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# Risk-taking, Trust, and Traumatization of Refugees in Germany – A Field Experiment<sup>#</sup>

FIRST DRAFT – VERY PRELIMINARY!

Nora El-Bialy<sup>1</sup>, Andreas Nicklisch<sup>2</sup>, and Stefan Voigt<sup>3</sup>

*Abstract:*

*An unprecedented number of refugees from the MENA region has sought refuge in Europe over the last couple of years. They do not only bring with them the – possibly traumatic – flight experience, but also values and norms they have acquired over their childhood and adolescence. Among those, trust and risk-taking are of major importance. We ran a number of experiments among refugees and Germans. According to the experiments, trust and risk aversion are not systematically correlated. In a first step, we ask whether refugees and Germans behave differently and find that risk preferences do not significantly differ between them. However, refugees are less trusting than Germans. In a second step, we seek to identify the factors determining the behavior of refugees and find that attributing a high importance to religion as well as having lived in a tent or container in Germany are associated with lower trust levels. Finally, we analyze the association between various possibly traumatic experiences such as civil war and flight and a trauma index developed by psychiatrists.*

*Key Terms: Values, norms, refugees, traumatic experience, risk preferences, trust, culture.*

*JEL classification: C93, D74, O15, Z12.*

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## **Risk-Taking, Trust, and Trustworthiness of Refugees in Germany – A Field Experiment**

### **1. Introduction**

More than 1.3 million refugees arrived in Europe in 2015 alone. Around one million arrived by sea (UNHCR 2016, 7). Some 50% are from Syria, another 21% from Afghanistan and some 9% from Iraq. Germany has become the country with the largest number of individual asylum applications worldwide (ibid., 3).

The large number of refugees challenges the host nations not only because of their physical needs (e.g., food, housing, medical services), but also because of their values and attitudes (e.g., degree of altruism, risk aversion, trust, honesty) they are bringing with them. In turn, many citizens of European countries but also many European governments have been highly critical of hosting so many refugees. Fears regarding the impossibility to integrate them are frequently stated. Four out of five refugees originate from predominantly Muslim countries, a fact that is often mentioned to flag the likely difficulties in integrating them into the hosting societies.

But in fact, we know very little about the socio-economic values of refugees. Nor do we know whether those values are idiosyncratic to people with foreign background, or the result of the experience of civil war and flight. Finally, we have to ask ourselves – the people from the hosting society – whether and if so how the presence of refugees changes our socio-economic values and norms. To shed some light on these questions, we ran field experiments with refugees in Germany inquiring into two related attitudes, risk preferences and trust. We discuss these two games jointly since they are of crucial importance for the coexistence of refugees and hosting people, and, as such, for the future of our society.

Among experimental economists, some take the position that trusting others is a specific case of risk-taking (e.g. Eckel and Wilson 2004). Alternatively, it has been argued that social preferences play an important role in explaining trusting behavior. Bohnet and Zeckhauser (2004) argue, for instance, that betrayal aversion is an important factor. They are basically saying that people are more willing to take risk when they play against nature than to trust others when they face (an identical) risk of being cheated. Fehr (2009) summarizes and discusses both neurological as well as behavioral evidence indicating that trust is more than risk-taking.

For our analysis we use a number of additional survey instruments in our post-experiment survey. They are introduced to disentangle different aspects of the refugees' exposure to violence in their home country, during their journey, and in the hosting country for their social values. In addition, we administer an abbreviated version of the Harvard Trauma Index (HTI) to operationalize the degree to which refugees are traumatized.

We find that in general, refugees trust significantly less than Germans, both when interacting with other refugees and when interacting with Germans, while there is no notable difference in terms of trustworthiness. Yet, there is an important qualification to this result: higher degrees of traumatization (according to the HTI) are associated with more trust. This rather surprising result corresponds with an accompanying low risk aversion of refugees who scale high on the HTI. Particularly, higher levels of traumatization are associated with more risk loving in the gain domain. In other words, those who are willing to choose a risky lottery instead of a sure gain are those who trust the hosting population the most. In turn, they suffered the highest degree of traumatization.

To the best of our knowledge, this is the first experimental study administered among the wave of refugees that recently arrived in Europe. It constitutes a significant contribution because it is the first study that not only analyzes the consequences of experiencing civil war on behavior but also the various flight experiences. Use of the traumatization index allows us to be more fine-grained than simply comparing subjects who have been "treated" with a civil war with those who have not.

The rest of the paper is structured as follows: In the next section, we briefly survey the various literatures that our paper touches upon. These include the literature dealing with the effects of trust but also the research into the long-run consequences of having experienced violence. This has been on the agenda of psychologists and psychiatrists for decades but has recently also been met with interest by economists. Section 3 briefly summarizes the procedures that refugees arriving in Germany need to go through. Section 4 describes the various ways in which refugees were recruited for our experiment and contains descriptive information on the characteristics of our sample. The experiments themselves and the way they have been played by the refugees are described in Section 5. Results arrived at by using the HTI are discussed in Section 6. Some of the many questions that cannot be dealt with at length in this paper are at least briefly taken up in Section 7. Section 8 concludes.

## 2. Trust and Risk-Taking – Effects and Potential Determinants

Decades ago, Kenneth Arrow (1972, 357) claimed that “virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” By now, there are quite a few studies showing that aggregate measures of trust are closely linked to many important economic variables. Knack and Keefer (1997) find a positive correlation between trust and economic growth. In line with that general finding, they also report significant positive correlations between trust and investment, output, capital, and schooling. Similar results are found by Zak and Knack (2001) for a larger sample. La Porta et al. (1997) show that a higher proportion of trusting people is correlated with lower inflation rates. Guiso et al. (2009) show that bilateral trust between two countries is an important determinant of the trade flows between these two countries. Aghion et al. (2010) show that regulation can be a substitute for trust: if people do not trust each other, the government steps in by passing regulation.

Many studies have shown that trust levels are highly stable.<sup>4</sup> If this is generally true, then we would not expect a marked difference in trust levels between refugees and other, “non-treated” people from the same societies. However, flight is often a life-or-death experience. During the flight, survival might depend on being able to trust a small number of companions. It is, thus, interesting to ask whether the number of people being trusted is rather small, echoing what was called “amoral familism” by Banfield (1958).<sup>5</sup>

Until now, the effect of a – possibly traumatic – flight on trust has not been analyzed. However, there are a number of studies showing that people who have experienced a civil war have been shown to display changes in their trust levels: Cassar et al. (2013) find that local trust levels decreased whereas trust in people living far away increased as a consequence of the civil war in Tajikistan. They explain their finding by pointing out that the civil war in Tajikistan can be described as of the “neighbor against neighbor” type. The inability to easily

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<sup>4</sup> Based on findings in a twin study, it has even been argued that trust is partially heritable (Cesarini et al. 2008).

