or threatened death, serious injury, or sexual violence. Symptoms include intrusive memories, where the traumatic event is repeatedly re-experienced through different means like nightmares and flashbacks; avoidance, where the individual avoids trauma-related stimuli; negative alterations in cognitions and mood, such as exaggerated blame of self or others and difficulty experiencing positive emotions; and alterations in arousal and reactivity, such as hypervigilance and irritability. Individuals whose symptoms lead to clinically significant distress or functional impairment for more than one month are eligible for a PTSD diagnosis.

### **Immigrant and Refugee Population**

Immigrants are people without citizenship in their host country at birth (U.S. Department of Homeland Security, 2019). They arrive to the host country through a migration process, and later obtain citizenship status. This migration process may be linked with trauma of leaving one's country of origin due to different conflict or persecution, as in the case of refugees (Laban et al., 2005; Scholte, van de Put, & de Jong, 2004). In addition to the pre-migration factors, post-migration factors such as economic stability, social connectedness, cultural and language barriers, and health care access interact and add to the challenges experienced by this group (Edberg et al.,

2011; U.S. Department of Health & Human Services, 2010).

Migrants have been found to be more vulnerable to psychological distress when compared with non-migrants (de Wit et al., 2008; Fassert et al., 2009). Research found higher prevalence rates of depressive symptoms for migrants than native population in many West European countries (Missinne & Bracke, 2012). This vulnerability in mental health compared with dominant culture counterparts may be associated with the additional stress through the migration process and post-migration living difficulties (Bentley et al., 2012). Their experience as immigrants and refugees may suggest a different outlook on their mental health.

### **Conceptualization of PTSD in Immigrant and Refugee Population**

In order to understand the experiences of people from immigrant and refugee backgrounds, different theoretical models describing their experiences in the context of healthcare were investigated. Although there is expansive diversity among the groups of immigrants and refugees, connection can be found with the shared experience of acculturation and risk of discrimination and marginalization. Hall and colleagues have conceptualized the key properties of marginalization for marginalized populations (1994) as the peripheral group on the basis of their identities, associations, experiences, and environments. Immigrants and refugees are at risk of marginalization due to their relative difference from the “norm” or “mainstream” that is in the center of a community. With increasing physical and social distance from the center is increasing diversity. The periphery and center often interact and influence each other back and forth. At the center, the marginalized are “disappeared” or overlooked, yet they are an important source for growth and learning. They are different from the norms and provide new ideas through their unique experiences. On the other hand, there are health consequences to consider for the marginalized

persons. Marginalization carries risk and resilience elements that may become either obstacle or protection. For example, one property of marginalization is differentiation, which may bring the obstacle of stigmatization by the central majority, while it may also bring resilience when celebrated by members of marginalized group and held dear as honored identity. Both the protective and risk factors for marginalization are important to explore when considering treatment for marginalized groups relative to the “mainstream” or center of a community.

In immigrant and refugee populations, it is critical to consider the specific process of acculturation. Williams and Berry proposed an acculturative stress model specifically for refugees (1991). While this was focused on the experience of refugees, acculturation is a process experienced not only in the specific group of refugees but also the bigger immigrant population. In their model, they proposed that the level of stress experienced by the individual depends on the a) mode of acculturation, b) phase of acculturation, c) nature of the larger society, d) characteristics of acculturating group and e) characteristics of acculturating individual. Specifically, the mode of acculturation refers to Berry’s (1984) acculturation categories of integration, assimilation, separation, and marginalization. Berry and colleagues (1987) found those who are marginalized tend to experience higher stress while those who pursue integration are minimally stressed and those pursuing assimilation have intermediate levels of stress. Phase of acculturation relates to the timeline of acculturation from contact, conflict, crisis, to adaptation. The nature of the larger society impacts acculturation stress differently when it is a multicultural versus assimilationist environment. Prejudice or discrimination in the larger community also affects stress level differently. Characteristics of the acculturating group are the social and cultural qualities that may affect stress experienced. Some of

the characteristics include age, status, and social support. Characteristics of the acculturating individual are the variables that play a role in the mental health of people going through the acculturation process. These include variables like appraisal, coping, and attitude of the individual towards stressors. These five groups of factors identified can impact individual acculturative stress, and the level of stress in turn may interact with other experiences like trauma. In the present study we will focus on the interaction of the factor of characteristics of the acculturating group with traumatic experiences.

A model of refugees' psychological reactions to trauma has been proposed by Nickerson and colleagues (2011) to help conceptualize PTSD among refugee populations. They have proposed a total of five levels in the development and maintenance of the disorder. Level 1 entails the refugees' traumatic experiences, while level 2 details the conditioning of fear responses to environmental cues related to traumatic event. Level 3 includes the contextual factors after the refugees have fled their home countries. These may include resettlement difficulties, leading to continued re-traumatization through the migration process and stress related to acculturation and asylum seeking. Level 4 outlines the psychological factors influencing mental health outcomes in refugees, including cognitive themes such as lack of control over one's own circumstances and a profound sense of hopelessness regarding the future. Level 5 outlines the key psychological reactions in this population, such as emotional dysregulation, anger, substance abuse, complicated grief, anticipatory anxiety about future traumatic events, separation anxiety as a result of dislocation from loved ones, anger, and guilt. Though this model is specifically conceptualized for refugee experience of trauma, it portrays a complex picture at the systemic level and how trauma may be experienced differently when there are other



ongoing processes at other systemic levels.

The migration and resettlement experience in immigrants and refugees is unique and contributes to the complexity of their mental health picture. For instance, non-refugee survivors of natural disasters or civilian trauma are often exposed to a single event. Afterwards, their linguistic, cultural, and social networks remain consistent. On the other hand, complex and cumulative traumatization is common among refugees where they often experience repeated trauma exposure, are forced to leave their home countries, and experience identity loss in addition to fear for the family left behind in their home countries with ongoing conflict (Hollifield et al., 2002; Laban et al., 2005; Steel et al., 2009). In addition to multiple war-related trauma, flight, migration, and transcultural challenges, they often experience insecure social status and fear of deportation from their host countries (Kruse et al., 2009). As they acculturate to these host countries, immigrants and refugees frequently worry about their employment status, social isolation, and discrimination. These experiences are encapsulated by the term post-migration living difficulties. Of these challenges, poor social support has specifically been found to be a risk factor for more severe PTSD symptomology (Kaniasty & Norris, 2008). Research has shown additional impact from pre-migratory stressors and challenges related to post-migration and resettlement on refugees' mental health (Steel et al, 2009; Silove et al., 1997; Carswell, Blackburn & Barker, 2011).

Though there had been theories and research on refugees and traumatic experiences, specific interaction of acculturation process and experiences of trauma had not been studied. A clearer conceptualization of PTSD in this population important to have a glimpse of the experience of this marginalized group going through a marginalizing experience of trauma.

## **Service Gaps and Treatment Barriers**

As is consistent with Hall's guiding concept of marginalization (1994) marginalized groups may experience more vulnerability in health. The peripheralized groups often struggle with obtaining services. Minorities such as immigrant and refugee populations are less likely to receive mental health services, and even when they are able to access treatment, they are more likely to receive treatment of low quality (Bhui & Dinos, 2008). Only a small proportion of the severely traumatized refugees can have access to, or can be referred for appropriate treatment (Koenen et al., 2003). Possible contributors to this service gap include cost, fragmentation of services, lack of service availability, the stigma attached to mental illness and minority status, and differences in language and communication (Bhui & Dinos, 2008). This service gap highlights the importance of investigating multiple aspects of trauma-informed care for refugees, and using this data to identify factors that may hinder treatment effectiveness.

Treatment barriers posed by immigrant/refugee service gaps may be exacerbated by the use of interventions that do not work consistently for this population or have not been empirically investigated among this population. For example, research on the efficacy of cognitive behavioral therapy (CBT) for refugees is mixed. Some studies have shown improvement of mental health symptoms in refugees over time (Palic & Elklit, 2011; Porter and Haslam, 2005) while other studies suggest that high levels of distress and symptom relapses may persist as many as 10 to 23 years post-resettlement (Boehnlein et al., 2004; Vaage et al., 2010). In order to improve mental health work in the immigrant/refugee population, it was proposed that the model or mechanism of change for treatment for PTSD in this population be described, followed by controlled studies for treatment applied to refugees and evaluation of

treatment in meeting the specific needs of this population. Following thorough assessment of different aspects of treatment impacts, the evaluation of intervention effectiveness in routine settings is a critical next step (Nickerson et al., 2011).

Determining treatment efficacy is an essential first step. However, ensuring that treatment development and evaluation occur within the communities that those interventions were designed for is necessary to bridge the service gap and optimize treatment outcomes for the immigrant/refugee community. Several factors should be considered when evaluating treatment effectiveness, including working with interpreters, dealing with limited resources, and practical and social benefits (Nickerson et al., 2011).

### **Treatment Effectiveness**

Treatment effectiveness may be impacted by the interacting effect between acculturation process and traumatic experience. Research on effective PTSD treatment for immigrant is limited. Given the limited research examining predictors of treatment outcomes among refugees, Li, Liddell and Nickerson (2016) suggest that more research exploring the effect of both trauma exposure and contextual life stressors on refugees in treatment is needed. Overall, the small amount of literature devoted to this topic suggests that researchers should consider different post-migration situations when designing treatment studies. For example, Orosa et al. (2011) found that psychopharmacology, sociocultural factors, and post-migration living conditions were more strongly associated with PTSD symptom reduction in refugees than their previous traumatization levels. It is clear that refugees' sociocultural environment, including individual living conditions, are vital to their posttraumatic recovery and improved functioning.

There is little evidence of mental health care effectiveness for refugee

populations (Bastin et al., 2013), in part due to the dearth of research in this area but also due to barriers to treatment that arise when working with refugees. In a systematic review, Crumlish and O'Rourke (2010) found that narrative exposure therapy and cognitive-behavioral therapy are the only PTSD treatments supported by research for clinical use. In their intervention reviews, Bradley et al. (2005) have also found evidence that cognitive-behavioral therapy, exposure-based treatment, eye movement desensitization and reprocessing (EMDR), and psychopharmacotherapy are the most effective PTSD treatments. However, these treatments have demonstrated inconsistent effectiveness when used with refugees. (Kruse et al., 2009).

