

Drawings from Syria's Lost Generation: Psychological Impacts of the Refugee Crisis

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Abstract: Since the onset of the Syrian civil war in 2011, more than 11 million people have been forcibly displaced and exposed to violence. Even if the civil war were to end tomorrow, the refugee crisis will be expected to last for decades more. With nearly half of the refugees being children, the impact of the loss of health, education, social networks, and home environments on children have resulted in what is being called Syria's lost generation. A potential solution in mitigating these psychological impacts is the reintegration from refugee camps into non-camp host communities or the resettlement into other countries. Through the psychological analysis of children's drawings, this research project hopes to study the mitigating impact of reintegration on the likelihood of anxiety, depression, and posttraumatic stress disorder on Syrian refugee children.

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1. Introduction

Civil war has been called “development in reverse,” in reference to its resulting destruction of physical structures and disintegration of social, economic, and political institutions (Collier et al., 2003; Collier and Hoeffler, 2004; World Bank, 2011). With the ongoing conflict of the Syrian civil war and the ever-worsening refugee crisis, much research has begun to emerge on the long-term impacts of forced displacement and exposure to conflict on a population. Forced displacement and exposure to conflict has been shown to have a negative impact on the cognitive and psychological development of refugee children. The objective of this research project is to study the dynamics that take place between the refugee experience and these negative psychological impacts, and to assess whether or not the reintegration of Syrian refugee children into non-camp communities within the host country mitigates these impacts.

Prior to the civil war, the well-being and living standards for children in Syria were moving in an upwards trend. Education in Syria was experiencing high enrollment and attendance rates with illiteracy decreasing. Healthcare in Syria was comparable to other middle-income countries with medical assistance widely available. Today, nearly 2.4 million children in Syria are out of school resulting from the destruction of educational facilities. Outside of Syria, nearly 1.5 million are out of school or at risk of dropping out. Syrian children have limited access to basic medical care as the result of damaged or destroyed primary care facilities. Diseases that had previously been eradicated in Syria such as polio are now found to affect up to eighty thousand children. Vaccinations have dropped from 90% to 68%. Doctors and teachers have been targeted by militants worsening these problems (Save the Children, UNICEF). As the result of the crisis, children have been forced to work or forced to marry by their families to cope with economic losses. Armed groups within Syria recruit children to take part as soldiers in the war. More than five million children affected by the Syrian civil war are vulnerable to threats to health, education, and protection.

Even if the civil war were to end, the issues faced by Syrian refugee children would still persist. A majority of Syrian refugee children have been victimized by forced displacement and exposure to conflict. As a result, psychological and social distress is commonly found to manifest in the form of anxiety, depression, and posttraumatic stress disorder among conflict-affected Syrian refugees (UNHCR, 2015). These negative psychological impacts have been determined to cause increased vulnerability to future

risk and diminished health, education, and labor market outcomes. It is for this reason that the children who have been victimized by forced displacement and exposure to conflict have been called 'Syria's Lost Generation.' If left unattended to, these negative psychological impacts will persist and continue to affect Syrian refugee children all throughout their lives.

The refugee crisis is a development issue that affects developed nations. Currently, there are more than sixty million people forcibly displaced worldwide, five million of which are Syrian refugees. According to UNHCR reports, the top nations receiving refugees are Jordan, Turkey, Pakistan, and Lebanon. Under the 1951 Refugee Convention, contracting states are obligated to provide protection to asylum seekers and grant them the rights and freedoms afforded by that nation (UN, 1951). Despite these mandates, the issue of the refugee crisis has been heavily politicized with several nations finding loop holes around these laws renegeing on their obligations to receive and provide refugees with protection. The hope of this paper is to emphasize the need for intervention and the possible benefit of reintegration and resettlement addressing the psychological needs of refugee children.

In this research paper, we examine three different dynamics relating to the psychological capital of refugee children as the result of the refugee experience. First, we study what is the impact of exposure to conflict on the likelihood of anxiety, depression, and posttraumatic stress disorder in Syrian refugee children. Second, we study what is the impact of reintegration on the likelihood of anxiety, depression, and posttraumatic stress disorder in Syrian refugee children. Third, we analyze whether or not reintegration has a mitigating impact on the psychological impacts that result from exposure to conflict. In Section 2, we cover the literature relating to the psychological impacts of forced displacement and exposure to conflict, previous assessments done on refugee mental health and psychosocial trauma, and the use of projective drawings as a measurement tool for psychological analysis. In Section 3, we cover the background of the refugee experience, specifically of Syrian refugees who have sought refuge in Jordan. In Section 4, we cover the methodology of utilizing drawing exercises to analyze psychological impacts. In Section 5, we cover the data analysis going over OLS regression, covariate matching estimations, and robustness checks. In Section 6, we conclude on the implications of our findings, policy recommendations, and directions for future research.

2. Literature Review

2.1. *Psychological Capital*

Forced displacement and exposure to conflict have been found to have negative impacts on “human capital” (Becker, 1962; Mincer, 1958; 1974). Psychological impacts result in decreases to cognitive ability and increases in psychosocial impairments (Arroyo & Eth, 1985; Diehl, Zea, & Espino, 1993; Qouta, Punamaki, & El Sarraj, 1995). Especially within children, these psychosocial impacts can manifest in the forms of emotional symptoms, social behavioral disorders, and academic behavioral disorders (Altawil et al., 2008). Besides the effects of psychological trauma, for children at a young age, other negative impacts caused by decreases in individual and household welfare through poorer labor market outcomes and economic performance have been found to lead to poverty traps (Becker, 1962; Mincer, 1974; Shultz, 1961). These negative impacts are exacerbated due to decreasing access to health and educational services, and separation from communities, environments, and families (Santa Barbara, 2006). At early stages of growth, these impacts result in an increased vulnerability to future risk and diminished health, education, and labor market outcomes (Alderman, Hoddinott, and Kinsey, 2006; Beegle, Weerdt and Dercon, 2006; Currie, 2008; Currie and Vogl, 2012; Lucas, 1998, 1999; Martorell, 1999; Silventoinen, 2003; Duflo, 2001; Grantham-McGregor et al., 2007).

2.1.1. *Negative psychological impacts manifest as the result of forced displacement and exposure to conflict*

Research on the psychological impact of the refugee experience has largely found increases in negative psychological trauma in refugees (Bradburn, 1991; Nader et al., 1993). In particular, children are highly susceptible to developing psychosocial disorders (Thabet et al. 2004; Husain, 2005; Mohlen et al., 2005). Higher levels of PTSD have been found to be associated with greater exposure to war trauma (Bradburn, 1991; Nader et al., 1993). Some researchers attribute this to the ‘fragmentation of community ties’ (Elbedour, ten Bensel, and Bastien, 1993). Other researchers find that these findings are caused by direct exposure to conflict (Nader, Pynoos, Fairbanks, & Frederick, 1990). Overall, researchers agree that exposure to war stressors are generally associated with higher levels of psychosocial problems such as anxiety, depression and PTSD (Justino, 2010; Smith et al., 2001; Thabet & Vostanis, 2000; Papageorgiou et al., 2000).

2.1.2. Negative psychological impacts increase with duration of forced displacement and instances and intensity of exposure to conflict

Generally, previous authors have found that psychological impacts increase in proportion to time spent in the situation of trauma (Norris et al., 2003; Kaysen et al., 2003; Eth, 2001). This effect has been proven for Palestinian children in the Gaza Strip where exposure to chronic traumatic experiences led to increases in symptoms of PTSD (Altawil et al., 2008). Depending on the nature and magnitude of exposure, long-term psychological impact can vary (Carlson and Rosser-Hogan, 1994; Green, 1994; Smith et al., 2001; Papageorgiou et al., 2000; Wayment, 2004; Weaver & Clum, 1995). Victims of chronic trauma, individuals who have experienced traumatic events over a long period of time, have been found to have lower rates of recovery (Famularo et al., 1996; Green, 1985; Terr, 1991).

2.1.3. Negative psychological impacts decrease with intervention and duration of reintegration and/or resettlement

Research on interventions for refugees has found that interventions result in significant decreases in posttraumatic reactions (Dyregrov et al., 2000; Holaday & McPhearson, 1997; Miller, 1996). In particular, adolescents who have immigrated to the US from conflict zones when compared to those still living in threatening environments have been shown to have high cognitive development (Sack et al., 1993). Researchers look at five major domains of personal growth that occur after traumatic experiences: “a greater appreciation of life and changed sense of priorities; warmer, more intimate relationships with others; a greater sense of personal strength; recognition of new possibilities or paths for one’s life; and spiritual development” (Emmons, Colby, and Kaiser 1998; Haidt 2006; Nolen-Hoeksema and Davis 2002; Tedeschi and Calhoun 1996). Psychosocial intervention for children following exposure to civil war has been found to result in improved cognitive and psychosocial development (Dahl & Schei, 1996; Dybdahl, 2001; Kagitçibasi, 1996; Myers, 1992; Santos, 2014; Thoresen & Dybdahl, 1998).