<sup>5</sup> Interestingly, trust levels have been shown to remain amazingly stable over generations. The offspring of migrants who came to the U.S. two or even three generations ago still display trust levels very similar to those found in the originating country. Since all of the migrants were subject to the same external institutions – namely, those of the U.S. – the internal institutions underlying different trust levels must have remained unchanged over a number of generations. Fernandez (2010) nicely summarizes the relevant literature.

separate friend from foe would make people more cautious - and less trusting with regard to their immediate environment. The (potential) effect of experiencing victimization on both trust and trustworthiness is also studied by Becchetti et al. (2013). They had slum-dwellers in Nairobi who experienced post-election violence in Kenya in 2007 play a simple sequence of games, namely a one-shot trust game, a common pool resource game and a second trust-game. The question was whether experiencing opportunism in the common pool resource game would have an effect on behavior in the second trust game. They find that victimized participants display higher levels of trustworthiness in the first trust game but also more pronounced decreases in trustworthiness in the second game – after having experienced opportunism in the common pool resource game. There is, thus, some evidence that major events such as experiencing a civil war or similar kinds of violence can affect behavior significantly. Here, we ask whether fleeing one's own country and seeking refuge elsewhere can reinforce this effect.

Risk preferences as a potentially important factor for economic development have been discussed and empirically ascertained for a long time (see, e.g., Binswanger 1980). One motivation for estimating them was the conjecture that economic growth in less developed countries could be hindered by high degrees of risk aversion. Empirically, there is, however, only very limited evidence that people in poor countries are more risk averse than people in more highly developed ones (Cardenas and Carpenter 2008). Yet, we have to recall that refugees are unlikely to be a representative sample, but a self-selected group of individuals who were willing to risk their lives to arrive at their current residence. In a sense, they have been rewarded for having taken huge risks which might have a re-enforcing effect. Thus *ex ante*, we have good reasons to expect significant differences in risk preferences between the refugees and our control group.<sup>6</sup>

Recently, some economists have begun to study the effects of important events – such as civil war - on values and norms in general, i.e. not necessarily focusing on trust and risk taking. Some studies rely primarily on surveys, some more recent ones on experiments. Relying on survey data, Bellows and Miguel (2009) find that individuals having experienced more violence during the civil war in Sierra Leone (1991-2002) are more likely to attend community meetings, to join political and community groups and are more likely to vote. Blattman (2009) finds

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<sup>6</sup> It is, however, unclear whether staying – for example in Syria – is the less risky strategy. Interpreted like this, flight might indicate risk aversion. This implies that it is unclear whether people who have fled from a civil war are more or less risk averse than those who have stayed.

evidence for a link between having been an active participant in a civil war (in his case in Uganda) and increased political activity.

Voors et al. (2012) is probably the first field experiment conducted in a post-conflict environment. It asks whether exposure to violence affects preferences and finds that individuals having experienced violence themselves or living in communities that have been violently attacked display more altruistic behavior, are more risk-seeking, and act less patiently. Studying the effects of violence and civil war in both Georgia and Sierra Leone, Bauer et al. (2012) find that greater exposure to war led to an increase in egalitarian preferences with regard to their own group, but not with their out-groups.

Relying on a lab-in-the-field experiment from Nepal, Gilligan et al. (2014) find that having experienced violence is associated with more altruistic giving, more contributions to public goods and a higher willingness to reciprocate. Hartmann and Morse (2015) is of particular interest because it studies to what degree the attitudes of receiving refugees (in their case from Cote d'Ivoire) in a country that has been through a civil war (Liberia) is affected by the civil war experience. Individuals and communities having been exposed to the civil war in Liberia are more positive toward receiving refugees. The economic literature on both the causes as well as the consequences of civil wars are nicely summarized in Blattman and Miguel (2010).

We now turn to briefly describe the procedures that refugees need to go through after arriving in Germany. Particular emphasis is on steps that might cause more traumatization – like insecure or overcrowded reception facilities or lengthy procedures during which refugees do not know with any degree of certainty whether their asylum application will be accepted or not.

### **3. The German Asylum Procedure**

Upon arrival in Germany, refugees are being registered with a state organization (such as the border control, the police or reception centers). After having been registered, asylum seekers are sent to a particular state according to a general formula.<sup>7</sup> In that state, they are provided shelter, food, and basic medical services in a reception facility. Due to the very high number of refugees coming to Germany, these facilities can be made up of containers or can be located in schools, empty home improvement stores and the like. Both the size of the facility

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<sup>7</sup> The so-called „Königsteiner Schlüssel“ which takes into account the size of the state and the average income of its population.

as well as the degree of privacy the refugees enjoy there can potentially affect the degree of traumatization. This is why we include aspects such as “number of persons that a sleeping room (bath room) is shared with” in our post-experiment questionnaire. The asylum application itself is submitted sometime during the stay in the reception facility. Before a personal hearing of the refugee takes place, the Federal Office for Migration and Refugees (which is in charge of the whole process) checks whether the so-called Dublin procedure has been complied with.<sup>8</sup> The federal office decides. Even if the asylum application is turned down, many refugees might still be entitled to remain in Germany, e.g. because their home country is evaluated as “unsafe”. Those whose application has been refused have the possibility to sue against the Federal Office. In case the court holds up the administrative decision, the refugees have the duty to leave the country (BAMF 2016a).

Due to the very high number of refugees that have arrived in particular since 2015, this procedure can take many months. Although the number of incoming refugees peaked in the second half of 2015, the peak in asylum applications was only reached in August 2016 – with more than 80,000 applications – indicating that many people lived in reception centers for more than half a year before they could even submit their asylum application. In November 2016, almost half a million asylum seekers were waiting for the decision regarding their application indicating that many more months can pass before a decision is made (all numbers from BAMF 2016b).

As long as their status has not been decided upon, refugees are not allowed to work. They are offered language as well as so-called integration courses that are to make them familiar with everyday life in Germany. However, due to the limited number of courses offered, it can also take months before refugees can participate in any such course. In sum, the whole procedure can easily take more than a year implying a very high degree of uncertainty for each refugee.

#### **4. Recruitment and Participants**

By now, most experimental economists rely on established routines for recruiting their participants. For a variety of reasons, these routines do not work for

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<sup>8</sup> It stipulates that the asylum request is processed in that EU member state that the refugee reaches first.



recruiting refugees. This is why we describe both the recruitment process as well as some characteristics of our refugees in this section.

