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## Adult Syrian Refugees Resettled in the United States: Social Support, Personality, Somatic Complaints, and Posttraumatic Stress Disorder

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## ABSTRACT

### ADULT SYRIAN REFUGEES RESETTLED IN THE UNITED STATES: SOCIAL SUPPORT, PERSONALITY, SOMATIC COMPLAINTS, AND POSTTRAUMATIC STRESS DISORDER

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This study examined the relationships between perceived social support, personality traits, and posttraumatic stress disorder (PTSD) symptoms in adult Syrian refugees resettled in the United States. Participants ( $N = 19$ ) were recruited from resettlement organizations across the United States. To be eligible, participants had to be at least 18 years old and had to have been resettled in the United States after 1/1/2015. After being screened for eligibility, participants completed a series of self-report questionnaires online, and were able to enroll in a drawing for five \$50 Visa gift cards for their participation. The findings failed to lend support to the hypotheses and the proposed relationships between the study variables. Limitations, implications, and future research directions are discussed.

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ADULT SYRIAN REFUGEEES RESETTLED IN THE UNITED STATES:  
SOCIAL SUPPORT, PERSONALITY, SOMATIC COMPLAINTS,  
AND POSTTRAUMATIC STRESS DISORDER

BY

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A THESIS SUBMITTED TO THE GRADUATE SCHOOL  
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Thesis Director:  
Michelle M. Lilly

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## CHAPTER ONE

### INTRODUCTION

The United Nations High Commissioner for Refugees (UNHCR) estimates that there are more than 4.7 million registered Syrian refugees worldwide (UNHCR, 2016). Refugee populations are at a heightened risk of developing posttraumatic stress disorder (PTSD) (Karunakara et al., 2004). In fact, PTSD has been reported to be the most prevalent psychological disorder among groups escaping mass violence (Wilson & Keane, 2004). This population endures war-related trauma, where persecution can be targeted at the individual but also targeted at others close to the individual, such as family, friends, and neighbors (Hooberman, Rosenfeld, Lhewa, Rasmussen, & Keller, 2007). War-related trauma that is not individually perpetrated includes forced migration, lack of food and water sources, witnessing the death or disappearance of family members or friends, and close contact with combat and dead bodies. Other war-related traumatic experiences that are more directed at the individual include torture, kidnappings, and physical and sexual assaults. Such experiences contribute to the development of psychopathology in this population (Hooberman et al., 2007). Other factors contributing to the development of PTSD include personality traits and levels of social support received post-trauma (Borja, Callahan, & Rambo, 2009). In this study, personality and social support were examined as predictors of posttraumatic and resiliency outcomes in Syrian refugees who have resettled in the United States.

The Syrian Revolution started in March of 2011 and has developed into a deadly civil war. Millions of Syrians have migrated from their home country to reach safety. The UNHCR estimates that there are 5.6 million Syrian refugees worldwide, with the majority residing in countries neighboring Syria. Approximately 21,000 Syrian refugees have arrived in the United States, with the majority arriving after January of 2015 (Refugee Processing Center, 2018). There have been no published studies examining PTSD prevalence among Syrian refugees resettled in the United States, and the first aim of this study is to fill in this gap in the literature to assess the needs of this population. Mental health in newly resettled Syrian refugees could constitute a major public health concern, as refugees very rarely return to their countries of origin.

In the United States, it has been estimated that 97.3% of the general population has experienced some form of traumatic event in their lives (Kilpatrick et al., 2013). However, only a minority of those exposed to traumatic experiences develop PTSD, with lifetime prevalence of 8.3% in the general population (Kilpatrick et al., 2013). It has been established that rates are higher in certain populations, such as war veterans. For instance, in a population survey, 12% of Iraq and Afghanistan veterans met criteria for PTSD (Erbes, Westermeyer, Engdahl, & Johnsen, 2007; Hoge, Auchterloine, & Milliken, 2006). Another population-based study found the rate of PTSD to be closer to 14% in Operation Iraqi Freedom/Operation Enduring Freedom veterans (Tanielian & Jaycox, 2008).

It has been established that there is notable variability in individual responses to traumatic events. Many individuals do not develop symptoms of PTSD, even when faced with the extremely adverse events. Some have vulnerabilities that put them at risk for developing such symptoms, whereas others may possess factors that protect them from developing PTSD. These

factors include certain personality traits as well as receiving positive social support post-trauma. This investigation is interested in examining the interaction between these two factors in predicting PTSD symptoms among Syrian refugees. This interaction is important to examine because it potentially helps identify which individuals are at heightened risk for developing PTSD and how best to intervene.

This document first briefly details the consequences of the Syrian Revolution. Due to the lack of studies examining mental health outcomes in Syrian refugees resettled in the United States, studies describing the outcomes of war-traumas on Iraqi refugees is reviewed next. Research on personality traits and social support as predictors of PTSD are then described. Research has shown that the traits of neuroticism and extraversion are the two most related to the emergence of PTSD symptoms, with neuroticism positively correlated and extraversion negatively correlated with symptoms. The interaction between perceived levels of social support and personality traits on PTSD symptoms is examined. Finally, the relationship between neuroticism, social support, and somatic complaints is examined as well.

### **Refugee Populations**

One important distinction to highlight is that between a refugee and an immigrant. A refugee is defined as an individual who is often forced to leave his or her country of origin due to conflicts related to religion, race, or political persecution and seeks shelter and protection in a new country (Takeda, 2000). Refugees differ from immigrants in multiple ways. Cohon (1981) describes immigrants as those who organize and plan their voluntary move from one country to another, whereas refugees are typically forced to leave their home countries with very few possessions, virtually no assistance, and very little time for planning. Refugees experience immense losses in income, social status, family relationships, and property (Takeda, 2000). They

may also suffer from harsh conditions during the migration process, including but not limited to living in refugee camps, rape and sexual assault, unsanitary living conditions, lack of food and water, lack of medical supplies, separation from family members, and violence. Consequently, refugees are at greater risk for mental health problems than are immigrants (Bhugra et al., 2011; Cohon, 1981).

### **The Syrian War and Its Aftermath**

The Arab Spring, a string of revolutions and uprisings that occurred across the Middle East and North Africa, erupted in Tunisia in 2010 and spread to Egypt and Libya, igniting protests throughout the Arab world (Lotan, Graeff, Ananny, Gaffney, & Pearce, 2011). The Syrian Revolution, inspired by the Arab Spring, began with the small town of Daraa in March of 2011 demanding political change and government reform, but the peaceful revolution escalated into a civil war and humanitarian crisis. Over the last five years, civilians have been attacked, tortured, and sexually assaulted; homes and cities have been destroyed; and millions of Syrians have escaped aerial bombardment and religious persecution in their war-torn country. Approximately half a million Syrian civilians have lost their lives in the conflict, and more than half of the Syrian population of 22 million is now displaced (Nasser, Mehchy, Marzouk, Jebaie, & Rutom, 2016).

The UNHCR (2018) estimates that two million Syrian refugees are now resettled in Egypt, Jordan, Iraq, and Lebanon, and approximately 3.5 million are registered in Turkey. Such countries have been struggling to adapt to this influx over the past 7 years. A big portion of the refugees are residing in refugee camps, but some live in urban areas, either with family members or acquaintances or in rented or informal settlements (Rizkalla & Segal, 2018; Sirin & Rogers-Sirin, 2015). Although government programs, such as the United Nations (UN), and non-

governmental organizations and charities are working to provide individuals and families with basic living conditions, funding shortages and the sheer number of refugees make it difficult to meet basic needs (Sirin & Rogers-Sirin, 2015). Therefore, many Syrian refugees migrate by sea to Europe or walk thousands of miles north to countries like Germany and Austria where they apply for asylum to receive better opportunities and resources (UNHCR, 2016).

Studies examining the mental health of resettled refugees in countries neighboring Syria indicate high rates of psychopathology, predominantly in the form of PTSD and/or depression. Alpak et al. (2015) found a 35% prevalence of PTSD in a refugee camp for Syrians in Gaziantep, Turkey. A study in Lebanon examined rates of Syrians admitted to hospitals before and after the war and found that rates of suicidal ideation had increased dramatically since the beginning of the war (Lama, Francois, Marwan, & Sami, 2015). A study at Al Zaatari refugee camp in Jordan showed that 56% of respondents suffer from at least one of the following: sleep difficulties, anger, feeling hopeless about the future, and experiences of panic and fear (Basheti, Qunaibi, & Malas, 2015). Around half of the respondents reported the need for psychological treatment in the camps, but only 14% actually received such assistance. This positive attitude toward mental health assistance was not common before the crisis, yet since the start of the war, Syrian refugees have been more accepting of psychological and mental health services, and the stigma and shame of seeking these services have decreased (Davis & Alchukr, 2014).

Approximately one million Syrian refugees have applied for asylum in Europe between April of 2011 and January of 2016 (UNHCR, 2016). There has been a generally positive reaction to the refugees' resettlement around Western Europe, with less positive attitudes in more eastern regions of Europe (de Wit & Altbach, 2016). Germany and Serbia have resettled the highest number of Syrian refugees of all European countries (UNHCR, 2016). Universities in Germany

are expecting to enroll around 10,000 new students of the 800,000 refugees resettled (de Wit & Altbach, 2016). Other European countries, such as the Netherlands and Denmark, have started developing programs that incorporate social support and the broader social environments to accommodate refugees' mental health needs (Sirin & Rogers-Sirin, 2015).

Approximately 21,000 refugees have been resettled in the United States since March of 2011, and a total of 10,005 Syrian refugees was admitted to the United States during 2016 alone (Refugee Processing Center, 2018). However, to date, no research has been published on Syrian refugees' status of mental health in the United States. Nevertheless, many studies have examined Iraqi refugees since the beginning of the Gulf War in 1990, and Syrians and Iraqis have many factors in common. Both Syria and Iraq are Arab countries, with Arabic as the main spoken language. Both are Muslim countries, with the majority of both populations self-identified as Muslim. Syrians and Iraqis both have similar cultural values and ideals. Finally, both countries have suffered from the reign of dictators for decades at a time. Due to these similarities, studies examining the mental health functioning of Iraqi refugees resettled in the United States provide important evidence of higher rates of such difficulties, including PTSD, among Middle-Eastern refugees resettled in the United States.

### **Iraqi Refugees in the United States**

Thousands of Iraqi refugees have arrived to the United States since the Gulf War in the 1990s (Jamil et al., 2005), and following the U.S. invasion of Iraq in 2003. Iraqi refugees escaping the wars in their country have suffered from many war-related traumatic events, including relocation, temporary resettlement in unsanitary refugee camps for months or years at a time, and witnessing the death of loved ones (Jamil et al., 2002). This group of refugees in the United States was largely disadvantaged, oppressed, and targeted for discrimination (Takeda,



2000). Following relocation to the United States, most Iraqi families suffered from economic difficulties as well as broken family ties, complicated mental health concerns, and feelings of shame from experiencing such problems (Nassir-McMillin, & Hakim-Larson, 2003).

### **PTSD in Iraqi Refugees**

Researchers studied this group in an effort to assist in their recovery and adaptation to a new home country. A retrospective study by Jamil et al. (2002) examined PTSD prevalence in 375 Iraqi refugees and compared it to rates of PTSD in other Arab-American subgroups living in the Detroit metropolitan area. They found PTSD in 30% of the Iraqi sample, compared to 4.5% of the Non-Iraqi Arab sample. Jamil, Nassar-McMillan, and Lambert (2007) compared three groups of Iraqis who migrated to the United States at different time points. The post-1990 group, the one that most likely includes refugees escaping the war, had the highest rate of PTSD (12%) compared to the pre-1990 groups (3%), followed by the pre-1980 groups (0%). The difference in prevalence estimates between the Jamil et al. (2002) and the Jamil et al. (2007) studies could be due to differences in demographics. The post-1990 group examined in the 2007 study was comprised of more females and more married individuals, whereas the Jamil et al. (2002) study included more males and more single individuals. In addition, the 2002 sample was accessed from records of a medical clinic and the assessment of PTSD was conducted by mental health professionals, whereas the 2007 study included participants who were randomly selected from residents of Dearborn, Michigan, and PTSD was assessed via a self-report questionnaire.

Similarly, Kira et al. (2007) found that in a group of 501 Iraqis in the United States, 14% met full criteria for PTSD, while Gorst-Unsworth and Goldenberg (1998) reported that 10% of their sample of 84 male Iraqi refugees resettled in the United Kingdom met criteria for PTSD. Laban, Gernaat, Kompree, Schreuders, and de Jong (2004) interviewed a sample of Iraqi asylum

seekers resettled in the Netherlands ( $N = 294$ ) and found that the prevalence of PTSD ranged from 31% to 41%. The variation in prevalence estimates found could be due to differences in sample demographics or the methodologies used. For instance, Laban et al. (2004) collected data using structured questionnaires translated into Arabic from two different adult groups, one that arrived to the Netherlands less than 6 months prior to data collection, and the other having arrived more than 2 years prior. Psychiatric diagnoses were based on the World Health Organization Composite International Diagnostic Interview (CIDI) version 2.1 (World Health Organization, 1997). In addition, the majority of their sample was from the minority Kurdish group, and being a member of a minority group makes individuals more vulnerable to developing PTSD (Al-Saffar, Borgå, Edman, and Hällström, 2003; Kessler, Sonnega, Bromet, Hughes, and Nelson, 1995). Kira et al. (2007), on the other hand, included refugees as young as 12 years old, and all of their sample had resided in the United States for at least two years. While most of their sample identified as Shiite Muslim, the majority of the Laban et al. (2004) sample identified as Sunni Muslim, which could also explain the differences in PTSD rates, since the Sunni group in Iraq was the minority. Lastly, Kira et al. used the Clinically Administered PTSD Scale for psychiatric diagnoses (Blake et al., 1991), which differs slightly from the CIDI.

### **Somatization in Iraqi Refugees**

In addition to the heightened prevalence of PTSD, Arab refugees tend to report heightened levels of somatic concerns compared to the U.S. general population. Nassar-Mcmillan and Hakim-Larson (2003) explained that Yemeni refugees report somatic symptoms as physical manifestations of mental health problems, a phenomenon that could be explained by a tendency to internalize, rather than externalize, problems. This phenomenon in Arab populations could be explained by the high levels of shame or stigma associated with experiencing poor

mental health (Nassar-Mcmillan & Hakim-Larson, 2003). The stress of displacement and moving to a new country could also explain the high levels of self-reported physical symptoms (Jamil et al., 2002). Refugees tend to resettle in economically disadvantaged environments, have limited transportation, and face barriers of insurance and medical expenses as well as language and communication barriers (Morris, Popper, Rodwell, Brodine, & Brouwer, 2009). Such hardships make it difficult for resettled refugees to seek the help they need, further exaggerating rates of mental and physical health symptoms. Further, failure to disclose emotional distress leads to elevated psychophysiological reactivity (Gross & Levenson, 1993) as well as decreased immune system functioning (Pennebaker, Kiecolt-Glaser, & Glaser, 1988), which can result in greater expression of somatic problems. This phenomenon has been observed in non-refugee populations as well. Lilly, Pole, Best, Metzler, and Marmar (2009) found rates of somatic symptoms in trauma-exposed female police officers associated with higher levels of emotional distress and emotional suppression, which is consistent with findings from Burke, Richardsen, and Martinussen (2006), who examined rates of somatic symptoms in Norwegian police officers.

Another potential explanation for heightened somatic concerns in refugees includes the discrimination and prejudice experienced by this population. For instance, the discrimination and prejudice that Iraqi refugees experienced after relocating to the United States led to higher levels of stress within this population, which could explain the high levels of self-reported physical symptoms (Jamil et al., 2002). Iraqi refugees had to cope with the negative attitudes associated with being from the “hostile” country of Saddam Hussein, despite the fact that most of these refugees were not in support of him or the Iraqi government (Kaslow & Moffett, 1995). In addition, Muslim refugee children living in the United States faced increasingly anti-Islamic discrimination in schools after the attacks in September of 2001 (Asali, 2003; McMurtrie et al.,

2001; Wingfield & Karaman, 1995). Muslim children who fast during the month of Ramadan, Muslim females who wear the Hijab (head covering), and Arab children with Arab-sounding names have faced ridicule and bullying by their schoolmates (Carter & El Hindi, 1999). In general, Arab refugees of all ages have had to deal with the “Arab stereotype.” The American public’s predominant perception of Arabs is that they are terrorists, threats to peace, uncivilized, barbaric, cunning, and members of a male-dominant society (Johnson, 1992; Schwartz, 1994; Slade, 1981). These stereotypes are dangerous because they entice hate crimes, racial profiling, and add to the stress of Muslim or Arab refugees recently resettled in the United States (Takeda, 2000). This stress can enhance risk for physical health problems in any group that faces discrimination.

Laban et al. (2004) noted significantly heightened levels of physical complaints in an Iraqi refugee sample resettled in the Netherlands. They found a prevalence of 13% for somatoform disorder, compared to 1% prevalence in the general population. They also noted an 11% prevalence for conversion and pain disorders. Similarly, Jamil et al. (2005) found the same trend in Iraqi refugees. They interviewed 116 Iraqi refugees in the greater Detroit, Michigan, area and divided the refugees’ medical complaints into medical conditions (including conditions like arthritis, asthma, seizures, and allergies) and symptoms (including low back pain, loss of sexual desire, fatigue, leg cramps, numbness, and dizziness). Rates of symptoms reported were notable, with 86% of the sample reporting irregular sleep, 68% complaining of lower back pain, 43% reporting loss of sexual drive, and 61% reporting constant headaches. The prevalence of physical complaints was higher than that found in other Arab-Americans diagnosed with the same co-morbid mental disorders (Jamil et al., 2005). The current investigation examines

prevalence of somatic concerns in Syrian refugees resettled in the United States to clarify the extent of this phenomenon.