2.1.4. Negative psychological impacts are correlated with prior socioeconomic status

Previous literature has found that the long term effects may vary due to the interaction of different factors including socioeconomic and familial demographic information and the nature of individual’s experiences (Kuterovac-Jagodic, 2000).

Susceptibility to psychological trauma has been found to be different across individuals from different backgrounds prior to the onset of trauma.

2.2. Previous Needs Assessments on Refugee Mental Health and Psychosocial Trauma

In response to the refugee crisis, the UNHCR has responded through implementing several needs assessments on the mental health and psychosocial well-being of refugees. These assessments had been conducted majorly through the use of field survey, focus groups, and personal interviews. The findings of these assessments have commonly found signs of mental, emotional, or behavioral problems in refugees along with cases of significant to extreme functional impairments. One out of four refugees report being uninterested in things they used to like, feelings of hopelessness, and of being severely upset. One-third of refugees report being unable to carry out essential activities due to feeling distressed, disturbed, or upset (UNHCR, 2014; 21015). For children below the age of twelve, bedwetting and night-terrors have been found to be common. Adolescents have been found at risk of heavy use of alcohol, cigarettes, drugs, and attempted suicide.

In comparing the refugee population living within camps with those living within non-camp communities, a study by the UNHCR finds that within refugee camps, there is a greater likelihood for refugees to be unable to carry out essential daily activities, severely upset about the crisis, and feeling so hopeless that they did not want to carry on living. Within refugee camps, Syrian refugees were reported to be more prone to aggression, excessive nervousness, and fainting to unconsciousness. Outside refugee camps, however, Syrian refugees were reported to be more prone to fear, continuous crying, and convulsions (UNHCR, 2014; 21015). Research done on comparing these two refugee populations is relatively new but is receiving more attention in an effort to address the urban refugee population who do not receive as much assistance as the refugee camp population.

2.3. Projective Drawing Analysis

The target population of interest, Syrian refugee children, is a “double vulnerable” population being both refugees and children. Considering our outcome variable of interest, negative psychological impacts caused by forced displacement and exposure to conflict, this research deals with highly sensitive subject matter. Especially in working with the UNHCR and other humanitarian organizations, interaction with Syrian refugee children was limited to ensure that there would be minimal risk in bringing up

traumatic experiences. It is for this reason that the measurement tool being utilized is the psychological analysis of children's human figure and free form drawing.

In the field of psychology, researchers have studied characteristics within human figure and free form drawings in relation to emotional and psychological conditions (Koppitz, 1968). Empirically tested and researched by psychologists, characteristics within human figure and free form drawings have been found to correlate with conditions such as nervousness, aggression, hopefulness, self-efficacy, and happiness. The projective drawing exercise has been utilized with refugee children before as a psychological assessment tool and as a therapeutic exercise but not widely as a measurement tool for development research. Research previously done using the projective drawing exercise utilized the method to analyze the psychological impact of child sponsorship programs in Indonesia. Wydick, Glewwe, and Rutledge (2013) collected drawings from children both participating and not participating in the child sponsorship programs asking them to draw a self-portrait of themselves in the rain. Through observing the presence or absence of characteristics within drawings such as the use of bright or dark colors, the study had measured the efficacy of child sponsorship programs in increasing happiness, self-efficacy, and hopefulness. In the use of the cognitive drawing exercise in working with children who had been exposed to violence, a study by Tibbets (1989) was done with children in Northern Ireland finding that the depiction of violence in drawings of children increased with exposure to violence. In Palestine and the West Bank, Magwaza et al (1993) worked with Palestinian children and adolescents asking them to draw their imagined futures in addition to gathering reports from parents on their psychosocial environments. Researchers on an investigative mission to Darfur were working with refugee families collecting evidence of human rights violations. While interviewing the heads of households, children were given paper and coloring materials to keep them occupied. Without prompt, the children began to draw pictures of Mujahideen terrorizing their villages. Five hundred of these drawings were submitted to and accepted by the International Criminal Court as evidence of war crimes taking place in Sudan (Aradau & Hill, 2015). The use of the psychological analysis of children's drawings as a measurement tool has not been widely explored as of yet. This project hopes to highlight the potential of the projective drawing exercise as a tool measuring the highly sensitive topic of psychological disorders within children.

3. Background

3.1. *The Refugee Experience*

Currently, there are more than five million refugees worldwide registered with the UNHCR. Despite comparisons to economic migrants, the situation of refugees who have been forcibly displaced is a distinctive experience with distinctive needs. Rather than driven by economic incentives, refugees make the decision to migrate based on potential threat to life. The primary influence for the forced migration of refugees is extreme violence (Raleigh, 2011).

For the purposes of this research project, we examine the case of refugees in Jordan. Bordering the southern region of Syria, Jordan is relatively safe compared to other Middle Eastern countries and has a cultural environment similar to that of Syria's. As well, it is home to several other refugee populations. With ten Palestinian refugee camps, the Palestinian refugee population is at more than two million. Following that, Iraqi, Sudanese, Somali, and other nationalities make up ten percent of the refugee population in Jordan (UNHCR, UNRWA).

In the initial onset of the Syrian civil war, the kingdom of Jordan was welcoming to Syrian refugees. However, social, cultural, and political tensions have increased with native Jordanian citizens blaming refugees as the cause for a worsening economic and resource infrastructure that was already weak prior to crisis. Within Jordan, refugees are subjected to complex laws and policies along with discrimination from the native Jordanians. The case for Jordan presents a unique environment in which to study the refugee experience both within refugee camps and amongst the host population.

3.1.1. *Refugee Camps in Jordan*

The Syrian refugee population within Jordan numbers at around six hundred and fifty thousand. Of this population, one hundred and forty thousand live in one of three Syrian refugee camps, the main one being Zaatari. Opened in mid-2012 in Mafraq and 13 kilometers from the Syrian border, Zaatari holds a population of around eighty thousand Syrian refugees, half of which are children below the ages of twelve. Controlled by the UNHCR and SRAD, there are twelve districts with WASH, health, education, and psychosocial support provided by the UNHCR and other partner humanitarian organizations. Despite the great amount of support provided by these organizations, there are many issues with overcrowding and lack of resources within a limited, restricted area resulting in the need to share facilities, ration out resources, and

a lack of privacy. Additionally, segregation from the host population with physical boundaries intensifies an in-group/out-group mentality exacerbating the already strenuous relations between the refugees and the host population (Mamdani, 1973; Murphy, 1955). Although present with other Syrians with shared experiences, the refugee camp constitutes a temporary environment acting as a reminder of the crisis and that they have had to leave their homes and lives behind.

3.1.2. Reintegration into Non-Camp Communities in Jordan

Within Jordan, outside of the refugee camps, five hundred thousand Syrian refugees reside in non-camp communities within urban, peri-urban, and rural environments amongst the host population. Compared to the refugee camps, Syrian refugees are faced with having to integrate into the host population rather than cohabitate with a population with a shared history and experience. With reintegration into the non-camp environment, there is not as wide an availability of health and educational facilities, and employment opportunities. Support and provision of resources and services from humanitarian refugee-assistance organizations is uncertain. Work opportunities are available but subject to the possibility of exploitation due to laws regarding refugees. Refugees in non-camp communities are also subject to more discrimination from the native population. However, the movement outside of the refugee camp provides exposure to a more permanent home environment.

3.1.3. Resettlement into Europe or US

Besides the possibility of reintegration into the host country, another possible scenario is resettlement into another country much farther away. Compared to the refugee camps and reintegration, resettlement presents a new dynamic to the forced migration model for refugees. The refugee migrates towards a country much more foreign to their own presenting greater risk and uncertainty. Compared to the host country with nearby borders, the society, culture, and politics in the potential country of resettlement may either result in a net gain or loss. The decision-making process, however, remains the same in that the main incentive of the refugee is to escape the initial threat of life and to regain lost social and economic status.