Most refugees neither speak English nor German. This is why we produced versions of the experiments as well as the post-experiment questionnaire in Arabic as well as in Farsi. Semantic equivalence was ensured by having a group of native speakers translate the English version into their language, and have a second group translate it back into English. But semantic equivalence is not sufficient as possible sensitivities need to be taken into account.

Sensitivities can be caused by various factors. Islam prohibits Muslims from any kind of gambling. This is why we invited refugees to a number of “tasks” (rather than games).<sup>9</sup> Sensitivities can also be a consequence of the traumatic experiences the refugees made in their home country, during their flight, or even in the reception facilities in Germany.

Recruitment itself is cumbersome because the reception facilities are guarded. Due to the huge influx of refugees in the fall of 2015 and the ensuing organizational problems this caused for the organizations running these facilities, we refrained from asking permission to enter the facilities but tried to convince refugees to join us in one of our labs. One lab located at the Technical University in the South of Hamburg is located right next to a reception facility. But convincing high numbers of refugees to leave their facility proved difficult. To overcome the problem of inviting refugees to our labs and making them come all the way to the university, we released an online version of the experiment in the summer of 2016. It enables refugees to participate via their own smart phones in three different languages. To participate in this type of experiment, refugees need to register with their email address in our data base.<sup>10</sup>

In the fall of 2016, we were granted permission to enter the reception facilities and conduct our experiments inside Hamburg’s largest reception facility in the northern part of town (Schnakenburgallee). To ensure the participation of women, we got in touch with groups in the facilities catering exclusively to women such as sewing groups with moderate success. To reduce the hurdles for participating and

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<sup>9</sup> In an early test, we had invited 24 Syrian refugees to the lab at the University of Hamburg. When learning that they were about to play a number of games and be remunerated depending on how they did in the games, 8 Syrians immediately left pointing at Islam and its prohibition of gambling.

<sup>10</sup> This is considered the first step towards including the refugees in the Hroot system of the University of Hamburg and to move forward towards a systematic structured way for recruiting refugees.

to guarantee the inclusion of less educated refugees who are unfamiliar with computers, a paper and pencil version of the experiment was offered.

In recruiting participants, we had to learn that many refugees showed little interest in participating in something unknown to them, although their opportunity costs seemed close to zero. That participation in the experiment was remunerated with € 13,15 on average did not seem a convincing incentive for many. To further increase the pool of potential participants, a Facebook group “Refugees in Germany – University of Hamburg” was established. Only refugees could become members. Facebook was one main means of communication used by refugees during their flight. They used to receive all information about shelter, boarder controls etc. from their escape agents via Facebook using their smart phones (Witty 2015). The Facebook group allows refugees who are group members and who already participated in our experiments to invite fellow refugees residing in other centers in Germany to join the group and hence broaden our pool of potential participants considerably. Furthermore, refugees have more confidence in joining a group where fellow refugees are already member. The contacts established via Facebook will also enable us to communicate with its members again in due course inquiring into the stability of the relevant values and norms over time.

After having completed the experiment proper, the refugees were asked to fill in a questionnaire consisting of four parts, namely a number of questions regarding their socio-economic background, their flight (duration, route etc.), their current situation (kind of reception facility, knowledge of German language etc.) and an abbreviated version of the Harvard Trauma Questionnaire. This information enables us to identify factors possibly influencing the choices made in the experiment proper.

To get the broadest possible coverage, we pooled the results of all experiments regardless of how they were run (in university labs, via smart phones, paper and pencil, or Facebook). Pooling is likely to make our sample more representative of the entire refugee population. We explicitly control for possible heterogeneity by attaching a dummy variable to every different method of eliciting responses. All in all, we had exactly 300 participants (238 refugees and 62 Germans). Their country of origin is depicted in Table 1. Compared to the overall shares who asked for asylum in Germany, Syrians and Iraqis are overrepresented in our experiments whereas Afghans are underrepresented.

Table1. Refugees Country of Origin

Country Of Origin	Freq.	%
Syria	144	60,50
Iraq	34	14,29
Palestine	16	6,72
Afghanistan	14	5,88
Iran	5	2,10
Egypt	4	1,68
Somalia	2	0,84
Tunisia	2	0,84
Lebanon	1	0,42
Missing Values	16	6,72
Total	238	100

Table 2 summarizes information regarding some socio-demographic aspects as well as some of the experiences the refugees made during their flight. 83% of our participants are male, around one third of the refugees are married. 51.3% declare religion to be “very important” in their lives, while 24.1% percent declare it to be “somewhat important.” On average, refugee participants were 32 days en route, paid some EUR 3,900 and crossed five countries before arriving to Germany.

Table 2. Descriptive Statistics Refugee Participants

Variables	N	Mean	St. Dev.	Min	Max
Age	205	27.839	9.040	14	65
Male	227	0.8119	0.374	0	1
Degrees	224	3.728	1.051	1	6
Married	231	0.329	0.471	0	1
Children	231	0.554	1.311	0	9
Income in COO	199	3.246	1.331	1	5
Cost of Flight	160	3,931	4,204	400	40,000
Days of Flight	167	31.635	51.797	1	500
PTSD score	152	2.071	0.708	1.000	4.000

Almost half of the surveyed refugees declared armed conflict as main reason for having left their home countries (45%), followed by dictatorship (13%). Only 8% indicated bad economic conditions as main reason for their flight (Table 3).<sup>11</sup>

<sup>11</sup> It could be the case that some of these items were answered „strategically“ in the sense that some answers are expected to increase the chance of getting the asylum application granted whereas others might decrease it. The answers should, hence, be interpreted with caution.

Table 3. Reason for Flight

Reason for Leaving	Freq.	Percent
Armed Conflict	108	45.38
Dictatorship	31	13.03
Oppression of minorities	19	7.98
Bad Economic Conditios	19	7.98
Other Reasons	22	9.24
Missing Values	39	6.39
Total	238	100

The overwhelming majority of our participants are Muslim. Within the group of Muslims, more than 87% are Sunnis (Table 4).