Syrian refugees resettling in the United States could experience similar stereotyping and discrimination as Iraqi refugees have previously encountered, which would be an additional stressor to face. They likely experience similar obstacles integrating to American society, including language barriers, economic strains, and mental health difficulties, specifically PTSD.

### **Adaptation/Resilience and PTSD**

Risk and protective factors for PTSD have been a focus of research in recent years. Risk factors are those linked with an individual's development of a disorder or disease, and protective factors are those associated with a lower occurrence of developing the disorder or disease (Schnurr & Vielhauer, 1999). Attempts have been made to identify potential risk factors for PTSD. Ozer, Best, Lipsey, and Weiss (2003) conducted a meta-analysis of 68 studies of PTSD in an effort to identify predictors of PTSD and its symptoms. Their meta-analysis included studies that examined any or all of the following factors: history of prior trauma, psychological problems prior to trauma, family history of psychopathology, perceived life threat, perceived social support post-trauma, peritraumatic emotional responses, and peritraumatic dissociation. Their results concluded that all factors significantly predict PTSD symptoms; however, peritraumatic dissociation was the strongest predictor ( $r = .60$ ). Similarly, Brewin, Andrews, and Valentine (2000) conducted a meta-analysis and included 77 studies looking at PTSD development and identified a number of risk factors. Identified risk factors included a family history of mental disorder ( $r = .13$ ), female gender ( $r = .13$ ), lower socio-economic status (SES;  $r = .14$ ), lower levels of education ( $r = .10$ ), lower intelligence ( $r = .18$ ), a history of abuse ( $r = .14$ ) or childhood adversity ( $r = .14$ ), belonging to a minority group ( $r = .05$ ), and young age at trauma

exposure ( $r = .13$ ; Brewin et al., 2000). The study also noted differences between populations examined. For example, there was no significant gender difference in veteran populations, whereas in civilian populations, gender disparities were significant. In contrast, younger age at trauma was only a significant predictor in veteran populations (Brewin et al., 2000).

### **Personality Factors and PTSD**

Personality has been shown to be an important factor in posttraumatic outcomes. The Five-Factor Model of personality (FFM) has been widely used to study personality factors as predictors of psychopathology (Ozer & Benet-Martinez, 2006). The FFM states that there are five broad personality dimensions (extraversion, agreeableness, conscientiousness, neuroticism, and openness) and that individuals vary on where they fall on each dimension (John & Srivastava, 1999). This model has proven to be extremely robust, and these five factors have been observed in both peer reports and self-reports (Connolly, Kavanaugh, & Viswesvaran, 2007; McCrae & Costa, 1987), in clinical samples (Reynolds & Clark, 2001), in longitudinal maternal ratings of preschool-age children (Abe, 2005), as well as across different cultures (John & Srivastava, 1999) and ages (Digman, 1997). Allik and McCrae (2002) examined the generalizability of the FFM across different cultures, and although they agree that there is much more to personality than traits, they conclude that the FFM domains seem to be a solid basis for personality research across cultures. Similarly, McCrae and Terracciano (2005) aimed to test the universality of the FFM using data from 50 cultures using 11,985 subjects. They similarly concluded that the American normative self-report measure assessing the FFM was clearly replicated in most of the cultures tested, which included Arabic and Black African cultures never before tested.

Costa and McCrae (1992) detail the components of each domain. Extraversion measures traits such as sociability and energy. Individuals high on extraversion are described as talkative, energetic, and assertive. However, people low on extraversion are not necessarily anxious socially or timid; they are independent and simply prefer to spend much of their time alone. Agreeableness encompasses altruism and empathy and includes traits such as trustful, good-natured, and cooperative. Traits under the conscientiousness domain include responsible and dependable. People high on conscientiousness tend to follow through on plans and organize and plan more than those low on conscientiousness. Neuroticism, or lack of emotional stability, includes items such as being easily upset, nervous, and unstable. People high on neuroticism tend to experience and report more negative affect than those low on neuroticism, including emotions such as fear, sadness, and disgust. Finally, traits that fall under openness include intellectual curiosity and imagination. Those low on openness tend to be more conventional and conservative in behavior and mindset, compared to individuals high on openness, who have a tendency to be more open to and accepting of new behaviors, experiences, and cultures (Costa & McCrae, 1992; McCrae & Costa, 1987).

Ozer and Benet-Martinez (2006) reviewed the literature on personality and psychopathology outcomes and outlined strong links between the FFM personality dimensions and psychopathology. Low extraversion and high neuroticism were found to be associated with higher rates of depression, and higher neuroticism predicted higher levels of anxiety disorders. Low conscientiousness and high openness were correlated with higher rates of substance use disorders. Agreeableness was only found to be correlated with personality disorders.

Kotov, Gamez, Schmidt, and Watson (2010) also examined links between the FFM personality traits and psychopathology in the most comprehensive quantitative meta-analysis of

the trait-psychopathology relationship. All of the disorders they examined, including major depressive disorder (MDD), substance use disorders, and PTSD, were correlated with high neuroticism and low conscientiousness. Agreeableness was negatively correlated with substance use disorders. PTSD correlated with high neuroticism ( $r = .49$ ), low extraversion ( $r = -.25$ ), low agreeableness ( $r = -.19$ ), and low conscientiousness ( $r = -.27$ ). Malouff, Thorsteinsson, and Schutte (2005) also performed a meta-analysis and examined 33 studies exploring the relationship between FFM traits and PTSD, MDD, and substance abuse disorders. The typical pattern of personality traits found to be associated with mental health diagnoses was low extraversion, low agreeableness, low conscientiousness, and high neuroticism.

Similarly, Trull and Sher (1994) examined the relationship between the five personality dimensions and the presence of PTSD, anxiety disorders, MDD, and substance abuse disorder in 468 young adults. The majority of the surveyed participants were full-time college students (77%) and self-identified as White (86%). The researchers reported that MDD was positively correlated with higher openness, higher neuroticism, lower extraversion, and lower conscientiousness. Anxiety disorders seemed to be significantly correlated with higher neuroticism, lower extraversion, lower conscientiousness, lower agreeableness, and higher openness. Extraversion and neuroticism were the most significantly associated with anxiety disorders, and agreeableness had the least significant association with pathology. A lifetime diagnosis of PTSD was highly correlated with high neuroticism, low extraversion, low conscientiousness, and low agreeableness. In their study, a diagnosis of PTSD was only significantly predicted by greater scores on neuroticism after controlling for gender and comorbid conditions. These findings again coincide with other findings regarding the relationship between personality traits and psychopathology. The focus of this study is to



examine the traits of neuroticism and extraversion because they have garnered the most empirical support as predictors of symptoms of PTSD and due to the important relationships of their affective components with negative and positive emotionality, respectively, which is further discussed (Watson, David, & Suls, 1999).

Before focusing on the impact of particular traits in predicting PTSD, it is important to note that researchers have also explored the possibility that trauma in itself might affect personality. Cloninger's (1998) psychobiological model of personality assumes that temperament and personality develop in early childhood and is fairly stable throughout adulthood. This could mean that it is stable in the face of extreme and adverse life events and trauma (Cloninger, 1998; Cloninger, Svrakic, & Pryzbeck, 1993; Hunt & Gakenyi, 2005). On the other hand, others have argued that personality can change after distressing or life-altering experiences of trauma (Herman, 1993; Peterson, Prout, & Schwarz, 1991; Reich, 1990). It has been argued that the heritability of personality traits is estimated to be between 40% and 60%, meaning that environmental factors are equally important in the development of personality (Cloninger, 1998; Loehlin, 1982). Findings from the Iowa Longitudinal Personality Project (ILPP), an ongoing longitudinal investigation examining the stability of personality, has found extraversion to be the most stable personality trait, followed by neuroticism (Vaidya, Gray, Haig, Mroczek, & Watson, 2008). It is important to note that they did not specify if these traits are stable in the face of traumatic experiences or adverse life events.

Of the few longitudinal studies available, pre-trauma personality traits have been found to predict the intensity of PTSD symptoms post-trauma in different groups, including Israeli undergraduate students post-terrorist attacks (Gil, 2005), a community sample before and after a natural disaster (Parslow, Jorm, & Christensen, 2006), as well as women who experienced

pregnancy loss (Engelhard, van den Hout, & Kindt, 2003). This has also been examined in war-related trauma. For instance, Rademaker et al. (2010) studied a sample of 410 Dutch soldiers pre- and post-deployment in Afghanistan. Their results showed that neuroticism pre-deployment was a significant predictor of PTSD symptoms post-deployment, even after controlling for other risk factors such as previous trauma exposure. However, the authors did not measure personality trait change after the 4-month deployment.

Prospective studies examining personality traits pre- and post-trauma are rare. Multiple investigations have investigated whether levels of neuroticism change after exposure to trauma, and those have concluded that neuroticism is stable in the face of traumatic experiences. These samples include two studies about adults from the University of North Carolina Alumni Heart Study (Costa et al. 2000; Ogle, Rubin, & Siegler, 2014) as well as a community sample of adults (Sutin, Costa, Wethington, & Eaton, 2010). In one exception, Löckenhoff et al. (2009) found a different effect. The authors studied the progress of personality change in the face of adverse events using the East Baltimore Epidemiological Catchment Area study. The authors found that 25% of their sample faced adverse life events within two years after the first time point of personality measurement, and this subsample showed an increase in neuroticism compared to the rest of the sample. However, this increase in neuroticism was mostly in the angry hostility facet of neuroticism measured in the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). The finding that this increase was correlated with lower mental health was identified as an important method for identifying those who are at a higher risk for developing PTSD. Though a prospective study is warranted, it is outside the scope of the present study, which cautiously assumes that personality is a stable construct that predates exposure to war-trauma.

**Neuroticism.** Several studies have focused specifically on neuroticism and its relationship with PTSD outcomes (Borja et al., 2009; Breslau, Davis, Andreski, & Peterson, 1991; Ceobanu & Mairean, 2015; Davidson, Kudler, & Smith, 1987; James, Van Kampen, Miller, & Engdahl, 2013; Morgan, Matthews, & Winton, 1995), all of which conclude that neuroticism positively correlates with higher PTSD symptoms. Neuroticism has been identified to be a precursor for psychological stress (Andrews, 1996; Ormel & Wohlfarth, 1991). Highly neurotic individuals are more susceptible to distress (Carver & Connor-Smith, 2010), and individuals high on neuroticism tend to display more avoidant temperaments (Lee-Baggley, Preece, & DeLongis, 2005; McCrae & John, 1992; O'Brien & DeLongis, 1996). It has been noted that neuroticism may increase vulnerability for PTSD through a tendency of attending to and exaggerating threats, implementing worry and self-blame, as well as other negative coping methods when under stress (Holeva & Tarrier, 2001). This trend has been examined in refugee populations as well (Huemer et al., 2013; Hunt & Gakenyi, 2005; Punamaki, Qouta, & El-Sarraj, 2001; Riolli, Savicki, & Cepani, 2002). Riolli et al. (2002) studied a group of Kosovan refugees resettled in Albania during the 1999 crisis and compared them to Albanians living in Albania as well as to Albanians who emigrated to the United States. They found that individuals high on neuroticism suffered from greater maladjustment, stress, and anxiety. Hunt and Gakenyi (2005) found a significant correlation between harm avoidance and PTSD symptoms in Bosnian refugees resettled in the UK. Harmful avoidance, which correlated with anxiety disorders, includes traits such as anticipatory and pessimistic worry, fear of uncertainty, shyness and fatigability, which also fall under the neuroticism construct (Cloninger et al., 1993). Similarly, in a sample of Palestinian children living in Gaza during the Intifada, a period of unrest and war in the Gaza Strip, PTSD symptoms negatively correlated with passive coping strategies (Punamaki et al., 2001). These

include distracting oneself and not focusing on resolving the problem, traits that also fall under the umbrella of neuroticism (Lazarus & Folkman, 1987).

**Extraversion.** This personality trait has also been of interest in the study of PTSD. High extraversion has been found to be correlated with lower PTSD symptoms in multiple investigations (Dörffel et al., 2008; Fauerbach et al., 2000; Jakšić, Brajković, Ivezić, Topić, & Jakovljević, 2012; Ozer & Benet-Martinez, 2006; Trull & Sher, 1994). It has also been found to be negatively correlated with PTSD symptoms in refugee groups (Huemer et al., 2013; Riolli et al., 2002). A group of African unaccompanied refugee minors (UMRs) resettled in Austria was studied, and it was found that positive affect was negatively correlated with distress post-trauma (Huemer et al., 2013). Such studies have claimed that extraversion acts as a protective factor against the development of PTSD because those high on extraversion tend to see events in a more positive and optimistic light (Ozer & Benet-Martinez, 2006). Individuals who are high on extraversion also tend to have less negative affect and are less responsive to negative feedback.

Though some authors contend that greater extraversion serves as a buffer to adverse post-trauma outcomes, others have found an association between higher extraversion and more PTSD symptomology (Breslau, Davis, & Andreski, 1995). In addition, results from a survey of 402 undergraduate students across the United States showed extraversion to be significantly positively correlated with trauma exposure (Lauterbach & Vrana, 2001). Such findings could be explained by the tendency of individuals high on extraversion to be more impulsive and to participate in risk-taking behaviors, which might put them in environments where there are at higher risk for experiencing traumatic events (Breslau et al., 1995; Breslau et al., 1991).

In conclusion, there is an extensive literature demonstrating neuroticism as a risk factor for PTSD. However, the literature on extraversion has been mixed and less clear compared to the

neuroticism literature. Therefore, this study examines neuroticism as a potential risk factor for developing PTSD in Syrian refugees resettled in the United States as well as the role extraversion plays in the development of PTSD in this population. Only neuroticism and extraversion were examined because their relationships with symptoms of PTSD are the most empirically supported and because of the important relationships of their affective components with negative and positive emotionality, respectively (Watson, David, & Suls, 1999).

**Social Support and PTSD.** Another important predictor of post-trauma outcome is post-trauma social support. Individuals' healing processes post-trauma rely heavily on a social context where they feel supported and where their behaviors are accepted (Brewin et al., 2000; Catherall, 1986; Ozer, Best, Lipsey, & Weiss, 2003). The quality of the support received is central, wherein perceived positive social support and a supportive and sensitive network have been found to be helpful in reducing symptoms of psychological distress (Borja et al., 2006). Indeed, research has reported that support systems with more negative reactions lead to an increase in psychological symptoms and poorer adjustment post-trauma (Davis, Brickman, & Baker, 1991).

There is a vast literature on social support and its relationship with PTSD symptoms. Ozer and colleagues' (2003) meta-analysis identified 11 studies that investigated perceived social support as a protective factor. From these 11 studies ( $n = 3,537$ ), they found, on average, a small-to-medium effect size ( $r = -.28$ ) of social support on adjustment after trauma, which had a much stronger effect size than pre-trauma factors. The only difference they noted among the eleven studies was the amount of time that had elapsed between exposure to the traumatic event(s) and the assessment of symptoms. The inverse relationship between social support and symptoms was strongest in studies that measured symptomatology more than 3 years after the occurrence of the traumatic event(s) ( $r = -.42$ ). They also found that perceived social support in

combat trauma populations had a stronger inverse relationship with PTSD symptoms ( $r = -.26$ ) compared to civilian non-combat interpersonal trauma ( $r = -.11$ ). These findings suggest that the positive impact of social support is cumulative and increases as more time passes since trauma exposure.

In addition, Brewin et al. (2000) explored the role of social support in ameliorating PTSD symptoms in their meta-analysis. Eleven studies ( $n = 3,276$ ) out of the 77 included in their study investigated lack of social support as a potential risk factor for developing PTSD. It was found that lack of social support was one of the strongest predictors of symptomatology ( $r = .40$ ), especially following combat trauma. The authors attributed this difference in effect to the tendency of veteran populations to portray more chronic PTSD than civilians. Many other studies examined the result of social support postwar in veteran populations. King, King, Fairbank, Keane, and Adams (1998) interviewed a sample of veterans ( $n = 1,632$ ), demonstrating results consistent with the literature on social support and its strong influence on recovery post-trauma. A similar effect of social support also has been shown ( $r = .11$ ) in relation to PTSD outcomes in 69 Operation Iraqi Freedom/Operation Enduring Freedom veterans (Price, Gros, Strachan, Ruggiero, & Acierno, 2013). Other researchers portrayed this relationship in hurricane-exposed minority youth (Banks & Weems, 2014), in a sample of trauma therapists (Rzeszutek, Partyka, & Gołąb, 2015), and in a group of patients with spinal cord injuries (Nielsen, 2003).

Social support has also been examined as a predictor of post-trauma recovery in refugee populations. Schweitzer, Melville, Steel, and Lacherez (2006) examined the relationship between perceived social support and PTSD in Sudanese refugees resettled in Australia ( $N = 63$ ). They asked participants to report whether they receive support from (a) the ethnic community around them or (b) from the wider society in which they live. More than half of the respondents reported

receiving support from their ethnic community (62%), and almost half (43%) reported receiving support from the wider community. It was determined that receiving social support was a very salient predictor of well-being post-trauma ( $R^2 = .51$ , adjusted  $R^2 = .47$ ), especially receiving support from within the Sudanese community. Similarly, Gorst-Unsworth and Goldenberg (1998) interviewed 84 male Iraqi refugees resettled in the United Kingdom. Most respondents reported low levels of social activity, but there was a wide range of perceived social support. In replication of the literature on social support and PTSD, results showed that rates of PTSD correlated with low levels of social support and social activities ( $r = .39$ ). In conclusion, there is a strong empirical literature that demonstrates that social support is inversely related to posttrauma symptoms. This study examines its potentially protective role against PTSD development in Syrian refugees resettled in the United States.