Despite the overall high efficacy of PTSD treatment in general population, many treated refugees will show no improvement after PTSD treatment, with some estimates suggesting that 18-54% of refugees did not improve resulting from treatment (Stenmark et al., 2014; Ter Heide et al., 2016). One possible explanation for this lack of improvement is the ongoing psychosocial stressor, such as post-migration living difficulties, that refugees experience (Miller & Rasmussen, 2010). However, this group of non-responders highlights the complex diversity in PTSD treatment outcomes within the refugee population, and warrants outcome research identifying markers that distinguish treatment responders from non-responders in order to optimize future interventions (Haagen et al., 2017).

Different predictors have been examined in the context of PTSD treatment outcome, including demographic variables, treatment variables, and clinical variables. In terms of demographic variables, Drozdek and Bolwerk (2010) found no impact of demographic characteristics on results of group therapy. However, other studies have uncovered demographics that associated with better treatment outcomes, such as education level (Bastin et al., 2013) as well as worse treatment outcomes, such as

male gender and language difficulties (Haagen et al., 2017; Silove et al., 2017; Stenmark et al., 2014; Miller et al., 2005; National Institute for Clinical Excellence (NICE), 2005). The number of trauma-focused treatment sessions (Lambert & Alhassoon, 2015) as well as the number and nature of refugees' traumatic experiences (Haagen et al., 2017) have also been proposed to influence treatment response.

### **Current Study**

Previous research supports the relationship between some demographic characteristics, such as education and gender, and treatment outcome. Clinical characteristics, such as the number of treatment sessions, have also been found to be associated with treatment outcome. More research is needed to assess how these different factors impact treatment outcomes. The current study is a longitudinal examination of how different factors affect treatment outcome in a clinical setting, comparing groups representing the general population and refugees/immigrants.

I used a model-generating approach, considering different variables and trimming out non-significance to generate the best-fitted model. I tested the following hypotheses. First, I proposed different factors in the sociocultural context of income status (1a), prior mental health history (1b), social support (1c), and number of counseling visits (1d) would predict treatment outcome in the immigrant/refugee group. Second, there would be a higher trauma symptom at baseline for refugee/immigrant (2). Third, there would be a decrease of trauma symptoms with time interval marked by days from intake (3). Fourth, there would be a slower decrease of symptoms for refugee/immigrant compared with the general population (4, see *Figure 1*). Lastly, I hypothesized that language and education would affect treatment outcome trajectory. I predicted that people who do not use English as their first language while receiving treatment in English would have a slower decrease of

trauma symptoms (5a, see *Figure 2*); and people with higher education would have a faster decrease of trauma symptoms (5b, see *Figure 3*).

*Figure 1.* Longitudinal View of Change in PTSD Symptoms Over Time Comparing Immigrant/Refugees to General Population.

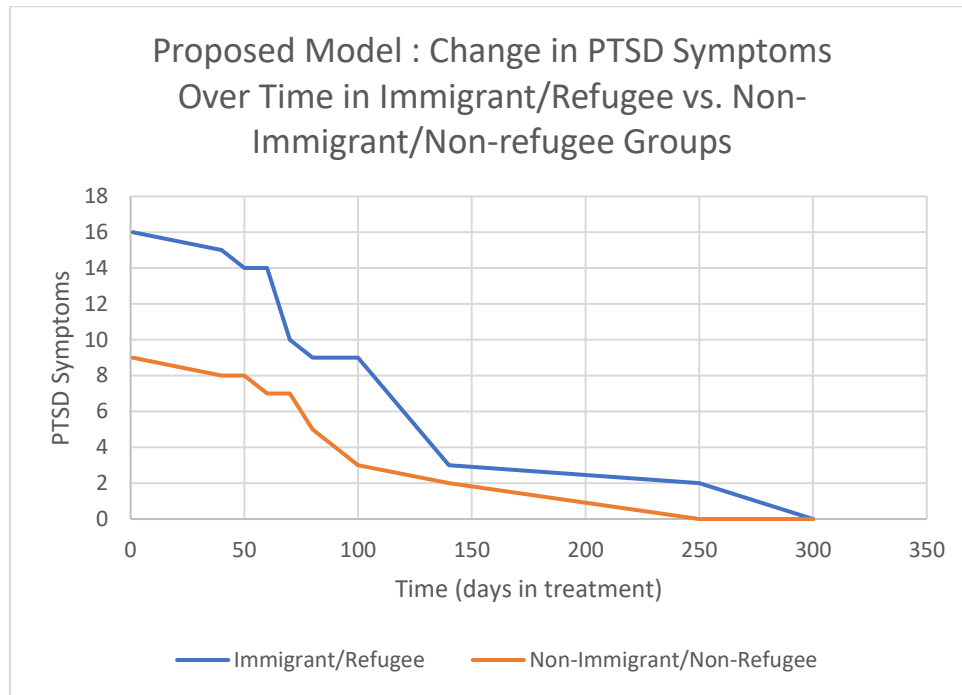


Figure 2. Longitudinal View of Change in PTSD Symptoms Over Time Comparing Language in Immigrant/Refugee Group.

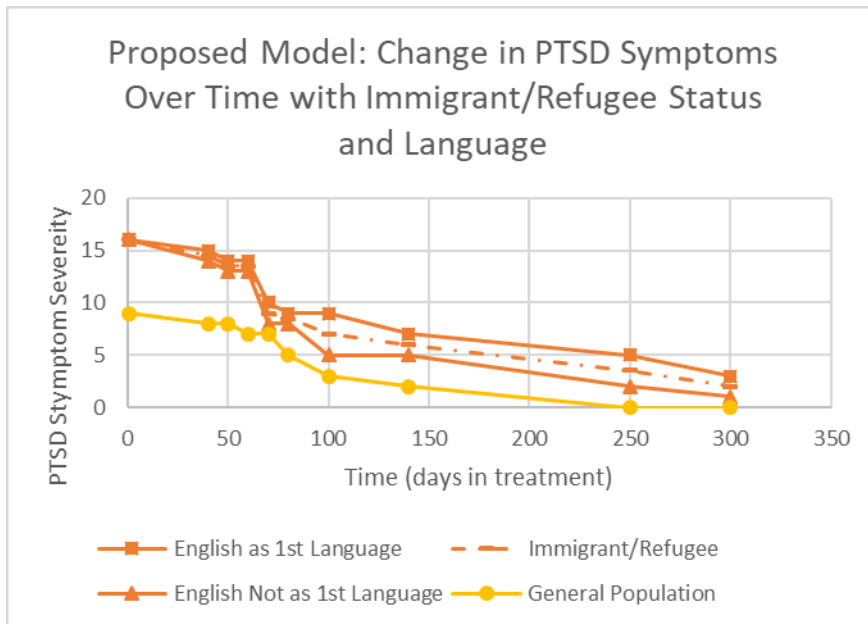
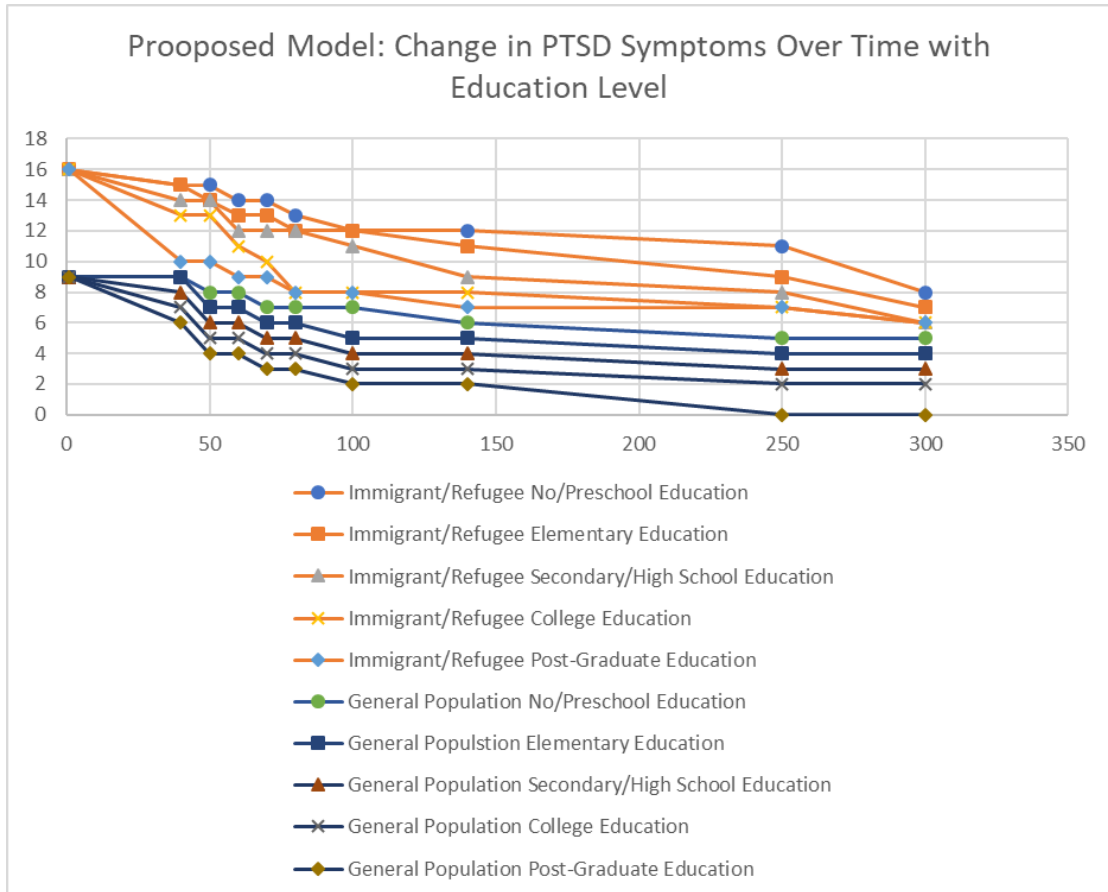


Figure 3. Longitudinal View of Change in PTSD Symptoms Over Time Comparing Different Groups and Education Levels.