Table 4. Religion

Religion	N	%
Muslims	206	86.55
Sunni	169	87.56
Shiite	18	9,32
Other	6	3,11
Christians	7	2,941
Without	7	2,941
Other	13	5.462
Missing Values	5	2.100

## 5. The Experiment

### 5.1. Risk Preferences

To tease out attitudes toward risk, we rely on a simple lottery game. Each participant was asked to make a decision in six rounds. Each round consists of a choice between a certain outcome and a risky one. The risky option entails a lottery between two possible payoffs that materialize with known probabilities (30% and 70% in our case). While we kept the expected payoff of the lottery constant for the first three rounds (and the second three rounds but with a different payoff), the payoff of the certain choice increased in the first three rounds, while it decreased in the final three rounds of the game. In the first round the expected payoff was higher than the certain one, in the second round the two payoffs were identical, and in the third round, the expected payoff was lower than the certain one.

The payoffs in rounds four to six were constructed as subtracting points from a baseline number. While the expected payoffs remained constant over the three rounds again, the certain payoff decreased from round to round. This design was chosen to see whether attitudes toward risk are influenced by the frame within which the choices are represented. It hence takes up the possibility that subjects follow the behavior predicted by Prospect theory as introduced by Kahnemann and Tversky (1979). The first three choices are framed as potential gains, the last three ones as potential losses. This is why we refer to them as the “gain frame” vs. the “loss frame”.

## 5.2. Trust

The game administered to our participants measures subjects' trust in others and their trustworthiness. It is fairly close to the original game as proposed by Berg et al. (1995). There are two players, namely a sender and a receiver. The sender can send any amount of money to the receiver. On its way to the receiver, the amount is tripled. The receiver then decides how much money to keep and how much money to send back – if any. According to conventional economic reasoning, no money should ever be sent because the receiver is expected to keep all the money sent which is anticipated by the sender who, therefore, does not send any money.

Here are the details of how our participants played the game. Both players received an identical initial endowment of 150 points. Subjects assumed both roles, namely sender and receiver, during the course of play. Payment was made on the basis of a randomly chosen round of the game. We constrained the possibility to send points to four possibilities (namely to send 0, 50, 100, and 150). This implies that the receiver has 150, 300, 450, or 600 points after the amount sent has been tripled. We inquired into how much money the receiver would send back in all four situations.<sup>12</sup>

Amounts sent by the sender are referred to as trust in the literature whereas amounts sent back by the receiver are interpreted as trustworthiness. Usually, the trust game is played in a situation, in which both players are completely anonymous. We modified this in our game to learn whether the identity of the interaction partner mattered for both trust and trustworthiness. We used three different versions. In the first one, refugees were playing against other refugees from their own country; in the second one, they were playing against other refugees who originated, however, from a different country; and in the third one,

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<sup>12</sup> It is unclear whether drawing on the strategy method – as done by us – has an important impact on the trust levels elicited. Brandts and Charness (2011) survey the available experiments.

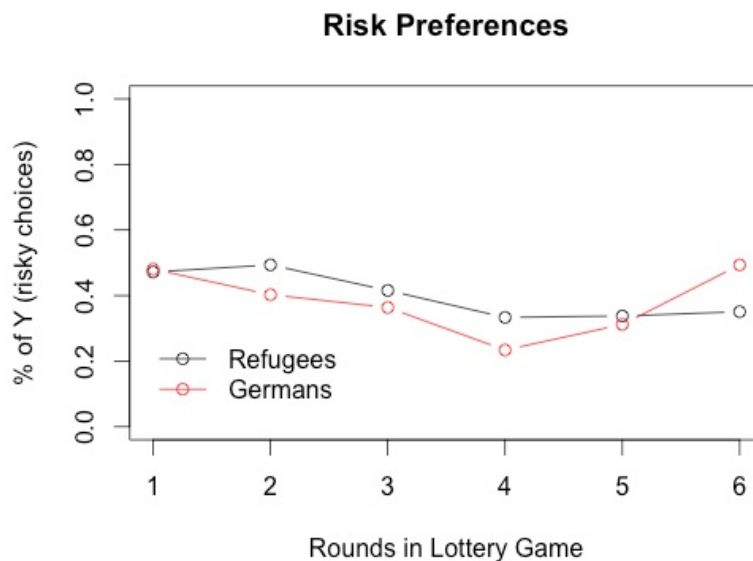
refugees were asked to decide if they were playing the game against Germans. Cassar et al. (2013) find that trust levels among neighboring Tajiks were low compared to trust levels displayed in interactions with more truly anonymous players. Relying on three different co-players allows us to answer the question whether trust levels are dependent on the identity of the interaction partner.

## 5.3 Results

### 5.3.1 Risk Preferences

Since there are six choices between a lottery and a certain payoff that are not always equal in their expected value, the raw number of risky choices can range between a total of 0 – very risk averse – and 6 – very risk seeking. Across all participants, the average number of risky choices is 2.38 (out of 6). The average number of risky choices among all refugees is 2.41; this compares to 2.32 risky choices among the German participants. This difference is not significant.<sup>13</sup>

Analyzing the choices from round to round (and thus going beyond comparing averages) offers additional insights. On average, risk preferences among refugee participants are not significantly different from German participants in the first five rounds played (Figure 3).



<sup>13</sup> Histograms depicting the number of risky choices and controlling whether the choice was made by a refugee or a German can be found in the appendix. Differentiating between the gain and the loss frame does not change the results.

The last round of the game is a choice between a certain payoff of 130 and an expected payoff of 140. Here, the Germans are significantly more risk-seeking than the refugees<sup>14</sup> (Wilcoxon rank sum test,  $p$ -value = 0.021). Notice that German participants' behavior is perfectly in line with the study of Kahneman and Tversky (1979) who predict this behavior based on their prospect theory: people tend to be risk seeking in the loss domain. To the contrary, refugees behave extremely risk averse in round six.

Although overall, refugees and Germans display very similar attitudes toward risk, we are interested in the factors determining the choices made by the refugees. More specifically, we are interested whether their choices can be explained on the basis of some socio-demographic traits, their recent experiences, or a combination of the two. Table 5 displays the main findings. The first finding is that it does matter whether the choices are presented in a win or a loss frame: generally speaking, the variables included in the empirical models are more adequate to explaining behavior in the win than in the loss frame. The model in column 3 contains both socio-demographic as well as flight-related variables. If refugees claim to have left close family members behind in their country of origin, they are significantly more risk averse. This is also true when they claim armed conflict or dictatorship as a reason for their flight. Among the socio-demographic factors, women are significantly more risk-averse than men – a finding in line with the findings of many other experiments – and married people are marginally more risk-seeking.

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<sup>14</sup> Figure 3 shows that a higher proportion of refugees than Germans prefers the lottery in the fourth round. There the choice is between a certain payoff of 150 against an expected payoff of 140. The difference is close to being marginally significant ( $p=0.12$ ).

Table 5. OLS on risk subsample Refugees- Experiences in home country

	Dependent variable. ratio of chosen lotteries			
	Gain domain	Loss domain	Gain domain	Loss domain
	(1)	(2)	(3)	(4)
Lost family members	-0.014 (0.064)	-0.046 (0.060)	-0.008 (0.066)	-0.076 (0.063)
People left behind	-0.017 (0.013)	0.002 (0.012)	-0.031** (0.014)	-0.004 (0.013)
Armed conflict and dictatorship	-0.092* (0.053)	-0.057 (0.049)	-0.106* (0.057)	-0.034 (0.054)
Age			-0.001 (0.003)	0.003 (0.003)
Married			0.116* (0.065)	0.048 (0.062)
Female			-0.150** (0.072)	-0.051 (0.069)
Very or somewhat importance of religion			0.006 (0.066)	-0.046 (0.062)
Constant	0.564*** (0.046)	0.379*** (0.043)	0.619*** (0.123)	0.347*** (0.117)
Observations	230	230	204	204
Adjusted R <sup>2</sup>	0.017	-0.003	0.062	0.006
F Statistic	2.327 (df = 3; 226)	0.760 (df = 3; 226)	2.920 (df = 7; 196)	1.166 (df = 7; 196)

Note:

• p&lt;0.1; \*\* p&lt;0.05; \*\*\* p&lt;0.01

Whereas behavior in the gain frame is significantly associated with socio-demographic traits as well as experiences made by the refugees in their home country, behavior in the loss frame is rather associated with experiences during their flight and in their host country: the more countries they have crossed, the more risk-averse they behave in the loss frame. The opposite association holds up for experiences in their host country: refugees who have stayed in more than one refugee camps and have lived in a container or a tent are more risk seeking in the loss domain (estimates available from authors upon request). All of these results should, however, be interpreted with a grain of salt as the coefficient of determination in all of these models is very low.

### 5.3.2 Trust

Figure 4 shows the histograms of amounts sent by refugees and by Germans. More than half of the refugee participants sent 0 points, while only around 35% of the German participants displayed no trust at all in their interaction partner (Wilcoxon rank sum test, p-value = 0.004915). On the other end of the spectrum, almost a quarter of the German participants sent their entire endowment, only



11% of the refugees did so (Wilcoxon rank sum test,  $p$ -value = 0.01695). Overall, German participants are significantly more trusting than the refugee participants.

Our set up allows us to see whether the identity of the receiver matters for the amount sent by the sender. This does seem to be case (Figure 5). There are significantly more refugees who are willing to send 100 points to a German than are willing to send 100 points to a fellow refugee ( $p=0.049$ ).

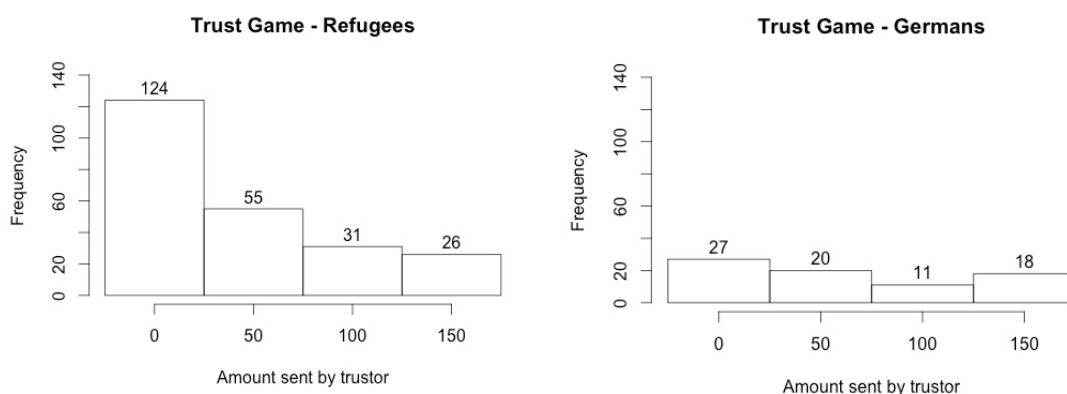


Figure 4: histograms of money sent by both refugees and Germans

As with regard to risk preferences, we are also interested to see if certain socio-demographic traits but also experiences made in connection with the flight have a significant impact on the amount of trust displayed in our game. It turns out that attributing religion a very important or a somewhat important role in life is associated with significantly lower trust levels (Table 6). A previous experiment interested in religiosity as a possible determinant of trust levels had found a negative but rather insignificant relationship between the two (Anderson et al. 2010). In a contribution based on surveys rather than experiments, Berggren and Bjørnskov (2011) deal with the possible reasons for the negative relationship. Refugees who claim to have lived on a low income are trusting more than those belonging to the omitted category (the very low income receivers). No other income group displays trust levels that are significantly different from the very low income receivers. Finally, and regarding the experience in the host country, having lived in a tent or a container is associated with fewer points sent.

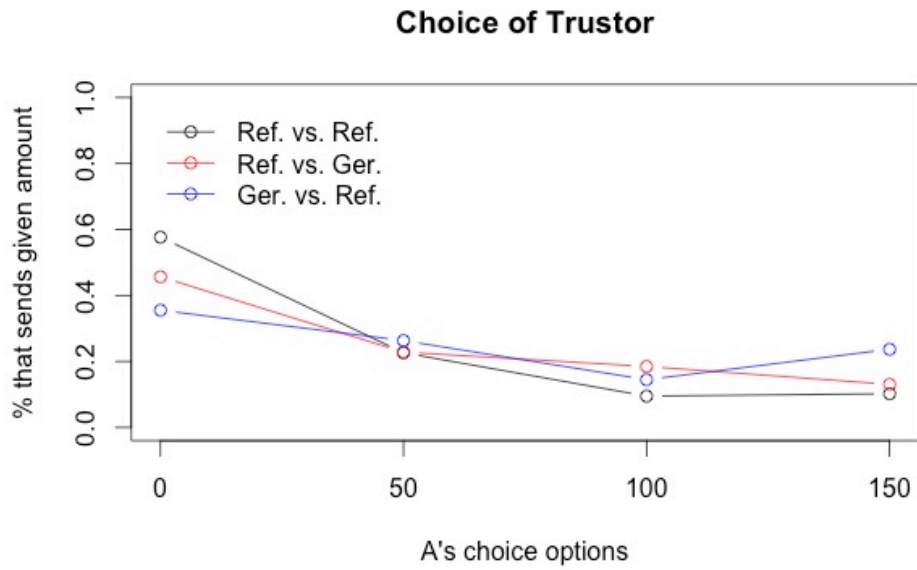


Figure 5: Amount of money sent differentiating identity of receiver

Overall, it seems that trust and risk preferences are two different things. In accordance with earlier results, we have some evidence which we interpret such that traumatization and the experience of violence “at home” influences the willingness of risk taking positively. In turn, trust seems to be a habit orthogonal to this type of traumatization. Here, the flight specific factor of the number of persons left behind seems to be more important.