**Personality, PTSD Symptoms, and Social Support.** Neuroticism and social support have been identified as among the most robust correlates of PTSD (Borja et al., 2009). One of the important features of individuals high on neuroticism is the tendency to feel insecure and anxious about social relationships (Caspi, Roberts, & Shiner, 2005). Indeed, Kendler, Gardner, and Prescott (2002) reported that individuals with more neurotic symptoms tend to report lower levels of social support. This insecurity obstructs the positive consequences social support has shown to have on individuals with PTSD (Borja et al., 2009). To examine the possible moderating relationship of social support on the relationship between neuroticism and PTSD, Borja et al. (2009) studied 86 undergraduate students from two different universities in the United States. Previous research has shown that social support could differ in its effects on recovery based on the traumatic event experienced (Brewin et al., 2000), so inclusion was based on an experience of either (a) direct exposure to natural disasters or (b) a sexual assault. Seventy-seven percent of

the sexual assault sample and 90.2% of the natural disaster sample identified as Caucasian, and the mean age for each group was  $M = 19.82$  and  $M = 20.97$  years, respectively. Results showed a significant interaction between social support and neuroticism in predicting PTSD symptoms in the natural disaster group. Within this group, the highest levels of PTSD symptoms were experienced by those high on both neuroticism and social support. The sexual assault group did not show a significant interaction between neuroticism and social support. However, individuals in the sexual assault group who reported high levels of neuroticism also reported high depression levels, even with high levels of social support. One possible explanation for the surprising results could be the quality and quantity of the support that the individuals received post-trauma. Those high on neuroticism may be especially sensitive to what is said or done post-trauma by those surrounding them, and negative reactions are more salient and impactful in individuals with more neurotic tendencies (Caspi et al., 2005). It is important to consider any selection effects that may have impacted these findings, as the authors only chose to include two types of traumas experienced by college students. This might be an issue regarding generalizability, as the traumatic experiences of sexual assault or an automobile accident differ from other traumatic experiences such as surviving an earthquake, war trauma, or a terrorist attack. However, this is the first study to examine the moderating role of social support on the neuroticism-PTSD symptom link, and its results add to the literature regarding the role of social support in post-trauma outcomes.

On the other hand, individuals high on extraversion tend to be cheerful, optimistic, and participate in more activities with the goal of overcoming stressful situations (Zellars & Perrewe, 2001). Research has shown that they have an internal tendency to interact with others, which might make them seek and perceive higher levels of social support compared to those low on



extraversion. Zellars and Perrew (2001) reported that individuals with high levels of extraversion reported more social support coming from coworkers, as their positive emotionality allowed them to derive more support compared to those with a more negative emotionality. This study examines the possible interaction between extraversion and social support and between neuroticism and social support in relation to risk for PTSD symptomology.

### **Adaptation/Resilience and Somatization**

Somatization is the process in which complaints of physical symptoms are assumed to be related to emotional distress (Lipowski, 1988). It is most often associated with depressive and anxiety disorders and is a common problem in health care (Lipowski, 1988). It has been suggested that affective, cognitive, and perceptual factors contribute to somatization (Barsky, Goodson, Lane, & Cleary, 1988). Previous research has shown that neuroticism and somatization are correlated with self-report health inventories. Wise and Mann (1994), for instance, evaluated 101 psychiatric outpatients and inquired about their somatic complaints. They also assessed their personalities utilizing the NEO Five Factor Inventory. They concluded that neuroticism had a significant contribution to somatic complaints, suggesting the importance of negative affect in the process of somatization. Similarly, Costa and McCrae (1980) used data from the Baltimore Longitudinal Study of Aging and found that more neurotic subjects endorsed higher levels of somatic problems. This relationship has also been examined longitudinally in university students taking exams, where those higher on neuroticism showed higher physical symptoms in general and higher physical symptom increases under exam stress (Zunhammer, Ebele, Eichhammer, & Busch, 2013). The nature of the relationship between perceived health and neuroticism is still unclear. Some have argued that more neurotic individuals do not suffer from a higher prevalence of fatal illness (Keehn et al., 1974), but they are possibly more troubled by minor health

problems and they are more sensitive and attentive to bodily states (Costa & McCrae, 1980).

Another variable that has been examined in relation to somatic complaints is social support. In the mid 1970s, three papers were published regarding the positive role of social support on health, and shortly after, there was an outpouring of papers examining the role of social environment (Broadhead et al., 1983). Many cross-sectional studies since then examined the direct association between social support and physical and somatic symptoms. Stephens, Blau, Oser, and Millar (1979) collected information over the phone from 2,672 respondents aged 55 years or older. They inquired about levels of social support, acute and chronic illnesses, and asked for a self-assessment of health, among other variables. Their results showed that individuals higher in informal support reported less depression and alienation and were less likely to convert these feelings to physical and somatic complaints (Stephens et al., 1979). Other researchers (Billings & Moos, 1981; Miller & Ingham, 1976) have reached the same conclusions. Similarly, Sherbourne and Stewart (1991) conducted the Medical Outcomes Study and examined factors in correlation with social support. They found significant negative correlations between all types of social support reported and physical limitations, and they reported a significant positive correlation between social support and physical functioning. This finding has been supported in different cultures and groups, such as in Italian children and adolescents (Gini, Carli, & Pozzoli, 2009;), Norwegian adolescents (Torsheim & Wold, 2001), Chinese college students enrolled in Japanese universities (Jou & Fukada, 1997), Israeli soldiers who fought in the Lebanese war (Solomon, Mikulincer, & Habershaim, 1990), female members of a sexual minority (Weiss, Garvert, & Cloitre, 2015), and adults with mild intellectual disability (Lunsky & Benson, 2001). The same relationship has been found in refugee populations as well, such as Nepalese torture survivors (Emmelkamp, Komproe, Van Ommeren, & Schagen, 2002) and

migrant pregnant women arriving in Canada (Stewart, Gagnon, Merry, & Dennis, 2012). Given the research on neuroticism and social support in relation to somatic complaints, this study examined rates of somatization in resettled Syrian refugees and what role these variables play in the observed prevalence of somatic symptoms.

### **Covariates**

It is important to consider covariates that might have a significant effect on PTSD. Being female places individuals at higher risk for developing PTSD (Breslau, 2002; Brewin et al., 2000; Tolin & Foa, 2006). Another variable of importance is the amount of time spent in war-afflicted Syria. The longer individuals spent in war-afflicted Syria could be positively correlated with the number of traumatic events they might have experienced. Income is also important to consider, as individuals from lower socioeconomic backgrounds are also at higher risk of developing PTSD (Alim et al., 2006; Binder et al., 2008; Breslau, Peterson, Poisson, Schultz, & Lucia, 2004; Brewin et al. 2000; Schwartz, Bradley, Sexton, Sherry, & Ressler, 2005; Switzer et al., 1999). Overall trauma exposure and the type of trauma endured are also important variables to take into consideration. It has been found that individuals who experience an overall greater level of trauma exposure, as well as individuals who experience interpersonal trauma compared to non-interpersonal trauma, report significantly more symptoms of PTSD (Forbes et al., 2013). Finally, levels of acculturation in refugee populations have been shown to negatively correlate with PTSD symptoms (Ellis et al., 2010; Spasojević, Heffer, & Snyder, 2000) and therefore are important to measure. These factors were assessed as potential covariates.

### **Purpose of Current Study**

This study examined the prevalence of PTSD in Syrian refugees resettled in the United States. It then explored the relationship among personality traits, social support, PTSD and

somatic symptoms in Syrian refugees. It is important to better understand the role social support plays in the recovery of Syrian refugees in order to increase opportunities for sustained assistance post-migration. It is also important to clarify the moderating effect social support has on the neuroticism-PTSD association, and the extraversion-PTSD link. This helps identify at-risk individuals and what, if any, buffering consequences social support has on their recovery. Lastly, following the trend of other Arab refugee populations, we are interested in measuring the levels of somatic symptoms in the Syrian refugee population and predictors of somatic symptoms.

The current study hypothesizes that:

1a- Given the substantial research connecting neuroticism with PTSD symptoms in the general population (Borja et al., 2009; Breslau, Davis, Andreski, & Peterson, 1991; Ceobanu & Mairean, 2015; Davidson, Kudler, & Smith, 1987; James, Van Kampen, Miller, & Engdahl, 2013; Morgan, Matthews, & Winton, 1995), as well as in refugee groups (Huemer et al., 2013; Hunt & Gakenyi, 2005; Punamaki, Qouta, & El-Sarraj, 2001; Riolli, Savicki, & Cepani, 2002), it is proposed that there will be a positive association between neuroticism and PTSD symptoms.

1b- Given the substantial research connecting extraversion with PTSD symptoms in the general population (Dörfel et al., 2008; Fauerbach et al., 2000; Jakšić, Brajković, Ivezić, Topić, & Jakovljević, 2012; Ozer & Benet-Martinez, 2006; Trull & Sher, 1994), as well as in refugee groups (Huemer et al., 2013; Riolli et al., 2002), it is proposed that there will be a negative association between extraversion and PTSD symptoms.

2a- Given the extant evidence correlating social support with PTSD symptoms in both the general population (Banks & Weems, 2014; Brewin et al., 2000; Ozer et al., 2008; Price, Gros, Strachan, Ruggiero, & Acierno, 2013; Rzeszutek, Partyka, & Gołąb, 2015) and refugee

populations (Gorst-Unsworth & Goldenberg, 1998; Schweitzer, Melville, Steel, & Lacherez, 2006), it is proposed that social support will be negatively correlated with PTSD symptoms.

2b- It is proposed that social support will act as a moderator between personality traits and PTSD symptoms. That is, greater social support will diminish the relationship between neuroticism and PTSD symptoms. At lower levels of support, the association between neuroticism and PTSD symptoms will be stronger. On the other hand, having greater social support will be associated with a stronger negative relationship between extraversion and PTSD symptoms, in comparison to lower levels of social support.

3- Given the research on the positive correlation between neuroticism and somatic complaints (Costa & McCrae, 1980; Wise & Mann, 1994; Zunhammer, Ebele, Eichhammer, & Busch 2013), it is proposed that Syrian refugees higher on neuroticism will display higher rates of somatic symptoms.

4- Given the research on the negative correlation between social support and somatic complaints (Billings & Moos, 1981; Miller & Ingham, 1976; Sherbourne & Stewart, 1991; Stephens et al., 1979), it is proposed that Syrian refugees reporting more social support will display lower rates of somatic symptoms.

## CHAPTER TWO

### METHOD

#### **Power Analysis**

A power analysis using G\*Power (Erdfelder, Faul, & Buchner, 1996) was executed to determine the sample size needed to produce effects of medium size ( $f^2 = .15$ ,  $p = .05$ ) with a power of .80 in the proposed regression analyses with two predictors. Results of the power analysis indicated that a sample size of 107 participants was needed to provide sufficient power to test the proposed hypotheses. Therefore, the proposed sample size of 150 participants was assumed to be sufficient to test the anticipated effects in this newly examined population.

#### **Participants**

It was proposed that data from 150 Syrian refugees resettled in the United States would be collected using an online survey. Although March 15<sup>th</sup> of 2011 marked the beginning of the Syrian Civil War, the majority (97.3%) of Syrian refugees arrived to the United States after January 1<sup>st</sup>, 2015 (Refugee Processing Center, 2018). Therefore, to be eligible for the study, participants must have been at least 18 years old, had to attribute their reason for migrating to the United States to the Syrian Civil War, and they had to have arrived to the United States on or after January 1<sup>st</sup>, 2015. Participants were recruited through contacting non-governmental

organizations, churches, and mosques across the United States identified by the authors as aiding refugees with the resettlement process. Due to the very low response rate to the initial online survey, an amendment was proposed to additionally collect responses through mailed paper surveys. This amendment was approved by the Northern Illinois University Institutional Review Board (IRB) in August of 2017. Each paper survey was mailed to the distributing organizations in a pre-stamped and pre-addressed envelope. A total of 104 organizations were contacted for the distribution of the online and/or the paper surveys, and these organizations were located in both the United States and Canada. The United States organizations contacted were located in the following states: Arizona, California, Idaho, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, Maryland, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Texas, Virginia, Washington, and Washington D.C. Out of the 104 organizations contacted, eleven agreed to distribute the online survey and ten organizations agreed to distribute a total of 260 paper surveys.

The final collected sample included 19 adult Syrian refugees; this was a significantly lower number than the proposed sample due to recruitment difficulties (further discussed in the discussion section). Fourteen participants completed the online survey. Out of the 260 paper surveys distributed, five paper surveys were completed and returned. Fifty-five percent of the sample ( $n = 10$ ) identified as male, and the mean age was 35.2 years ( $SD = 10.1$ ). One hundred percent of the sample identified as Muslim/Sunni. Ten participants left Syria in the year 2012 (52.6%), six left in the year 2013 (31.5%), one left in 2014 (5.3%), one left in 2011 (5.3%), and one participant did not answer this question (5.3%). Additionally, most participants arrived to the United States in the year 2016 ( $n = 10$ , 52.6%), followed by arriving in the year 2015 ( $n = 7$ , 36.8%), and two participants did not answer this question (10.6%). The average length of time

that had elapsed since participants left Syria was 5.58 years ( $SD = .69$ ). One hundred percent of the sample lived in another country before migrating to the United States. Fifteen participants (80%) lived in Jordan, one (5%) lived in Egypt, one (5%) lived in Turkey, and two (10%) lived in Lebanon before migrating to the United States.

In terms of marital status, 73.7% of participants identified as married ( $n = 14$ ), 21% identified as single ( $n = 4$ ), and 5.3% identified as widowed ( $n = 1$ ). Eighty percent ( $n = 16$ ) of the sample reported having children. Participants reported having 0 to 5 children, and the mean number of children reported was  $M = 3.47$  ( $SD = 1.30$ ). Regarding education levels, nearly half the sample reported high school as the highest level of education attained ( $n = 9$ , 47.3%), followed by elementary school ( $n = 4$ , 21.1%), vocational/technical school ( $n = 4$ , 21.1%), and college ( $n = 2$ , 10.5%). Thirty-six percent of the sample was employed at the time of completing the survey ( $n = 7$ ), and 31% identified as a current student ( $n = 6$ ). The average yearly income gained before the war was 7,943 U.S. dollars ( $SD = 24,492$ ). The average current yearly income was 6,228 U.S. dollars ( $SD = 13,936$ ).

## Measures

### Posttraumatic Stress Disorder Symptoms

The PTSD checklist for DSM-5 (PCL-5; Blevins, Weathers, Davis, Witte, & Domino, 2015) was used to assess symptoms of PTSD. The PCL-5 is a widely used, 20-item self-report questionnaire that allows participants to rate how much they have been bothered by each symptom of PTSD over the past month. The first version of the PCL was developed in 1993 at the National Center for PTSD (Weathers, Litz, Herman, Huska, & Keane, 1993). It included 17 items, each reflecting one PTSD symptom based on the DSM-IV criteria. Respondents first are



asked to answer a few questions about the “worst event” they have experienced (i.e., the one that is bothering them the most), and they are instructed to respond to the rest of the questionnaire based on this event. They are asked to keep this “worst event” in mind and then rate how much each symptom has been bothering them over the past month on a 5-point scale, with 1 = *not at all* and 5 = *extremely*. The 5<sup>th</sup> version was updated to reflect changes in the PTSD criteria in the DSM-5, and three items were added (to measure blame, reckless/self-destructive behavior, and negative emotions, the new symptoms that were added to the DSM-5 criteria), making it a total of 20 items. The changes also included rewording three items to reflect the change in some of the symptoms in DSM-5, as well as changing the rating scale from 1 to 5 to 0 to 4. This last change was to modify the lowest possible score from 17 to a more meaningful score of 0 (Blevins et al., 2015).

Reliability and validity of the PCL-5 scores have been established by Blevins et al. (2015). The PCL-5 demonstrates high internal consistency ( $\alpha = .94$ ), good one-week test-retest reliability ( $r = .82$ , 95% CI [.71, .89]), strong convergent validity with other PTSD measures (PCL, DAPS, and PDS;  $r_s = .74$  to  $.85$ ), and reasonable discriminant validity ( $r_s = .31$  to  $.60$ ), as it correlated moderately with related constructs such as depression ( $r = .60$ ) and the least strongly with constructs such as mania ( $r = .31$ ) and antisocial personality traits ( $r = .39$ ). They also found the PCL-5 to fit adequately with the DSM-5 four-factor model. For the purposes of this study, participants were asked to think of the “worst event” that they experienced that was not related to the Syrian civil war. This is because the Harvard Trauma Questionnaire, explained below, measured PTSD symptoms due to the worst traumatic event related to the Syrian civil war. The Cronbach’s alpha in the current study was .97.

### **War Trauma**

The Harvard Trauma Questionnaire (HTQ; Mollica, 2004) is a trauma questionnaire developed by the Harvard Program in Refugee Trauma (HPRT). It asks respondents about a variety of traumatic events and emotional symptoms usually associated with trauma exposure. The newest version of the HTQ includes four parts. Part I asks about possible traumatic events that may have affected refugees, and respondents answer with either “yes” or “no” for each of the 41 traumatic events. Part II is an open-ended question that asks respondents to describe the most traumatic war-related event they experienced. Part III assesses for traumatic head injuries, and Part IV asks about 40 different trauma symptoms. All four portions of the measure were included in this study. This measure has been used with Iraqi refugees (Laban et al., 2004; Shoeb, Weinstein, & Mollica, 2007), Indochinese refugees (Mollica, Caspi-Yavin, Bollini, Truong, Tor, & Lavelle, 1992), and Tibetan refugees (Lhewa, Banu, Rosenfeld, & Keller, 2007) but has not (to the author’s knowledge) yet been used with Syrian refugees.