## CHAPTER II – METHODS

### Sample and Participant Selection

#### Participants

Data was collected from the electronic medical record (EMRs) of Harborview Medical Center, a comprehensive healthcare facility in the Pacific Northwest. Data was collected between the years of 2015 to 2017 of participants presenting to the Harborview Center for Sexual Assault and Traumatic Stress (HCSATS) for a diverse range of traumatic experiences. Participants were included for analysis based on the following criteria: over the age of 18, completed baseline assessment, completed at least one outcome measure. A total of 835 participants were 18 or above in age. Of the 835 participants, 817 had completed a baseline measure of trauma symptom within 1-week of intake, with 58 reported as immigrant/refugee. Progress was monitored in the baseline group. Of the 817, 506 participants completed one time point of symptom monitoring, with 42 of them reported to be immigrant/refugee. Of the 691, 381 participants completed two time points of symptom monitoring, with 24 of them reported to be immigrant/refugee. Of the 691, a number of 303 participants completed three time points of symptom monitoring, with 21 of them reported to be immigrant/refugee. A detailed table is provided below for specific number of time points (*Table 1*).

#### Procedure

All participants were seen for therapy at the HCSATS, which is a medical/mental health clinic in Seattle, WA that provides evidence-based cognitive-behavioral therapy treatment to patients affected by sexual violence and other traumatic events. Initial appointments were conducted at HCSATS, local emergency departments, or local clinics.



During initial appointments at HCSATS, providers documented the type of presenting trauma and how much time had passed since the trauma. Clients completed a demographic questionnaire and a series of standardized measures including a modified PTSD Symptom Scale (PSS) to assess for baseline trauma symptoms. The symptoms were monitored at different time points for each individual, depending on the practitioner's clinical judgment and practical feasibility.

Following approval of an expedited review by the University of Washington IRB, data was de-identified by HCSATS' contact, Lucy Berliner and colleagues. Data was cleaned and prepared for analyses. An IRB approval from Seattle Pacific University was not required since the data were de-identified, and the participants had consented to their data being used for research purposes.

## **Measures and Covariates**

### ***PTSD symptom severity***

Baseline PTSD symptoms were measured using the PTSD Symptom Scale-Interview for DSM-5 (PSS-I-5; Foa & Capaldi, 2013). The PSS-I-5 consist of 20 questions that address symptoms corresponding to the four *DSM-5* (American Psychiatric Association, 2013) clusters (Foa et al., 2016). The clusters include intrusion (Items 1-5), avoidance (Items 6-7), changes in mood and cognition (Items 8-14), and arousal and hyperactivity (Items 15-20). Symptoms are considered present when rated 1 or higher. The symptoms are rated on a Likert-type scale ranging from 0 (*Not at all*) to 4 (*6 or more times a week/Severe*). The wording of the questions was modified for community clinic setting. The total score is calculated through summation of scores from all items, with higher scores indicating more severe symptoms. Psychometric properties were studied in a group of 242 urban community residents, veterans, and college undergraduates recruited from three different sites

(Foa et al., 2016). Internal consistency of the total score of PSSI-5 was found to be good ( $\alpha = .89$ ), and test-retest reliability was good with  $r = .87$ . Interrater reliability in the study was found to be .84. Convergent validity was indicated by significant correlations with PDS-5, PCL-S, and CAPS-5.

Continued monitoring of treatment outcome are collected through a combination of PHQ-9, 2-items from GAD-7, and a 6-item questionnaire that consist of symptoms in the intrusion, avoidance, and hypervigilance domains as taken from the diagnostic criteria from the *International Classification of Diseases 11<sup>th</sup> Revision* (ICD-11; World Health Organization, 2018).

### ***Counseling visits***

The number of counseling visits was measured as a continuous variable reflecting the total number of visits including the intake. The number of counseling visits was tracked using Harborview Center for Sexual Assault and Traumatic Stress's own electronic medical records database.

### **Data Analytic Plan**

Based on the study design, ANOVA was first conducted to compare groups with different sociocultural factors. Hierarchical multiple regression was then used to analyze impact of continuous predictor on treatment outcome. Lastly, multi-level analysis was used for the whole set of data with Hierarchical Linear Modeling Software to examine the longitudinal data. In SPSS, ANOVA was conducted to examine group differences on treatment outcome for different income status, prior mental health history, and social support. Hierarchical multiple regression was conducted to examine effect of number of counseling visits as predictors of treatment outcome while controlling for effect from baseline PTSD symptoms. Then in HLM, two levels were used in this design, with Level 1 accounting for individual-level

variables of trauma symptoms and number of counseling visits, while Level 2 accounted for the group-level variables of language and education, and refugee/immigrant status (see *Figure 4*).

This study utilized hierarchical linear modeling to help examine the longitudinal trajectory of the data, as well as the cross-level interactions between Level 1 and Level 2 variables. All clinical variables were naturally occurring and recorded via clinicians and self-report measures at HCSATS.

I follow the model building approach recommended by O'Connell et al. (2013) to identify a longitudinal growth trajectory by estimating the fit of linear, quadratic, and cubic growth models to the repeated measure of symptoms (SX). I modeled each variable separately, beginning with an empty model (i.e., containing no predictors). This model (Model A) was used to determine how much variation exist between participants, while ignoring time. In this model we fitted a baseline model with no growth; that is, the model contained random intercepts for all persons at L1 and no slope terms. Random error between individuals on the overall intercept was presented with the variance component,  $r_{0i}$  and  $e_{it}$  represent random error within participants from their own mean score. Although this model did not describe growth, it was a useful starting point because it allowed for the partitioning of between ( $r_{0i}$ ) to total ( $r_{0i} + e_{it}$ ) variance.

Time was counted in days, with the first intake visit coded 0. In Model B, I added the time variable and baseline trauma symptom. This model included a random intercept (i.e., allowing participants to vary in levels of symptoms when TIME = 0) but a fixed slope (i.e., in this model participants were assumed to grow in a linear fashion and at the same rate). Model C added a random (rather than fixed) slope to the model. Model D assessed for quadratic change by squaring the TIME variable and

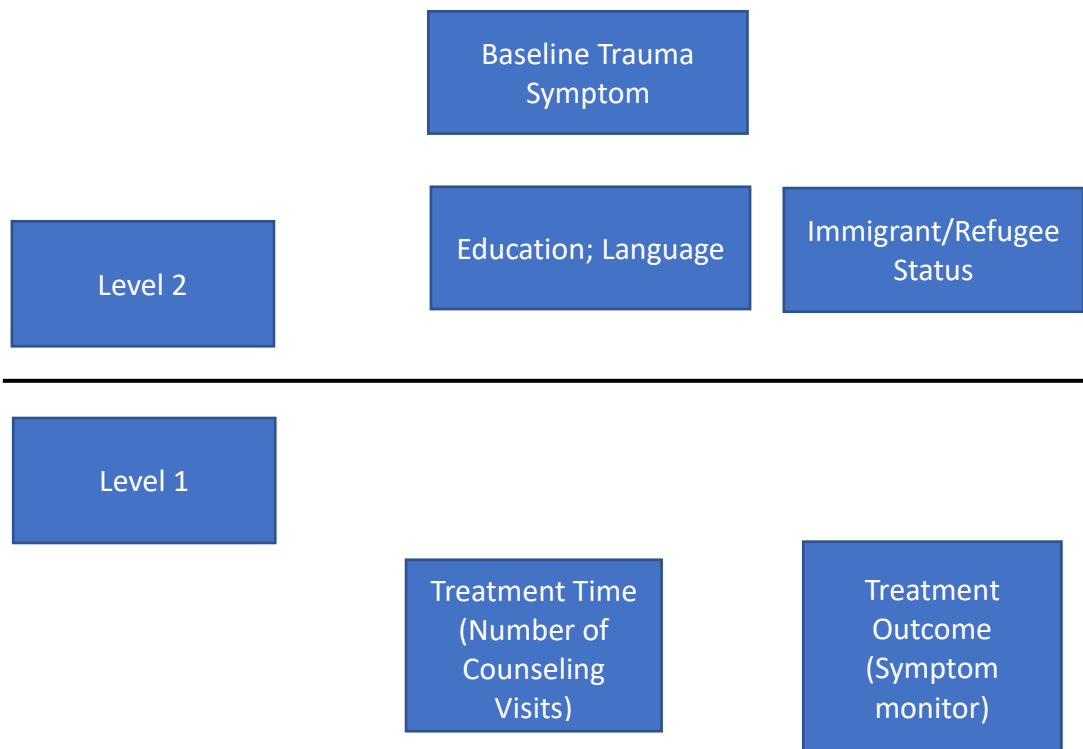
adding it. In Model D the intercept is random, but both slope and curvature were fixed. In Model E the slope was free to vary; in Model F, the curvature was free to vary. Then language and education was considered and explored to generate the best-fitted model, so I added them in and trimmed out non-significance.

Then baseline trauma symptoms were added to the model to investigate model fit as affected by baseline symptom severity. Then refugee/immigrant status (RI) was added to the model as a between-person L2 variable, starting from the simple model with only RI1 and RI2, then building up.

Table 1. *Number of participants at different time points.*

Number of Time points	Total	Immigrant/ refugee
Time Point 1	506	42
Time Point 2	381	24
Time Point 3	303	21
Time Point 4	223	7
Time Point 5	173	4
Time Point 6	142	4
Time Point 7	115	4
Time Point 8	97	3
Time Point 9	83	2
Time Point 10	66	
Time Point 11	52	
Time Point 12	43	
Time Point 13	38	
Time Point 14	27	
Time Point 15	26	
Time Point 16	19	
Time Point 17	16	
Time Point 18	9	
Time Point 19	8	
Time Point 20	6	
Time Point 21	6	
Time Point 22	4	
Time Point 23	2	
Time Point 24	2	
Time Point 25	2	
Time Point 26	1	

Figure 4. *Organization of Hierarchical Linear Modeling with the Within-Person Variables at Level 1 and Between-Person Variables at Level 2.*



## CHAPTER III – RESULTS

### Preliminary Analysis

Prior to testing hypotheses, I inspected the data for missing data. All participants who completed baseline trauma symptom score were included.