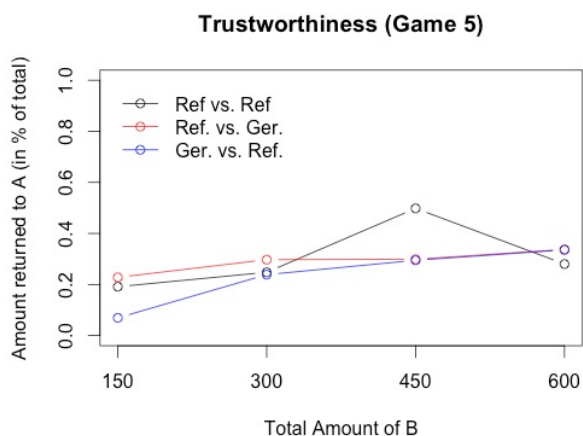
Table 6. OLS on trust subsample Refugees

	Dependent variable.
	Amount of points sent
Low income	0.107* (0.058)
People left behind	-0.011 (0.013)
Living in tent or container	-0.098** (0.046)
Very or Somewhat importance of religion	-0.114** (0.054)
Constant	0.387*** (0.065)
Observations	194
Adjusted R <sup>2</sup>	0.046
F Statistic	3.314** (df = 4; 189)

Note.  $p < 0.1$ ;  $p < 0.05$ ;  $p < 0.01$

### 5.3.3 Trustworthiness

When the ratio of the number of points sent back over the total number of points the second player has at his or her disposition is used as a proxy for trustworthiness and a dummy is used to indicate whether the experiment was run by a German or a refugee, refugees and Germans do not behave differently. But we were also interested to see whether the type of interaction partner had any effect on the amount sent back. Figure 5 summarizes the amounts returned back to the first player. The likelihood that 450 points will be sent back is significantly higher when refugees are interacting with other refugees than when they are interacting with Germans. Inquiring into the factors determining the amount sent back among the refugee subsample, no robust associations are found. The only marginally significant (and robust) relationship is between those who have walked for more than 20 kilometers during their flight and the amount sent back. Refugees with that experience are (marginally) less trustworthy.



...

## 6. Traumatization

Psychiatrists and psychologists have long been concerned with the effects of experiencing violence on a person's values and norms. The Harvard Program in Refugee Trauma has analyzed the effects of experiencing violence on people's mental health for decades. To assess the health needs of refugees systematically, the Harvard Trauma Questionnaire was developed (Mollica et al. 1992). It pays special attention to the specific experiences refugees might have been through but also to the special cross-cultural equivalence of the questionnaire.<sup>15</sup>

The questionnaire has been adapted to refugees from Iraq living in the U.S. by Shoeb et al. (2007). The authors summarize findings from previous studies regarding the effects of violence on populations in the Middle East and report (ibid., 450) that religious faith (among others) appears to provide some protection against being traumatized, that loss of social networks and separation from family members were important factors conducive to higher levels of traumatization and that social factors in the recipient countries, such as language proficiency and fear

<sup>15</sup> The questionnaire has been made available in Vietnamese, Cambodian and Laotian (for the use with Southeast Asian refugees), in Japanese (for the survivors of the Kobe earthquake in 1995), Croatian (for the veterans of the war in the Balkans), and Bosnian (for the civilians who survived the conflict) (HPRT <http://hpert-cambridge.org/screening/harvard-trauma-questionnaire/>).

of repatriation were relevant for recovering from posttraumatic stress disorder (PTSD).<sup>16</sup>

To inquire into the possible association between traumatization – either as a cause for deciding to flee one’s own country or as a consequence of the flight experience – and risk-taking and trust, we asked our participants to respond to the questions of the Harvard Trauma Questionnaire as the last part of the post-experiment questionnaire. The questions inquire into symptoms that people sometimes have after experiencing hurtful or terrifying events. To keep the session reasonably short, we used an abbreviated version of the questionnaire consisting of 16 different items. The questionnaire is documented in the appendix. The entire HTQ is much longer, the questions used here are confined to PTSD. Answers were coded 1 (“not at all”), 2 (“a little”), 3 (“quite a bit”), and 4 (“extremely”) and the average score over all 16 items is called the PTSD score here. People with a PTSD of 2.5 and larger are said to suffer from severe PTSD symptoms.

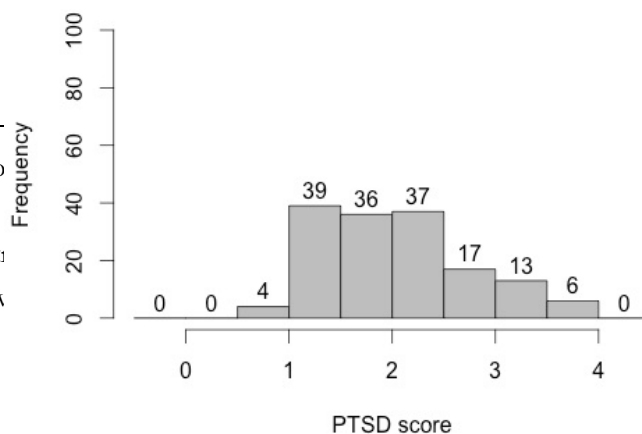
The part of the questionnaire pertaining to PTSD was filled in by 152 participants. Their mean score was 2.071. Of them, 36 (equivalent to 23.7%) showed severe PTSD symptoms.

It is tempting to ask whether the degree of traumatization can be used as a variable explaining behavior. We refrain from doing so here as the PTSD score is a consequence of the experiences made over the last couple of years. In fact, the decision to stay or to go could be influenced by the degree to which people are traumatized. Nevertheless, it is highly interesting to inquire into those factors that let us predict a person’s PTSD score given that he or she is a refugee. Regarding possible associations, we look at four groups, namely (1) basic socio-demographic variables, (2) possibly terrifying experiences in the country of origin, (3) experiences made during the flight, and (4) experiences made in the host country

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**Histogram of PTSD**



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– in our case Germany.

In column 1 of Table 5, we include a number of socio-demographic variables as our baseline. In columns 2a to 4a, we inquire into variables proxying for possibly hurtful experiences made in the country of origin (column 2), during the flight (column 3), and in Germany (column 4). In columns 2b to 4b, we include both the basic socio-demographic information and the specific experiences. We refrain from adding them all into a single model because we would lose many observations.

It turns out that there are three basic socio-demographic variables that are robustly associated with the PTSD score. Older refugees are more likely to suffer from PTSD symptoms than younger ones. *Ceteris paribus*, a 50 year old refugee would score .6 higher than a 20 year old refugee on the PTSD scale (which ranges from 1 to 4). But we should be careful not to misinterpret this result: it could be that *c.p.*, older people need to be more traumatized before they decide to leave their country. As of today, we cannot compare our results obtained from refugees with those obtained from people who decided to stay in their country of origin, there is thus no way to refute this possibility.

Refugees who are married are significantly less likely than unmarried ones to suffer from PTSD symptoms. Interestingly, we find that people who attribute more importance to religion are likely to score higher on the PTSD scale. This result directly contradicts Shoeb et al. (2007) who had found that higher levels of religiosity serve as an antidote against PTSD symptoms. Columns 2b through 4b indicate that our finding is quite robust.

Possibly hurtful experiences in the country of origin are the focus in column 2. Only the loss of family members is significantly associated with the PTSD score. However, as soon as we add our three socio-demographic variables, the association is not significant anymore. Column 3 focuses on hurtful experiences during the flight itself such as having to walk for more than 20 kilometers or losing someone during the flight. None of the variables is significantly correlated with the PTSD score. In column 4, we focus on possibly terrifying experiences in the reception country. People who not only stayed in a camp but had to live in a tent or container (that is the interaction effect between the two) are significantly more likely to suffer from PTSD symptoms. However, this correlation is not robust to the inclusion of the socio-demographic variables either. According to these estimates, it seems that the degree of traumatization is only marginally affected by specific flight experiences.

Table 7. Analysis of PTSD Scores

	(1)	(2.a)	(2.b)	(3.a)	(3.b)	(4.a)	(4.b)
Age	0.020** (0.009)		0.020** (0.009)		0.019** (0.009)		0.021** (0.009)
Married	-0.374** (0.164)		-0.364** (0.166)		-0.319* (0.179)		-0.386** (0.166)
Importance of Religion	0.158** (0.079)		0.150* (0.081)		0.174** (0.086)		0.155* (0.081)
Income Status in COO	0.005 (0.046)		0.003 (0.046)		0.033 (0.050)		0.012 (0.046)
Armed Conflict/Dcitorship		0.098 (0.119)	0.120 (0.140)				
Loss of Family members in COO		0.280** (0.132)	0.175 (0.140)				
Leaving Family members in COO		-0.019 (0.196)	-0.066 (0.241)				
Number of Days of Flight				0.001 (0.001)	0.001 (0.001)		
Walking for more than 20km				0.042 (0.120)	0.190 (0.134)		
Loss in Flight Dummy				-0.009 (0.288)	-0.288 (0.319)		
Stayed in other camp						0.056 (0.150)	0.071 (0.165)
Tent or Container Residence						-0.101 (0.154)	0.023 (0.176)
Stayed in other camp* Tent						0.384* (0.154)	0.155 (0.176)

or Container Residence						(0.216)	(0.248)
Other means of Finance						-0.147	-0.290
						(0.183)	(0.211)
<i>Adjusted R<sup>2</sup></i>	0.04	0.01	0.04	-0.02	0.03	0.03	0.04
<i>Number of Observations</i>	153	197	153	167	139	197	153

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$   
PLACE NOTES!!

## 7. Possible Implications

At the beginning of this paper, we formulated two questions, namely (1) what are the values and norms of the refugees having come to Germany – and are they significantly different from the values and norms held by a control group of people who have lived in Germany for a long time? And (2) have the values and norms of the refugees been affected significantly by any traumatic experience they have been through? In this section, we deal with a third question, namely (3) what are the possible consequences of the influx of refugees for the norm-based social preferences prevalent in Germany until now? This section is definitely more speculative than the previous ones.

In January 2017, in a representative survey administered by infratest dimap and published by German television (ARD 2017), 50% of those surveyed answered that Germany would rather lose from migration generally speaking. The share of those who expect Germany to lose from migration was slightly higher in East than in West Germany (55% vs. 49%). Regarding the influx of refugees, 62% were worried that criminality in Germany would increase, 55% that the influence of Islam on Germany would be too strong, but only 18% that the competition on the labor market would increase. Straightforward economic concerns (increased competition on the labor market) play, hence, only a minor role compared to the concern that the influence of Islam on Germany could become too strong. This can be interpreted as concerns that the values and norms that inform the beliefs and preferences of many refugees might be incompatible with those held by many Germans which might, in turn, lead to frustrated expectations and a higher level of uncertainty regarding the behavior of interacting partners.

Various strands of research have touched upon the question regarding the effects of norms and behavior in the event that the carriers of two partially contradictory norm sets meet and interact. Still, predictions derived from sound theory are very hard to come by. Huntington (1997) famously predicted the “clash of civilizations” arguing that the single most important defining trait of civilizations are religions. He was concerned with a possible clash between the (Christian) West and Islam. He predicted such a clash also on the individual level due to



record numbers of migrants from Muslim-dominated into Western countries. More specifically, he argued that one reason for an increase in clashes between the Islamic and the Western civilization were the “increasing contact and intermingling of Muslims and Westerners” that would “stimulate in each a new sense of their own identity and how it differs from that of the other” (ibid., 211).

Huntington’s worries created a huge echo – including serious critique. Based on data from the World Values Survey, Inglehart and Welzel (2006, 68f.) show that the differences in core values between Christians and Muslims within given societies are relatively small, pointing to the fact that nationality seems a more important determinant of values than religion. Smith et al. (2007, 235f.) make a very similar point.

So how different are the values held by individuals living in predominantly Muslim societies from those living in predominantly Christian societies? One aspect frequently referred to is the degree of individualism vs. collectivism (e.g. Hofstede and Hofstede 2001). If one compares individualism scores of West European countries with those of Muslim countries, there is, indeed, a significant difference. But this does not, of course, prove that it is caused by religion. Inglehart and Welzel (2007, 140) argue that “the aspirations for choice is not peculiar to individualistic Western cultures but exists everywhere.” Thoroughly analyzing available survey evidence, Fish (2002, 2011) dismisses claims that people in Muslim countries would be more prone to be violent, would display lower trust levels or would be more religious than people in non-Muslim countries. The role of women, however, is significantly different from that in Western countries. Fish does, however, not attribute these differences to religion but rather to the more authoritarian political regimes.

What do we know regarding possible changes in the values and norms of a recipient population (as opposed to changes in the values and norms of refugees, or migrants more generally speaking)? All in all, our knowledge is small (Smith et al. 2007, 237). Evolutionary game theory seems a candidate to deliver a sound theoretical footing for a theory inquiring into the likely effects of bearers of two at least partially incompatible value systems interacting with each other. Within that frame, one would search for evolutionary stable strategies, i.e. strategies that are immune against mutant strategies. In their anthropological view on the evolution of norms, Boyd and Richerson (1994) distinguish between three channels through which norms are transmitted, namely (1) an unbiased one (parents to their children), (2) a biased one (other influences), and (3) via natural selection. Here, the second channel seems of primary interest: to what degree is the acceptance of

norms also influenced by the concrete environment in which they are learned? Then again, the basic assumption in these models is that values and norms are constant over time. The evidence presented in this paper sheds doubt on this assumption, however.

In behavioral economics, viscosity is defined as the increased probability of interacting with others of one's own type (see, e.g., Grimm and Mengel 2009). It is straightforward to ask whether trust and trustworthiness are systematically affected by the degree of viscosity among interaction partners. In their experiment, Grimm and Mengel (*ibid.*) find that viscosity leads to an endogenous sorting of cooperators and defectors and persistently higher rights of cooperation among the former. To the best of our knowledge, the effects of viscosity on trust and trustworthiness have not been tested experimentally.

With regard to the relationship between diversity and trust, there is some early experimental evidence by Glaeser et al. (2000) who find that it does not travel well across racial lines. Based on the General Social Survey, Alesina and La Ferrara (2000) show that people living in more racially fragmented cities in the U.S. tend to trust other people less. Asking why the welfare states in the U.S. is so much smaller in the U.S. than in Europe, Alesina et al. (2001) find no evidence supporting the usual suspects such as income inequality and the like. Instead, they find that differences in the degree of racial heterogeneity explain the differences in welfare spending: since altruism beyond one's own type is low, the (more wealthy) white voters do not favor welfare policies that would support that (often black) poor people. If this a generally valid insight, then European welfare states might become smaller – and not larger – as a consequence of increased heterogeneity.

## **8. Conclusions and Possible Next Steps**

In this paper, we present the findings of a trust game and an investment game played both with refugees who have sought refuge in Germany and Germans. Although some significant differences in behavior between refugees and Germans are observed, the similarities in behavior seem to prevail. In their behavior, refugees clearly separate interactions with fellow refugees from interactions with Germans: whereas they put more trust in Germans, their trustworthiness is higher in interactions with other refugees. Inquiring into possible determinants of posttraumatic stress disorder symptoms, we find that socio-demographic factors (such as age, marriage status and being religious) are more closely associated with

PTSD scores than any of the variables having been influenced by the experience of civil war, the flight and the reception in the host country.

A number of follow-up questions – and studies – almost seem to suggest themselves. One is to inquire into the longevity of the changes in the values and norms that have been the consequence of having experienced a civil war or other kinds of violence. Fortunately, the refugees that are members of our Facebook group are very likely to be easily contactable two or three years down the road.

In this paper, we tried to identify the effect of having experienced violence and flight by drawing on the Harvard Trauma Index. Another - “cleaner” - way to identify the effects of these treatments on the values and norms of refugees is to run the same experiments on people who have not been treated by these events. Now, it is impossible to find a Syrian who has not fled the country and has not been subject to the civil war waging there since 2011.

But Syrians who have experienced the civil war and fled their country could have made very different experiences regarding both their flight and in their recipient countries. Early on, many Syrians who now live in Egypt simply bought an air ticket to Cairo and settled there. Then, many Syrians left their country and are now staying in Jordan. Now, their flight was relatively easy but they are not allowed to take up regular jobs in Jordan and stay in huge refugee centers creating all sorts of uncertainties and possibly also causing traumatic experiences. We are planning to administer our experiments to refugee populations in these two countries next.

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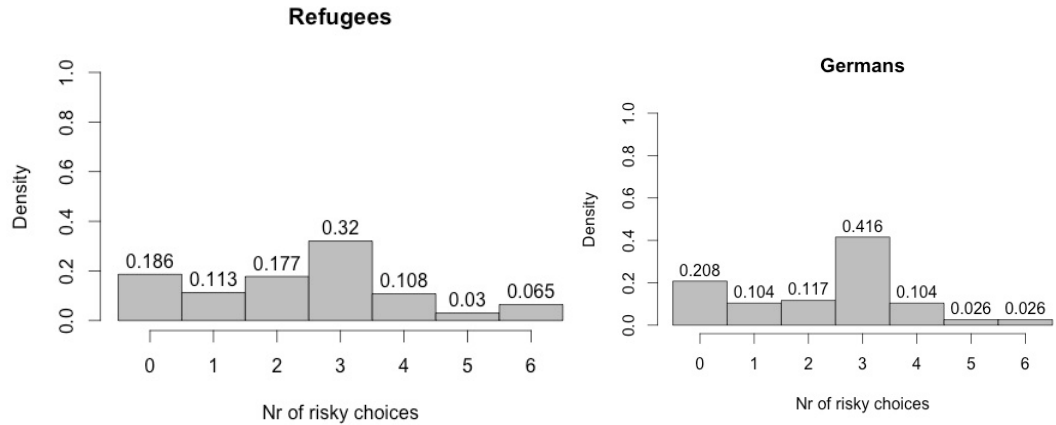
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## Appendix

Histograms depicting the number of risky choices made by (a) refugees and (b) Germans



## PTSD Questionnaire

### PTSD 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.

Please choose the appropriate response for each item:

	Not at all	A little	Quite a bit	Extremely
Recurrent thoughts or memories of the most hurtful or terrifying events.				
Feeling as though the event is happening again.				
Recurrent nightmares.				
Feeling detached or withdrawn from people.				
Unable to feel emotions.				
Feeling jumpy, easily startled.				
Difficulty concentrating.				
Trouble sleeping.				
Feeling on guard.				
Feeling irritable or having outbursts of anger.				

Avoiding activities that remind you of the hurtful event.				
Inability to remember parts of the most hurtful events.				
Less interest in daily activities.				
Feeling as if you don't have a future.				
Avoiding thoughts or feelings associated with the hurtful events.				
Sudden emotional or physical reaction when reminded of the most hurtful events.				