Reliability of the HTQ scores has been demonstrated by Mollica et al. (1992), who found a strong reliability of .98 for the trauma-related symptoms subsection. One-week test-retest reliability of the trauma-related symptoms section was found to be .92, providing adequate evidence that the HTQ is a reliable measure over time. Examination of the HTQ’s Cronbach’s coefficient alpha demonstrated strong internal consistency of the scale, with a coefficient of .96 for the trauma-related symptoms section. In the current study, the Cronbach’s alpha for the trauma symptoms subsection was .97.

### **Somatic Symptoms**

The somatization subscale of the Brief Symptom Inventory (BSI; Derogatis, 1993) was used to assess somatic symptoms. The BSI is a 53-item self-report measure used to assess

psychological symptoms during the last 7 days. The BSI was developed from the Symptom-Checklist-90-Revised (SCL-90). The BSI is composed of nine primary symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The somatization subscale, consisting of seven items, measures psychological distress arising from the perception of bodily dysfunction. Participants rate each item on a 5-point scale, ranging from 0 to 4, with 0 = *not at all* and 4 = *extremely*. A total somatization score was calculated by averaging the seven items of the subscale. An individual with a given raw score will receive different T-scores depending upon the population on which the scores are normed. The adult non-patient comparison group was used for the purposes of this study. Reliability coefficients for the BSI subscales have been established in regard to internal consistency and test-retest reliability. The somatization subscale has demonstrated moderate internal consistency ( $\alpha = .80$ ) and test-retest reliability at a 2-week interval ( $r = .68$ ), indicating reliability (Derogatis & Melisaratos, 1983). It has also demonstrated good convergent validity with the MMPI scales evaluated (ranged from  $r = .32 - .38$ ). It has also shown good construct validity; the item loadings were high, and the pattern was consistent with factor analysis of the SCL-90-R (Derogatis & Melisaratos, 1983). In the current study, the Cronbach's alpha for the somatic subsection was .70.

### **Extraversion and Neuroticism**

The Big Five Inventory (BFI; John & Srivastava, 1999) was used to assess neuroticism and extraversion. The BFI is a 44-item self-report inventory that measures where respondents fall on each of the Big Five Factors of personality. The five dimensions are extraversion, agreeableness, conscientiousness, neuroticism, and openness. Each dimension constitutes a different construct, and though the whole measure was administered, only the neuroticism and

extraversion dimensions were examined for the purposes of this study. Respondents were asked to rate each statement on a 1-5 scale, with 1 = *disagree strongly* and 5 = *agree strongly*.

Negatively keyed items are reverse-scored prior to calculating an average score from each domain. An average score was calculated for each scale. The BFI has demonstrated strong 3-month test-retest reliability ( $r = .80$  to  $.90$ ) and moderate internal consistency, with Cronbach's alpha averaging  $.70$  (range =  $.53$  to  $.83$ ; Soto & John, 2009). In the current study, the Cronbach's alpha for Neuroticism factor was  $.76$ , and the Cronbach's alpha for the Extraversion factor was  $.32$ . The low alpha value detected for the Extraversion scale in this study is considered in the discussion section.

### **Perceived Social Support**

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item self-report questionnaire that assesses perceptions of social support from three different sources: family, friends, and significant others. This measure has been used across many different cultures, including a Turkish sample; a sample of battered Asian, African-American and Hispanic women; and a group of Mexican-American youth (Arkar, Sari, & Fidaner, 2004; Edwards, 2004; Heiman, 2004; Short & Johnston, 1997; Yoshioka, Gilbert, El-Bassel, & Baig-Amin, 2003). It has also been used with various refugee populations, including Russian Jewish men and women (Ritsner, Modai, & Ponizovsky, 2000) and refugees from Africa, Asia, Europe, and South America (Hooberman, Rosenfeld, Rasmussen, & Keller, 2010). Respondents are asked to rate each statement on a 7-point scale, with 1 = *very strongly disagree* and 7 = *very strongly agree*. The items that make up each subscale are summed then divided by their number to calculate a mean score for each of the three subscales. For example, to calculate the significant other subscale mean score, items 1, 2, 5, and 10 are summed then

divided by 4. A total score for the full measure can be obtained by averaging all 12 item scores. The reliability of the MSPSS has been obtained as a whole as well as for each individual subscale. For the family, friends, and significant other subscales, the Cronbach's coefficient alpha values were .87, .85, and .91, respectively (Zimet et al., 1988). The total scale demonstrated an alpha value of .88. These values indicate good internal consistency for individual scales as well as a unidimensional measure. The MSPSS also revealed adequate 2- to 3-month test-retest reliability of .85 as a whole measure and values of .85, .75, and .72 for the family, friends, and significant other subscales, respectively (Zimet et al., 1988). In the current study, the Cronbach's alpha for the total score was .93.

### **Demographics Questionnaire**

Participants were asked to complete a demographics questionnaire (see Appendix A). This questionnaire asked participants to report their age, gender, marital status, religious affiliation, level of education, partnership status, employment status, income levels, dates of migrating from Syria, dates of arrival to the United States, and if they resided anywhere other than the United States after migrating from Syria and for how long.

### **Covariates**

#### **Time Refugees Spent in War-Afflicted Syria**

The length of time spent in Syria after the war may correlate with exposure to traumatic events, with an assumed increased likelihood of experiencing traumatic events the longer one resides in a war zone. A higher likelihood of exposure is associated with higher PTSD and psychological distress (Abu-Saba, 1999; Thoits, 1983). Time spent in Syria during the war was measured in the demographic questionnaire by the number of months individuals lived in Syria after March 15<sup>th</sup> of 2011.

### **Income Before/After Migrating from Syria**

Research has shown that individuals from lower income backgrounds tend to be at a higher risk for exposure to traumatic events and for developing PTSD (Alim et al., 2006; Binder et al., 2008; Breslau, Peterson, Poisson, Schultz, & Lucia, 2004; Brewin et al. 2000; Schwartz, Bradley, Sexton, Sherry, & Ressler, 2005; Switzer et al., 1999). Therefore, it is important to measure this factor in studies examining PTSD levels. It is also likely that those from higher income households tend to have left Syria earlier than those from lower income backgrounds simply because they had the means to leave earlier. This was assessed in the demographic questionnaire and examined as a continuous variable.

### **Gender**

Research has shown that women are at higher risk for developing PTSD (Breslau, 2002; Brewin et al., 2000; Tolin & Foa, 2006). This was measured in the demographic questionnaire and considered as a potential covariate. Gender was coded as “0” for males and “1” for females.

### **Acculturation**

Acculturation has been positively correlated with better mental health outcomes in Somali refugees (Ellis et al., 2010) and also Bosnian refugees (Spasojević, Heffer, & Snyder, 2000) and was therefore tested as a potential covariate in this study. The Abbreviated Multidimensional Acculturation Scale (AMAS; Zea, Anser-Self, Birman, & Buki, 2003) was used to measure acculturation levels in the sample. The AMAS is a self-report questionnaire comprised of 42 items. This tool measures an individual’s acculturation to a new country or culture as well as enculturation to one’s original culture. However, for the purposes of this study, though the whole measure was administered, only U.S. acculturation was assessed. The measure of acculturation includes three components: U.S. cultural competence, English competence, and

U.S. identity (Zea et al., 2003). Participants rate each item in each of the three sections on a 4-point scale ranging from 1 to 4. The scale items vary between the three sections: the language and cultural competence subscales include response options ranging from 1 = *not at all* to 4 = *extremely well*, and the scale for cultural identity includes response options ranging from 1 = *strongly disagree* to 4 = *strongly agree*. Item scores are totaled to get an average score ranging from 1 to 4, which is used to assess the three factors associated with acculturation. The AMAS has demonstrated adequate convergent and discriminant validity and high internal consistency, ranging from .89 to .99 (Zea et al., 2003). In this current study, Cronbach's alphas for the U.S. and Syrian acculturation subscales were .89 and .85, respectively.

### **Life Trauma and Interpersonal Trauma**

It is important to measure traumatic events that individuals might have experienced before and after the onset of the war. Research has shown that experiencing more than one traumatic event puts individuals at a higher likelihood of developing PTSD (Breslau, Chilcoat, Kessler, & Davis, 1999; Kilpatrick et al., 2013; Williams et al., 2007). In addition, refugees can endure different types of trauma, some of which can be interpersonal in nature. Interpersonal trauma can impact individuals' assumptions about the world and its safety and predictability, and those who experience interpersonal traumas report significantly higher PTSD symptoms compared to those with a history of non-interpersonal trauma exposure (Chung & Breslau, 2008; Forbes et al., 2013). To measure overall exposure to traumatic events, as well as type of trauma exposure (interpersonal versus non-interpersonal), the Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was used. The TLEQ is a self-report questionnaire that assesses exposure to 23 different potentially traumatic events (Kubany et al., 2000). Event descriptions do not include emotionally charged terms such as *rape* or *abuse* and instead are described in

behaviorally descriptive terms. Respondents are asked to indicate the number of times they experienced each of the events listed on a 7-point scale, with response options ranging from *never* to *five times or more*. They are also asked to indicate whether each event evoked feelings of horror, fear, or helplessness and then asked about any physical injuries. The TLEQ has demonstrated adequate convergent and discriminative validity (Kubany et al., 2000). This covariate was scored in two ways: a summed number of traumatic events experienced and a summed number of experienced traumatic events of an interpersonal nature.

### **Procedure**

Non-governmental organizations, churches, and mosques across the United States assisting Syrian refugees with the resettlement process were contacted starting January 2017 for assisting in survey distribution and recruitment. Data collection ended in March 2018. Arabic is the primary language spoken in Syria, therefore the distributed survey was in Arabic. All measures were translated from English to Arabic, and back-translated by independent translators. The translated measures were pre-tested before distribution to the target population. To adhere to the methodologies outlined by the World Health Organization (WHO, n.d.) regarding the process of translation of instruments, the following steps were taken. The measures were translated by a professional Syrian translator living in Syria, a professional in the field familiar with terminology included in the measures. A different expert translator, also a Syrian residing in Syria, was used for the back-translation. The translated survey was then administered online to the pre-test group, which included both male and female representatives of future participants. Therefore, the pre-test population were Syrian men and women, ages 18 and older, from different socioeconomic



backgrounds, recruited from the author's contacts. This study included 10 respondents for each section of the study, as recommended by the WHO. These individuals were recruited from the author's contacts. At the end of the pre-test online survey, each pre-test participant was contacted over the phone and debriefed. They were asked about any wording they did not understand, any strange or odd phrasing they encountered, or any expression they found confusing or offensive. They were also provided with the author's email address for further questions and comments.

After the translation process, the survey was distributed to the intended sample. Prior to completing the questionnaires online, participants were presented with an informed consent document that informed them of the risks and benefits involved with the study (Appendix A). Participants who fully completed the survey were thanked for participating and debriefed about the purposes of the study. The number for the national crisis hotline was provided in the debriefing documents for participants to use if they are in an immediate need of help. Participants were also advised to call their refugee agency if they were feeling any distress after completing the survey. Additionally, participants were asked at the conclusion of the survey if they would like to be entered in a drawing for one of five \$50 Visa gift cards. If they chose to, they were asked to enter their contact information by following a link to a separate survey, which ensures that responses remain anonymous. Those who filled out the paper surveys were asked to write their names at the end of the debriefing form if they chose to enter in the drawing.

The online questionnaires were presented in a randomized order to each participant. The questionnaires in the paper format were presented in the same order as can be seen in Appendix B. Validity checks were included in both the pre-test survey and the final survey. Due to the anticipated length of this survey (30-45 minutes), three validity checks were added. These took the form of questions asking the participants to choose a specified answer option, such as "Please

choose ‘Strongly Agree’ for this question.” In addition, to prevent participants from accidentally or purposefully skipping any questions, participants were not able to proceed to following pages unless all questions on any given page were answered. However, all questions included a “Prefer not to respond” response option. Participants’ data were not used if they incorrectly answered two or more of the three validity questions ( $n = 1$ ). As such, the final sample for analysis was comprised of 19 participants.

## **Data Analysis Plan**

### **Missing Data**

It is likely that one or more variables was missing from some participants’ responses. Therefore, the data were analyzed for trends between missing and non-missing data by running Little’s MCAR test (Little, 1988) in order to determine if the data are missing at random. If the result of Little’s MCAR test was non-significant, it was assumed that the data was missing completely at random, and multiple imputation was executed using SPSS. Multiple imputation is a technique that estimates the likely value for missing data by substituting more than one set of potential values for missing entries and using the average of the substituted values (Rubin, 1987). Guidelines suggest that 5-10 imputations are sufficient for most analyses (Rubin, 1987; Schafer & Olsen, 1998). However, recent research has shown that a higher number of imputations may be necessary to retain statistical power and validity (Bodner, 2008; Graham, Olchowski, & Gilreath, 2007). The number of imputations conducted was determined by the fraction of missing data within the sample using guidelines proposed by Bodner (2008).

### **Preliminary Analyses**

Prior to primary analyses, variables were examined utilizing histograms, graphs, and scatterplots. The data were examined for possible skewness and kurtosis. Variables portraying significant skew were proposed to be transformed according to recommendations of Tabachnick and Fidell (2007), such that variables with significant skew (i.e.,  $z = +/-2.00$ , based on the  $z$ -score calculated by dividing skew by the standard error of skew) were to be transformed using a logarithmic transformation, depending upon the severity of the skew. The data were also examined visually and statistically for any outliers. Finally, correlations were executed to examine the associations between perceived social support, neuroticism, extraversion, somatization, and PTSD symptoms.

### **Inferential Analyses**

All hypotheses were tested using regression analyses, and all analyses were run using SPSS software. First, the hypothesized direct effects were tested. As stated previously, the suggested direct effects were as follows: higher levels of neuroticism predict higher levels of PTSD symptoms, higher levels of perceived social support will predict lower levels of PTSD symptoms, higher levels of extraversion predict lower levels of PTSD symptoms, higher levels of neuroticism predict higher levels of somatic complaints, and higher levels of social support will predict lower levels of somatic complaints.

Once the analysis of the direct effects was completed, regression analyses were conducted to determine if perceived social support acts as a moderator, buffering the effects of personality traits on PTSD. Hypothesis 2b states that levels of neuroticism will be less strongly associated with PTSD symptoms under conditions of increased social support, and levels of extraversion will be less strongly associated with PTSD symptoms under high levels of social

support. The moderation models were analyzed using the PROCESS macro (Model 1). The variables in this analysis were mean centered to follow recommendations by Cohen et al. (2003). Conditional effects were determined by inspecting the interaction terms. Moderation effects are present when the confidence intervals for the interaction terms do not span zero. If the interaction effect is significant, then the null hypothesis will be rejected, and the simple slopes of conditional effects were interpreted to determine if they are significantly different than zero and in the predicted direction.

## CHAPTER THREE

### RESULTS

#### **Data Screening**

Approximately 13% of the values were missing. Little's MCAR (missing completely at random) test was conducted, and the  $p$  value (.456) indicated that the data were missing completely at random. Multiple imputations were executed due to missing values in seven of the key study variables (i.e., income, HTQ total exposure, HTQ PTSD score, PCL-5 scores, acculturation, somatic symptoms, and trauma history). Five imputed datasets were generated, and data in each of the imputed datasets were analyzed. Finally, the data were pooled to obtain averages, standard deviations, coefficients and standard errors. Prior to primary analyses, variables were examined utilizing histograms, graphs, and scatterplots. The data were also examined for possible skewness and kurtosis. No outliers were found using the proposed methods, no variables were transformed, and no significant skewness or kurtosis was detected (skewness range: -1.2 to .74; kurtosis range: -.49 to 1.24)

## Primary Analyses

### Descriptive Statistics

The means and standard deviations of all relevant variables are reported in Table 1.

Overall, perceived social support fell mostly in the moderate levels according to proposed cutoff scores from 3 to 5 (Zimet et al., 1988). Further, a cutoff score of 33 was used for potential PTSD diagnostic status (Weathers et al., 2013), and approximately 31.58% of the sample ( $n = 6$ ) met this cutoff. Based on the proposed cutoff of 2.5 on PTSD symptoms endorsed on the fourth subsection of the HTQ (Mollica, 2004), 33.3% of this sample are considered symptomatic for PTSD. Based on  $t$ -score cutoffs on the BSI (Derogatis & Melisaratos, 1983), three participants (15.79%) endorsed at-risk levels of somatic complaints (i.e.,  $t$ -scores above 60), and one participant (5%) endorsed clinically significant levels of somatic complaints (i.e.,  $t$ -scores above 70).

The types and frequencies of war-related traumatic events endorsed on the first section of the HTQ are reported in Table 2. The most frequently endorsed events were confiscation/destruction of personal property (78.9%), forced evacuation under dangerous situations (78.9%), combat situations (68.4%), being ill without access to medical care (52.6%), and serious physical injury to family member or friend due to combat situations or landmines (52.6%). On the third subsection of the HTQ, six participants (31.6%) endorsed enduring starvation, six (31.6%) endorsed suffering from a head injury, and two (10.5%) endorsed experiencing suffocation/strangulation. Four participants (21.1%) endorsed losing consciousness due to starvation, head injuries, or suffocation/strangulation. Finally, of the six participants who endured starvation, three (50%) reported losing significant levels of weight and one (16.7%) reached near-death starvation. The average weight lost was 21.33 pounds ( $SD = 3.61$ ). The

period of time over which this weight was lost was not inquired about in the HTQ and is unknown. However, the participants reporting weight loss left Syria between 8 and 31 months after the war was initiated; this indicates that the weight was lost during this period of time for the participants.

Interpersonal trauma exposure was measured using the TLEQ (Kubany et al., 2000). Events on the TLEQ were classified as *interpersonal* if they involved personal assaults or acts of violence perpetrated by another person. Out of 23 events on the TLEQ, 13 events were classified as interpersonal (i.e., items 2, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20). Two totals were created using the TLEQ data: a summed general exposure and a summed interpersonal exposure. Six participants (31.57%) endorsed exposure to at least one trauma of an interpersonal non-war-related nature, and on average, participants endorsed exposure to three traumatic events in general, regardless of the nature (see Table 1).