#### Data Preparation

After controlling for missing data, the number of participants left who have completed the baseline trauma measurement was 817. Of these, 58 identified as immigrant/refugee.

#### Descriptive

The means and standard deviations for overall baseline PTSD symptom, refugee/immigrant population, and non-refugee/non-immigrant population are presented in Table 2.

Table 2. *Means and Standard Deviations of Baseline PTSD Symptoms for Different Groups.*

<i>N</i>	Mean	Standard Deviation
817	39.08	11.07
759 (Non-Immigrant/Non-Refugee)	39.12	0.40
58 (Immigrant/Refugee)	39.23	1.98

#### **Hypothesis 1A: Individuals in different income status, prior mental health history, and social support groups may present with different baseline PTSD symptoms and treatment results**

In hypothesis 1, ANOVAs were run in SPSS to examine group differences of baseline PTSD symptoms and last treatment progress monitor scores for different

factors including income status, prior mental health history, and social support for the traumatic event. Significant group difference in baseline PTSD symptom and progress monitor were found for income status groups ( $p = .029$  for baseline symptom,  $p = .001$  for last progress monitor score), with the highest baseline symptom in low/moderate income group ( $\bar{x} = 40.6$ ), lowest baseline in moderate income group ( $\bar{x} = 35.78$ ), highest last monitored symptom in low income group ( $\bar{x} = 23.78$ ), and lowest last monitored symptom in moderate income group ( $\bar{x} = 16.97$ ). Significant group difference was found in baseline PTSD symptom for prior mental health history groups ( $p = .048$ ) with the highest baseline symptom in the maybe/partial history group ( $\bar{x} = 40.22$ ) and the lowest baseline score in the no prior history group ( $\bar{x} = 37.07$ ). Significant group difference in last progress monitor was found for social support groups ( $p = .002$ ) with highest symptom monitor in the no social support group ( $\bar{x} = 29.2$ ) and lowest symptom monitor in the maybe/partial support group ( $\bar{x} = 21.07$ ).

### **Hypothesis 1B: Number of counseling visits will predict treatment outcome**

Hierarchical multiple regression was run with PTSD baseline symptom added in the first step and number of counseling visits added at the second step. PTSD baseline symptom was significant in predicting 19.2% of variance in treatment outcome ( $R^2 = 0.19$ ;  $p < 0.001$ ) and number of counseling visits did not add significant variance to the model ( $R^2 = 0.19$ ;  $p = 0.12$ ). The overall model was significant ( $p < .001$ ).

### **Hypothesis 2: Baseline PTSD Symptom**

In hypothesis 2, the baseline PTSD symptoms for refugee/immigrant and non-refugee/non-immigrant were compared. One-way ANOVA was conducted to determine if immigrant/refugee status had an effect on PTSD symptoms at baseline. PTSD was set as dependent variable with independent variable of immigrant/refugee

status. Result showed that there was no significant different baseline symptom between the two groups ( $F [1, 487] = 0.78, p = 0.38$ ) but significant difference was found for last progress monitor symptoms ( $F [1, 487] = 4.40, p = 0.04$ ) with higher symptoms in the immigrant/refugee group ( $\bar{x} = 26.03$ ) as compared to non-immigrant/non-refugee ( $\bar{x} = 21.65$ ).

### **Hierarchical Linear Modeling Analysis**

The longitudinal growth trajectory was studied by estimating the fit of linear and quadratic growth models to the repeated measures variables of interest (i.e., distress symptoms). I followed the model building approach recommended by O'Connell, Logan, Pentimonti, and McCoach (2013). I modeled each variable separately, beginning with an empty model (i.e., containing no predictors). This model (A) was used to determine how much variation existed between subjects, while ignoring time. In this model we fitted a baseline model with no growth; that is, the model contained random intercepts for all persons at L1 and no slope terms. Using the distress symptom variable as an example (Table 3),  $\beta_{00} = 25.17$  was the estimated overall mean symptom score across all subjects. Random error between subjects on the overall intercept is presented with the variance component,  $r_{0i}$  and  $e_{ti}$  represent random error within subjects from their own mean score. Although this model does not describe growth, it is a useful starting point because it allows for the partitioning of between ( $r_{0i}$ ) to total ( $r_{0i} + e_{ti}$ ) variance. The resultant interclass correlation (ICC) for distress symptoms suggested that 64% of the variance lies between subjects; 35% is due to variation within subjects across occasions.

Time was counted in days. The first session was coded 0. In Model B, time variable TIMEINTE was added. This model included a random intercept (i.e., allowing subjects to varying levels of SX when TIMEINTE = 0) but a fixed slope



(i.e., in this model subjects were assumed to grow in a linear fashion and at the same rate). In the SX model,  $\beta_{10}$  was -0.01 ( $p < 0.001$ ). The value was statistically significant, meaning that for each day in the study, SX decreased by 0.01 (in SD units). Model C added a random (rather than fixed) slope to the model. Model D assessed for quadratic change by squaring the TIMEINTE variable and adding it. In model D the intercept is random, but both slope and curvature are fixed. In model E the slope was free to vary; in Model F, the curvature was free to vary. Due to limitation to data available, analysis was not able to run for Model F. Looking at all the  $\beta$  coefficients, it seems to suggest a quadratic growth model for the data. Model E seems to have the best fit.

### ***Distress Symptoms Over Time***

The best fitted model showed initial symptom of 29.85 with a significant decrease in symptom ( $\beta_{10} = -0.053$ ,  $p < 0.001$ ) over time. The quadratic change of symptoms was also significant, suggesting a quadratic curve to the change, with a slight reduction of the decrease in symptom over time ( $\beta_{20} = 0.00006$ ,  $p < 0.001$ ).

### ***Compare Change of Symptoms Over Time for Refugee/Immigrant and Non-Refugee/Non-Immigrant***

The change of symptoms was compared by evaluating the fit of IMMIGRANT on L2. This model suggests that 53% of the variance lies between subjects, and 47% is due to variation within subjects across time points. Model A starts with TIMEINTE at L1, and IMMIGRANT at intercept level. Then the model builds sequentially, adding IMMIGRANT to the different timepoint slopes. The model shows significance with L1 variables ( $\beta_{10 (TIMEINTE)} = -0.059$ ,  $p < 0.001$ ) but did not show significance with the L2 variable ( $\beta_{01 (IMMIGRAN)} = 1.00$ ,  $p = 0.64$ ).

### ***Education***

Then the fit of EDUCATION was evaluated. This model suggests that 53% of the variance lies between subjects, and 47% is due to variation within subjects across timepoints. Model A starts with TIMEINTE at L1, and fixed education at intercept level. Then the model builds sequentially, adding EDUCATION to different TIMEINTE slopes. The model shows significance with L1 variables ( $\beta_{10 (TIMEINTE)} = -0.02, p < 0.001$ ), but did not show significance with the L2 variable ( $\beta_{01 (EDUCATION)} = 0.68, p = 0.09$ ). The model still suggests more significant variance at timepoint 1.

### ***Language***

The fit of language on L2 was evaluated. This model suggests that 53% of the variance lies between subjects, and 47% is due to variation within subjects across time points. Model A starts with TIMEINTE at L1, and fixed language at intercept level. Then the model builds sequentially, adding LANGUAGE to the different timepoint slopes. The model shows significance with L1 variables ( $\beta_{10 (TIMEINTE)} = -0.02, p < 0.001$ ), but did not show significance with the L2 variable ( $\beta_{01 (LANGUAGE)} = 0.87, p = 0.45$ ). The model still suggests more significant variance at timepoint 1. The results suggested that there is a positive negative relationship with time and distress symptoms. Immigrant status, language, and education did not show significant positive relationship with SX. Only within-person differences were shown, no between-person (Level 2) differences were significant in this study.

### **Post Hoc Analyses**

Given that the model still suggests more significant variance at timepoint 1, post hoc analyses were conducted to evaluate the fit of other variables in the model that may explain the variance. The fit of income status and social support had been evaluated separately.

### **Income Status**

Income status was evaluated for fit at the L2 level. Income status was found to be not significant at the intercept level but significant at both the TIMEINTE and TIMEINTE<sup>2</sup> levels with  $\beta_{11} = -0.17, p = 0.050$  and  $\beta_{21} = 0.00065, p = 0.011$ .

### **Social Support for the Traumatic Event**

Social support was a significant predictor at the intercept level but was not significantly accounting for variance at the TIMEINTE and TIMEINTE<sup>2</sup> levels.

### **Distress Symptoms in Refugee/Immigrant Group**

The trajectory of distress symptoms was also evaluated with immigrant/refugee population alone in a post-hoc analysis shown in Table 5. The analysis showed significant quadratic trajectory with  $\beta_{00} = 32.93, p < 0.001$ ,  $\beta_{10} = -0.13, p = 0.006$ , and  $\beta_{20} = 0.00023, p = 0.015$ . Language was evaluated for fit in the immigrant/refugee sample on the L2 level. Language was not significant at the intercept level but was significant at both the TIMEINTE and TIMEINTE<sup>2</sup> levels with  $\beta_{11} = 0.17, p = 0.07$  and  $\beta_{21} = -0.00066, p = 0.005$ .

Table 3. *Evaluating the Fit of Linear and Quadratic Growth Models on Distress Symptoms.*

	Coefficients			Variance Components			Deviance		
	$\beta_{00}$	$\beta_{10}$	$\beta_{20}$	$r_0$	$r_1$	$e$	Dev	Par	
A	25.17***			92.63***			52.40	4946.16	3
B	26.92***	-0.01***		98.23***			49.79	4920.98	4
C	28.30***	-0.03***		114.27***	0.002***		39.87	4871.35	6
D	29.85***	-0.05***	0.000062***	110.88***			45.31	4876.06	5
E	30.55***	-0.067***	0.00009***	121.01***	0.0012***		37.97	4838.72	7

*Note.* Model A is intercept only. B includes TIMEINTE with random intercept and fixed slope. C includes TIMEINTE with random intercept and slope. D includes TIMEINTE and TIMEINTE<sup>2</sup> with random intercept but fixed slope and curvature. E includes TIMEINTE and TIMEINTE<sup>2</sup> with random intercept and slope but fixed curvature.

Table 4. *Evaluating the Fit of Immigrant or Refugee Status as the Between-Person Variable.*

	Coefficients						Variable Components			Deviance	
	$\beta_{00}$	$\beta_{01}$	$\beta_{10}$	$\beta_{11}$	$\beta_{20}$	$\beta_{21}$	$r_0$	$r_1$	$e$	Dev	Par
A	29.93***	-1.09	-0.053***		0.000062***		110.79***		45.31	4875.99	6
B	29.94***	-1.31	-0.053***	0.0017	0.000062***		110.72***		45.31	4875.98	7
C	30.70***	-2.10	-0.067***	0.0043	0.000091***		120.99***	0.0012***	37.97	4838.53	9
D	30.62***	1.27	-0.066***	-0.068	0.00008***	0.00022	122.58***	0.0012***	37.96	4836.07	10

*Note.* Model A is TIMEINTE and TIMEINTE<sup>2</sup> with IMMIGRANT at intercept level with variable slope. Model B includes IMMIGRANT at TIMEINTE slope with fixed slope on top of Model A. Model C includes variable slope at TIMEINTE slope on top of Model B. Model D includes IMMIGRANT at TIMEINTE<sup>2</sup> slope with fixed slope on top of Model C.

Table 5. *Evaluating the Fit of Linear and Quadratic Growth Models on PTSD Symptoms in Immigrant/Refugee Sample.*

	Coefficients			Variance Components			Deviance	
	$\beta_{00}$	$\beta_{10}$	$\beta_{20}$	$r_0$	$r_1$	$e$	Dev	Par
A	23.83***			120.63***		35.39	295.13	3
B	28.04***	-0.033***		154.55***		26.51	286.69	4
C	29.23	-0.058***		61.47***	0.0016***	19.40	275.87	6
D	33.55	-0.15***	0.00032***	145.63***		20.28	276.76	5
E	32.93***	-0.13**	0.00023*	82.81***	0.00077**	16.73	270.52	7

*Note.* Model A is intercept only. B includes TIMEINTE with random intercept and fixed slope. C includes TIMEINTE with random intercept and slope. D includes TIMEINTE and TIMEINTE<sup>2</sup> with random intercept but fixed slope and curvature. E includes TIMEINTE and TIMEINTE<sup>2</sup> with random intercept and slope but fixed curvature.

## CHAPTER IV – DISCUSSION

Immigrant and refugee migration has been increasing worldwide , and this population is at increased risk for poor mental health outcome due to the difficulties experienced through the migration process (Salami, Salma & Hegadoren, 2019). For asylum seekers and refugees, the rates of PTSD have been noted as 10 times more frequent compared to host populations of similar age (Fazel, Wheeler & Danesh, 2005). Although there is higher need for mental health support, it has also been found that access to appropriate treatment for this group has been more limited. According to the Annual Convention for the American Psychological Association Convention in 2001, the report states that “minorities have less access to, and availability of, mental health services; minorities are less likely to receive needed mental health services; minorities in treatment often receive a poorer quality of mental health care” (U.S. DHHS 2001, Executive Summary, p. 12). Different factors associated with this barrier to access include cultural difference in conceptualizing mental health, stigma of mental illness, economic burden of accessing care, language barrier, and lack of training from service providers. With the barriers of culture, stigma, and language, effectiveness of intervention must be carefully examined to provide appropriate care to immigrants and refugees. Understanding of how to adapt and develop evidence-based interventions for this population to ensure effectiveness of treatment is important. In order to gain more understanding, this study explored the different variables at play and potential impact on treatment intervention across time.

### **Group Differences in Sociocultural Factors**

I will first review results of hypothesis 1A for the different sociocultural factors. Cross-sectionally, there was significant group difference in income status for both baseline PTSD symptom and last progress monitor; significant different in prior

mental health history for baseline PTSD symptoms; and significant group difference in social support for last progress monitor. Access to care and vulnerability of certain groups is to be considered as both income status and prior mental health history impact baseline symptom of PTSD differently, with lowest income status and some mental health history associating with higher baseline symptoms. Furthermore, the relationship between baseline symptoms and treatment outcome was examined.

### **Baseline Symptom as Predictor**

From the regression analysis, it was found that baseline symptoms predict about 19% of treatment outcome measured as the last progress monitor. This predictor accounts for the variance above the impact of days in treatment. Thus baseline PTSD symptoms is an important predictor of treatment outcome, and the sociocultural factors that put certain groups at risk of higher baseline PTSD symptoms is to be examined as well.

There remain questions as to what other variables account for the other 81% of the variance. From comparing means between immigrant/refugee group and non-immigrant/non-refugee group, there was no group difference in baseline PTSD symptom, yet there was difference in last progress monitor. Thus, other factors must be at play in addition to the impact from baseline symptoms to treatment trajectory.

### **Longitudinal Analyses**

In analyses of the longitudinal data, hierarchical linear modeling was used with results from the full dataset indicated significant decrease of PTSD symptoms over time following a quadratic trajectory. At baseline, the mean PTSD outcome was 29.85 with a decrease of symptoms over time with the mean slope of -0.053. Over time, this slope increases, meaning the symptom reduction decreases over time, showing a flattening of the curve. The variance of the model was best explained by time and the

fit of immigrant/refugee status was not found to be significant for the model. This suggests that the immigrant/refugee status did not significantly account for variance in PTSD symptoms over time even though from means comparison, there was group difference in treatment outcome between the immigrant/refugee group and non-immigrant/non-refugee group. Thus, exploration of other factors that may affect the immigrant/refugee group may help clarify the picture.

When looking at other factors, it was found that income status and social support for the event both individually account for variance in PTSD symptoms over time. Income status at baseline suggests that higher income associates with lower PTSD symptoms at baseline. Over time, there was continual gradual decrease in symptoms, but the difference in the trajectories between different income status groups decreased in a linear fashion. The decrease in difference over time is reduced on the quadratic trajectory. Social support helped explain some of the variance but was found to be significant at the baseline with higher social support predicting lower PTSD symptoms. Social support for the traumatic event did not significantly predict trajectory of PTSD symptoms in this dataset. For the overall group, only social support and income status were found to impact symptoms differently. For immigrant/refugee group, social support may not be available. Migration process may involve leaving familiar social networks. Future studies examining how to increase support for trauma and provide culturally appropriate support for immigrant/refugee will be valuable. System level education on trauma and how to support trauma survivors may be valuable.

### **Social Support and Marginalized Group**

It is noteworthy that social support for the traumatic event may impact PTSD symptoms at baseline. Having strong community support specifically for the



traumatic event may help with coping for the event even prior to trauma-focused treatment intervention. For marginalized groups, social support may not be as available, especially if during migration progress some may have to experience separation with family members. As immigrants and refugees leave the social networks with which they are familiar with to build new support network in a new culture, it may be more challenging for them to have strong support. Therefore, studies on factors important in providing support for trauma will be valuable in moving further towards decreasing the gap for marginalized group's mental health care. Specifically, exploring ways to promote support for trauma and different aspects of culturally appropriate support for immigrant/refugee will be important in helping to provide adapted care for this group. Considerations of the acculturation process by addressing stigma towards mental health and increasing continuity to treatment and helps reduce barrier to accessing and utilizing service.

### **Post-Hoc Analyses**

Post-hoc analysis of the immigrant/refugee sample separately showed that time interval with quadratic trajectory best fit the model as well. At baseline, the mean PTSD symptom is 32.93 with a decrease of symptoms over time of mean slope of -0.13. Over time, this slope increases, meaning the symptom reduction decreases over time in a quadratic trajectory. Limited data were available to assess fit of level-2 factors, but language increased fit of model separately for immigrant/refugee population. At baseline, language did not predict a difference in PTSD symptoms, but over time, immigrant/refugee with less English fluency had less reduction in symptoms compared to those who spoke English as 1<sup>st</sup> language. This reduction was less over time. Education did not change the fit of the model significantly. Language barrier contribute to health disparities, lower service satisfaction, and higher rates of

treatment dropout (Morrison et al, 2012; Jacobs et al., 2006). Within an underserved population, it becomes more important to address in order to promote treatment effectiveness and reduce access barrier.

Language was not a significant predictor in overall data but was a stronger predictor in the sample pool of immigrant/refugee. The level of symptom reduction decreases from the English-speaking group compared to English as a second language and reduction was least in non-English-speaking group. The more prominent impact in immigrant/refugee group may be due to the higher variance of different language fluency levels in immigrant/refugee group compared to the general population. A higher immigrant/refugee representation in the general population would have helped distinguished the impact of language clearer. The current difference in number of cases of immigrant/refugee population compared to the non-immigrant/non-refugee is high.

Demographic data of income status and social support for the traumatic event both predicted PTSD symptoms at the baseline level, with reduction of impact over time with treatment. Language, on the other hand did not predict a difference at baseline but showed different trajectory with course of treatment in immigrant/refugee population. It will be an important future direction to gather data with more variance in language fluency in the overall population to examine the impact of language on delivery of treatment. When examining income status, social support, and language, a positive correlation between social support and income status was found, suggesting higher social support associated with higher income level. A correlation between English fluency and social support was found where higher English fluency correlated with increased support.

## **Language and Cultural Barriers to Care**

Language as a barrier to treatment in immigrant/refugee population is important to note as many migrants do not speak the language of the host country. Language barriers may impact understanding of service and limit the availability of resources. Language barriers have been found to be one of the most important contributors to health disparities, leading to lower service satisfaction and higher rates of treatment dropout (Morrison et al., 2012; Jacobs et al., 2006). From a study among Somali immigrants and refugees, it was found that use of medical interpreters was associated with higher completion rates of preventive services (Morrison et al, 2012). This highlights the importance of addressing language barriers when providing care to immigrant/refugee group. When treatment is provided in a language other than the native tongue, it adds complexity in the processing of trauma and comprehension of aspects of intervention. For instance, Brisset et al. (2014) have found that conveying empathic understanding and understanding clients' expression of emotional experiences via interpretation can be very challenging in a primary care mental health setting. Ideally, having interpreters with greater knowledge of mental health and treatment provision for mental health can ensure more accurate communication regarding treatment. Even when language barriers are considered, cultural difference in how mental health is conceptualized may continue to act as a barrier to effectiveness of treatment. Stigma and lack of knowledge about mental illness has been consistently found to be a part of provision of care for immigrant/refugee, improving training for interpreters and cultural brokers in working with immigrant/refugee to explain mental health care in a culturally appropriate and meaningful format will be central to reducing barriers to service (Salami et al., 2019). Interpreters may include different types and roles as well (Brisset et al., 2014).

Interpreters can be either a professional interpreter who is an interpreter who has received formal training in interpretation, or an ad hoc interpreter who is an untrained individual, often either a family member or perhaps a healthcare staff. In terms of the different roles, interpreters can take a linguistic agent stance, serving more as a neutral translating agent. Another role proposed is a system agent, where the interpreter aims to bring the client to more understanding of the norms and values of the dominant culture, thus favoring the dominant culture while minimizing the cultural differences. A lifeworld agent, on the other hand can play the role of cultural mediator and advocate, acknowledging and helping the migrants in conveying their values and norms. Lastly, an integration agent stance aims to help migrants find resources and adapt to the cultural environment of the host country. Interpretation services can come with different types and potentially play different role depending on the expectation of the provider and communication with the interpreter. Different types and roles of the interpreter can likely impact the quality of treatment. As language presents as a barrier to effectiveness in treatment, further study of the nuances of delivery of treatment with interpretation services is important to make considerations in adaptations necessary to decrease the service gap for marginalized populations. Bridging the central/norm and the periphery of the marginalization model through decreasing language and stigmatization barriers will hopefully decrease barrier to treatment and increase effectiveness of treatment.

## **Clinical Implications**

### **Candidacy Framework**

One way to weave in the different factors is to use the candidacy framework. Access to care can be defined as the “timely use of personal health services to achieve the best possible health outcomes” (Millman, 1993). The candidacy framework has

originally been proposed as a structured, dynamic model in understanding the process of access and utilization of services. This model emphasizes the interactions between the individual and professionals. In a study by van der Boor and White (2020), they proposed using the candidacy framework in understanding the barrier to care for asylum seekers and refugees, which may help frame the different aspects of barriers to service identified in this study that impact the service provision and outcome of treatment. The candidacy framework consists of seven stages of progressing towards the “candidacy for service.” Each of the stage present unique challenges when applying this framework for immigrant/refugee group. The first stage is “identification of candidacy by the individual,” which is the recognition of need by the service recipient. For immigrant/refugee, the barrier faced here may be difficulty in identifying mental health symptoms. The second stage of candidacy is “navigation,” which is knowing how to connect to appropriate services. In immigrant/refugee population, this may look like having knowledge of the healthcare system to access appropriate service. Stage 3 is “permeability of services, which includes being able to use the service and being “culturally aligned” with the service provided. This includes being provided appropriate interpretation services. Stage 4 is “appearing at services and asserting candidacy,” which include the process of being able to share some of the social context of individual experience and feeling “acknowledged or understood.” Stage 5 is “adjudications by professional,” meaning proper referrals to appropriate service. Stage 6 is “offers of, and resistance to, specific services,” which means connecting to appropriate service while inhibiting inappropriate referrals or plans. The last stage is “operating conditions and local production of candidacy,” which means continuing the relationship and building treatment plan that matches the needs of service recipient.

From looking at the candidacy framework and thinking about the variables identified in this study, language barriers seem to fall within the stages of permeability of services and also appearing at services and asserting candidacy. With language barrier, the "cultural alignment" between service users and providers may be harder to achieve. Furthermore, the extent to which individuals are able to assert candidacy and feel understood may be more limited.

The social support aspect may fall more within the navigation stage, as social support may facilitate this process by potentially providing more information regarding services, help with transportation, and potentially helping with some responsibilities to free up time for individuals to attend appointments.

The last stage of "operating conditions and local production of candidacy" remains a challenge for immigrant/refugee population in consideration of the fit and development of relationship between professionals and service-users with increasing number of encounters. Due to various factors including culture and language barriers, this could impact the treatment outcome. Further research on how to facilitate the fit of service to service-users may help promote treatment outcome.

Though this model emphasizes the access and process of service utilization, examination of this process is helpful in conceptualizing provision of care for immigrant/refugee group and also consideration of treatment outcome. For instance, low permeability of services limits true access to service, thus likely impacting outcome to treatments. Low fit of operating conditions and local production of candidacy may result in early termination and limiting outcome to treatment as well. Further studies looking into different barriers to treatment in the process of service utilization and potential impact to treatment outcome may help us gain more information towards developing adaptive treatment options for immigrant/refugee

group.

*Table 6. The Seven Stages of Candidacy (van der Boor & White, 2020).*

Stages of candidacy	Description of stages	Examples
1. Identification of candidacy by the individual	Process through which individuals decide that they have a particular need and that assistance may be required	Individuals' recognition of mental health symptoms
2. Navigation	Knowing how to make contact with appropriate services in relation to identified candidacy	Being allowed time off work for appointments
3. Permeability of services	Ease with which people can use services. Includes the level of explicit and implicit gate-keeping within a service and the complexity of its referral systems; in addition, it refers to the 'cultural alignment' between users and services	Provision of translational services
4. Appearing at services and asserting candidacy	The work that individuals must do to assert their candidacy in an interaction with a healthcare professional	The service user feels taken seriously – 'acknowledged' and/or 'understood'
5. Adjudications by professional	Refers to the judgments and decisions made by professionals which allow or inhibit continued progression of candidacy	Being referred on to mental health services
6. Offers of, and resistance to, specific services	Emphasizes that follow-up services may be appropriately or inappropriately offered and that these may or may not be acted upon by service-users	Refusal of offer of medication
7. Operating conditions and local production of candidacy	Incorporates factors that influence decisions about subsequent service provision (i.e., the resources available for addressing candidacy) and the kinds of contingent relationships that develop between professionals and	Adapting the frequency of consultations to the individual's needs

### **Limitations**

This study had different limitations including a selection bias that may be present. For populations that experience higher service gap and limited resources, they may not be able to reach this resource and stay consistently in service over time. In the current dataset, there was no significant difference between the number of counseling visits in overall data and the separate data with immigrant/refugee only. The mean number of visits for all was 9.89 while the mean for immigrant/refugee was 10.42. This suggests that in this dataset there was no significant difference in continuation of treatment. Another limitation was due to the clinical nature of the data. The data of this study was not specific to focusing on the immigrant/refugee population, and it was not able to provide specific distinction between immigrant and refugee populations. It will be interesting in future studies to see if there are further difference in treatment trajectories between immigrant and refugee populations. In addition, this dataset also had a large amount of missing data. This made it more difficult to complete higher level analyses in hierarchical linear modeling, especially when more predictors were added to the model. In future research, a more complete and bigger set of data focusing on immigrant/refugee population will help inform us more to the impact of service gap and factors predicting treatment outcome specific to this group.

### **Future Directions**

With the barriers experienced by marginalized groups of immigrants and refugees, continued studies to move towards decreasing barriers to care is imperative. Some of the directions to be explored include more studies of longitudinal treatment



comparisons and exploring the role of interpretation on treatment effectiveness. Nuanced examination of different structure of treatment provided with interpretation may help with further understanding of how to adapt and reduce barrier. As interpretation may take up more treatment time, perhaps increasing treatment time when using interpretation services would be important to study. Controlling for quality of interpretation may be another direction to explore. Furthermore, considering how to provide more culturally-appropriate support in the community for refugee/immigrant will be important to attempt to mitigate potential limitation in social support experienced by this group.

Additionally, programs aiming to decrease barriers to treatment and enhance improved mental health by addressing the language barrier, social support, and facilitate acculturation would be beneficial to overall wellbeing of immigrant/refugee group. One study by Goodkind et al. (2020) studied the impact of Refugee Well-being Project, a multilevel intervention pairing refugee families with undergraduate advocates in colleges to work together for 6 months. The project involves one-on-one learning time where students support refugee individuals in practicing English, filling out job applications, and improving skills to work towards goals together. This project strives to increase refugees' ability to navigate new communities in the host country, improve access to resources in the communities, and enhancing meaningful social roles by sharing refugee culture and experience with students. This also helps the natives of the host country to learn and respond better to needs of refugee communities. The findings of this project showed significant increase of refugee experience in connection to American culture, increase in English language fluency, and even increased connection to their home cultures compared to the control group. This decreases their risk to marginalization as there is less risk of disconnection to

both home and new cultures. This project also provides an opportunity to increase social support during the time of the intervention. The findings of this study are promising in future exploration of holistic and multilevel perspective in providing intervention and treatment to immigrant/refugee group. This finding is consistent with support in the process of acculturation, reduction of stigma, and thus promote improving of mental health. The multilevel approach aiming at reducing acculturative stress and supporting integration into host country may be crucial to further improve effectiveness of treatment for mental health in this group.

Another direction to explore for the experience of refugee/immigrant over time is the socio-political atmosphere and the impact of this on the marginalization of this group and impact to treatment. For instance, the experience of Arab immigrant/refugee during the time of 2001 may be very different from other timepoints. The current increase of Asian hate due to the global pandemic of COVID-19 in 2020-2021 with outbreak that started in China may impact experience for Asian immigrant/refugee and further affect access to care, trust, and social support. Gibson et al. (2021) has found that experience of abuse or stigma due to one's identity as belonging to an ethnically marginalized group predict mental health inequalities during the COVID-19 outbreak. The added vulnerability due to social and political environment may potentially impact treatment outcome as well. Studies to compare treatment for immigrant/refugee across time may help our understanding of potential impact to treatment and thus start the process of addressing the disparity in care.