3.1.4. Remain or Return Home

In some cases, a refugee household may, contrary to what would be deemed the rational decision, make the decision to stay preferring to reside in their home country

despite having to risk living under dangerous conditions rather than leave their homes and face great uncertainty and unfamiliar conditions.

4. Methodology

4.1. *Psychological Analysis of Children's Drawings*

In measuring the likelihood of anxiety, depression, and posttraumatic stress disorder (PTSD) in Syrian refugee children, the assessment tool to be utilized is the psychological analysis of children's human figure and free form drawings. This method was chosen as a non-invasive and unbiased measurement tool for dealing with a "double vulnerable" population, being both refugees and children. In performing quantitative analysis on human figure drawings (HFDs) and free form drawings (FFDs), characteristics within drawings from the literature on the psychological analysis of drawings found to empirically correlate with symptoms of anxiety, depression, and PTSD within individuals were gathered. In determining the drawing indicators to be utilized, much effort was made to identify drawing indicators that would be more applicable to the same socio-cultural context faced by Syrian refugee children, being in a forcibly displaced population, having experienced exposure to conflict, and from regions in the Middle East.

Based on the review of the literature on the psychological analysis of human figure and free form drawings, the drawing indicators of interest were trimmed down to eighteen indicators correlating with symptoms of anxiety, depression, and PTSD to varying degrees. Out of these indicators, nine were categorized as indicators of anxiety, nine were categorized as indicators for depression, and seven were categorized as indicators for PTSD. All drawing indicators were chosen before the analysis of the drawings. After analysis began, no drawing characteristics were added, removed, or modified.

In previous research utilizing this method of measurement, the projective drawing exercise has been supplemented with interviews with a psychologist or having the participant complete a survey. For the purposes of this research project, however, this was logistically difficult due to security issues, and resource and time constraints. Taking into consideration the complex nature of these psychological disorders, it is important to note that the presence or absence of drawing indicators shouldn't be regarded as the presence or absence of anxiety, depression, or PTSD. It is for this reason that the outcome variables of interest are not a measurement of actual anxiety,

depression, and PTSD in refugee children. Rather, the outcome variables of interest are that of the likelihood of anxiety, depression, or PTSD in refugee children based on indicators within drawings.

4.2. Projective Drawing Exercise

The drawing exercise was implemented as follows. Permission for the child to participate in the drawing exercise was requested from the parent, guardian, or host organization. After permission was granted, participants were provided with a box of twenty-four coloring pencils, one drawing pencil, and two sheets of paper. Participants were then asked to perform two tasks. First, the participant was instructed to “Draw a picture of yourself.” Second, the participant was instructed to “Draw a picture of whatever you feel like.” From the parent, guardian, host organization, or participants themselves, the following basic socioeconomic and familial information was gathered: age, gender, city of origin in Syria, date of arrival in Jordan, father’s occupation in Syria, family size, number of brothers, and number of sisters. In conducting the drawing exercises, the following stipulations were important to make clear to those facilitating and interacting with the children. All drawings were to be done by the child and the child alone. All children were to perform the drawing exercise free from distraction and criticism. No prompt or suggestion was to be given on how or what to draw. The decision to draw was up to the child. After all the drawings and information were completed and collected, the exercise is concluded.

Generally, the drawing exercise would last between fifteen to thirty minutes. If possible, the child was given permission to draw in an area where they felt most comfortable in. Due to necessity and convenience, in some cases, the drawings were collected through in-house visits with between one to six children participating at a time. Most of the drawings were collected from visits to schools and community centers with groups of around twenty to forty children drawing together. In these cases, much care was taken to ensure that children were making their own drawings and not copying or being influenced by their seatmates. In a few cases, some children would decide to do only the first drawing. In others, children would decide not to take part in the drawing exercise. There was some concern to the accuracy of the background information collected. Some children were not able to recall their father’s occupation or when they had arrived in Jordan.

4.3. Target Population

The drawing exercise was conducted over the course of three months throughout Jordan. The target sample population of interest consisted of Syrian refugee children between the ages of five and twelve who have sought refuge in Jordan. Syrian refugee children were reached out to through the assistance of the UNHCR and other partner humanitarian organizations working with refugees within Jordan. For the control population, we worked with Syrian refugee children situated in one of the twelve districts within Zaatari refugee camp. For the treatment population, we worked with Syrian refugee children situated outside of Zaatari refugee camp in non-camp communities around Jordan. Human figure and free form drawings from nearly two thousand children were collected. Excluding drawings that were unusable for analysis and with much missing information, the collection of drawings was trimmed down to drawings from 1,231 Syrian refugee children.

4.3.1. Zaatari Refugee Camp

From within Zaatari refugee camp, drawings from 707 Syrian refugee children were collected. Drawing exercises were conducted within UNHCR registration areas and in schools and centers across all of the districts except for District 7. Access to these different districts was facilitated through several different refugee assistance organizations within Zaatari providing different levels of health, education, and psychosocial support and services to refugee children. It is important to note that teachers and psychologists in Zaatari have commented that there are a considerable number of refugee children who make the decision not to attend schools. These children, according to teachers and psychologists, are more likely to have significant emotional and psychological problems.

4.3.2. Non-Camp Communities in Jordan

From non-camp communities in Jordan, drawings from 524 Syrian refugee children were collected. Drawing exercises were conducted through one-on-one sessions and within community centers in the cities of Amman, Irbid, Zarqa, Wadi Al-Seer, Ramtha, Sweileh, Mafraq, and Jerash. Across these different cities, refugee children are exposed to different urban, peri-urban, and rural environments with varying presence of other refugees, and availability of support and services. Access to these community centers was facilitated through several different refugee assistance organizations and one-on-one household visits. Currently, there are “double-shift” programs being implemented within public schools that native Jordanian children

attend. Attempts were made to collect drawings from both refugee children and native Jordanian children attending these schools, but this was not possible due to the schools being on summer break.

5. Data Analysis

5.1. *Likelihood of Anxiety, Depression, and Posttraumatic Stress Disorder*

In generating the outcome variables of interest, likelihood of anxiety, depression, and PTSD, drawings were coded solely based on drawing indicators previously selected without knowledge of the background of the participants, or whether or not they were from a refugee camp or reintegrated into non-camp communities. In coding each of the drawings, each drawing indicator was coded as a dummy variable: a code of 1 if the characteristic is present in the drawing and a code of 0 if the characteristic is absent in the drawing. Likelihood of anxiety consisted of nine indicators. Likelihood of depression consisted of nine indicators. Likelihood of PTSD consisted of seven indicators. Utilizing the Anderson index, dimensionality reduction was performed to weight drawing indicators higher or lower depending on covariance with other drawing indicators.

It should be noted that the average likelihood of anxiety, depression, and PTSD is observed to be lower for cases of reintegration into non-camp communities than for within the refugee camps. This finding on the averages, however, is prior to any performed estimations. Another important note is that the drawing indicators were found to not be highly correlated with one another. This is of particular relevance because it shows that the presence or absence of one drawing indicator would not occur in tandem with another drawing indicator overstating the outcome variables of interest.

5.2. *Exposure to Conflict*

In generating the variable measuring exposure to conflict, data from the Syrian Revolution Martyr database, accepted by other research conducted on conflict as a reliable measure of battle-related deaths in Syria, was utilized. The database provides a measure of the number of battle-related deaths that have occurred within a governorate in Syria from 2011 to 2016. With this data along with the information on date of arrival and city of origin collected from respondents, a variable is generated tallying up the total number of battle-related deaths that were to have occurred within a respondent's governorate of origin prior to the respondent's departure from Syria into Jordan. This value is then logged, normalized, and set as a dummy variable of 1 if the value is greater than 0. From this, we generate our variable for Exposure to Conflict.

5.3. *Summary Statistics*

Across the respondents, age, from five to twelve, and gender, male or female, had a relatively normal distribution. For year of arrival, between 2011 and 2016, there was a relatively normal distribution with a majority of respondents having arrived in the year 2013. For family size, there was a relatively normal distribution with a majority of respondents having a family size of six. For father's occupation, responses were classified as Unemployed, Agriculture, Blue-Collar, or White-Collar. A majority of respondents had fathers whose occupations were in the blue-collar industry, which was expected. Of particular concern is that a majority of respondents were from the Daraa governorate. This was expected as well due to Daraa being only thirteen kilometers north of the border of Jordan and more easily accessible. In dealing with this problem, the city of origin variable was used to generate dummy variables indicating whether or not the respondent's city of origin was urban or rural, and whether or not the respondent's city of origin had a small, medium, or large population. Of the respondents, 707 were in the control group situated in Zaatari refugee camp and 524 were in the treatment group reintegrated in non-camp communities within Jordan. Of interesting note is that within refugee camps, there were a larger percentage of children who had fathers who worked in the white-collar industry than outside of refugee camps. This is counterintuitive to previous concerns that the child being from a wealthier family may cause self selection into the treatment of reintegrating into non-camp communities. Besides that, there was generally a very similar distribution across all variables with good overlap between children within refugee camps and children in non-camp communities.