The mean U.S. acculturation score endorsed was 2.7 ( $SD = .46$ ). Scores that fall in the middle, such as the average acculturation score detected in this sample, indicate neither biculturalism or marginalism, and Zea et al. (2003) suggest that further research is required to clarify and make any conclusions regarding the participant's affiliation and connection with the new culture (i.e., American culture). Further, demographic variables were examined for potential associations with other variables. Men and women did not differ significantly on endorsed PTSD or somatic symptoms, levels of perceived social support, acculturation, extraversion, or trauma exposure (see Table 1). However, women reported significantly higher levels of neuroticism compared to men ( $t(17) = -1.17, p = .002$ ).

Table 1.

Means and Standard Deviations of Study Variables and Independent Sample *T*-test Results of Means Compared by Gender

Variable	Possible range	Total sample		Women		Men		Women vs. Men	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	df
PCL-5	0-80	27.3	28.4	29.3	31.02	25.5	25.9	0.57	18
HTQ	0-4	2.25	0.90	2.20	0.52	2.30	1.18	0.28	18
BSI	0-4	1.63	0.56	1.73	0.63	1.54	0.48	-0.80	18
BFI neuroticism	1-5	3.08	0.99	3.69	0.70	2.52	0.89	-3.15**	18
BFI extraversion	1-5	3.18	0.65	2.93	0.58	3.40	0.66	1.64	18
TLEQ	0-23	3.03	2.09	3.18	1.98	2.89	2.25	0.46	18
AMAS	1-5	2.75	0.46	2.60	0.57	2.90	0.28	1.51	18
MSPSS	1-7	4.67	0.99	4.51	1.50	4.82	2.06	0.37	18

*Note.* PCL-5 = total score on PTSD Checklist for DSM-5; HTQ = PTSD symptom score on the Harvard Trauma Questionnaire; BSI = somatic complaints symptom score; BFI Neuroticism = neuroticism score on the Big Five Inventory; BFI Extraversion = extraversion score on the Big Five Inventory; TLEQ = lifetime traumatic exposure score; AMAS = level of U.S. acculturation on the Abbreviated Multidimensional Acculturation Scale; MSPSS = total score on the Multidimensional Scale of Perceived Social Support. \*\*  $p < 0.01$ .



Types of War-Related Traumas Endorsed on the HTQ by Total Sample

Type of Assault	Total Sample <i>n</i> (%)
Lack of shelter	9 (47.4%)
Lack of food or drink	5 (26.3%)
Ill without access to medical care	10 (52.6%)
Confiscation/destruction of personal property	15 (78.9%)
Combat situation	13 (68.4%)
Forced evacuation under dangerous situation	15 (78.9%)
Beating to the body	5 (26.3%)
Rape/other types of sexual abuse	0 (0%)
Knifing/axing	0 (0%)
Torture	3 (15.8%)
Serious physical injury due to combat or landmine	1 (5.3%)
Imprisonment	2 (10.5%)
Forced labor	3 (15.8%)
Extortion or robbery	4 (21.1%)
Brainwashing	0 (0%)
Forced to hide	6 (31.6%)
Kidnapped	1 (5.3%)
Other forced separating from family members	3 (15.8%)
Forced to find and bury bodies	0 (0%)

(Continued on following page)

Table 2 continued.

Type of Assault	Total Sample <i>n</i> (%)
Enforced isolation from others	2 (10.5%)
Someone forced to betray you and place you in danger	2 (10.5%)
Prevented from burying someone	4 (21.1%)
Forced to destroy bodies/graves of deceased persons	0 (0%)
Forced to physically harm family member or friend	6 (31.6%)
Forced to physically harm a non-family member or non-friend	6 (31.6%)
Forced to destroy someone else's property	0 (0%)
Forced to betray family member or friend, placing them at risk	1 (5.3%)
Forced to betray non-family member or non-friend, placing them at risk	1 (5.3%)
Murder, death due to violence, of spouse	1 (5.3%)
Murder, death due to violence, of child	1 (5.3%)
Disappearance or kidnapping of spouse	0 (0%)
Disappearance or kidnapping of child	1 (5.3%)
Disappearance or kidnapping of other family member or friend	9 (47.4%)
Serious physical injury to family member or friend due to combat	10 (52.6%)
Witness beatings to head or torture	4 (21.1%)
Witness torture	4 (21.1%)
Witness killing/murder	4 (21.1%)
Witness rape or sexual abuse	0 (0%)
Another situation that was frightening	8 (42.1%)

Table 3.

Correlation Matrix of PTSD, Somatization, Personality traits, Social Support, and Trauma Exposure

	1	2	3	4	5	6
1- PCL-5	-					
2- BSI	.128	-				
3- BFI Neuroticism	.254	.314	-			
4- BFI Extraversion	.056	-.003	-.171	-		
5- MSPSS	-.034	.265	-.023	-.052	-	
6- TLEQ	-.341	.127	.107	-.289	-.041	-

*Note.*  $n = 19$ . PCL-5 = total score on PTSD Checklist for DSM-5; BSI = somatic complaints symptom score; BFI Neuroticism = neuroticism score on the Big Five Inventory; BFI Extraversion = extraversion score on the Big Five Inventory; MSPSS = total score on the Multidimensional Scale of Perceived Social Support; TLEQ = lifetime traumatic exposure score.

Table 4.

## Correlation Table of Proposed Covariates with PTSD

	PCL-5	BSI
1- PCL-5	-	
2- BSI	.128	-
3- Income before war	.091	.059
4- Current income	-.029	-.228
5- AMAS	-.404	.235
6- Gender	.073	.171
7- Time in Syria post-war	.488	-.015
8- TLEQ-interpersonal	-.165	.189
9- TLEQ	-.314	.127

*Note.*  $n = 19$ . PCL-5 = total score on PTSD Checklist for DSM-5; BSI = somatic complaints symptom score; AMAS = level of U.S. acculturation on the Abbreviated Multidimensional Acculturation Scale; TLEQ-interpersonal = interpersonal trauma exposure score; TLEQ = lifetime traumatic exposure score.

Age and income were not significantly correlated with any of the key study variables. A correlation matrix between key study variables is presented in Table 3. Finally, none of the proposed covariates were controlled for in the inferential analyses because none were significantly correlated with PTSD or somatic symptoms (Table 4).

### **Hypothesis Testing**

Hypothesis 1a was tested using linear regression analyses. The results of the regression analysis indicated that neuroticism did not significantly predict symptoms of PTSD,  $b = 6.85$ ,  $t(17) = 1.41$ ,  $p = .431$ , failing to lend support to Hypothesis 1a. Further, neuroticism did not explain significant variance in PTSD symptomology,  $R^2 = .073$ ,  $F(17) = 1.39$ ,  $p = .336$ . Pearson's  $r = 0.32$  suggested a moderate association between neuroticism and PTSD symptoms.

Similarly, Hypothesis 1b was tested using linear regression analyses. The results of the regression analysis indicated that extraversion did not significantly predict symptoms of PTSD,  $b = 2.70$ ,  $t(17) = 2.33$ ,  $p = .792$ , failing to lend support to Hypothesis 1b. Further, extraversion did not explain significant variance in PTSD symptomology,  $R^2 = .005$ ,  $F(17) = .093$ ,  $p = .792$ . However, Pearson's  $r = 0.49$  suggested a large association between extraversion and PTSD symptoms.

Hypothesis 2a was tested using linear regression analyses, and the results indicated that social support did not significantly predict PTSD symptoms,  $b = -.834$ ,  $t(17) = -.14$ ,  $p = .817$ , failing to lend support to Hypothesis 2a. Further, social support did not explain significant variance in PTSD symptoms,  $R^2 = .006$ ,  $F(17) = .092$ ,  $p = .817$ . Pearson's  $r = 0.03$  suggested a low association between social support and PTSD symptoms.

Hypothesis 2b was tested using the PROCESS macro (Model 1). Conditional effects were determined by inspecting the interaction terms. A moderation effect would be present if the confidence intervals for the interaction terms did not span zero. The first moderation analysis indicated that social support did not significantly moderate the relationship between neuroticism and PTSD symptoms,  $b = -3.54$ , CI [-9.50, 5.77] (Table 5, Figure 1). Further, the second moderation analysis indicated that social support did not significantly moderate the relationship between extraversion and PTSD symptoms,  $b = 3.62$ , CI [-9.94, 12.92], failing to lend support to Hypothesis 2b (Table 6, Figure 2).

Additionally, Hypothesis 3 was tested using linear regression analyses. The results of the regression analysis indicated that neuroticism did not significantly predict somatic symptoms,  $b = .018$ ,  $t(17) = 1.41$ ,  $p = .278$ , failing to lend support to Hypothesis 3. Further, neuroticism did not explain significant variance in somatic symptoms,  $R^2 = .12$ ,  $F(17) = 2.52$ ,  $p = .278$ . However, Pearson's  $r = 0.32$  suggested a moderate association between neuroticism and somatic complaints.

Finally, Hypothesis 4 was also tested using linear regression analyses. The results of the regression analysis indicated that social support did not significantly predict somatic complaints,  $b = .079$ ,  $t(17) = 1.10$ ,  $p = .329$ , failing to lend support to Hypothesis 4. Further, social support did not explain significant variance in somatic symptoms,  $R^2 = .253$ ,  $F(17) = 1.40$ ,  $p = .329$ . However, Pearson's  $r = 0.25$  suggested a moderate association between social support and somatic complaints.

Table 5.

## PTSD Predicted from Neuroticism and Social Support

Predictor	<i>b</i>	S.E.	<i>p</i>
Neuroticism	3.45	7.85	.654
Social Support	-2.39	4.54	.590
Social Support x Neuroticism	-3.58	3.58	.334

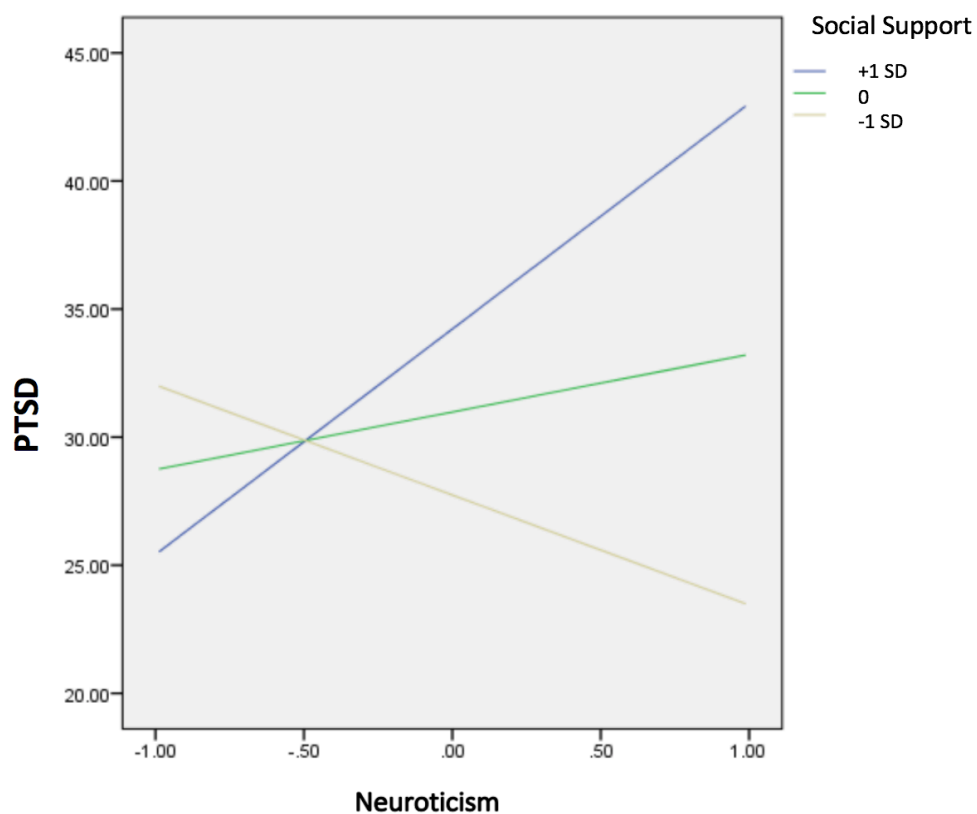


Figure 1. Perceived social support model with neuroticism. Graph created from moderation analysis in first imputed dataset.

Table 6.

## PTSD Predicted from Extraversion and Social Support

Predictor	<i>b</i>	S.E.	<i>p</i>
Extraversion	6.52	11.3	.631
Social Support	-1.36	4.09	.732
Social Support x Extraversion	3.62	5.36	.516

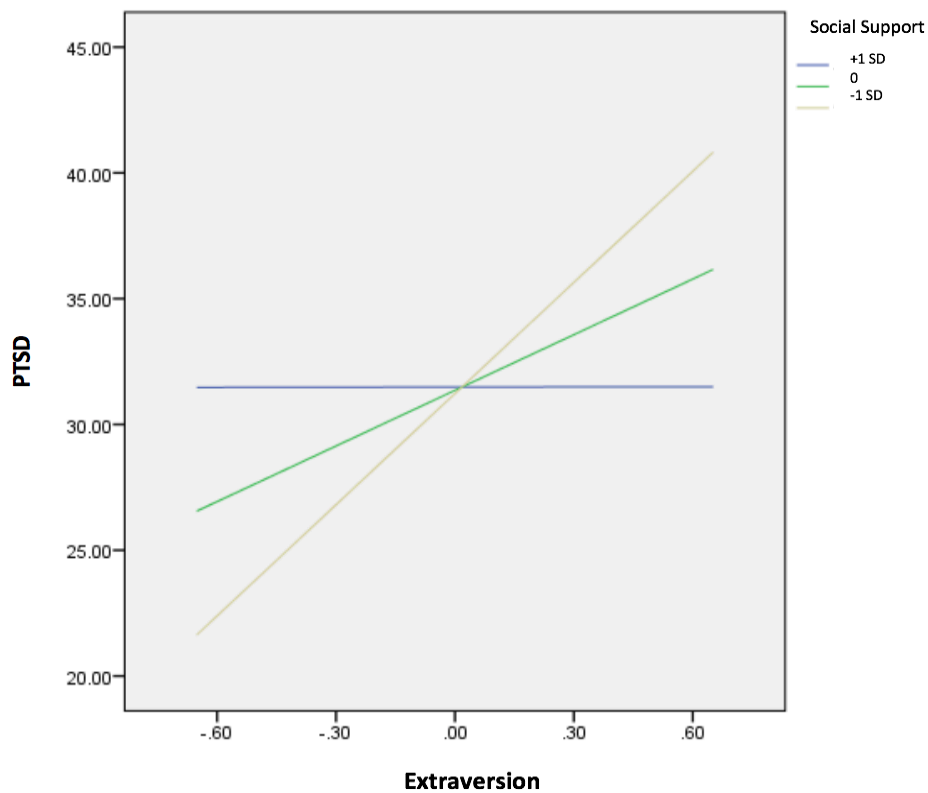


Figure 2. Perceived social support model with extraversion. Graph created from moderation analysis in first imputed dataset.



## CHAPTER FOUR

### DISCUSSION

The purpose of the current study was to examine the social context of PTSD in Syrian refugees resettled in the United States. Specifically, social support was examined as an indirect pathway by which personality traits (i.e., neuroticism, extraversion) impact PTSD symptoms in trauma-exposed refugees. Additionally, the relationships between social support and somatization, as well as between neuroticism and somatization, were examined.

The sample of Syrian refugees consisted of 19 adults (55% men) who arrived in the United States after 1/1/2015. Participants were asked to answer questions pertaining to PTSD symptoms after identifying an index event, personality traits, and perceived social support. Although participants were asked to identify an event that occurred before the war on the PCL-5, war-related events (e.g., kidnapping attempt, aerial bombardment, torture, death of a family member, town attacked by militia) comprised most of the identified index events, while non-war-related events that occurred before the war (e.g., car accident, work-related injury) were less frequently reported.

On the first section of the HTQ, which lists potential war-related traumatic events refugees could have experienced, 100% of the participants endorsed exposure to at least one event. The high rate of endorsed traumatic events on the HTQ is comparable to rates detected in other investigations with this population in countries such as Jordan, Sweden, and Turkey (Chung et al., 2018; Rizkalla & Segal, 2018).

Of note, on both the TLEQ and the HTQ, there were zero instances of endorsed rape or experiences of sexual assault. While this is similar to low rates of such experiences detected in an investigation conducted in a refugee camp in Turkey (Alpak et al., 2015), significantly higher rates of rape or sexual violence experiences were detected in other studies with the same population (Chung et al., 2018). The unfamiliarity of the online methodology with this population could have raised doubts of anonymity in participants and therefore made them uncomfortable in disclosing such experiences, particularly due to the sensitivity of the topic of sexual assault within Syrian populations (Ouyang, 2013).