### **Conclusion**

Immigrant and refugee experience can be so different as a marginalized group. The current study was focused on understanding the different aspects this group's experience may impact their mental health care, specifically for trauma care. From

this study, no significant difference was found of change in trauma symptom between refugee/immigrant group compared to others, but specifically aspects of language and social support were found to be important to treatment outcome. As language barrier and limited social support can be the experience of marginalized group, this study prompt us to continue exploring the specific aspects of refugee/immigrant experience that may put them at risk for barriers to treatment and disparity in treatment outcome. Future directions looking at language and interpretation, and ways of increasing social support for marginalized group will be invaluable.

## REFERENCES

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5<sup>th</sup> ed.). Washington DC: Author.
- Bastin, P., Bastard, M., Rossel, L., Melgar, P., Jones, A., & Antierens, A. (2013). Description and predictive factors of individual outcomes in a refugee camp based mental health intervention (Beirut, Lebanon). *PLoS ONE*, 8(1). Retrieved from <http://search.ebscohost.com.ezproxy.spu.edu/login.aspx?direct=true&AuthType=ip&db=psych&AN=2013-07974-001&site=ehost-live>
- Batista, R., Pottie, K., Bouchard, L., Ng, E., Tanuseputro, P., & Tugwell, P. (2018). Primary health care models addressing health equity for immigrants: A systematic scoping review. *Journal of Immigrant and Minority Health*, 20(1), 214–230. <https://doi-org.ezproxy.spu.edu/10.1007/s10903-016-0531-y>
- Bentley, J. A., Thoburn, J. W., Stewart, D. G., & Boynton, L. D. (2012). Post-migration stress as a moderator between traumatic exposure and self-reported mental health symptoms in a sample of Somali refugees. *Journal of Loss and Trauma*, 17(5), 452–469. <https://doi-org.ezproxy.spu.edu/10.1080/15325024.2012.665008>
- Berry, J. W. (1984). Cultural relations in plural societies: Alternatives to segregation and their socio-psychological implications. In M. Brewer & N. Miller (Eds.), *Groups in contact* (pp. 11-27). San Diego, CA: Academic Press.
- Berry, J. W., Kim, U., Minde, T., & Mok, D. (1987). Comparative studies of acculturative stress. *International Migration Review*, 21, 491-511.
- Bhui, K., & Dinos, S. (2008). Health beliefs and culture: Essential considerations for outcome measurement. *Disease Management & Health Outcomes*, 16(6), 411–

419. <https://doi-org.ezproxy.spu.edu/10.2165/0115677-200816060-00006>
- Boehnlein, J. K., Kinzie, J. D., Sekiya, U., Riley, C., Pou, K., & Rosborough, B. (2004). A ten-year treatment outcome study of traumatized Cambodian refugees. *Journal of Nervous and Mental Disease, 192*(10), 658–663. <https://doi-org.ezproxy.spu.edu/10.1097/01.nmd.0000142033.79043.9d>
- Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry, 162*, 214-227.
- Brisset, C., Lanza, Y., Rosenberg, E., Vissandjée, B., Kirmayer, L. J., Muckle, G., Xenocostas, S., & Laforce, H. (2014). Language barriers in mental health care: A survey of primary care practitioners. *Journal of Immigrant and Minority Health, 16*(6), 1238–1246. <https://doi-org.ezproxy.spu.edu/10.1007/s10903-013-9971-9>
- Carswell, K., Blackburn, P., & Barker, C. (2011). The relationship between trauma, post-migration problems and the psychological well-being of refugees and asylum seekers. *International Journal of Social Psychiatry, 57*(2), 107–119. <https://doi-org.ezproxy.spu.edu/10.1177/0020764008105699>
- Crumlish, N., & O'Rourke, K. (2010). A systematic review of treatments for post-traumatic stress disorder among refugees and asylum-seekers. *Journal of Nervous and Mental Disease, 198*(4), 237–251. <https://doi-org.ezproxy.spu.edu/10.1097/NMD.0b013e3181d61258>
- de Wit, M. A. S., Tuinebreijer, W. C., Dekker, J., Beekman, A.-J. T. F., Gorissen, W. H. M., Schrier, A. C., ... Verhoeff, A. P. (2008). Depressive and anxiety disorders in different ethnic groups: A population-based study among native Dutch, and Turkish, Moroccan and Surinamese migrants in Amsterdam. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social*

and *Genetic Epidemiology and Mental Health Services*, 43(11), 905–912.

<https://doi-org.ezproxy.spu.edu/10.1007/s00127-008-0382-5>

Droždek, B., & Bolwerk, N. (2010). Group therapy with traumatized asylum seekers and refugees: For whom it works and for whom it does

not? *Traumatology*, 16(4), 160–167. <https://doi->

[org.ezproxy.spu.edu/10.1177/1534765610388299](https://doi-org.ezproxy.spu.edu/10.1177/1534765610388299)

Edberg, M., Cleary, S., & Vyas, A. (2011). A trajectory model for understanding and assessing health disparities in immigrant/refugee communities. *Journal of*

*Immigrant and Minority Health*, 13(3), 576–584. <https://doi->

[org.ezproxy.spu.edu/10.1007/s10903-010-9337-5](https://doi-org.ezproxy.spu.edu/10.1007/s10903-010-9337-5)

Fazel, M., Wheeler, J., & Danesh, J. (2005). Prevalence of serious mental disorder in 7000 refugees resettled in western countries: A systematic review. *The*

*Lancet*, 365(9467), 1309–1314. <https://doi-org.ezproxy.spu.edu/10.1016/S0140->

[6736\(05\)61027-6](https://doi-org.ezproxy.spu.edu/10.1016/S0140-6736(05)61027-6)

Foa, E.B. & Capaldi, S. (2013). Manual for the administration and Scoring of the PTSD Symptom Scale-Interview for DSM-5 (PSS-I-5).

Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Rauch, S., Porter, K., ... Kauffman, B.

Y. (2016). Psychometric properties of the Posttraumatic Stress Disorder

Symptom Scale Interview for DSM–5 (PSSI–5). *Psychological*

*Assessment*, 28(10), 1159–1165. <https://doi->

[org.ezproxy.spu.edu/10.1037/pas0000259.supp](https://doi-org.ezproxy.spu.edu/10.1037/pas0000259.supp) (Supplemental)

Gibson, B., Schneider, J., Talamonti, D., & Forshaw, M. (2021). The impact of inequality on mental health outcomes during the COVID-19 pandemic: A

systematic review. *Canadian Psychology/Psychologie Canadienne*, 62(1), 101–

126. <https://doi-org.ezproxy.spu.edu/10.1037/cap0000272.supp> (Supplemental)

- Goodkind, J. R., Bybee, D., Hess, J. M., Amer, S., Ndayisenga, M., Greene, R. N., Choe, R., Isakson, B., Baca, B., & Pannah, M. (2020). Randomized controlled trial of a multilevel intervention to address social determinants of refugee mental health. *American Journal of Community Psychology*, *65*(3–4), 272–289. <https://doi-org.ezproxy.spu.edu/10.1002/ajcp.12418>
- Haagen, J. F. G., ter Heide, F. J. J., Mooren, T. M., Knipscheer, J. W., & Kleber, R. J. (2017). Predicting post-traumatic stress disorder treatment response in refugees: Multilevel analysis. *British Journal of Clinical Psychology*, *56*(1), 69–83. <https://doi-org.ezproxy.spu.edu/10.1111/bjc.12121>
- Hall, E., & Cuellar, N. G. (2016). Immigrant health in the United States: A trajectory toward change. *Journal of Transcultural Nursing*, *27*(6), 611–626. <https://doi-org.ezproxy.spu.edu/10.1177/1043659616672534>
- Hall, J. M., Stevens, P. E., & Meleis, A. I. (1994). Marginalization: A guiding concept for valuing diversity in nursing knowledge development. *Advances in Nursing Science*, *16*(4), 23–41. <https://doi-org.ezproxy.spu.edu/10.1097/00012272-199406000-00005>
- Hollifield, M., Warner, T. D., Lian, N., Krakow, B., Jenkins, J. H., Kesler, J., ... Westermeyer, J. (2002). Measuring trauma and health status in refugees: A critical review. *JAMA: Journal of the American Medical Association*, *288*(5), 611–621. <https://doi-org.ezproxy.spu.edu/10.1001/jama.288.5.611>
- Hollifield, M., Verbillis-Kolp, S., Farmer, B., Toolson, E. C., Woldehaimanot, T., Yamazaki, J., ... SooHoo, J. (2013). The Refugee Health Screener-15 (RHS-15): Development and validation of an instrument for anxiety, depression, and PTSD in refugees. *General Hospital Psychiatry*, *35*(2), 202–209. <https://doi-org.ezproxy.spu.edu/10.1016/j.genhosppsy.2012.12.002>

- Institute of Medicine (U.S.). Committee on Monitoring Access to Personal Health Care Services, ProQuest Ebook Subscriptions, ProQuest (Firm), & Millman, M. L. (1993). *Access to health care in America*. National Academy Press.
- Jacobs, E., Chen, A. H., Karliner, L. S. ., Agger-gupta, N., & Mutha, S. (2006). The Need for More Research on Language Barriers in Health Care: A Proposed Research Agenda. *Milbank Quarterly*, 84(1), 111–133. <https://doi-org.ezproxy.spu.edu/10.1111/j.1468-0009.2006.00440.x>
- Kaniasty, K., & Norris, F. H. (2008). Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. *Journal of Traumatic Stress*, 21(3), 274–281. <https://doi-org.ezproxy.spu.edu/10.1002/jts.20334>
- Koenen K. C., Goodwin R., Struening E., Hellman F., Guardino M. (2003). Posttraumatic stress disorder and treatment seeking in a national screening sample. *J Trauma Stress*. 16:5-16.
- Kruse, J., Joksimovic, L., Cavka, M., Wöller, W., & Schmitz, N. (2009). Effects of trauma-focused psychotherapy upon war refugees. *Journal of Traumatic Stress*, 22(6), 585–592. Retrieved from <http://search.ebscohost.com.ezproxy.spu.edu/login.aspx?direct=true&AuthType=ip&db=psych&AN=2010-00260-013&site=ehost-live>
- Laban C. J., Gernaat H. B. P. E., Omproe I. H., van der Tweel I., De Jong J. T. V. M. (2005). Postmigration living problems and common psychiatric disorders in Iraqi asylum seekers in the Netherlands. *J Nerv Ment Dis*. 193:825-832.
- Lambert, J. E., & Alhassoon, O. M. (2015). Trauma-focused therapy for refugees: Meta-analytic findings. *Journal of Counseling Psychology*, 62, 28-37. doi:10.1037/cou0000048



- Le, Q. A., Doctor, J. N., Zoellner, L. A., & Feeny, N. C. (2014). Cost-effectiveness of prolonged exposure therapy versus pharmacotherapy and treatment choice in posttraumatic stress disorder (the optimizing PTSD treatment trial): A doubly randomized preference trial. *The Journal of Clinical Psychiatry, 75*(3), 222–230.
- Li, S. S., Liddell, B. J., Nickerson, A. (2016). The relationship between post-migration stress and psychological disorders in refugees and asylum seekers. *Current Psychiatry Reports, 18*(9):82. doi:10.1007/s11920-016-0723-0
- Miller, K. E., Martell, Z. I., Pazdirek, I., Caruth, M., & Lopez, D. (2005). The role of interpreters in psychotherapy with refugees: An exploratory study. *American Journal of Orthopsychiatry, 75*, 27-39. doi:10.1037/0002-9432.74.1.27
- Miller, K. E., & Rasmussen, A. (2010). War exposure, daily stressors, and mental health in conflict and post-conflict settings: Bridging the divide between trauma-focused and psychosocial frameworks. *Social Science & Medicine, 70*, 7-16. doi:10.1016/j.socscimed.2009.09.029
- Missinne, S. & Bracke, P. (2012). Depressive symptoms among immigrants and ethnic minorities: a population based study in 23 European countries. *Soc Psychiatry Psychiatr Epidemiol, 47*(1):97-109
- Morrison, T. B., Wieland, M. L., Cha, S. S., Rahman, A. S., & Chaudhry, R. (2012). Disparities in preventive health services among Somali immigrants and refugees. *Journal of Immigrant and Minority Health, 14*(6), 968–974. <https://doi-org.ezproxy.spu.edu/10.1007/s10903-012-9632-4>
- National Institute for Clinical Excellence (NICE) (2005). *Post-traumatic stress disorder: The management of PTSD in adults and children in primary and secondary care*. Wiltshire, UK: Gaskell and British Psychological Society.
- Nickerson, A., Bryant, R. A., Silove, D., & Steel, Z. (2011). A critical review of

- psychological treatments of posttraumatic stress disorder in refugees. *Clinical Psychology Review*, 31(3), 399–417. <https://doi-org.ezproxy.spu.edu/10.1016/j.cpr.2010.10.004>
- Orosa, F. J. E., Brune, M., Huter, K., Fischer-Ortman, J., & Haasen, C. (2011). Belief systems as coping factors in traumatized refugees: A prospective study. *Traumatology*, 17(1), 1–7. <https://doi-org.ezproxy.spu.edu/10.1177/1534765609358468>
- Palic, S., & Elklit, A. (2011). Psychosocial treatment of posttraumatic stress disorder in adult refugees: A systematic review of prospective treatment outcome studies and a critique. *Journal of Affective Disorders*, 131(1–3), 8–23. <https://doi-org.ezproxy.spu.edu/10.1016/j.jad.2010.07.005>
- Palic, S., Zerach, G., Shevlin, M., Zeligman, Z., Elklit, A., & Solomon, Z. (2016). Evidence of complex posttraumatic stress disorder (CPTSD) across populations with prolonged trauma of varying interpersonal intensity and ages of exposure. *Psychiatry Research*, 246, 692–699. <https://doi-org.ezproxy.spu.edu/10.1016/j.psychres.2016.10.062>
- Porter, M., & Haslam, N. (2005). Predisplacement and Postdisplacement Factors Associated with Mental Health of Refugees and Internally Displaced Persons: A Meta-analysis. *JAMA: Journal of the American Medical Association*, 294(5), 602–612. <https://doi-org.ezproxy.spu.edu/10.1001/jama.294.5.602>
- Salami, B., Salma, J., & Hegadoren, K. (2019). Access and utilization of mental health services for immigrants and refugees: Perspectives of immigrant service providers. *International Journal of Mental Health Nursing*, 28(1), 152–161. <https://doi-org.ezproxy.spu.edu/10.1111/inm.12512>
- Scholte, W. F., van de Put, W. A. C. M., & de Jong, J. P. (2004). A protocol for

- psychosocial intervention in refugee crisis: Early experiences in Rwandan refugee camps. *International Journal of Mental Health, Psychosocial Work and Counseling in Areas of Armed Conflict*, 2, 181-192.
- Silove, D., Sinnerbrink, I., Field, A., Manicavasgar, V., Steel, Z. (1997). Anxiety depression and PTSD in asylum-seekers: Associations with pre-migration trauma and post-migration stressors. *Br J Psychiat*, 170:351-357.
- Steel, Z., Silove, D., Brooks, R., Momartin, S., Alzuhairi, B., & Susljik, I. (2006). Impact of immigration detention and temporary protection on the mental health of refugees. *The British Journal of Psychiatry*, 188(1), 58–64. <https://doi-org.ezproxy.spu.edu/10.1192/bjp.bp.104.007864>
- Steel, Z., Chey, T., Silove, D., Marnane, C., Bryant, R. A., van Ommeren, M. (2009). Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement. *JAMA*, 302:537-549.
- Stenmark, H., Guzey, I. C., Elbert, T., & Holen, A. (2014). Gender and offender status predicting treatment success in refugees and asylum seekers with PTSD. *European Journal of Psychotraumatology*, 5, 20803. doi:10.3402/ejpt.v5.20803
- Straimer, C. (2011). Between protection and assistance: Is there refuge for asylum seekers with disabilities in Europe? *Disability & Society*, 26(5), 537–551. <https://doi-org.ezproxy.spu.edu/10.1080/09687599.2011.589189>
- Ter Heide, F. J. J., Mooren, T. M., Van de Schoot, R., De Jongh, A., & Kleber, R. J. (2016). Eye movement desensitization and reprocessing therapy v. stabilization as usual with refugees: Randomised controlled trial. *The British Journal of Psychiatry*, 209, 311-318. Doi:10.1192/bjp.bp.115.167775
- Tingvold, L., Vaage, A. B., Allen, J., Wentzel-Larsen, T., van Ta, T., & Hauff, E.

- (2015). Predictors of acculturative hassles among Vietnamese refugees in Norway: Results from a long-term longitudinal study. *Transcultural Psychiatry*, 52(5), 700–714. <https://doi-org.ezproxy.spu.edu/10.1177/1363461515572208>
- UNHCR (2018) UNHCR Statistical Online Population Database. Data extracted: 12/10/2018. Available at: [http://popstats.unhcr.org/en/persons\\_of\\_concern](http://popstats.unhcr.org/en/persons_of_concern)
- United States. Public Health Service. Office of the Surgeon General. (2001). *Mental health: Culture, race, and ethnicity : a supplement to Mental health, a report of the Surgeon General*. Dept. of Health and Human Services, U.S. Public Health Service ; For sale by the Supt. of Docs., U.S. G.P.O..
- U.S. Department of Health & Human Services (2010).
- U.S. Department of Homeland Security (2019). Retrieved from [https://www.dhs.gov/immigration-statistics/data-standards-and-definitions/definition-terms#permanent\\_resident\\_alien](https://www.dhs.gov/immigration-statistics/data-standards-and-definitions/definition-terms#permanent_resident_alien)
- Vaage, A. B., Thomsen, P. H., Silove, D., Wentzel-Larsen, T., Van Ta, T., & Hauff, E. (2010). Long-term mental health of Vietnamese refugees in the aftermath of trauma. *The British Journal of Psychiatry*, 196(2), 122–125. <https://doi-org.ezproxy.spu.edu/10.1192/bjp.bp.108.059139>
- van der Boor, C. F., & White, R. (2020). Barriers to accessing and negotiating mental health services in asylum seeking and refugee populations: The application of the candidacy framework. *Journal of Immigrant and Minority Health*, 22(1), 156–174. <https://doi-org.ezproxy.spu.edu/10.1007/s10903-019-00929-y>
- Watts, B. V., Zayed, M. H., Llewellyn-Thomas, H., & Schnurr, P. P. (2016). Understanding and meeting information needs for patients with posttraumatic stress disorder. *BMC Psychiatry*, 16. <https://doi->

org.ezproxy.spu.edu/10.1186/s12888-016-0724-x

Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013). The PTSD Checklist for *DSM-5* (PCL-5). Scale available from the National Center for PTSD at [www.ptsd.va.gov](http://www.ptsd.va.gov).

Williams, C. L., & Berry, J. W. (1991). Primary prevention of acculturative stress among refugees: Application of psychological theory and practice. *American Psychologist*, *46*(6), 632–641. <https://doi-org.ezproxy.spu.edu/10.1037/0003-066X.46.6.632>

World Health Organization. (2018). *International statistical classification of diseases and related health problems* (11<sup>th</sup> Revision). Retrieved from <https://icd.who.int/browse11/l-m/en>

Wortmann, J. H., Jordan, A. H., Weathers, F. W., Resick, P. A., Dondanville, K. A., Hall-Clark, B., ... Litz, B. T. (2016). Psychometric analysis of the PTSD Checklist-5 (PCL-5) among treatment-seeking military service members. *Psychological Assessment*, *28*(11), 1392–1403. <https://doi-org.ezproxy.spu.edu/10.1037/pas0000260.supp> (Supplemental)