5.4. *OLS Regression Analysis*

In analyzing the impact of exposure to conflict and reintegration on the likelihood of anxiety, depression, and PTSD, we run three sets of OLS regressions. In the first set, we include our control variables and Exposure to Conflict. In the second set, we include our control variables and Reintegration. In the third set, we include our control variables and both Exposure to Conflict and Reintegration. The control variables added are age, gender, whether or not the child's city of origin was an urban or rural area, whether or not the father worked in the agriculture, blue-collar, or white-collar industry, number of family members, whether or not the child's city of origin had a small, medium, or large population, and the number of years spent in Jordan. In all

estimations, age and gender were found to be significant predictors for likelihood of anxiety, depression, and PTSD. For age, the greater the age is the lesser the likelihood of anxiety, depression, and PTSD. For gender, males were found to have greater likelihood of anxiety, depression, and PTSD.

5.4.1. *Impact of Exposure to Conflict*

$$Anxiety_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} + \varepsilon_i$$

$$Depression_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} + \varepsilon_i$$

$$PTSD_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} + \varepsilon_i$$

In the first set of OLS regressions, we include all the control variables with exposure to conflict as the treatment. We find that exposure to conflict has a significant effect on PTSD increasing likelihood by 0.136 standard deviation points with no significant effect on anxiety and depression. In addition, the father having worked in the white-collar industry decreases the likelihood of PTSD by 0.277 standard deviation points. The father having worked in the blue-collar industry was found to significantly decrease the likelihood of depression. The child being from a city with a medium-sized population was found to significantly increase the likelihood of depression.

5.4.2. *Impact of Reintegration*

$$Anxiety_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + Reintegration_{11} + \varepsilon_i$$

$$Depression_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + Reintegration_{11} + \varepsilon_i$$

$$PTSD_i = \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + Reintegration_{11} + \varepsilon_i$$

In the second set of OLS regressions, we include all the control variables with reintegration as the treatment. We find that reintegration has a significant effect on all outcome variables of interest with likelihood of anxiety, depression, and PTSD decreasing by 0.112, 0.166, and 0.098 standard deviation points respectively. As with the previous estimations, the father having worked in the white collar industry decreases the likelihood of PTSD by 0.278 standard deviation points. The child having been from a city with an urban setting significantly decreased all outcome variables of interest. As with the previous estimation with Exposure to Conflict as the treatment, the father having worked in the blue collar industry was found to significantly decrease

the likelihood of depression and the child being from a city with a medium-sized population was found to significantly increase the likelihood of depression.

5.4.3. *Impact of Reintegration and Exposure to Conflict*

$$\begin{aligned} Anxiety_i = & \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i \\ & + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} \\ & + Reintegration_{12} + \varepsilon_i \end{aligned}$$

$$\begin{aligned} Depression_i = & \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i \\ & + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} \\ & + Reintegration_{12} + \varepsilon_i \end{aligned}$$

$$\begin{aligned} PTSD_i = & \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \beta_3 Urban_i + \beta_4 Agriculture_i + \beta_5 BlueCollar_i + \beta_6 WhiteCollar_i + \beta_7 FamilySize_i \\ & + \beta_8 MediumPopulation_i + \beta_9 LargePopulation_i + \beta_{10} YearsinJordan + ExposuretoConflict_{11} \\ & + Reintegration_{12} + \varepsilon_i \end{aligned}$$

In the third set of OLS regressions, we include all the control variables with both exposure to conflict and reintegration as the treatment. As with the previous estimations, the father having worked in the white collar industry decreases the likelihood of PTSD by 0.140 standard deviation points. As with the previous estimations, the likelihood of depression is found to significantly decrease with the child being from a city with an urban setting and with a father having worked in the blue collar industry, and increase with the child being from a city with a medium-sized population. We find that reintegration has a significant effect on both likelihood of anxiety and depression decreasing it by 0.111 and 0.167 standard deviation points significantly. For exposure to conflict, there is no significant effect on both likelihood of anxiety and depression. The effect of reintegration on the likelihood of PTSD is a decrease of 0.087 standard deviation points but it is not significant. The effect of exposure to conflict on the likelihood of PTSD is a significant increase of 0.122 standard deviation points. Running an F-test for the treatment variables of reintegration and exposure to conflict, we find that both of these variables are jointly significant.

5.4.4. *Impact of Years Spent in Jordan*

Additional to the previously run regressions, we run OLS regressions separating refugee children into three groups, those who have been in Jordan for less than three years, those who have been in Jordan for exactly three years, and those who have been in Jordan for more than three years. By observing these three different groups, we analyze how these dynamics change over time. 157 refugee children had been in Jordan for less than three years, 888 refugee children had been in Jordan for exactly three years, and 186 refugee children had been in Jordan for more than three years.

5.4.4.1. *Less than three years in Jordan*

In this set of estimations, we run our previous OLS regressions for the subset of refugee children who have been in Jordan for less than three years. The father having worked in the agriculture industry significantly decreased the likelihood of anxiety and depression, but not PTSD, in all estimations. The father having worked in the white-collar industry significantly decreased the likelihood of all outcome variables in all estimations. Reintegration was found to have a significant effect in decreasing only the likelihood of anxiety. Exposure to conflict was found to have a significant effect in increasing the likelihood of PTSD.

5.4.4.2. Exactly three years in Jordan

In this set of estimations, we run our previous OLS regressions for the subset of refugee children who have been in Jordan for exactly three years. Contrary to the previous set of estimations, the father having worked in the agriculture industry significantly increased the likelihood of anxiety. The child being from an urban area significantly decreased the likelihood of anxiety. The father having worked in the blue-collar industry significantly decreased the likelihood of depression. The child being from a city with a medium population size increased the likelihood of PTSD. Of interesting note is that in these set of estimations, females were found to have significantly decreased likelihood for all outcome variables in all estimations. Reintegration was found to have a significant effect in decreased only the likelihood of depression. The significance of exposure to conflict was observed to have decreased in this set of estimations.

5.4.4.3. More than three years in Jordan

In this set of estimations, we run our previous OLS regressions for the subset of refugee children who have been in Jordan for more than three years. As with the previous set of estimations, the child being from an urban area significantly decreased the likelihood of anxiety, in addition to likelihood of PTSD. Both the father having worked in agriculture and the white-collar industry were found to significantly decrease the likelihood of PTSD. As with the previous estimations, females had significantly decreased likelihood for all outcome variables in all estimations. As observed with the previous set of estimations, the significance of reintegration and exposure to conflict decreased even more in this set of estimations.

5.5. Matching Estimations

In addition to OLS regression analysis, we utilize matching estimations. In

measuring the impact of reintegration into non-camp communities in Jordan, refugee children within Zaatari refugee camp will be compared with refugee children with similar socioeconomic and familial backgrounds except living in non-camp communities within Jordan. For the matching covariates, we match on age, gender, whether or not the child's city of origin was an urban or rural area, whether or not the father worked in the agriculture, blue collar, or white collar industry, number of family members, whether or not the child's city of origin had a small, medium, or large population, and the number of years spent in Jordan. For the treatment variable, we utilize exposure to conflict and reintegration into non-camp communities.

5.5.1. Covariate Matching

5.5.1.1. Exposure to Conflict

For our covariate matching estimations, we match refugee children on the matching covariates with the treatment being exposure to conflict. Running covariate matching estimations from one to five neighbors, we find significant impacts for all our outcome variables of interest, likelihood of anxiety, depression, and PTSD, at varying levels of neighbors. However, only the outcome variable of likelihood of PTSD is found to be robust having significance at all five levels of neighbors.

5.5.1.2. Reintegration

In addition to running estimations for the effect of exposure to conflict, we match refugee children on the matching covariates with the treatment being reintegration into non-camp communities. Running covariate matching estimations from one to five neighbors, we find significant impacts for all our outcome variables of interest with likelihood of anxiety, depression, and PTSD decreasing with reintegration into non-camp communities.

5.5.2. Propensity Score Matching

5.5.2.1. Exposure to Conflict

For our propensity score matching estimations, we utilize the same matching covariates with the treatment of exposure to conflict. Although the degree of significance is not as high as with covariate matching, it is important to note that all estimations show that likelihood of anxiety, depression, and PTSD increases with the treatment of exposure to conflict

5.5.2.2. Reintegration

We run the same propensity score matching estimations with the treatment of

reintegration. As with before, although the degrees of significance are varying it is important to note that all estimations show that likelihood of anxiety, depression, and PTSD decreases with the treatment of reintegration into non-camp communities.

5.6. Robustness Checks

For our robustness checks, we perform treatment effect matching estimations using the Nearest Neighbor Matching method, the Stratification method, and Radius Matching method. Additionally, we run Bootstrap Estimations, Oster Bounds and Rosenbaum Bounds tests.

5.6.1. Treatment Effects

In all cases, the Average Treatment on the Treated effects of reintegration on the likelihood of anxiety, depression, and posttraumatic stress disorder shows decreasing likelihood of anxiety, depression, and posttraumatic likelihood with reintegration at varying degrees of significance. This supports the findings on the mean likelihood of anxiety, depression, and posttraumatic stress disorder being lower for respondents who have been reintegrated. Although not significant, the effect is shown to be in the same direction as our findings with OLS regressions and matching estimations.

5.6.2. Bootstrap Estimations

In testing the impact of reintegration on the impacts caused by exposure to conflict, we run bootstrap estimations performing random sampling with replacement. However, the results from the bootstrap estimations do not show that our findings are robust.

5.6.3. Oster Bounds

Running an Oster Bounds test, we find that for all outcome variables of interest, likelihood of anxiety, depression, posttraumatic stress disorder, the delta variable is a negative value. This indicates that the inclusion of additional control variables into our model may increase the effect of the treatment variable. This finding indicates that our mean result is more robust to endogeneity.

5.6.4. Rosenbaum Bounds

To assess how sensitive the estimated average causal effects are to potential unobserved heterogeneity, Rosenbaum bounds estimations are applied. The results show that the model is highly sensitive to the unobserved covariates. Although not conclusive in showing that our model is robust, these findings also signal that the inclusion of additional unobserved covariates may just as well further add significance to our model.

6. Summary & Conclusion

6.1. *Results*

This research project is not without some potential problems. The ability to live within non-camp communities is most likely attributed to Syrian families having the availability of wealth and social networks creating potential selection bias. However, we find that within the refugee camps, there is a greater percentage of refugee children with fathers who have worked in the white-collar industry counterintuitive to that logic. Additionally, a majority of respondents originated from the Daraa governorate due to its close proximity to Jordan. We hope to address these issues through the inclusion of the urban/rural and population size variables, and through covariate matching. In obtaining our sample population, schools both within Zaatari refugee camp and outside were reached out to. Children with higher levels of anxiety, depression, and posttraumatic stress disorder may make the decision not to attend school or even to opt out of the drawing exercise thus disallowing us to capture that effect. Also, the assessment of this research project rests on the strength of diagnostic drawing exercises as a measurement tool for psychological impacts.

To sum up, the main findings indicate that, on average, the likelihood of anxiety, depression, and PTSD decreases for refugee children with reintegration into non-camp communities. For refugee children who have been exposed to conflict, the likelihood of PTSD increases. One-third of the PTSD generated by exposure to conflict is mitigated by reintegration. Although our results are not conclusive, our robustness checks show that the reintegration should generally decrease the likelihood of all our outcome variables of interest. The Oster bounds and Rosenbaum bounds test show that our model is highly sensitive to unobservable covariates but does not invalidate our model. Just as the addition of other covariates may decrease significance, they may also increase significance. Our findings show that over time, the impact of exposure to conflict on the likelihood of PTSD loses significance over time. This effect shows that with time spent in reintegration and with psychosocial interventions, the likelihood of PTSD within refugee children decreases over time.

6.2. *Policy Implications*

For likelihood of anxiety and depression, we were unable to find any significant difference. This is somewhat suspected as within Zaatari refugee camp there is much psychosocial support provided to refugee children. However, for posttraumatic stress

disorder, although psychosocial support can be provided within the Zaatari refugee camp, child respondents are faced with a constant reminder that they are living within a temporary environment. Though the population within the refugee camp is made up of common neighbors with a shared experience, this population may not act as a strong support group as they are potential victims of trauma. Regardless it can be concluded that reintegration generally has a mitigating psychological impact for Syrian refugee children and significant impact on decreasing posttraumatic stress disorder.

6.3. Future Research

This research project was conducted in non-camp communities in Jordan and in Zaatari refugee camp where refugee children receive much psychosocial support. However, suggestions from teachers and psychologists was given to look into Azraq camp where there are no needs assessments conducted or much health, education, and psychosocial support provided. In continuing this research project, it would be beneficial to look into Azraq refugee camp. As well, this research project compares refugee children within Zaatari refugee camp with refugee children reintegrated into non-camp communities in Jordan. The hope is to continue this research project with Syrian refugee children who have been resettled into cities in the US or Europe. For the case of resettlement, the dynamics are different from those of reintegration. It would be beneficial to compare the results from these cases. Additionally, more work could be done in comparing Syrian refugee children with Syrian children who have not been forcibly displaced or exposed to conflict. This group would constitute as a more proper counterfactual in assessing psychological impacts of the refugee crisis and the mitigating impact of reintegration.

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Table 1: Summary Statistics
Means with Standard Deviations in Parentheses

Matching Variables	Refugee Camp	Reintegrated	Total
Age	8.864 (1.954)	8.628 (2.037)	8.764 (1.992)
Gender (1 if female)	0.607 (0.489)	0.529 (0.499)	0.574 (0.495)
Family Size	7.035 (1.989)	6.908 (1.793)	6.981 (1.909)
Years in Jordan (as of 2016)	3.057 (0.638)	2.948 (0.654)	3.011 (0.647)
Parental Occupation (Agriculture)	0.052 (0.223)	0.034 (0.182)	0.045 (0.207)
Parental Occupation (Blue Collar)	0.525 (0.500)	0.452 (0.498)	0.494 (0.500)
Parental Occupation (White Collar)	0.424 (0.202)	0.023 (0.150)	0.034 (0.182)
Urban/Rural (1 if urban)	0.676 (0.468)	0.643 (0.480)	0.662 (0.473)
Population Size (0 if less than 50,000; 1 if between 50,000 and 1,000,000; 2 if greater than 1,000,000)	0.975 (0.496)	0.905 (0.389)	0.945 (0.455)
Observations	707	524	1,231

Table 2: Likelihood of Anxiety, Depression, and PTSD
Means with Standard Deviations in Parentheses

Outcome Variables	Refugee Camp	Reintegrated	Total
Anxiety	0.020 (1.025)	-0.027 (0.965)	0.000 (1.000)
Depression	0.036 (1.042)	-0.048 (0.940)	0.000 (1.00)
PTSD	0.015 (0.975)	-0.020 (1.033)	0.000 (1.000)
Observations	707	524	1,231

Table 3: OLS Regressions
Means with Standard Deviations in Parentheses

Variables	(1) Anxiety	(2) Depression	(3) PTSD	(4) Anxiety	(5) Depression	(6) PTSD	(7) Anxiety	(8) Depression	(9) PTSD
Reintegration	-	-	-	-0.112** (0.057)	-0.166*** (0.057)	-0.098* (0.057)	-0.111* (0.057)	-0.167*** (0.058)	-0.087 (0.057)
Exposure to Conflict	0.021 (0.073)	0.009 (0.074)	0.136* (0.073)	-	-	-	0.003 (0.073)	-0.018 (0.074)	0.122* (0.074)
Age	-0.083*** (0.015)	-0.084*** (0.015)	-0.069*** (0.014)	-0.084*** (0.015)	-0.086*** (0.015)	-0.072*** (0.014)	-0.084*** (0.015)	-0.087*** (0.015)	-0.070*** (0.014)
Gender (1 if female)	-0.554*** (0.056)	-0.462*** (0.057)	-0.432*** (0.059)	-0.562*** (0.056)	-0.477*** (0.057)	-0.429*** (0.058)	-0.563*** (0.056)	-0.475*** (0.057)	-0.439*** (0.059)
Urban/Rural (1 if urban)	-0.103 (0.071)	-0.121* (0.073)	-0.074 (0.077)	-0.112* (0.064)	-0.125* (0.066)	-0.131* (0.068)	-0.110 (0.071)	-0.133* (0.073)	-0.080 (0.077)
Parental Occupation (Agriculture)	0.114 (0.135)	-0.003 (0.137)	-0.146 (0.124)	0.103 (0.133)	-0.028 (0.134)	-0.117 (0.119)	0.102 (0.135)	-0.022 (0.136)	-0.156 (0.123)
Parental Occupation (Blue Collar)	-0.045 (0.060)	-0.107* (0.062)	-0.084 (0.064)	-0.053 (0.058)	-0.122** (0.059)	-0.067 (0.059)	-0.054 (0.061)	-0.119* (0.062)	-0.090 (0.064)
Parental Occupation (White Collar)	0.003 (0.141)	-0.140 (0.134)	-0.277** (0.116)	-0.018 (0.143)	-0.173 (0.137)	-0.278** (0.115)	-0.018 (0.142)	-0.171 (0.138)	-0.293** (0.116)
Family Size Population Size (50,000 to 1,000,000)	-0.005 (0.015)	-0.002 (0.015)	-0.002 (0.015)	-0.007 (0.014)	-0.004 (0.015)	-0.008 (0.015)	-0.007 (0.015)	-0.005 (0.015)	-0.003 (0.015)
Population Size (Greater than 1,000,000)	0.055 (0.084)	0.145* (0.086)	0.106 (0.081)	0.062 (0.084)	0.154* (0.086)	0.120 (0.081)	0.062 (0.085)	0.155* (0.086)	0.112 (0.081)
Years spent in Jordan	0.139 (0.129)	0.190 (0.136)	0.158 (0.135)	0.123 (0.125)	0.156 (0.134)	0.196 (0.128)	0.121 (0.129)	0.164 (0.137)	0.145 (0.135)
Constant	0.019 (0.048)	-0.046 (0.044)	0.008 (0.046)	0.012 (0.048)	-0.056 (0.045)	0.005 (0.046)	0.012 (0.048)	-0.056 (0.045)	0.003 (0.046)
Constant	1.039*** (0.218)	1.160*** (0.221)	0.750*** (0.210)	1.161*** (0.218)	1.317*** (0.226)	0.977*** (0.220)	1.157*** (0.225)	1.337*** (0.234)	0.842*** (0.214)
Observations	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231
R-squared	0.106	0.088	0.070	0.108	0.094	0.070	0.108	0.094	0.072

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: OLS Regressions (Less than Three Years)
Means with Standard Deviations in Parentheses

Variables	(1) Anxiety	(2) Depression	(3) PTSD	(4) Anxiety	(5) Depression	(6) PTSD	(7) Anxiety	(8) Depression	(9) PTSD
Reintegration	-	-	-	-0.341*	-0.046	-0.198	-0.329*	-0.029	-0.173
				(0.185)	(0.195)	(0.168)	(0.185)	(0.191)	(0.164)
Exposure to Conflict	0.483	0.655**	0.949***	-	-	-	0.453	0.652**	0.932***
	(0.324)	(0.306)	(0.328)				(0.335)	(0.309)	(0.341)
Age	-0.092**	-0.158***	-0.059	-0.104**	-0.175***	-0.084	-0.093*	-0.158***	-0.059
	(0.047)	(0.047)	(0.051)	(0.047)	(0.047)	(0.052)	(0.047)	(0.048)	(0.051)
Gender (1 if female)	-0.150	-0.172	-0.220	-0.157	-0.122	-0.167	-0.194	-0.176	-0.244
	(0.179)	(0.171)	(0.165)	(0.169)	(0.167)	(0.174)	(0.179)	(0.174)	(0.168)
Urban/Rural (1 if urban)	0.135	0.011	0.191	-0.145	-0.140	-0.100	-0.051	-0.005	0.094
	(0.194)	(0.203)	(0.201)	(0.203)	(0.218)	(0.186)	(0.224)	(0.232)	(0.213)
Parental Occupation (Agriculture)	-0.587**	-0.536**	-0.375	-0.498**	-0.523**	-0.323	-0.502**	-0.529**	-0.331
	(0.235)	(0.246)	(0.392)	(0.240)	(0.248)	(0.394)	(0.246)	(0.255)	(0.397)
Parental Occupation (Blue Collar)	-0.366	-0.194	-0.363	-0.269	-0.157	-0.281	-0.290	-0.187	-0.323
	(0.228)	(0.224)	(0.240)	(0.234)	(0.233)	(0.251)	(0.235)	(0.234)	(0.250)
Parental Occupation (White Collar)	-1.237***	-0.690*	-1.127***	-1.306***	-0.748*	-1.222***	-1.268***	-0.693*	-1.144***
	(0.297)	(0.392)	(0.246)	(0.260)	(0.436)	(0.262)	(0.265)	(0.399)	(0.232)
Family Size	0.034	0.063	0.027	0.007	0.041	-0.009	0.022	0.062	0.020
	(0.056)	(0.062)	(0.043)	(0.054)	(0.060)	(0.042)	(0.056)	(0.061)	(0.045)
Population Size (50,000 to 1,000,000)	0.067	0.074	-0.319	0.133	0.115	-0.245	0.108	0.078	-0.298
	(0.233)	(0.182)	(0.246)	(0.240)	(0.195)	(0.256)	(0.237)	(0.186)	(0.248)
Population Size (Greater than 1,000,000)	0.099	0.405	-0.591	0.254	0.564	-0.345	0.147	0.409	-0.566
	(0.487)	(0.512)	(0.413)	(0.475)	(0.504)	(0.387)	(0.491)	(0.517)	(0.413)
Years spent in Jordan	-0.479**	-0.517***	-0.466**	-0.383*	-0.381**	-0.270	-0.477**	-0.517***	-0.465**
	(0.190)	(0.178)	(0.205)	(0.198)	(0.180)	(0.181)	(0.191)	(0.178)	(0.209)
Constant	1.232	1.491**	0.941	1.945***	2.129***	1.968***	1.520*	1.516*	1.093*
	(0.756)	(0.739)	(0.620)	(0.724)	(0.709)	(0.658)	(0.805)	(0.776)	(0.609)
Observations	157	157	157	157	157	157	157	157	157
R-squared	0.114	0.156	0.124	0.121	0.139	0.091	0.130	0.156	0.129

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: OLS Regressions (Exactly Three Years)
Means with Standard Deviations in Parentheses

Variables	(1) Anxiety	(2) Depression	(3) PTSD	(4) Anxiety	(5) Depression	(6) PTSD	(7) Anxiety	(8) Depression	(9) PTSD
Reintegration	-	-	-	-0.020 (0.068)	-0.194*** (0.070)	-0.081 (0.066)	-0.021 (0.069)	-0.194*** (0.071)	-0.065 (0.067)
Exposure to Conflict	0.002 (0.084)	0.043 (0.085)	0.142* (0.085)	-	-	-	-0.002 (0.085)	0.003 (0.086)	0.128 (0.088)
Age	-0.087*** (0.017)	-0.082*** (0.017)	-0.081*** (0.017)	-0.087*** (0.017)	-0.083*** (0.017)	-0.082*** (0.017)	-0.087*** (0.017)	-0.083*** (0.017)	-0.081*** (0.017)
Gender (1 if female)	-0.620*** (0.066)	-0.518*** (0.068)	-0.432*** (0.069)	-0.622*** (0.067)	-0.535*** (0.070)	-0.429*** (0.069)	-0.621*** (0.067)	-0.535*** (0.069)	-0.438*** (0.070)
Urban/Rural (1 if urban)	-0.146* (0.087)	-0.099 (0.091)	-0.046 (0.092)	-0.145* (0.077)	-0.101 (0.082)	-0.104 (0.079)	-0.146* (0.087)	-0.099 (0.091)	-0.046 (0.092)
Parental Occupation (Agriculture)	0.311* (0.173)	0.186 (0.176)	0.082 (0.152)	0.307* (0.172)	0.163 (0.173)	0.120 (0.145)	0.308* (0.174)	0.162 (0.176)	0.074 (0.151)
Parental Occupation (Blue Collar)	-0.027 (0.071)	-0.162** (0.075)	-0.064 (0.075)	-0.030 (0.068)	-0.185*** (0.070)	-0.045 (0.068)	-0.029 (0.072)	-0.185** (0.075)	-0.072 (0.073)
Parental Occupation (White Collar)	0.165 (0.156)	-0.053 (0.155)	-0.152 (0.133)	0.160 (0.157)	-0.094 (0.160)	-0.147 (0.132)	0.161 (0.157)	-0.095 (0.160)	-0.166 (0.133)
Family Size	-0.018 (0.016)	-0.013 (0.016)	-0.009 (0.017)	-0.018 (0.016)	-0.014 (0.016)	-0.013 (0.018)	-0.018 (0.016)	-0.014 (0.016)	-0.009 (0.0174)
Population Size (50,000 to 1,000,000)	0.093 (0.096)	0.167 (0.105)	0.164* (0.090)	0.095 (0.096)	0.182* (0.105)	0.180** (0.090)	0.095 (0.097)	0.182* (0.105)	0.169* (0.090)
Population Size (Greater than 1,000,000)	0.127 (0.141)	0.118 (0.151)	0.192 (0.155)	0.124 (0.135)	0.094 (0.148)	0.240 (0.146)	0.125 (0.141)	0.093 (0.153)	0.183 (0.154)
Years spent in Jordan	-	-	-	-	-	-	-	-	-
Constant	1.259*** (0.201)	1.066*** (0.224)	0.824*** (0.189)	1.272*** (0.199)	1.213*** (0.223)	1.006*** (0.198)	1.275*** (0.203)	1.210*** (0.230)	0.873*** (0.188)
Observations	888	888	888	888	888	888	888	888	888
R-squared	0.140	0.105	0.082	0.140	0.113	0.080	0.140	0.113	0.083