The first purpose of this investigation was to examine rates of psychopathology in this population, specifically rates of PTSD and somatic complaints. Approximately 31-33% of the sample met the cutoff for PTSD based on the PCL and HTQ cutoffs. This rate is more than three times higher than the rate detected in the general U.S. population (Kilpatrick et al., 2013). This rate fell within the range detected in a recent systematic review on PTSD rates reported in Iraqi refugees resettled in Western countries (i.e., PTSD prevalence ranged from 8 to 37.2%; Slewa-Youman, Guajardo, & Heriseanu, & Hasan, 2015). Other investigations examining PTSD in Syrian refugees have been conducted, albeit not in the United States. In comparison to studies conducted with Syrian refugees living in Turkish refugee camps, the detected rate in the current study was similar to that detected in one investigation (33.5%; Alpak et al., 2015), but substantially lower than that found in another study (84.7%; Acarturk et al., 2017). The difference in the detected rates could be explained by multiple factors. Firstly, the Acarturk et al. (2017) data were collected in a refugee camp that is located right at the Syrian-Turkish border, where residents of the camp can constantly be exposed to and hear dangerous elements of the conflict (e.g., bombardment, explosions, airplanes). In comparison, the Alpak et al. (2015) data

were collected in a city called Gaziantep, which is not close to the border with Syria, therefore decreasing the likelihood of continuous trauma exposure. Additionally, participants in the Alpak et al. (2015) study had been residing in the refugee camp for an average of 6 months, whereas participants in the Acarturk et al. (2017) study had been residing in the refugee camp for an average of 14 months. In comparison, participants in this investigation have been living in the United States for at least 2 years (i.e., since 2015). Therefore, the length of time spent living in a refugee camp located on the border of a war-ridden country in comparison to living in a non-war-ridden country could further explain the substantially higher rates of PTSD detected in the Acarturk et al. (2017) investigation.

Research on PTSD prevalence in Syrian refugees resettled outside of refugee camps has also been conducted. Kira, Shuwiekh, Rice, Al-Ibraheem, and Aljakoub (2017) concluded that 33.5% of Syrian refugees residing in Cairo, Egypt, met criteria for PTSD. Similarly, PTSD prevalence was 24% in Syrian refugees resettled in the Netherlands (Ibraheem, Kira, Aljakoub, & Al-Ibraheem, 2017). Further, Chung et al. (2018) detected a rate of 43% in Syrian refugees resettled in Turkey and Sweden. While the majority (74%) of their study participants resided within the community, a portion of the sample resided in a refugee camp in Turkey. Overall, it was found that relocating in Sweden was associated with lower PTSD symptoms, whereas living in Turkey was associated with higher symptomology. To help explain this finding, the authors cited superior living conditions in the Sweden sample (e.g., proper accommodations with facilities) in comparison to poor living conditions in the Turkey sample (e.g., garages without windows or ventilation, semi-constructed houses, camps). The Swedish sample also had easier access to community amenities such as supermarkets, libraries, and shops. The post-resettlement living conditions could help explain the lower rate of PTSD detected in this investigation in

comparison to the Chung et al. (2018) and Acarturk et al. (2017) samples, as there are no refugee camps in the United States, and all resettled Syrian refugees live in the community in decent conditions and basic housing arrangements (Refugees in America, n.d.). Interestingly, an investigation with Syrian refugees residing in the community in six Jordan cities detected lower prevalence of PTSD (18%; Al-Samadi et al., 2016). This lower rate could be partially explained by the fact that living in Jordan might present with less language-related difficulties and therefore fewer daily difficulties, as Arabic is the main language spoken in Jordan. However, it has been reported that Syrian refugees living in Jordan experience a host of economic and social difficulties, impacting individuals' well-being (Rizkalla & Segal, 2018).

An important variable to highlight is the method of data collection used across the different investigations with this population. For instance, Al-Samadi et al. (2016) developed an Arabic self-report measure of PTSD and distributed a paper version to participants. Similarly, in the Chung et al. (2018) investigation, relief workers distributed Arabic self-report measures to participants and measured PTSD with a translated version of the HTQ (Mollica, 2004). On the other hand, the Acarturk et al. (2017) and the Alpak et al. (2015) investigations used an interview methodology by an Arabic-speaking interviewer. The trained interviewers in the Acaturk et al. (2017) investigation used the Impact of Events Scale-Revised (IES-R; Weiss, 2007). In the Alpak et al. (2015) study, a fourth-year psychiatry resident conducted the unstructured clinical interviews in Arabic and diagnosed PTSD according to DSM-IV-TR criteria (American Psychiatric Association, 2000). This investigation is the first, to our knowledge, to use an online methodology with this population. The costs and benefits of this method are further discussed in the limitations section.

A second purpose of this investigation was to understand the prevalence of somatic complaints in this population. This sample reported a rate of somatic complaints that is approximately twice the rate detected in the U.S. general population (Derogatis, 1993). Such high levels of somatic complaints are apparent in many investigations with refugee populations, including a sample of Syrian refugee adults (Pfortmueller, Schwetlick, Mueller, Lehmann, & Exadaktylos, 2016) and children (Özer, Sirin, & Oppedal, 2016), refugees resettled in Canada (Kirmayer et al., 2011), a sample of Croatian refugees (Prorokovic, Cavka, & Cubela Adoric, 2005), and a sample of Cambodian refugees (Hinton, Kredlow, Bui, Pollack, & Hofmann, 2012).

Surprisingly, no demographic variables were significantly correlated with PTSD symptoms or somatic complaints. For instance, current income was not significantly negatively correlated with PTSD symptomology or somatic complaints in this investigation, whereas it has been found to be positively associated with well-being in recent studies with this population (Rizkalla & Segal, 2018). Perhaps the low variation in income levels in this sample could explain the nonsignificant association between income and psychopathc participants in this study are living below the U.S. poverty line (US Census Bureau, n.d.).

Further, an established and hypothesized difference in rates of PTSD by gender was not detected in this investigation. In the general U.S. population (Kilpatrick et al., 2013) and in other studies with resettled Syrian refugees (Ibraheem et al., 2017), females reported significantly higher PTSD scores compared to male participants. Although a mean-level gender difference was detected, with females ( $n = 9$ ) reporting higher PCL-5 scores compared to males ( $n = 10$ ) in this study, the difference was nonsignificant, which could be due to the small sample size. Relatedly for somatic complaints, females reported higher somatization scores compared to males, but the mean-level difference was nonsignificant. Additionally, acculturation was

hypothesized to be associated with lower levels of post-trauma pathology; however, this was not found in this investigation. One possible explanation could be the average levels of acculturation detected, which indicate neither biculturalism nor marginalism. High scores on this subscale of the AMAS usually indicate biculturalism, signifying identification with both the original and new cultures, and low scores indicate marginalism, signifying low involvement with either culture. Scores in the middle, such as the scores detected in this study, require further research to understand the types of association and involvement in either culture (Zea et al., 2003). This prevents conclusions from being reached regarding its association with psychopathology in the present study.

### **Basic Model Results**

All the proposed models were tested in the full sample without covariates included in the analyses. The proposed regression models theorizing that PTSD is predicted by neuroticism and extraversion was not confirmed but suggested medium to large effect sizes that may warrant clinical significance. The proposed model hypothesizing a negative relationship between social support and PTSD was not confirmed, and the effect size for this association was small. Further, the proposed moderation model, theorizing that PTSD is impacted through personality traits and perceived social support, was tested by using the PROCESS macro. The predicted direct effect of perceived social support on PTSD, predicted direct effects of neuroticism and extraversion on PTSD, and the predicted indirect effect failed to be confirmed in this sample. The results from the PROCESS macro analysis failed to support the proposed moderation models. Finally, the proposed models theorizing a relationship between somatic complaints and neuroticism and

between somatic complaints and social support failed to be confirmed and suggested medium effect sizes that may also warrant future investigation.

Many past investigations were able to detect the predicted positive relationship between personality traits and PTSD in refugee populations (Huemer et al., 2013; Hunt & Gakenyi, 2005; Punamaki et al., 2001; Riolli et al., 2002). Although nonsignificant, a positive relationship between neuroticism and PTSD was detected in this sample and the effect size of this relationship was moderate, though neuroticism levels were not significantly associated with symptoms of PTSD. Perhaps with a larger sample size, a statistically significant effect could have been detected. Unlike the predicted negative relationship between extraversion and PTSD detected in previous studies (Huemer et al., 2013; Ozer & Benet-Martinez, 2006; Riolli et al., 2002), these two variables displayed a nonsignificant positive association in this investigation and displayed a large effect size. This association is comparable to the findings of a number of researchers debating the role of extraversion and arguing that it serves as a risk factor for post-trauma pathology, and not a protective factor against such consequences (Breslau et al., 1995; Breslau et al., 1991; Lauterbach & Vrana, 2001). Perhaps the propensity to be impulsive in those scoring higher on extraversion places them at a higher risk for experiencing further traumatic experiences, particularly in a highly traumatized sample which endured many high-risk situations pre- and post-migration to the United States.

The anticipated negative relationship between PTSD and social support was detected yet was nonsignificant, and the effect size was small. The proposed moderation model, arguing that social support would act as an indirect pathway between personality traits and PTSD was also not supported. This could be explained by a variety of ways. Firstly, the Arab culture is collectivist in nature, and social support is one of the main doctrines of that cultural group (Al-

Haj, 1987; Barakat, 1985). Some researchers have argued that measures of social support which are created for non-collectivist cultural groups, such as the MSPSS, may not be robust with collectivist groups such as Arabs (Ramaswamy, Aroian, & Templin, 2009). Further, Syrian and Muslim adults may be part of considerably different social networks and may have dissimilar social support expectations in comparison to the samples with which the MSPSS was tested. Additionally, Syrian refugees and immigrants in general may have social support needs influenced by other social processes, such as acculturation, that occur due to living between two distinct culture groups (Aroian, 2006; Ponizovsky & Ritsner 2004; Ramaswamy et al., 2009). Perhaps because social support is a fundamental expectation within the Syrian culture, and because acculturation might play a role in this expectation in newly resettled refugees, it does not contribute significantly in buffering the adverse effects of trauma exposure (i.e., PTSD symptomology, somatic complaints) or have a significant effect on the strength of the relationship between personality traits and PTSD.

Finally, neuroticism did not significantly predict somatic symptoms, as detected in other investigations (Costa & McCrae, 1980; Wise & Mann, 1994; Zunhammer, Ebele, Eichhammer, & Busch 2013). To our knowledge, this relationship has not been examined in refugee populations before this investigation, and perhaps there are more important variables than personality traits to consider as predictors of somatic complaints (e.g., post-settlement difficulties, unemployment, access to medical intervention).

### **Limitations and Future Directions**

This study has a few strengths to highlight. This is the first study, to the author's knowledge, investigating mental health status in Syrian refugees resettled in the United States



and is the first glimpse into the psychological needs of this population. Further, the translation process adopted as guided by the WHO recommendations increased the likelihood of reliable and valid administration of the measures used, which all demonstrated strong internal consistency with the exception of the extraversion subscale of the BFI. In examining the literature reporting on the BFI extraversion scale with Arabic populations, investigations have generally found good internal consistency for this scale using a group of undergraduate Kuwaitis ( $\alpha = .79$ ; Alansari, 2016) and a sample of employees in the United Arab Emirates ( $\alpha = .72$ ; Elanain, 2007). Perhaps in the current translated version of the BFI with this particular sample, certain items failed to measure the construct of extraversion and instead measured another latent construct, thereby lowering the reliability index of this scale. This was the case for the Agreeableness and Openness scales of the BFI in investigations with Sudanese adolescents (Rizkiyani et al., 2015) and Indonesian undergraduates (Wibowo, Yudiana, Reswara, & Jatmiko, 2017) when employing translated versions of the BFI. Specifically, in this study, when examining the translated items on the extraversion scale, the Arabic translation of the first item (i.e., talkative) might contain a negative connotation to members of the Arabic culture, as it could be interpreted as, “I have too much to say,” indicating an undesirable trait or a form of gossip. Further, brevity is an attribute that is often praised in the Arabic culture, as can be seen in common sayings such as “The best speech is short and sweet.” Therefore, this item might be construed in a negative way and therefore alter the way in which individuals from this culture respond to it.

When examining the inter-item correlations of the extraversion scale in this study, item 1 was poorly correlated with 3 out of the 7 other items in the scale, supporting the hypothesis that this item might have been poorly translated. Similarly, item 11 was not closely related to 3 out of

the 7 items. However, the translation of item 11 did not seem to be problematic to the researchers, and it is unknown why it performed so poorly. Finally, an additional explanation for this low reliability could be the same size, as it has been suggested that reliability analyses in samples with less than 30 participants are not stable and should be interpreted with caution (Samuels, 2015).

There were several limitations to this investigation that are important to consider. The collected sample size was significantly lower than the originally proposed sample size. A small sample size increases the margin of error and decreases the power of the analyses. Further, such a small sample is not a representative sample, preventing the generalization of any of the findings. For instance, our sample was very homogenous regarding religious affiliation. One hundred percent of our sample identified as Muslim/Sunni. Although the majority of the Syrian population identifies as Muslim/Sunni, there are various religious groups such as Muslim/Shia, Christian, Jewish, and atheist who were not assessed in this investigation. Due to the strong relationship between religious and political affiliation in Syria, religious belongingness influences the chances of being attacked by either the government or other groups involved in the conflict (Phillips, 2015; Pierret, 2013). Therefore, it is imperative to recruit more religiously and ethnically diverse samples in future investigations for more accurate generalizations about Syrian refugees and their mental health needs.

Additionally, this study attempted to recruit a true random sample across the United States by contacting more than 100 different organizations to distribute both the online and paper surveys. However, because only a small number of organizations agreed to assist in the recruitment process, the data collected might not represent a true random sample of Syrian refugees residing in the United States. The organizations that agreed to assist in the distribution

attempts might have more resources readily available, allowing them to allocate some of those resources to aid with this project. This might indicate that the refugees being assisted by such organizations might be at an advantage and might have access to more of such resources. In comparison, agencies that declined to help in distributing this project may have more limited resources to offer the refugee families who are being accommodated by them.

Moreover, this sample consists of refugees residing in a developed country, with significantly better infrastructure, services, and resources for newly arrived refugees. Therefore, any findings cannot be generalized to groups resettled in refugee camps or in developing countries, where basic needs, such as food and housing, might not be met. Further, the researchers received feedback from a few of the organizations who assisted in recruitment efforts. This feedback indicated that the Syrian population is not familiar with completing self-report questionnaires, particularly through an online methodology, which may have discouraged many from completing the survey. Relatedly, many of the published investigations with Syrian refugees used an interview methodology (Acarturk et al., 2017; Alpek et al., 2015; Rizkalla, & Segal, 2018) or paper surveys (Al-Samadi et al., 2016; Acarturk et al., 2017), but no studies, to the researcher's knowledge, were conducted online. The feedback received also highlighted the high illiteracy rates in this population and recommended switching to an interview methodology for better retention rates and to increase the participants' levels of comfort. More specifically, data on the PCL suggest a reading level of 10<sup>th</sup> grade (Terhakopian, Sinaii, Engel, Schnurr, & Hoge, 2008) and therefore some of our participants could have struggled with completing this section of the survey. As reading level of our sample was not assessed, it is difficult to determine whether the reading level of the included questionnaires were appropriate for the current sample or larger population of Syrian refugees living in the United States.

Although opting to enter in a drawing for gift cards was included in the study, it was suggested to the researcher to offer direct rewards for all participants, which could take the form of directly compensating them with a few dollars, assisting the participants with a task they are experiencing difficulty with (e.g., helping them make an appointment with the doctor or at the DMV), or holding a luncheon or a community-wide meal for the families who participated. Finally, the participants were reportedly not comfortable with providing their names on either the paper surveys or online, although they were told that their identifying information would be kept separate from their responses. Therefore, direct compensation may make future participants feel more comfortable regarding responding to the survey and may increase future response rates.

Another limitation to consider is the unknown nature of our sample and how it might differ from the larger population of Syrian refugees currently residing in the United States. With the anonymity guaranteed in this study, it is not possible to uncover any biases that might be present in the studied group or any demographic similarities or dissimilarities that might exist. Although we can presume that this sample has likely had different experiences than Syrian refugees living outside the United States, it is difficult to discern what encouraged those 19 individuals to complete our survey and not others living in this country. It is possible that they are more literate and therefore able to complete the survey. It is also possible that that they might be more comfortable with reflecting and reporting on mental health symptoms than others. Finally, it is possible that this sample had more free time to fill out this survey, which could be due to the fact that the majority of the participants are not currently employed or are students.

Moreover, the non-experimental, cross-sectional methodology prevents any causal and temporal conclusions to be made. For instance, although approximately a third of the participants met the cutoff for a probable PTSD diagnosis, it is not possible to determine the temporal

sequence in which one might have developed such symptoms. For instance, it is not possible to conclude from this study whether pre-war events, war exposure, or post-migration experiences had a stronger impact on the reported rates of psychopathology. There is extensive research that supports the significant role of adverse post-migration experiences on psychopathology. A study with refugees resettled in Norway found that unemployment, weak social support links, and poor social integration were correlated with higher rates of PTSD and major depressive disorder (Teodorescu, Heir, Hauff, Wentzel-Larsen, & Lien, 2012). Schweitzer, Melville, Steel, and Lacherez (2006) reached similar conclusions regarding post-settlement difficulties in Sudanese refugees residing in Australia. Such stressors included difficulties within the immigration system, unemployment, feelings of loneliness, lack of access to medical care, and worrying about family members abroad.

Further, geographical location and discrimination experiences were not examined in this investigation, and such factors might play a strong role in any conclusions reached. Regarding geographic location, more Syrian refugees are resettled in states such as California, Texas, and Michigan (Refugee Processing Center, 2018). Relocation in such states, with more resources and sources of support readily available, could strongly influence the mental health needs of newly arrived refugees. For example, Syrian refugees residing in Sweden endorsed significantly lower symptoms of PTSD in comparison to a group relocated in Turkey (Chung et al., 2018), indicating the potential importance of relocating to a more resource-available location. Therefore, geographical location, albeit within the same country, could impact participants' well-being via the quantity and quality of the resources available to them in their new home state. However, it is not possible to examine such differences in this investigation because current home state was not

assessed in order to increase participants' anonymity and therefore likelihood of completing the survey.

Finally, discrimination experiences have also been found to adversely affect post-settlement well-being in Iraqi (Jamil et al., 2002) and Somali (Ellis, MacDonald, Lincoln, & Cabral, 2008) refugees residing in the United States, Somali refugees resettled in Finland (Mölsä, Kuittinen, Tiilikainen, Honkasalo, & Punamäki, 2017), and Syrian refugees residing in Jordan (Hassan, Ventevogel, Jefee-Bahloul, Barkil-Oteo, & Kirmayer, 2016) and Turkey (Çelebi, Verkuyten, & Bagci, 2017). Such experiences were not examined in this investigation but are important to consider for future studies, particularly within a political climate where immigration is a polarizing topic. Overall, this investigation assessed important variables related to the post-resettlement experiences for Syrian refugees. However, other key variables such as experiences of discrimination, geographic location, and post-resettlement difficulties could be included in future investigations.

### **Implications**

Several implications can be highlighted from the study results. The detected rates of PTSD and somatic complaints indicate elevated levels of pathology in an understudied population in the United States. Such rates indicate a dire need for the development of and research on culturally sensitive treatment approaches for highly traumatized Syrian refugees. Mental health in this population represents a serious public health concern, as refugees rarely immigrate back to their countries of origin. In administering psychotherapy with Syrian war trauma survivors, it would likely be beneficial to attend to traumas that occurred before, during, and after the resettlement process, due to the high rates of trauma exposure experiences by this population. In relation to detecting who may be at a higher risk of developing psychopathology,

personality traits and social support may not be the most relevant predictors of post-trauma pathology in this population, and other variables might be more important to examine to better identify who is at a higher need of services and treatment. It is also critical to use culturally sensitive approaches to better understand the nature of the somatic symptoms this population may be experiencing to help alleviate the suffering experienced by members of this group.

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APPENDIX A  
INFORMED CONSENT FORMS

The purpose of this study is to examine how individual traits, as well as support from others, influence the experiences of Syrian refugees as they settle in the United States. Today you will be asked to fill out several questionnaires online, varying in length. It will take most people about 45-60 minutes to complete all of the questions. The questionnaires contain items asking about you, your life in relation to the Syrian war, how you have accustomed to life in the United States, adverse events that you may have encountered in your life, and your relationships with family and community. Specifically, we'll be asking about your mental health, any upsetting events you have experienced during the war or the resettlement process. This study is run by graduate student Zena Dadouch and Dr. Michelle Lilly at the clinical psychology department at Northern Illinois University.

***Participants who have completed the survey can elect to be entered to win one of five \$50 Visa gift cards by clicking a link at the completion of this study.*** Though a specific date has not been set for the drawing, you can call the lab at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

There is the possibility that filling out these online questionnaires may evoke some upsetting thoughts or feelings associated with your past experiences. Your participation in this study is voluntary. This means that you can choose to stop at any time without penalty. Furthermore, you may choose to skip particular items throughout this online survey by selecting the response "I prefer not to answer." Choosing to not participate or withdraw from the current study will not affect your relationship with Northern Illinois University or the researchers. Sometimes after thinking about topics included in the questionnaires, an individual may notice

feeling somewhat down or emotionally upset. If you are noticing a strong emotional reaction, it is recommended that you speak with someone regarding your reactions. If you are in immediate distress, proceed to your nearest hospital emergency room. You can also call the national crisis hotline at 1-800-273-8255. If you choose to call the hotline and are not fluent in English, wait until the responder picks up the phone after the automatic message and state that you do not speak English well, and ask for an Arabic translator. The responder would then put you on hold and get an Arabic-speaking translator on the phone to help you. If you are not in immediate distress, but would like to speak with someone, it is recommended that you contact your refugee agency to discuss behavioral health referrals.

All of the information collected will be kept confidential by the researchers. However, you should be aware that this study utilizes a data software (Qualtrics) to collect your responses and your answers will be stored on their servers during the data collection phase. Qualtrics protects the privacy of your responses as you can see in their online documentation at <http://www.qualtrics.com/privacy-statement/> and <http://www.qualtrics.com/security-statement/>. Once data is transferred off of the servers it will be stored on password-protected computers in a locked research lab, which only Dr. Michelle Lilly and her research team can access. Any presentations, reports, or publications based on the data collected in this study will use group data only and will never give details associated with a specific participant. To ensure your anonymity, you will not be asked to enter your name or contact information into the online survey where your responses are recorded. If you wish to be entered into the drawing, you will enter your information into a separate survey that is not linked to your responses. If you have any questions or concerns related to your participation in this study, please contact Zena Dadouch at Northern Illinois University at 510-292-9667, or [zdadouch1@niu.edu](mailto:zdadouch1@niu.edu). Any questions about your

rights as a research participant can be addressed to the NIU Office of Research Compliance (815-753-8588).

By clicking on the button below, you are indicating you have read the information about the study and have been informed of its general purpose. You are indicating you are fully aware of the risks and benefits associated with participating in the study described to you. If you would like a copy of this consent, please print this page now before proceeding. If you do not wish to participate in this study, please exit out of the survey.

- I have read the above information and willingly agree to participate in the survey

## INFORMED CONSENT - PAPER VERSION

The purpose of this study is to examine how individual traits, as well as support from others, influence the experiences of Syrian refugees as they settle in the United States. Today you will be asked to fill out several paper questionnaires, varying in length. It will take most people about 45-60 minutes to complete all of the questions. The questionnaires contain items asking about you, your life in relation to the Syrian war, how you have accustomed to life in the United States, adverse events that you may have encountered in your life, and your relationships with family and community. Specifically, we'll be asking about your mental health, any upsetting events you have experienced during the war or the resettlement process. This study is run by graduate student Zena Dadouch and Dr. Michelle Lilly at the clinical psychology department at Northern Illinois University.

***Participants who have completed the survey can elect to be entered to win one of five \$50 Visa gift cards by filling in their contact information towards the end of this study.***

Though a specific date has not been set for the drawing, you can call the lab at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

There is the possibility that filling out these online questionnaires may evoke some upsetting thoughts or feelings associated with your past experiences. Your participation in this study is voluntary. This means that you can choose to stop at any time without penalty. Furthermore, you may choose to skip particular items throughout this survey by selecting the response "I prefer not to answer." Choosing to not participate or withdraw from the current study will not affect your relationship with Northern Illinois University or the researchers. Sometimes after thinking about topics included in the questionnaires, an individual may notice feeling

somewhat down or emotionally upset. If you are noticing a strong emotional reaction, it is recommended that you speak with someone regarding your reactions. If you are in immediate distress, proceed to your nearest hospital emergency room. You can also call the national crisis hotline at 1-800-273-8255. If you choose to call the hotline and are not fluent in English, wait until the responder picks up the phone after the automatic message and state that you do not speak English well, and ask for an Arabic translator. The responder would then put you on hold and get an Arabic-speaking translator on the phone to help you. If you are not in immediate distress, but would like to speak with someone, it is recommended that you contact your refugee agency to discuss behavioral health referrals.

All of the information collected will be kept confidential by the researchers. However, you should be aware that by mailing this questionnaire back to us, your information might end up in the hands of a third party if any mishandling with the mail occurs. Once data is transferred from the paper questionnaires, it will be stored on password-protected computers in a locked research lab, which only Dr. Michelle Lilly and her research team can access. Any presentations, reports, or publications based on the data collected in this study will use group data only and will never give details associated with a specific participant. If you wish to be entered into the drawing, you will enter your information on a separate page. If you have any questions or concerns related to your participation in this study, please contact Zena Dadouch at Northern Illinois University at 510-292-9667, or [zdadouch1@niu.edu](mailto:zdadouch1@niu.edu). Any questions about your rights as a research participant can be addressed to the NIU Office of Research Compliance (815-753-8588).

By writing your name below, you are indicating you have read the information about the study and have been informed of its general purpose. You are indicating you are fully aware of



the risks and benefits associated with participating in the study described to you. If you would like a copy of this consent, please make a copy of this page now before proceeding. If you do not wish to participate in this study, please disregard this survey.

My name is \_\_\_\_\_, and I have read the above information and willingly agree to participate in the survey

APPENDIX B  
INSTRUMENTS AND SCALES

## PTSD CHECKLIST FOR DSM-5

Instructions: This questionnaire asks about problems you may have had after a very stressful experience involving *actual or threatened death, serious injury, or sexual violence*. It could be something that happened to you directly, something you witnessed, or something you learned happened to a close family member or close friend. Some examples are a *serious accident; fire; disaster such as a hurricane, tornado, or earthquake; physical or sexual attack or abuse; war; homicide; or suicide*.

First, please answer a few questions about your *worst event*, which for this questionnaire means the event that currently bothers you the most. This could be one of the examples above or some other very stressful experience. Also, it could be a single event (for example, a car crash) or multiple similar events (for example, multiple stressful events in a war-zone or repeated sexual abuse).

Briefly identify the worst event (if you feel comfortable doing so): \_\_\_\_\_

How long ago did it happen? \_\_\_\_\_ (please estimate if you are not sure)

Did it involve actual or threatened death, serious injury, or sexual violence?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

How did you experience it?

\_\_\_\_\_ It happened to me directly

\_\_\_\_\_ I witnessed it

\_\_\_\_\_ I learned about it happening to a close family member or close friend

\_\_\_\_\_ I was repeatedly exposed to details about it as part of my job (for example, paramedic, police, military, or other first responder)

\_\_\_\_\_ Other, please describe \_\_\_\_\_

If the event involved the death of a close family member or close friend, was it due to some kind of accident or violence, or was it due to natural causes?

\_\_\_\_\_ Accident or violence<sup>[SEP]</sup>

\_\_\_\_\_ Natural causes<sup>[SEP]</sup>

\_\_\_\_\_ Not applicable (the event did not involve the death of a close family member or close friend)

Second, keeping this worst event in mind, read each of the problems on the next page and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you actually back there reliving it)?	0	1	2	3	4
4. feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience ( <i>for example, heart pounding, trouble breathing, sweating</i> )?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience ( <i>for example, people, places, conversations, activities, objects, or situations</i> )?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world ( <i>for example, having thoughts such as: I am bad, there</i>	0	1	2	3	4

<i>is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?</i>					
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings ( <i>for example, being unable to feel happiness or have loving feelings for people close to you</i> )?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being “superalert” or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

## HARVARD TRAUMA QUESTIONNAIRE

## INSTRUCTIONS

We would like to ask you about your past history and present symptoms. You may find some questions upsetting. If so, please feel free not to answer. The answer to the questions will be kept confidential.

## PART 1: TRAUMA EVENTS

Please indicate whether you have experienced any of the following events (check YES or NO)

	Trauma events	Yes	No
1.	Lack of shelter		
2.	Lack of food and water		
3.	Ill health without access to medical care		
4.	Confiscation or destruction of personal property		
5.	Combat situation (e.g. shelling and grenade attacks)		
6.	Forced evacuation under dangerous conditions		
7.	Beating to the body		
8.	Rape		
9.	Other types of sexual abuse or sexual humiliation		
10.	Knifing or axing		
11.	Torture, i.e., while in captivity you received deliberate and systematic infliction of physical or mental suffering		
12.	Serious physical injury from combat situation or landmine		
13.	Imprisonment		

14.	Forced labor (like animal or slave)		
15.	Extortion or robbery		
16.	Brainwashing		
17.	Forced to hide		
18.	Kidnapped		
19.	Other forced separation from family members		
20.	Forced to find and bury bodies		
21.	Enforced isolation from others		
22.	Someone was forced to betray you and place you at risk of death or injury		
23.	Prevented from burying someone		
24.	Forced to desecrate or destroy the bodies or graves of deceased persons		
25.	Forced to physically harm family member, or friend		
26.	Forced to physically harm someone who is not family or friend		
27.	Forced to destroy someone else's property or possessions		
28.	Forced to betray family member, or friend placing them at risk of death or injury		
29.	Forced to betray someone who is not family or friend placing them at risk of death or injury		
30.	Murder, or death due to violence, of spouse		
31.	Murder, or death due to violence, of child		
32.	Murder, or death due to violence, of other family member or friend		

33.	Disappearance or kidnapping of spouse		
34.	Disappearance or kidnapping of child		
35.	Disappearance of kidnapping of other family member or friend		
36.	Serious physical injury of family member or friend due to combat situation or landmine		
37.	Witness beatings to head or body		
38.	Witness torture		
39.	Witness killing/murder		
40.	Witness rape or sexual abuse		
41.	Another situation that was very frightening or in which you felt your life was in danger.  Specify:		

## PART 2: PERSONAL DESCRIPTION

Please indicate what you consider to be the most hurtful or terrifying events you have experienced, if any. Please specify where and when these events occurred.

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Under your current living situation (i.e. refugee camp, country of resettlement, returned from exile, etc.) what is the worst event that has happened to you, if different from above. Please specify where and when these events occurred.

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### PART 3: HEAD INJURY

If you answer yes to the following trauma events, please indicate if you lost consciousness and for how long.

	Experienced		Loss of consciousness?		If yes, for how long?	
	Yes	No	Yes	No	Hours	Minutes
1. Beatings to the head						
2. Suffocation or strangulation						
3. Near drowning						
4. Other types of injury to the head (e.g. shrapnel, burns, etc.)						
5. Starvation						
If Yes:	Normal weight:		Starvation weight:			
If Yes: Were you near death due to starvation?			Yes:	No		

## PART 4: TRAUMA SYMPTOMS

The following are symptoms that people sometimes have after experiencing hurtful or terrifying events in their lives. Please read each one carefully and decide how much the symptoms bothered you in the past week.

	Trauma events	Not at all	A little	Quite a bit	Extremely
1.	Recurrent thoughts or memories of the most hurtful or terrifying events				
2.	Feeling as though the event is happening again				
3.	Recurrent nightmares				
4.	Feeling detached or withdrawn from people				
5.	Unable to feel emotions				
6.	Feeling jumpy, easily startled				
7.	Difficulty concentrating				
8.	Trouble sleeping				
9.	Feeling on guard				
10.	Feeling irritable or having outbursts of anger				
11.	Avoiding activities that remind you of the traumatic or hurtful event				
12.	Inability to remember parts of the most hurtful or traumatic events				

13.	Less interest in daily activities				
14.	Feeling as if you don't have a future				
15.	Avoiding thoughts or feelings associated with the traumatic or hurtful events				
16.	Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events				
17.	Feeling that you have less skills than you had before				
18.	Having difficulty dealing with new situations				
19.	Feeling exhausted				
20.	Bodily pain				
21.	Troubled by physical problem(s)				
22.	Poor memory				
23.	Finding out or being told by other people that you have done something that you cannot remember				
24.	Difficulty paying attention				
25.	Feeling as if you are split into two people and one of you is watching what the other is doing				
26.	Feeling unable to make daily plans				
27.	Blaming yourself for things that have				

	happened				
28.	Feeling guilty for having survived				
29.	Hopelessness				
30.	Feeling ashamed of the hurtful or traumatic events that have happened to you				
31.	Feeling that people do not understand what happened to you				
32.	Feeling others are hostile to you				
33.	Feeling that you have no one to rely upon				
34.	Feeling that someone you trusted betrayed you				
35.	Feeling humiliated by your experience				
36.	Feeling no trust in others				
37.	Feeling powerless to help others				
38.	Spending time thinking why these events happened to you				
39.	Feeling that you are the only one that suffered these events				
40.	Feeling a need for revenge				

## BRIEF SYMPTOM INVENTORY - SOMATIZATION SUBSCALE

Below is a list of problems people sometimes have. Read each one carefully and circle the number of the response that best describes HOW MUCH that problem has DISTRESSED/BOTHERED you during the PAST 7 DAYS, INCLUDING TODAY.

Not at all	A little bit	Moderately	Quite a bit	Extremely	Prefer to not respond
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Faintness or dizziness

Pains in heart or chest

Nausea or upset  
stomach

Trouble getting your  
breath

Hot or cold spells

Numbness or tingling  
in parts of your body

Feeling weak in parts  
of your body

### THE BIG FIVE INVENTORY

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1	2	3	4	5

I see Myself as Someone Who...

- \_\_\_ 1. Is talkative
- \_\_\_ 2. Tends to find fault with others
- \_\_\_ 3. Does a thorough job
- \_\_\_ 4. Is depressed, blue
- \_\_\_ 5. Is original, comes up with new ideas
- \_\_\_ 6. Is reserved
- \_\_\_ 7. Is helpful and unselfish with others
- \_\_\_ 8. Can be somewhat careless
- \_\_\_ 9. Is relaxed, handles stress well
- \_\_\_ 10. Is curious about many different things
- \_\_\_ 11. Is full of energy
- \_\_\_ 12. Starts quarrels with others
- \_\_\_ 13. Is a reliable worker
- \_\_\_ 14. Can be tense
- \_\_\_ 15. Is ingenious, a deep thinker
- \_\_\_ 16. Generates a lot of enthusiasm
- \_\_\_ 17. Has a forgiving nature
- \_\_\_ 18. Tends to be disorganized
- \_\_\_ 19. Worries a lot

- \_\_\_ 20. Has an active imagination
- \_\_\_ 21. Tends to be quiet<sup>[L]</sup><sub>[SEP]</sub>
- \_\_\_ 22. Is generally trusting
- \_\_\_ 23. Tends to be lazy
- \_\_\_ 24. Is emotionally stable, not easily upset
- \_\_\_ 25. Is inventive
- \_\_\_ 26. Has an assertive personality
- \_\_\_ 27. Can be cold and aloof
- \_\_\_ 28. Perseveres until the task is finished
- \_\_\_ 29. Can be moody
- \_\_\_ 30. Values artistic, aesthetic experiences
- \_\_\_ 31. Is sometimes shy, inhibited
- \_\_\_ 32. Is considerate and kind to almost everyone
- \_\_\_ 33. Does things efficiently
- \_\_\_ 34. Remains calm in tense situations
- \_\_\_ 35. Prefers work that is routine
- \_\_\_ 36. Is outgoing, sociable
- \_\_\_ 37. Is sometimes rude to others
- \_\_\_ 38. Makes plans and follows through with them
- \_\_\_ 39. Gets nervous easily<sup>[L]</sup><sub>[SEP]</sub>
- \_\_\_ 40. Likes to reflect, play with ideas
- \_\_\_ 41. Has few artistic interests
- \_\_\_ 42. Likes to cooperate with others
- \_\_\_ 43. Is easily distracted
- \_\_\_ 44. Is sophisticated in art, music, or literature

### MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree<sup>[L]</sup>

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree<sup>[L]</sup>

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1. There is a special person who is around when I am in need.           | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. There is a special person with whom I can share my joys and sorrows. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. My family really tries to help me.                                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I get the emotional help and support I need from my family.          | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I have a special person who is a real source of comfort to me.       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. My friends really try to help me.                                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. I can count on my friends when things go wrong.                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. I can talk about my problems with my family.                         | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I have friends with whom I can share my joys and sorrows.            | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. There is a special person in my life who cares about my feelings.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. My family is willing to help me make decisions.                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. I can talk about my problems with my friends.                       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |



## DEMOGRAPHICS QUESTIONNAIRE

We would like to ask you some questions about yourself. Please answer the following questions as accurately as possible.