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: OLS Regressions (More than Three Years)
Means with Standard Deviations in Parentheses

Variables	(1) Anxiety	(2) Depression	(3) PTSD	(4) Anxiety	(5) Depression	(6) PTSD	(7) Anxiety	(8) Depression	(9) PTSD
Reintegration	-	-	-	-0.187 (0.156)	-0.05 (0.152)	0.087 (0.183)	-0.189 (0.162)	-0.013 (0.151)	0.104 (0.182)
Exposure to Conflict	-0.030 (0.191)	-0.276 (0.189)	-0.090 (0.186)	-	-	-	0.013 (0.198)	-0.273 (0.189)	-0.122 (0.181)
Age	-0.049 (0.044)	-0.048 (0.042)	-0.030 (0.040)	-0.057 (0.045)	-0.043 (0.041)	-0.02 (0.043)	-0.057 (0.045)	-0.048 (0.042)	-0.026 (0.043)
Gender (1 if female)	-0.531*** (0.144)	-0.375*** (0.139)	-0.591*** (0.145)	-0.530*** (0.144)	-0.387*** (0.139)	-0.597*** (0.145)	-0.531*** (0.144)	-0.375*** (0.139)	-0.591*** (0.145)
Urban/Rural (1 if urban)	-0.199 (0.198)	-0.433*** (0.166)	-0.497* (0.261)	-0.175 (0.192)	-0.322** (0.154)	-0.465* (0.257)	-0.170 (0.198)	-0.431** (0.167)	-0.513** (0.259)
Parental Occupation (Agriculture)	-0.036 (0.271)	-0.032 (0.257)	-0.776*** (0.198)	-0.095 (0.264)	-0.118 (0.241)	-0.778*** (0.176)	-0.099 (0.268)	-0.037 (0.253)	-0.742*** (0.185)
Parental Occupation (Blue Collar)	0.099 (0.164)	0.198 (0.153)	-0.139 (0.190)	0.090 (0.163)	0.170 (0.146)	-0.146 (0.180)	0.089 (0.164)	0.197 (0.152)	-0.133 (0.183)
Parental Occupation (White Collar)	-0.347 (0.290)	-0.321 (0.275)	-0.771** (0.333)	-0.313 (0.278)	-0.328 (0.276)	-0.793** (0.347)	-0.313 (0.279)	-0.319 (0.280)	-0.789** (0.346)
Family Size	0.033 (0.042)	0.006 (0.041)	0.009 (0.043)	0.026 (0.039)	0.024 (0.040)	0.021 (0.042)	0.027 (0.042)	0.005 (0.043)	0.013 (0.045)
Population Size (50,000 to 1,000,000)	-0.167 (0.255)	0.167 (0.243)	0.224 (0.237)	-0.188 (0.254)	0.152 (0.246)	0.230 (0.235)	-0.189 (0.254)	0.166 (0.245)	0.236 (0.233)
Population Size (Greater than 1,000,000)	0.361 (0.397)	0.625 (0.401)	0.665 (0.405)	0.282 (0.392)	0.498 (0.397)	0.657 (0.404)	0.277 (0.395)	0.619 (0.405)	0.711* (0.405)
Years spent in Jordan	0.126 (0.227)	0.007 (0.182)	-0.167 (0.163)	0.143 (0.236)	0.050 (0.195)	-0.159 (0.169)	0.145 (0.233)	0.008 (0.181)	-0.177 (0.159)
Constant	0.212 (1.105)	0.722 (0.937)	1.589* (0.867)	0.328 (1.108)	0.146 (0.959)	1.279 (0.871)	0.301 (1.133)	0.728 (0.956)	1.540* (0.890)
Observations	186	186	186	186	186	186	186	186	186
R-squared	0.106	0.101	0.154	0.113	0.090	0.155	0.113	0.101	0.156

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Covariate and Propensity Score Matching – Reintegration

Variable	Nearest Neighbor Matching			Propensity Score Matching		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Reintegration	-0.094 (0.077)	-0.149** (0.076)	-0.109 (0.069)	-0.027*** (0.098)	-0.048*** (0.095)	-0.020 (0.097)
Observations	1,231	1,231	1,231	1,231	1,231	1,231

Matching on Age, Gender, Urban/Rural, Parental Occupation, Family Size, Population Size, Years spent in Jordan

Table 8: Treatment Effect Matching Estimations - Reintegration

Variable	Nearest Neighbor Method			Stratification Method			Radius Method		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Reintegration	0.246*** (0.092)	-0.329*** (0.091)	-0.149* (0.089)	-0.164*** (0.062)	-0.220*** (0.065)	-0.115* (0.063)	-0.116* (0.071)	-0.161*** (0.071)	-0.080 (0.072)
Treated	524	524	524	524	524	524	459	459	459
Controls	373	373	373	705	705	705	558	558	558

Variable	Regression Adjustment			Inverse-Probability Weights		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Reintegration	-0.099* (0.056)	-0.130** (0.060)	0.153*** (0.057)	-0.181*** (0.061)	-0.110** (0.055)	-0.091 (0.060)

Table 9: Covariate and Propensity Score Matching – Exposure to Conflict

Variable	Nearest Neighbor Matching			Propensity Score Matching		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Exposure to Conflict	0.237*** (0.084)	0.228* (0.090)	0.198** (0.094)	0.002 (0.294)	0.000 (0.303)	0.023 (0.238)
Observations	1,231	1,231	1,231	1,231	1,231	1,231

Matching on Age, Gender, Urban/Rural, Parental Occupation, Family Size, Population Size, Years spent in Jordan

Table 10: Treatment Effect Matching Estimations - Exposure to Conflict

Variable	Nearest Neighbor Method			Stratification Method			Radius Method		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Exposure to Conflict	0.494 (0.303)	0.465 (0.299)	0.340 (0.260)	0.526*** (0.154)	-0.440*** (0.049)	0.338*** (0.097)	0.330 (0.291)	0.316 (0.281)	0.260 (0.248)
Treated	834	834	834	834	834	834	404	404	404
Controls	210	210	210	293	293	293	191	191	191

Variable	Regression Adjustment			Inverse-Probability Weights		
	Anxiety	Depression	PTSD	Anxiety	Depression	PTSD
Exposure to Conflict	0.452*** (0.139)	0.289*** (0.106)	0.286*** (0.099)	0.726*** (0.165)	-0.621*** (0.097)	0.540*** (0.130)

Table 11: Oster Bounds (Reintegration)

Bound Estimate for Anxiety		Bound Estimate for Depression		Bound Estimate for PTSD		
delta	-0.213	-.208		-0.133		
Inputs from Regressions		Inputs from Regressions		Inputs from Regressions		
	Coefficient	R-Squared	Coefficient	R-Squared	Coefficient	R-Squared
Uncontrolled	-0.046	0.001	-0.084	0.002	-0.035	0.000
Controlled	-0.111	0.108	-0.167	0.094	-0.087	0.072

Table 12: Oster Bounds (Exposure to Conflict)

Bound Estimate for Anxiety		Bound Estimate for Depression		Bound Estimate for PTSD		
delta	0.006	-.034		0.144		
Inputs from Regressions		Inputs from Regressions		Inputs from Regressions		
	Coefficient	R-Squared	Coefficient	R-Squared	Coefficient	R-Squared
Uncontrolled	0.049	0.000	0.025	0.000	0.124	0.003
Controlled	0.003	0.108	-0.18	0.094	0.122	0.072

Table 13: Rosenbaum Bounds

Rosenbaum Bounds for Anxiety (N = 341 matched pairs)

Gamma	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.000	0.000	0.449	0.449	0.321	0.589
1.1	0.000	0.000	0.393	0.498	0.258	0.646
1.2	0.000	0.000	0.347	0.556	0.216	0.694
1.3	0.000	0.000	0.305	0.592	0.184	0.741
1.4	0.000	0.000	0.263	0.642	0.131	0.787
1.5	0.000	0.000	0.223	0.678	0.110	0.823
1.6	0.002	0.000	0.205	0.709	0.084	0.872
1.7	0.007	0.000	0.171	0.755	0.043	0.908
1.8	0.020	0.000	0.131	0.784	0.000	0.939
1.9	0.050	0.000	0.110	0.809	-0.018	0.977
2	0.103	0.000	0.0995	0.847	-0.039	1.013

Rosenbaum Bounds for Depression (N = 341 matched pairs)

Gamma	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.000	0.000	0.353	0.353	0.244	0.479
1.1	0.000	0.000	0.309	0.394	0.180	0.497
1.2	0.000	0.000	0.253	0.439	0.111	0.553
1.3	0.000	0.000	0.241	0.485	0.056	0.608
1.4	0.000	0.000	0.186	0.497	0.056	0.678
1.5	0.002	0.000	0.125	0.551	0.000	0.737
1.6	0.008	0.000	0.084	0.564	-0.000	0.761
1.7	0.024	0.000	0.056	0.619	-0.000	0.804
1.8	0.058	0.000	0.056	0.677	-0.000	0.844
1.9	0.118	0.000	0.028	0.710	-0.016	0.850
2	0.207	0.000	0.000	0.749	-0.056	0.890

Rosenbaum Bounds for PTSD (N = 341 matched pairs)

Gamma	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.000	0.000	0.256	0.256	0.063	0.319
1.1	0.000	0.000	0.220	0.294	0.063	0.357
1.2	0.001	0.000	0.118	0.319	0.011	0.388
1.3	0.004	0.000	0.063	0.319	-0.000	0.494
1.4	0.018	0.000	0.063	0.357	-0.000	0.562
1.5	0.057	0.000	0.038	0.375	-0.000	0.576
1.6	0.133	0.000	0.000	0.438	-0.000	0.576
1.7	0.252	0.000	-0.000	0.513	-0.056	0.600
1.8	0.400	0.000	-0.000	0.557	-0.099	0.631
1.9	0.556	0.000	-0.000	0.576	-0.144	0.639
2	0.697	0.000	-0.000	0.576	-0.194	0.694

Table 14: Drawing Indicators for Anxiety, Depression, and PTSD

Drawing Indicator	Anxiety	Depression	PTSD	Sources
<i>Shading of Face or Body</i>	1	1	0	Farokhi and Hashemi (2011), Klepsch & Logie (1982), di Leo (1983), Skybo (2007), Johnson (1971)
<i>Missing Nose or Mouth</i>	1	1	0	Klepsch & Logie (1982), di Leo (1983), Skybo (2007), Dolidze (2013)
<i>Frowning or Crying</i>	1	1	0	Furth (2002)
<i>Drawn in Dark Colors</i>	1	1	0	Wadeson (1971)
<i>Drawn in Single Color</i>	1	1	0	Wadeson (1971)
<i>Poor Figural Integration</i>	1	1	1	Tibbets (2013)
<i>Smiling (Low Anxiety)</i>	-1	0	0	Furth (2002)
<i>Drawn in Light or Cheery Colors</i>	-1	0	0	Wadeson (1971)
<i>Tiny Figure</i>	0	1	1	Skybo (2007), Tibbets (2013)
<i>Faint lines</i>	0	1	0	Farokhi & Hashemi (2011)
<i>Lack of Details</i>	0	0	1	Tibbets (2013)
<i>Primary Traumatizing Effect</i>	0	0	1	Tibbets (2013)
<i>Focus on Symbols or Memories of Trauma</i>	0	0	1	Tibbets (2013)
<i>Lack of Concern with Integrating Background into drawing</i>	0	0	1	(Tibbets, 2013)
<i>Monster Pictures</i>	0	0	1	Tibbets (2013)
<i>Aggressive Action Figures</i>	0	0	1	Magwaza et al. (1993)

Table 15: Correlation Heat Map of Drawing Indicators

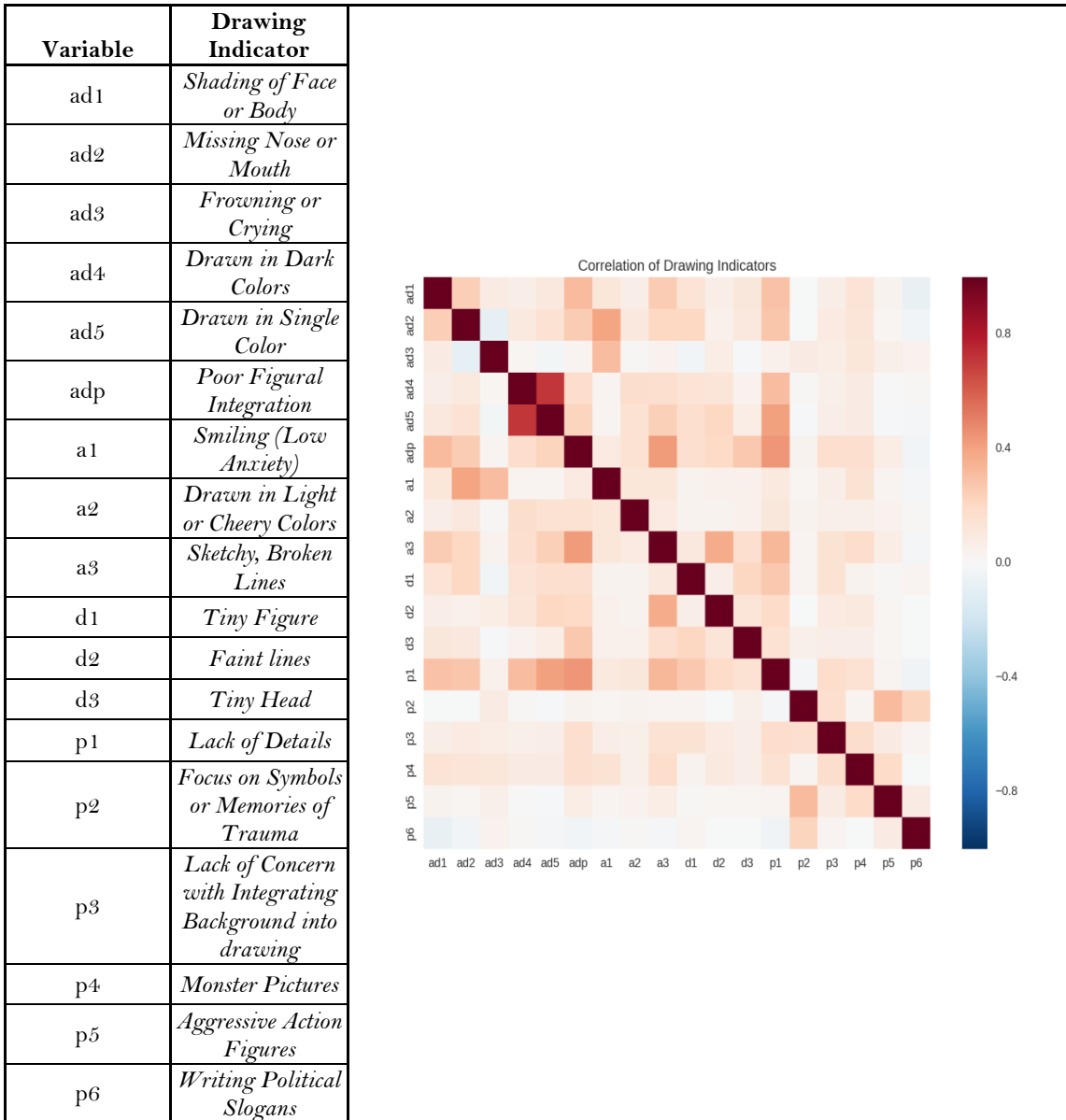


Figure 1: Likelihood of Anxiety, Depression, and PTSD
Refugee Camps vs Reintegration