1. What is your partnership status?
  - 1 = Single
  - 2 = Married
  - 3 = Divorced
  - 4 = Separated
  - 5 = Remarried
  - 6 = Widowed
  
2. If you answered "Widowed" to question 1, did you lose your spouse as a result of the war?
  - Yes
  - No
  - Prefer not to respond
  
3. With what religious affiliation do you most identify with?
  - 1 = Muslim/Sunni
  - 2 = Muslim/Shia
  - 3 = Muslim/other
  - 4 = Christian
  - 5 = Jewish
  - 6 = Atheist
  - 7 = Other: \_\_\_\_\_
  
4. What is your gender?
  - Male
  - Female
  
5. What is your age? \_\_\_\_\_
  
6. What is the highest grade of school you've completed?
 

Elementary	1	2	3	4	5	6	7	8
High School	9	10	11	12				
Post-High School (vocational or technical school)	1	2	3	4				

College                                    1        2        3        4        Degree earned (if any): \_\_\_\_\_

Graduate/Professional                5        6        7        8        Degree earned (if any): \_\_\_\_\_

7. What was your approximate family income the year before the Syrian Civil war started (U.S. dollars, with a conversion rate of \$1 = 50 Syrian Pounds)?

\_\_\_\_\_

8. What was your approximate family income last year (U.S. dollars, with a conversion rate of \$1 = 50 Syrian Pounds)? \_\_\_\_\_

9. When did you leave Syria? \_\_\_\_\_

10. Did you live anywhere else after leaving Syria and before arriving to the United States? If yes, where did you live and for how long? (Please provide information on each location you have lived in after leaving Syria.)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

11. When did you arrive to the United States? \_\_\_\_\_

12. Do you have children?

Yes

No

13. If you answered yes to question 12, how many children do you have?

\_\_\_\_\_

14. If you answered yes to question 12, are they all living in the United States with you right now? \_\_\_\_\_

15. If you answered no to question 14, how many of your children are not residing with you in the United States, and where are they residing? \_\_\_\_\_

16. If you are married, does your spouse live with you in the United States?

\_\_\_\_\_

17. If you answered no to question 16, where is your spouse right now?

\_\_\_\_\_

18. Are you currently employed?

Yes

No

19. If you answered yes to question 18, what is your current job?

\_\_\_\_\_

20. If you answered yes to question 18, what is your monthly income (U.S. dollars)?

\_\_\_\_\_

21. Are you currently a student?

Yes

No

### ABBREVIATED MULTIDIMENSIONAL ACCULTURATION SCALE

The following section contains questions about your *culture of origin* and your *native language*. By *culture of origin* we are referring to the culture of the country either you or your parents came from (e.g., Puerto Rico, Cuba, China). By *native language* we refer to the language of that country, spoken by you or your parents in that country (e.g., Spanish, Quechua, Mandarin). If you come from a multicultural family, please choose the culture you relate to the most.

Instructions: Please mark the number from the scale that best corresponds to your answer.

1	2	3	4
Strongly Disagree	Disagree somewhat	Agree somewhat	Strongly agree

1. I think of myself as being U.S. American.
2. I feel good about being U.S. American.
3. Being U.S. American plays an important part in my life.
4. I feel that I am part of U.S. American culture.
5. I have a strong sense of being U.S. American.
6. I am proud of being U.S. American.
7. I think of myself as being \_\_\_\_\_ (a member of my culture of origin).
8. I feel good about being \_\_\_\_\_ (a member of my culture of origin).
9. Being \_\_\_\_\_ (a member of my culture of origin) plays an important part in my life.
10. I feel that I am part of \_\_\_\_\_ culture (culture of origin).
11. I have a strong sense of being \_\_\_\_\_ (culture of origin).
12. I am proud of being \_\_\_\_\_ (culture of origin).

Please answer the questions below using the following responses:

1	2	3	4
Not at all	A little	Pretty well	Extremely well

How well do you speak English:

13. at school or work
14. with American friends
15. on the phone
16. with strangers
17. in general

How well do you understand English:

- 18. on television or in movies
- 19. in newspapers and magazines
- 20. words in songs
- 21. in general

Please answer the questions below using the following responses:

1	2	3	4
Not at all	A little	Pretty well	Extremely well

How well do you speak your native language:

- 22. with family
- 23. with friends from the same country as you
- 24. on the phone
- 25. with strangers
- 26. on the phone

How well do you understand your native language:

- 27. on television or in movies.
- 28. in newspapers and magazines.
- 29. words in songs.
- 30. in general.

How well do you know:

- 31. American national heroes.
- 32. popular American television shows.
- 33. popular American newspapers and magazines
- 34. popular American actors and actresses.
- 35. American history.
- 36. American political leaders.

How well do you know:

- 37. national heroes from your native culture.
- 38. popular television shows in your native language.
- 39. popular newspapers and magazines in your native language.
- 40. popular actors and actresses from your native culture.
- 41. history of your native culture.
- 42. political leaders from your native culture.

## TRAUMATIC LIFE EVENTS QUESTIONNAIRE

The purpose of this questionnaire is to identify important life experiences that can affect a person's emotional well-being or later quality of life. The events listed below are far more common than people realize. Please read each question carefully and mark the answers that best describe your experience.

1. Have you ever experienced a natural disaster (a flood, hurricane, earthquake, etc.)?

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

Were you seriously injured?

Yes                       No

Was someone you cared about or close by seriously injured or killed?

Yes                       No

Do you think you or a loved one was in danger of being killed by the disaster?

Yes                       No

2. Were you involved in a motor vehicle accident for which you received medical attention or that badly injured or killed someone?

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

Were you seriously injured?

Yes                       No

3. Have you been involved in any other kind of accident where you or someone else was badly hurt?

(examples: a plane crash, a drowning or near drowning, an electrical or machinery accident, an explosion, home fire, chemical leak, overexposure to radiation or toxic chemicals)

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

Were you seriously injured?

Yes                       No

4. Have you ever lived, worked, or had military service in a war zone?  Yes                       No

If yes, were you ever exposed to warfare or combat? (for example: in the vicinity of a rocket attack or people being fired upon; seeing someone get wounded or killed)

never                       once                       twice                       3 times  
 4 times                       5 times                       more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

Were you seriously injured?

Yes                       No

5. Have you ever experienced the sudden or unexpected death of a close friend or loved one?

never                       once                       twice                       3 times  
 4 times                       5 times                       more than 5 times

Due to accident?                       Yes                       No  
 Illness?                       Yes                       No  
 Suicide?                       Yes                       No  
 Murder?                       Yes                       No

*If his happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

6. Has a loved one ever survived a life threatening or permanently disabling accident, assault, or illness? (examples: spinal cord injury, rape, cancer, life threatening virus)

never                       once                       twice                       3 times  
 4 times                       5 times                       more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

7. Have you ever had a life threatening illness?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

8. Have you been robbed or been present during a robbery-where the robber(s) used or displayed a weapon?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

Were you seriously injured?

- Yes                       No

9. Have you been hit or beaten up and badly hurt by a stranger or by someone you didn't know very well?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

Were you seriously injured?

- Yes                       No

10. Have you seen a stranger (or someone you didn't know very well) attack or beat up someone and seriously injure or kill them?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

11. Has anyone threatened to kill you or cause you serious physical harm?



never             once             twice             3 times  
 4 times             5 times             more than 5 times

Stranger?                             Yes             No  
 Friend or acquaintance?         Yes             No  
 Relative?                             Yes             No  
 Intimate partner?                  Yes             No

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes                             No

12. While you were growing up: Were you physically punished in a way that resulted in bruises, burns, cuts, or broken bones?

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes                             No

13. While growing up: Did you see or hear family violence? (such as your father hitting your mother, or any family member beating up or inflicting bruises, burns or cuts on another family member)

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes                             No

14. Have you ever been slapped, punched, kicked, beaten up, or otherwise physically hurt by your spouse (or former spouse), a boyfriend/girlfriend, or some other intimate partner?

never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened?*

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes                             No

Were you seriously injured? yes/no  
 Yes                             No

Has more than one intimate partner physically hurt you? yes/no

Yes  No

If yes, how many hurt you? \_\_\_\_\_

Yes  No

15. Before your 13<sup>th</sup> birthday: Did anyone – who was at least 5 years older than you – touch or fondle your body in a sexual way or make you touch or fondle their body in a sexual way?

never  once  twice  3 times  
 4 times  5 times  more than 5 times

*If this happened:*

Was the person a:

Stranger?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Friend or acquaintance?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Parent or caregiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other relative?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Was threat or force used?

Yes  No

Were you seriously injured?

Yes  No

Was there oral, anal, or vaginal penetration?

Yes  No

Did you experience intense fear, helplessness, or horror when it happened?

Yes  No

16. Before your 13<sup>th</sup> birthday: Did anyone close to your age touch sexual parts of your body or make you touch sexual parts of their body – against your will or without your consent?

never  once  twice  3 times  
 4 times  5 times  more than 5 times

*If this happened:*

Was the person a:

Stranger?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Friend or acquaintance?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Parent or caregiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other relative?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Was threat or force used?

Yes                       No

Were you seriously injured?

Yes                       No

Was there oral, anal, or vaginal penetration?

Yes                       No

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

17. After your 13<sup>th</sup> birthday and before your 18<sup>th</sup> birthday: Did anyone touch sexual parts of your body or make you touch sexual parts of their body – against your will or without your consent?

never                       once                       twice                       3 times  
 4 times                       5 times                       more than 5 times

*If this happened:*

Was the person a:

Stranger?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Friend or acquaintance?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Parent or caregiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other relative?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Was threat or force used?

Yes                       No

Were you seriously injured?

Yes                       No

Was there oral, anal, or vaginal penetration?

Yes                       No

Did you experience intense fear, helplessness, or horror when it happened?

Yes                       No

18. After your 18<sup>th</sup> birthday: Did anyone touch sexual parts of your body or make you touch sexual parts of their body – against your will or without your consent?

never                       once                       twice                       3 times  
 4 times                       5 times                       more than 5 times

*If this happened:*

Was the person a:

Stranger?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Friend or acquaintance?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Parent or caregiver?  Yes  No  
 Other relative?  Yes  No

Was threat or force used? yes/no  
 Yes  No

Were you seriously injured? yes/no  
 Yes  No

Was there oral, anal, or vaginal penetration? yes/no  
 Yes  No

Did you experience intense fear, helplessness, or horror when it happened? yes/no  
 Yes  No

19. Were you ever subjected to uninvited or unwanted sexual attention (other than sexual contact discussed in previous questions)?

never  once  twice  3 times  
 4 times  5 times  more than 5 times

*If this happened:*

Was this person a:

Stranger?  Yes  No  
 Friend or acquaintance?  Yes  No  
 Relative?  Yes  No  
 Supervisor or coworker?  Yes  No

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes  No

20. Has anyone ever stalked you – in other words: followed you or kept track of your activities – causing you to feel intimidated or concerned for your safety?

never  once  twice  3 times  
 4 times  5 times  more than 5 times

*If this happened:*

Was the person a:

Stranger?  Yes  No  
 Friend or acquaintance?  Yes  No  
 Relative?  Yes  No  
 Intimate Partner?  Yes  No

Did you experience intense fear, helplessness, or horror when it happened?  
 Yes  No

21. Have you or a romantic partner ever had a miscarriage?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

Did it (ever) happen after you were physically injured?

- Yes                       No

22. Have you or a romantic partner ever had an abortion?

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

23. Have you ever experienced (or seen) any other events that were life threatening, causing serious injury, or were highly disturbing or distressing? (examples: lost in the wilderness; a serious animal bite, violent death of a pet; being kidnapped or held hostage; seeing mutilated body or body parts)

- never             once             twice             3 times  
 4 times             5 times             more than 5 times

*If this happened:*

Did you experience intense fear, helplessness, or horror when it happened?

- Yes                       No

Were you seriously injured?

- Yes                       No

APPENDIX C  
ADVERTISING FLYERS

## ADVERTISING FLYER/EMAIL

Syrian refugees who resettled in the US after 01/01/2015 and are above the age of 18 may participate in this online study. During this study, you will be asked questions online about you, your life in relation to the Syrian war, adverse events that you may have encountered in your life, symptoms you have been feeling, somatic complaints you might have, your family relationships, how you feel about yourself, your relationships in general, and how you have accustomed to life in the US. This should take between 45-60 minutes to complete. Participants that have completed the survey will be entered to win one of five \$50 Visa gift cards at the conclusion of the study, if they choose to enter the drawing. Though a specific date has not been set for the drawing, you can contact graduate student Zena Dadouch at the psychology department at Northern Illinois University at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

You may start this survey if you meet the following qualifications:

- 1- You moved to the United States on or after 01/01/2015.
- 2- You are a Syrian refugee and are at least 18 years old.
- 3- Your reason for leaving Syria is due to the onset of the Syrian war.

## ADVERTISING FLYER - PAPER VERSION

Syrian refugees who resettled in the US after 01/01/2015 and are above the age of 18 may participate in this study. During this study, you will be asked to answer questions about you, your life in relation to the Syrian war, adverse events that you may have encountered in your life, symptoms you have been feeling, somatic complaints you might have, your family relationships, how you feel about yourself, your relationships in general, and how you have accustomed to life in the US. This should take between 45-60 minutes to complete. Participants that have completed the survey will be asked whether they want to be entered to win one of five \$50 Visa gift cards at the conclusion of the study. Though a specific date has not been set for the drawing, you can contact graduate student Zena Dadouch at the psychology department at Northern Illinois University at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

You may start this survey if you meet the following qualifications:

- 1- You moved to the United States on or after 01/01/2015.
- 2- You are a Syrian refugee and are at least 18 years old.
- 3- Your reason for leaving Syria is due to the onset of the Syrian war.



APPENDIX D  
DEBRIEFING FORMS

## DEBRIEFING FORM - ONLINE VERSION

Thank you for participating in this study on Posttraumatic Stress Disorder (PTSD) in Syrian refugees resettled in the United States. The objective of this study is to help understand the prevalence of PTSD within the Syrian refugee population in the US, and particularly, whether there is a relationship between personality traits, social support, and symptoms of PTSD. The information that you provided can help us answer these questions. It is hoped that your participation in this study will help to inform psychologists, as well as prevention and intervention efforts for refugees in the future.

Sometimes after thinking about topics included in the questionnaires, an individual may notice feeling somewhat down or emotionally upset. In most cases, these feelings are fleeting and resolve quickly. However, in some cases, people may notice that they continue to have these feelings for longer, or their feelings are strong and very upsetting. If you are noticing a strong emotion reaction, it is recommended that you speak with someone regarding your reactions. If you are in immediate distress, proceed to your nearest hospital emergency room. You can also call the national crisis hotline at 1-800-273-8255. If you choose to call the hotline and are not fluent in English, wait until the responder picks up the phone after the automatic message and state that you do not speak English well, and ask for an Arabic translator. The responder would then put you on hold and get an Arabic-speaking translator on the phone to help you. If you are not in immediate distress, but would like to speak with someone, it is recommended that you contact your refugee agency to discuss behavioral health referrals. If you have questions in the future regarding this study, or you are unable to access resources, please contact Zena Dadouch at 510-292-9667. She will be happy to answer any questions that you may have or address

concerns. Participants who have completed the survey can elect to be entered to win one of five \$50 Visa gift cards by clicking the link below. Though a specific date has not been set for the drawing, you can call the lab at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

IF YOU WISH TO BE ENTERED INTO THE DRAWING FOR ONE OF FIVE \$50 GIFT CARDS, PLEASE CLICK ON THE LINK BELOW TO PROVIDE YOUR CONTACT INFORMATION:

[LINK WILL BE INSERTED HERE]

Contact information survey:

Thank you for participating in our study. If you wish to be entered into the drawing for one of five \$50 gift cards, please enter your information below. If you win one of the gift cards, we will call you to arrange shipment.

Name:

Phone number:

Email address:

### DEBRIEFING FORM - PAPER VERSION

Thank you for participating in this study on Posttraumatic Stress Disorder (PTSD) in Syrian refugees resettled in the United States. The objective of this study is to help understand the prevalence of PTSD within the Syrian refugee population in the US, and particularly, whether there is a relationship between personality traits, social support, and symptoms of PTSD. The information that you provided can help us answer these questions. It is hoped that your participation in this study will help to inform psychologists, as well as prevention and intervention efforts for refugees in the future.

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\$50 Visa gift cards by choosing the option below. Though a specific date has not been set for the drawing, you can call the lab at 815-753-7186 for an approximate date for when the drawing will occur. If you win, you will be contacted over the phone to inform you that you have won and to get a mailing address for the gift card.

Thank you for participating in our study. If you wish to be entered into the drawing for one of five \$50 gift cards, please enter your information below. If you win one of the gift cards, we will call you to arrange shipment.

Name:

Phone number: