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To cooperate or not to cooperate? An analysis of in-group favoritism among Syrian refugees*

Nora El-Bialy,^ξ Elisa Fraile Aranda,^ξ Andreas Nicklisch,^ψ
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Abstract

Does the experience of civil war promote in-group bias among survivors? We try to answer this question by analyzing cooperation in a prisoner's dilemma game among Syrian refugees in two host countries, Germany and Jordan. We use a between-subjects analysis to test our in-group cooperation hypothesis. We find that Syrians are more likely to cooperate when they are interacting with another Syrian participant than when they are interacting with a German or a Jordanian participant. While Syrian refugees self-report a feeling of relative welcome in the host country, punishment of cooperation norm violations by in-group or out-group members does not differ significantly. We conclude that our results are more likely to be driven by in-group favoritism rather than out-group hostility.

Key words: *Cooperation, in-group favoritism, refugees, experiments*

JEL Classification: *C71, C92, D91*

1 Introduction

The Syrian civil war, which broke out in 2011, is responsible for the largest refugee population from a single conflict in a generation.¹ Four million Syrians have fled their country as a consequence of the war. According to the Jordanian government, more than one million Syrian refugees now reside in Jordan. Of that number, 650,000 are officially registered with the United Nations refugee agency (Krafft et al., 2018). Although geographically more distant, Europe has also received its share of Syrian refugees. Around

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¹ Antonio Guterres, the United Nations high commissioner for refugees. The New York Times, <http://www.nytimes.com/2015/07/09/world/middleeast/number-of-syrian-refugeesclimbs-to-more-than-4-million.html?r=0>.

600,000 Syrian refugees are residing in Germany.² The experiences endured by the refugees because of the war and the ensuing flight are likely to have an impact on their behavior, not only how they interact among themselves, but also impacting interactions with their host community.

The experience of civil war impacts human behavior in any number of ways. These impacts can range from physical injuries to post-traumatic mental disorders that cause depression and high distress levels (Galovski and Lyons, 2004). Some of the documented consequences are quite unexpected (Voors et al., 2012; Gilligan et al., 2014). The experience of civil war does, for instance, affect the propensity to cooperate. Individuals who experience conflict learn to cooperate with one another to survive (Choi and Bowles, 2007; Bauer et al., 2016).

These results, however, need to be considered with caution. There is evidence of strong in-group favoritism among victims of a civil war. In their experiments in Sierra Leone, Cecchi et al. (2016) find that players who have been exposed to more intense war-related violence are more altruistic towards their in-group team players in comparison to their out-group players. In their allocation games (also in Sierra Leone), Bauer et al. (2014) find the same effect. By manipulating the identity of the interaction partner, they demonstrate that victims of conflict-related violence are less selfish and more inequality-averse when interacting with their in-group same village partner. The effect disappears once they deal with partners from another village. In their study on the effects of ethnic violence in postwar Bosnia, Whitt and Wilson (2007) find that although altruism levels indicate in-group favoritism, fairness still generally holds when ethnically diverse members interact with each other.

Provided that group affiliation matters for the behavior of civil war victims, we ask whether Syrian refugees cooperate differently when interacting with in-group and out-group partners. We also introduce a standard peer punishment mechanism to analyze how Syrian refugees react to cooperation norm violations of in-group and out-group interaction partners. To answer these questions, and to determine potential influences on the socio-economic interactions of Syrian refugees in their new host societies, we conducted a series of lab-in-the-field experiments with Syrian refugees in both Germany and Jordan. Successful integration in host societies is more likely when high levels of cooperation exist across all

² <http://data.unhcr.org/syrianrefugees/regional.php>.

groups, rather than high levels of in-group favoritism.

Our findings indicate that Syrian refugees show in-group favoritism (in terms of higher cooperation levels among each other) in comparison to their willingness to cooperate when playing with partners from the host country. The results do not differ between the Syrian refugees in Germany and those in Jordan, implying no specific country bias. Linking the cooperation behavior revealed in the game analysis with a post-experiment questionnaire, we find that refugees show no out-group hostility towards their host societies, but that their behavioral preference is driven by in-group favoritism. We also find that the punishment behavior of the Syrian refugees is not affected by the respective interaction partner in either country. Thus, there is little evidence that the sanctioning of norm violations differs between in-group or out-group members.

Our results contribute to two strands of literature. The first strand focuses on general theories about in-group favoritism among unrelated groups of individuals with an emphasis on cooperation (e.g., [Yamagishi et al., 1999](#); [Balliet et al., 2014](#); [Paetzel and Sausgruber, 2018](#)). The second strand is the scant literature on the behavioral effects of civil war, with a focus on individual identification (how individuals identify themselves within groups) after the conflict (e.g., [Voors et al., 2012](#); [Bauer et al., 2014](#)). To the best of our knowledge, our paper is the first to investigate the notion of cooperation with a refugee population while the civil war from which they escaped is ongoing.

The rest of the paper is organized as follows: The following section introduces our theoretical conjectures. Section 3 describes the experimental design and the experimental setup in both Germany and Jordan. Section 4 presents the results and the last section concludes.

2 Theoretical Conjectures

The way humans cooperate as members of a group is a widely studied phenomenon. According to [Akerlof and Kranton \(2000\)](#), individual economic decisions are strongly influenced by self-identification. They argue that their framework model of identity accounts for psychological concepts such as in-group and out-group classifications. Humans have different perceptions about how to define the group they belong to. Understanding how individuals identify themselves with a group sheds light on how intergroup conflicts arise, and might allow us to prevent the outbreak of such conflicts. Many studies have

shown in-group favoritism to be empirically relevant (Bornstein and Ben-Yossef, 1994; Halevy et al., 2011; Goette et al., 2012b). A recent meta-analysis using cooperation situations to investigate in-group favoritism finds that individuals are generally more willing to incur personal costs to cooperate with an in-group member than with an out-group member (Balliet et al., 2014). A number of theories have been developed to explain not only how individuals identify their in-group, but how in-group members interact with each other (Böhm et al., 2018). Some theories argue that in-group favoritism is equally driven by a strong identification with members of the same group, and aggressive behavior towards the out-group members (Sherif et al., 1961; Yamagishi and Mifune, 2015). Other theories argue that although intergroup discrimination does exist, it does not necessarily imply any hostility towards the out-group members (Yamagishi et al., 1999).

Yamagishi et al. (1999) assume that individuals in groups that are characterized by high levels of trust and cooperation behave pro-socially based on their expectation that their behavior will be reciprocated by members of the in-group, but not of the out-group. Their idea of “bounded generalized reciprocity” suggests that in-group favoritism is due to reciprocal expectations, rather than out-group hostility. Yamagishi and Kiyonari (2000) tested this theory using a simultaneous prisoner’s dilemma game, and find that individuals are more willing to cooperate with an in-group member than an out-group member. They conclude that this finding supports the hypothesis that individuals cooperate because of their expectations of the reciprocal behavior from the other members of their in-group. Once the incentivization of expected reciprocity disappears, no evidence of in-group favoritism is found. Other studies have found similar evidence that in-group love is a more significant driver of behavior than out-group hate (Goette et al., 2006; Yamagishi et al., 2008; Yamagishi and Mifune, 2009; Goette et al., 2012a).

Relying on the framework of Yamagishi et al. (1999), we test whether Syrian refugees identify with each other as a group, and whether this identification affects their behavior. Our experiments are based on a prisoner’s dilemma game. Our game is treated in such a way that the participants know the player with whom they are interacting, either a German (if the host country is Germany) or a Jordanian (if the host country is Jordan), or with another Syrian who is a refugee as well. The simultaneous nature of the cooperation behavior in our prisoner’s dilemma experiment allows us to test the following hypotheses:

Hypothesis 1a: Syrian refugees in Germany cooperate more with other Syrian

refugees than with Germans.

Hypothesis 1b: Syrian refugees in Jordan cooperate more with other Syrian refugees than with Jordanians.

Our analysis accounts for our participants' personal characteristics, including their background in Syria and their current living conditions. It seems natural to assume that Syrian refugees who settled in the unfamiliar German environment will behave much differently than those who settled in Jordan, where there is a similar language, religion and culture. Therefore, assuming that it is easier for Syrian refugees to form an in-group in Germany than in Jordan, we hypothesize:

Hypothesis 2: The extent of in-group favoritism is stronger in Germany than in Jordan.

[El-Bialy et al. \(2020a\)](#) offer evidence that Syrian civil war victims excessively punish when allowed to do so, and that they do not seem to differentiate based on the identity of their opponent.³ It appears that their punishment behavior is a demonstration of power, rather than a sanction or a potential attempt to correct a norm violation. Since we do not expect to find a substantial in-group/out-group or host country difference in the punishment behavior of the Syrian refugees, we hypothesize:

Hypothesis 3: Punishment patterns of Syrian refugees do not differ between in-group and out-group opponents.

3 The Experiment

To test our hypotheses, we employ a between-subjects treatment design. Participants are informed at the beginning of each game that they will be randomly matched with another player. Players that are assigned to the first treatment are informed that they will be playing with a player from the host country in which they are residing: a German player

³ The literature on sanctioning of norm violations refers to punishment of cooperators as perverse ([Cinyabuguma et al., 2006](#)) or antisocial ([Herrmann et al., 2008](#)) punishment in contrast to pro-social punishment of defectors. Potential reasons (e.g., [Gächter and Herrmann, 2009](#)) and consequences (e.g., [Nikiforakis, 2008](#); [Grechenig et al., 2010](#); [Nicklisch et al., 2016](#)) are subject to an extensive academic debate.

for the Syrian players in Germany, and a Jordanian player for the Syrian players in Jordan.⁴ Players assigned to the second treatment are informed that they will be playing with another Syrian refugee. The experimenters inform all participants that they are playing with a randomly chosen person. Specifically, participants are unaware of the treatments, or to which treatment they will be assigned. These procedures allow us to test our hypotheses about variations in cooperation levels between our in-group and out-group members.

The results presented in this paper, and the prisoner’s dilemma game we use to measure cooperation and the response to norm violations, are part of a larger study that involved a variety of games used to analyze different types of behavior.⁵ The games were always played in the same order.

3.1 The Experimental Design

We use a modified version of the prisoner’s dilemma (PD) game (Fehr et al., 2002). The participants are each randomly matched with another participant. The game has two stages. In the first stage, we measure cooperation. Players simultaneously choose either option (X), which is to cooperate, or option (Y), which is to defect. The Nash equilibrium (mutual defection) results in 80 points for each player.

		Player Two	
		X	Y
Player One	X	140,140	50,170
	Y	170,50	80,80

⁴ We also conducted experimental sessions with both Germans and Jordanians where they were assigned to a treatment in which they played with a Syrian refugee.

⁵ The other games measure altruism, risk taking, reciprocity, trust and trustworthiness and honesty (see El-Bialy et al. (2020a, and b) and (2021)).

In the second stage, players are informed of matched players' choice (cooperate or not cooperate), and given two possible choices. The first choice is to not react to the choice made by the other player (leave all points as is). The second option is to take 40 points from the other player, at an own cost of 10 points. Stage 2 employs a within-subject design where players are subjected to two scenarios (one when the other player cooperates and the other when she/he doesn't) and asked to make their choices in both scenarios. The game's instructions are provided in Appendix C of the paper.

3.2 The Experimental Procedures

All experimental sessions were run as lab-in-the-field sessions. Subjects were not informed about the content of the experiment beforehand. To guarantee anonymity, no personal names were used during the experiment. Subjects created their own identification codes. They were informed that their participation is anonymous and that their answers would be used exclusively for academic purposes. The words "experiment" and "game" were avoided during the recruitment process due to sensitivities, the word "tasks" was used instead. The experiment with refugees was run in Arabic (the native language of the participants) in both countries. The average duration of each session was 60 minutes, and consisted of two parts. The first part being the experimental games, and the second part a post-experiment questionnaire. The questionnaire included questions about our participants' socio-demographic status, the flight from Syria and their current living situation.

3.2.1 The Experiments in Germany

Our experimental sessions in Germany were run between January 2017 and July 2018. Using a variety of methods we randomly selected a total of 152 Syrian refugee participants from Hamburg, Stuttgart, and Leipzig. In Hamburg, we randomly recruited participants from German language courses, by using social network channels and with the assistance of Syrian recruiters who distributed flyers among Syrian refugees inviting them to participate in the experiment. In both Stuttgart and Leipzig, only the latter method of recruiting was implemented. Two experimental sessions were run in Hamburg and one session in each of the other two cities.

The experimental sessions in Germany used lab-in-the-field techniques.⁶ The average

⁶ The labs of both the University of Hamburg and the Hamburg University of Technology were used to conduct the experiment in Hamburg. In Stuttgart and Leipzig, the experiments were conducted outside the lab.

payoff received by participants during the experiment was 12 euros. Descriptive statistics of the sample in Germany are presented in Table 1 below.⁷ Our participants were divided into 7 age groups defined by a discrete span of years (see notes, Table 1). The mean age group of our participants was the age group defined as 26 to 36 years. Males make up 75% of our participants, and around 74% of our sample reported having held a regularly paying job at some point in their life. Generally, however, the current economic status of our participants enabled them to satisfy their basic needs, with a small amount of disposable income left over. About 39% of the sample reported being married, with an average number of 1.48 children. Around 84% of our participants reported that they feel welcomed by German society, and over 86% of our sample reported being Sunni Muslims. More statistics concerning the refugees' experiences in the civil war and subsequent flight are presented in Table 5 in Appendix A.

Table 1: Socio-Economic Variables: Syrian refugees in Germany

Statistic	N	Mean	St. Dev.	Min	Max
Age	148	3.061	1.326	1	7
Male	150	0.753	0.433	0	1
Education	150	3.560	1.039	1	6
Paid Job	151	0.742	0.439	0	1
Economic Status	148	3.270	1.249	1	5
Married	151	0.391	0.490	0	1
Number of Children	110	1.482	1.831	0	8

Age is a categorical variable ranging from 1=16-26 years to 7=Above 60 years of age. *Male* is a dummy variable equal to 1 if participant is a male. *Education* is a categorical variable ranging from 1=read and write to 6=post-graduate degree. *Paid Job* is a dummy variable equal 1 if participant ever had a paid job. *Economic status* is a categorical variable referring to the household financial status ranging from 1=very poor to 5=very rich. *Married* is a dummy variable describing the marital status of the participants. *Number of Children* is a discrete variable measuring the participants' number of children.

3.2.2 The Experiments in Jordan

A total of 128 Syrian refugees in Jordan participated in our experiment. The experiment took place in May 2017. Participants were contacted through a local NGO in the Mafraq governorate. The Mafraq governorate hosts the highest number of Syrian

⁷ In our paper, we focus on the behavior of the Syrian participants. Descriptive statistics of our German participants (where the experiments were conducted in German) are presented in Table 7 in Appendix A.

refugees in Jordan, and is located just south of the Syrian-Jordanian border. The sessions were run at the computer lab of the NGO. Participants were recruited in a random manner. They were paid in cash upon finishing the experiment and before leaving the experimental room. The average payoff in Jordan was 12 JDs (equivalent to around 15 euros).

Table 2 provides a summary of socio-demographic characteristics of our sample in Jordan.⁸ On average, our participants were between 26 and 36 years of age. Females constituted the majority of the sample with only 27% of the participants being males. Only 31% of the Jordanian sample reported having had a paid job at some point in their life, and that their economic status allowed them to only satisfy their basic needs. About 70% of our participants were married, with 4.8 being the average number of children. The vast majority (94.5%) of our participants reported that they feel welcomed by the Jordanian society, and all participants reported being Sunni Muslims. More statistics regarding the Syrian refugees' experiences of the civil war and subsequent flight to Jordan are provided in Table 6 in Appendix A.

Table 2: Socio-Economic Variables: Syrian refugees in Jordan

Statistic	N	Mean	St. Dev.	Min	Max
Age	128	3.383	1.262	0	7
Male	126	0.270	0.446	0	1
Education	128	2.469	0.752	0	5
Paid Job	128	0.312	0.465	0	1
Economic Status	127	2.921	1.295	1	5
Married	128	0.703	0.459	0	1
Number of Children	103	4.845	2.865	0	11

Age is a categorical variable ranging from 1=16-26 years to 7=Above 60 years of age. *Male* is a dummy variable equal to 1 if participant is a male. *Education* is a categorical variable ranging from 1=read and write to 6=post-graduate degree. *Paid Job* is a dummy variable equal 1 if participant ever had a paid job. *Economic status* is a categorical variable referring to the household financial status ranging from 1=very poor to 5=very rich. *Married* is a dummy variable describing the marital status of the participants. *Number of Children* is a discrete variable measuring the participants' number of children.

If we compare the means presented in Tables 1 and 2, it is obvious that the socio-economic realities of the two groups are quite different. There are distinct differences between the two groups in terms of gender, education, having a paid job, being married and the number of children. The only similarities are the mean age and religious affiliation,

⁸ Again, we focus on the behavior of Syrian refugees. Descriptive statistics of our Jordanian participants are presented in Table 8 in Appendix A.

and of course, the status of being refugees who have experienced and fled from a bitter civil war.

4 Results

Our analysis of cooperation in the first stage of the modified prisoner's dilemma game supports our hypotheses of in-group favoritism. The results of the game are shown in Figure 1, Panel A for the experiments conducted in Germany and Panel B for the experiments run in Jordan. Out of the 152 Syrian refugee participants in Germany, 70 play with a German and 82 play with another Syrian refugee. Regardless of whether participants played with a German or a Syrian refugee, the average cooperation rates are high. Seventy percent of the Syrian refugees who played against a German chose to cooperate, compared to 85% of those who played against another Syrian. The difference in cooperation levels is statistically significant (Wilcoxon rank-sum test p -value=0.022).⁹ This finding supports Hypothesis 1a that Syrian refugees in Germany are more likely to cooperate when they are interacting with a Syrian player rather than when they are interacting with a German player.

Results of the experiments run in Jordan point in the same direction. Among the Syrian refugees in Jordan, 68 play with a Jordanian and 60 play with another Syrian. Again, participants report unexpectedly high cooperation rates in both treatments. We find that 69% of those playing with a Jordanian choose to cooperate compared to 85% of those playing with another Syrian. Similar to the results obtained in Germany, the difference is statistically significant (Wilcoxon rank-sum test p -value=0.035).¹⁰ In line with Hypothesis 1b, Syrian refugees in Jordan are also more likely to cooperate when they are interacting with a Syrian rather than when they are interacting with a Jordanian.

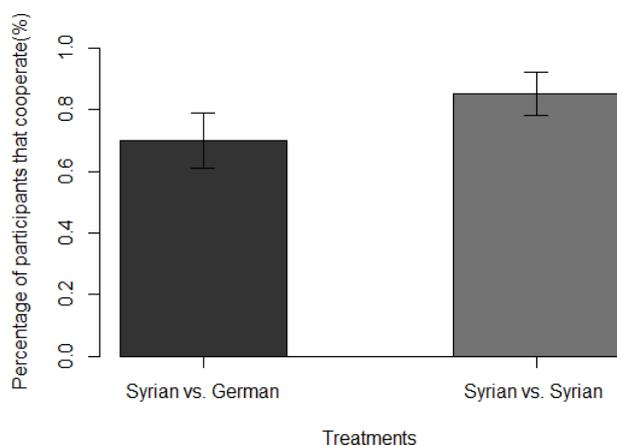
Because these insights are based on a comparison of simple averages, we conduct a multivariate analysis by running probit regressions in order to add a number of socio-demographic controls. Table 3 documents our results for the Syrian refugee participants in Germany. Results show that the effect of the treatment (playing with a German) significantly reduces cooperation in comparison to the baseline of playing with a fellow Syrian refugee. None of the controls is significantly correlated with cooperation. The results hold when we

⁹ In comparison, 77% of our German participants chose to cooperate: 83% cooperate when playing with a Syrian, while 66% cooperate when playing with a German (Wilcoxon rank-sum test p -value=0.090). This suggests an opposite effect to what we find with our Syrian participants.

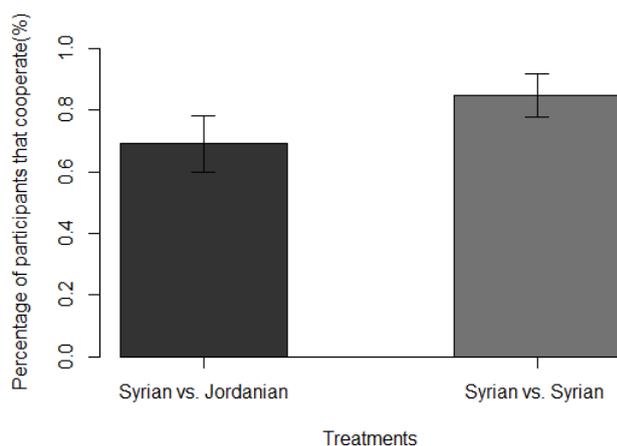
¹⁰ In comparison, 65% of our Jordanian participants chose to cooperate: 70% cooperate when playing with a Syrian while 62% cooperate when playing with a Jordanian (Wilcoxon rank-sum test p -value=0.367).

rely on OLS regressions (Table 9 in Appendix B). They are also robust to additional controls that are used to analyze the cooperation patterns among the Syrian refugees in Germany (Tables 10 and 11 in Appendix B). When we focus on the impact of their self-reported experience of the civil war in Syria on their decision to cooperate, the loss of family members during the course of the war significantly reduces the likelihood to cooperate. The current living conditions of the refugees residing in Germany do not seem to have much of an effect on their willingness to cooperate, still the treatment effect robustly holds.

Figure 1: Cooperation patterns across treatments in Germany and Jordan



(a) Germany



(b) Jordan

Table 3: Cooperation among Syrian refugees in Germany

Dependent variable:

	Cooperation
With German	-0.534** (0.252)
Age	0.158 (0.120)
Male	-0.103 (0.302)
Education	-0.141 (0.122)
Economic Status	-0.098 (0.106)
Married	0.099 (0.300)
Constant	1.507** (0.693)
Observations	143
Log Likelihood	-67.388
Akaike Inf. Crit.	148.776

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

The results in Table 4 show the analogous results for Syrian refugee participants in Jordan. The refugees playing with a Jordanian are also less likely to cooperate than those playing with another Syrian. The coefficient is amazingly close to the one from the experiment in Germany. We also find that older participants are more likely to cooperate than younger participants, whereas males are less likely to cooperate than females. More robustness checks on the consistency of the results are presented in Tables 12-14 in Appendix B. Cooperation is lower when interacting with a non-Syrian regardless of the model used. We find no evidence that the civil war experiences had an effect on the Syrian players' decision to cooperate or not. The current living conditions also do not seem to impact their cooperation choice. However, those who report that they stayed in a camp show a slightly higher likelihood to cooperate than those who did not. This result is, however, found only in Jordan and not in Germany.¹¹ This may imply that the camp conditions in Jordan foster more inter-relations among the Syrian refugees. Camps in Germany by their nature host

¹¹ Around 71% of the refugees' sample in Germany report staying in a camp while 80% of those in Jordan report staying in a camp.

different nationalities unlike those in Jordan that primarily host only Syrians. In summary, we find similar cooperation patterns in both Jordan and Germany. Syrians tend to cooperate more with one another than with members of their host.

Table 4: Cooperation among Syrian refugees in Jordan

<i>Dependent variable:</i>	
	Cooperation
With Jordanian	– 0.621 ** (0.284)
Age	0.315 ** (0.132)
Male	– 0.506 * (0.285)
Education	0.157 (0.181)
Economic Status	0.073 (0.106)
Married	–0.548 (0.349)
Constant	–0.012 (0.674)
Observations	125
Log Likelihood	–60.710
<u>Akaike Inf. Crit.</u>	<u>135.420</u>

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

We also investigate whether the differences that may exist between the Syrians that fled to Germany and those that fled to Jordan impact their behavior. We find no evidence of this effect (Wilcox-test, two-sided, $p = 0.94$), and no support for Hypothesis 2 of a suspected difference between refugees settling in Germany or Jordan. More than half of the Syrian participants, regardless of whether they fled to Germany or Jordan, feel welcomed by the host society, with lower levels in Germany. This supports an interpretation that it is not the out-group effect that is driving their high levels of cooperation, but rather favoritism of the in-group and the expectations they have toward their in-group members.

While in-group favoritism seems to drive the willingness to cooperate, it does not apply to punishment behavior, the second stage of the game. Panels A and B in Figure 2 present four punishment scenarios depending on the choice of the first player as explained

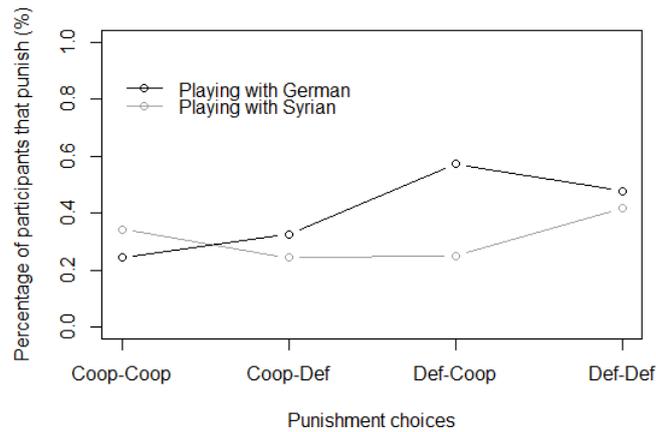
previously.¹² The strategy method allows us to measure the treatment effect with the different punishment scenarios we employ. We find no significant differences in punishment behavior among the Syrian participants when they were playing against a Syrian refugee player in comparison to when they were playing with a German or a Jordanian player. The one exception being Syrian defectors are more likely to punish German cooperators than Syrian cooperators (57% versus 25%, the difference is marginally significant, $p = 0.08$, Wilcoxon-test, two-sided, all other comparisons being insignificant). This may indicate that Syrians are behaving preemptively because they believe Germans are more likely to punish them than their fellow Syrians. Yet, due to the limited number of Syrian defectors, we cannot provide further insights here (regression tables using probit models showing the same results are available in Tables 15-24 in Appendix D).

In line with Hypothesis 3, there is little difference between the punishment of in-group and out-group members (again, our results are limited by the overall low number of defecting Syrians). We find that in Germany 13% of our Syrian participants chose to punish cooperators, while in Jordan around 9% of the Syrian participants display the same behavior. We do not find a specific difference between the punishment behavior in either country. One argument that could explain our findings is that punishment may be not only affected by the mere experience of war itself, but rather by the specific experiences that war survivors witnessed.¹³

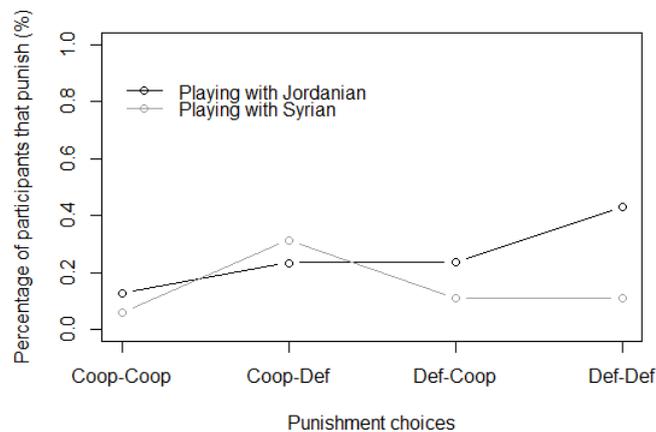
Figure 2: Punishment patterns across treatments in Germany and Jordan

¹² The first scenario Coop-Coop refers to the decision of the player to cooperate given the decision of the first player to cooperate in Stage 1. The second scenario Coop-Def refers to the situation where the player decided to cooperate though he is informed that the first player defected. Def-Coop is the other way around, it refers to the decision of defecting; in other words, reacting to cooperation with no cooperation. Finally, Def-Def is a scenario where both players decide not to cooperate

¹³ This hypothesis is analyzed in (El-Bialy et al., 2020a). Syrians who have higher war-related victimization levels are likely to punish more in an anti-social manner than those who have not faced the same experiences.



(a) Germany



(b) Jordan

5 Conclusion

The literature analyzing behavioral change as a consequence of experiencing a civil war shows that such experience can increase cooperative behavior. In this paper, we ask whether the in-group/out-group status of the interaction partner of the Syrian refugee participants affects their willingness to cooperate. We try to empirically answer that question by recruiting Syrian refugees in Germany and in Jordan and engaging them in a modified prisoner's dilemma game. We apply a between-subjects design to investigate in-group favoritism in cooperation behavior among the participants. We also investigate the punishment behavior of Syrian refugees in both countries. We extend our analysis by collating answers from post-experiment questionnaires that inquire into certain socio-economic variables.

Our results show that Syrian refugees are more likely to cooperate when playing with a Syrian partner than with playing with someone from the host society. This tendency holds in both Germany and Jordan. Syrian refugees expect fellow Syrians (in-group) to be more cooperative than members of the host society (out-group). We do not find any significant differences in the behavior of the Syrian refugees regardless of whether they are living in Germany or Jordan. This suggests it is not the characteristics of the host country or the host population that affects their behavior, but is rather their formation of personal links between each other. However, this effect does not extend beyond cooperation patterns, when punishing interaction partners, the differential treatment does not prevail.

This paper provides new insights regarding the behavioral patterns of Syrian refugees in Germany and Jordan. Given the current state of the civil war in Syria, Syrian refugees are unlikely to go back to Syria any time soon. Therefore, understanding their behavior is highly relevant to the process of integrating them into their host countries. Although most of our participants report being welcomed by the host society, our results show that this feeling of acceptance is not a sufficient motivator to fully integrate into the host country. The participants in our study still favored their fellow Syrians when behaving cooperatively. This suggests the formation of strong social networks between Syrians in their new countries. Our results indicate that it is important to invest in policies that will stimulate the integration of refugees into their host communities, balanced with the need to pay attention to maintaining their existing social networks.

A Descriptive Tables

Table 5: War and flight: Syrian refugees in Germany

Statistic	N	Mean	St. Dev.	Min	Max
Loss of family members	152	0.046	0.210	0	1
Stay in camp	148	0.709	0.456	0	1
Importance of religion	152	2.849	1.581	1	4
Welcome nature of host society	152	0.842	0.366	0	1
Connection to other Syrians	140	2.164	1.116	1	4

Loss of family members is a dummy that is equal to 1 if participants reported losing any of their family members because of the war. Stay in camp is a dummy that is equal to 1 if participants reported staying in a camp in Germany. Importance of religion is a categorical variable ranging from 1=not important at all to 4=very important. Welcome nature is a dummy that is equal to 1 if participants reported that the nature of the host society is welcoming. Connection to other Syrians is a categorical variable ranging from 1=no connection at all to 4=very strong connection.

Table 6: War and flight: Syrian refugees in Jordan

Statistic	N	Mean	St. Dev.	Min	Max
Loss of family members	128	0.414	0.494	0	1
Stay in camp	126	0.802	0.400	0	1
Internal Displacement	128	0.617	0.488	0	1
Importance of religion	122	3.951	0.217	3	4
Welcome nature of host society	128	0.945	0.228	0	1
Connection to other Syrians	128	1.758	1.121	1	4

Loss of family members is a dummy that is equal to 1 if participants reported losing any of their family members because of the war. Stay in camp is a dummy that is equal to 1 if participants reported staying in a camp in Germany. Internal displacement is a dummy variable that is equal to 1 if participants reported that they were internally displaced in Syria before coming to Jordan. Importance of religion is a categorical variable ranging from 1=not important at all to 4=very important. Welcome nature is a dummy that is equal to 1 if participants reported that the nature of the host society is welcoming. Connection to other Syrians is a categorical variable ranging from 1=no connection at all to 4=very strong connection.

Table 7: Socio-economic variables: German participants

Statistic	N	Mean	St. Dev.	Min	Max
Age	88	4.341	1.728	2	7
Male	88	0.557	0.500	0	1
Education	88	4.352	0.959	2	6
Paid_job	88	0.943	0.233	0	1
Economic status	88	3.966	0.809	1	5
Married	88	0.318	0.468	0	1
No.kids	86	0.837	1.039	0	3

Age is a categorical variable ranging from 1=16-26 years to 7=Above 60 years of age. Male is a dummy variable equal to 1 if participant is a male. Education is a categorical variable ranging from 1=read and write to 6=post-graduate degree. Paid Job is a dummy variable equal 1 if participant ever had a paid job. Economic status is a categorical variable referring to the household financial status ranging from 1=very poor to 5=very rich. Married is a dummy variable describing the marital status of the participants. No.kids is a discrete variable measuring the number of kids the participants have.

Table 8: Socio-economic variables: Jordanian participants

Statistic	N	Mean	St. Dev.	Min	Max
Age	60	2.367	0.758	2	5
Male	59	0.356	0.483	0	1
Education	60	4.183	0.748	3	6
Paid Job	60	0.400	0.494	0	1
Economics status	60	3.750	1.083	1	5
Married	59	0.119	0.326	0	1
No. Kids	41	0.732	1.718	0	7

Age is a categorical variable ranging from 1=16-26 years to 7=Above 60 years of age. Male is a dummy variable equal to 1 if participant is a male. Education is a categorical variable ranging from 1=read and write to 6=post-graduate degree. Paid Job is a dummy variable equal 1 if participant ever had a paid job. Economic status is a categorical variable referring to the household financial status ranging from 1=very poor to 5=very rich. Married is a dummy variable describing the marital status of the participants. No.kids is a discrete variable measuring the number of kids the participants have.

B Robustness checks

B.1 Germany

Table 9: Cooperation among Syrian refugees in Germany: OLS regression

<i>Dependent variable:</i>	
	Cooperation
With German	−0.145** (0.068)
Age	0.035 (0.030)
Male	−0.033 (0.080)
Education	−0.037 (0.032)
Economic Status	−0.033 (0.028)
Married	0.021 (0.082)
Constant	1.008*** (0.181)
Observations	143
Adjusted R ²	0.041
Residual Std. Error	0.400 (df = 136) F
Statistic	2.011* (df = 6; 136)

Ordinary least squares regressions. The dependent variable is the cooperation rates among the Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 10: Conditions in Syria and socio-demographics: Syrian refugees in Germany

	<i>Dependent variable:</i>	
	Cooperation	
	(1)	(2)
With German	-0.587** (0.252)	-0.642** (0.278)
Age		0.157 (0.134)
Male		-0.002 (0.321)
Education		-0.121 (0.139)
Economic Status		-0.049 (0.118)
Married		0.068 (0.358)
Armed Conflict	-0.143 (0.257)	-0.0004 (0.281)
Loss of family members	-1.059** (0.530)	-1.125** (0.556)
Cost of flee	0.0001* (0.0001)	0.0001 (0.0001)
Constant	0.844*** (0.296)	0.973 (0.780)
Observations	130	124
Log Likelihood	-64.623	-57.230
Akaike Inf. Crit.	139.246	134.461

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Germany. Column (1) reports the results when controlling for the war conditions in Syria. Column (2) adds the socio-demographic variables to that. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 11: Conditions in host country: Syrian refugees in Germany

	<i>Dependent variable:</i>	
	Cooperation	
	(1)	(2)
With German	-0.599**	-0.572*
	(0.294)	(0.323)
Age		0.069
		(0.174)
Male		-0.226
		(0.399)
Education		-0.149
		(0.149)
Economic Status		-0.052
		(0.131)
Married		0.310
		(0.399)
Stay in Germany	-0.087	-0.084
	(0.581)	(0.607)
Stayed in camp	0.315	0.261
	(0.301)	(0.327)
Welcome society	0.071	0.130
	(0.578)	(0.602)
Connection with other Syrians	0.139	0.008
	(0.153)	(0.167)
Access to public services	-0.415**	-0.602**
	(0.203)	(0.235)
Harassment in host	0.284	0.238
	(0.418)	(0.458)
Medical services	0.187	0.410
	(0.251)	(0.292)
Psychological services	-0.005	0.072
	(0.222)	(0.259)
Constant	0.944	1.690
	(0.867)	(1.417)
Observations	116	109
Log Likelihood	-56.912	-48.047
Akaike Inf. Crit.	133.823	126.094

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Germany. Column (1) reports the results when controlling for the conditions in the host country. Column (2) adds the socio-demographic variables to that. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

B.2 Jordan

Table 12: Cooperation among Syrian refugees in Jordan: OLS regression

<i>Dependent variable:</i>	
Cooperation	
With Jordanian	-0.167** (0.077)
Age	0.087** (0.036)
Male	-0.147* (0.084)
Education	0.051 (0.050)
Economic Status	0.018 (0.030)
Married	-0.140 (0.096)
Constant	0.516*** (0.194)
Observations	125
Adjusted R ²	0.062
Residual Std. Error	0.411 (df = 118)
F Statistic	2.356** (df = 6; 118)

Ordinary least squares regressions. The dependent variable is the cooperation rates among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 13: Conditions before refugee and socio-demographics: Syrian refugees in Jordan

	<i>Dependent variable:</i>	
	Cooperation	
	(1)	(2)
With Jordanian	-0.714** (0.298)	-0.878** (0.366)
Age		0.399** (0.158)
Male		-1.064*** (0.371)
Education		0.038 (0.212)
Economic Status		0.120 (0.131)
Married		-0.515 (0.397)
Armed Conflict	-0.331 (0.598)	-1.089 (0.700)
Internal Displacement in Syria	0.047 (0.290)	0.179 (0.342)
Loss of family members	0.065 (0.284)	0.099 (0.322)
Cost of trip	-0.00000 (0.0002)	-0.0001 (0.0002)
Constant	1.358** (0.643)	1.000 (1.043)
Observations	102	99
Log Likelihood	-54.387	-44.882
Akaike Inf. Crit.	120.774	111.765

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Jordan. Column (1) reports the results when controlling for the war conditions in Syria. Column (2) adds the socio-demographic variables to that. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 14: Conditions in host country: Syrian refugees in Jordan

	<i>Dependent variable:</i>	
	Cooperation	
	(1)	(2)
With Jordanian	-0.800*** (0.297)	-1.002*** (0.351)
Age		0.345** (0.147)
Male		-0.673** (0.316)
Education		0.007 (0.224)
Economic Status		0.108 (0.122)
Married		-0.471 (0.384)
Stay in Jordan	-0.452 (0.360)	-0.554 (0.399)
Family in Jordan	0.007 (0.009)	0.004 (0.010)
Humanitarian finance	0.333 (0.287)	0.122 (0.315)
Stayed in Camp	0.584* (0.329)	0.722* (0.375)
Harassed in Jordan	0.448 (0.529)	1.014 (0.691)
Constant	0.931* (0.556)	0.280 (0.886)
Observations	113	11 1
Log Likelihood	-57.002	-48.988
Akaike Inf. Crit.	128.005	121.976

Probit regressions. The dependent variable is the cooperation rates among the Syrian refugees in Jordan. Column (1) reports the results when controlling for the conditions in the host country. Column (2) adds the socio-demographic variables to that. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

C Game Instructions

Now consider yourself to be in the following situation in which you may collaborate with a (treatment).¹⁵ Hence there are two people interacting.

Here are the rules:

The game has two stages.

In stage 1, each person chooses simultaneously between two options, X and Y. In stage 2, each person chooses simultaneously between two options, Q and P. In stage 1, choosing X leads to 50 points for the choosing person and 90 points for the other; choosing Y yields 80 points for the choosing person and 0 points for the other. Therefore, if both persons choose X, each person earns 140 points, if both persons choose Y, each person earns 80 points. If one person chooses X, but the other Y, the first choosing X earns 50 points, while the one choosing Y earns 170 points.

In stage 2, persons are informed on the option chosen by the other person. Then each person has the opportunity to destroy points of the other person at own cost, or leave them as they are. That is, in stage two you (and the other) can choose either Q implying no punishment for the other person and no cost for you, or P leading to a deduction of 40 points from the other's payoff and a decrease of your income by 10 points.

Have a look at those three examples:

1. You choose X, the other X. You and the other earn 140 points each. You then choose Q, while the other chooses P. 40 points are destroyed from your income and 10 points deducted from the other's income. You end up with 100 points, the other with 130 points.
2. You choose Y, the other Y. You and the other earn 80 points each. You then choose Q, the other chooses Q as well. No points are destroyed nor deducted. You end up with 80 points, the other with 80 points as well.
3. You choose X, the other Y. You earn 50 points and the other earns 170 points. You then choose P, while the other chooses Q. 40 points are destroyed from the other's

¹⁵For the sample used in this paper: Syrians were told that they are playing with another Syrian participant and Jordanians were told they are playing with another Jordanian participant.

income and 10 points deduced from your income. You end up with 40 points, the other with 130 points.

Please look at the following page. On the basis of those examples, please choose how you are going to behave in this situation.

After all participants have completed the questionnaire, we will randomly select you and a Syrian living in Syria and reward you both according to your decisions.

What will you choose in stage 1?

I choose

Please choose only one of the following answers:

- o X (this implies 50 points for me and 90 points for the other)
- o Y (this implies 80 points for me and 0 points for the other)

What will you choose in stage 2?*

*If the other player chooses X (in combination with your decision X in stage 1 this yields 140 point for you and 140 points for the other):

Please choose only one of the following answers:

- o Q (this implies 0 points destruction for the other and 0 points decrease for your income)
- o P (this implies 40 points destruction for the other and 10 points decrease for your income)

What will you choose in stage 2?*

*If the other player chooses Y (in combination with your decision X in stage 1 this yields 50 points for you and 170 points for the other):

Please choose only one of the following answers:

- o Q (this implies 0 points destruction for the other and 0 points decrease for your income)
- o P (this implies 40 points destruction for the other and 10 points decrease for your income)

What will you choose in stage 2?*

*If the other player chooses X (in combination with your decision Y in stage 1 this yields 170 points for you and 50 points for the other):

Please choose only one of the following answers:

Q (this implies 0 points destruction for the other and 0 points decrease for your income)

P (this implies 40 points destruction for the other and 10 points decrease for your income)

What will you choose in stage 2?*

*If the other player chooses Y (in combination with your decision Y in stage 1 this yields 80 points for you and 80 points for the other):

Please choose only one of the following answers:

Q (this implies 0 points destruction for the other and 0 points decrease for your income)

P (this implies 40 points destruction for the other and 10 points decrease for your income)

D Further Regressions

D.1 Germany

Table 15: Punishment among Syrian refugees in Germany

<i>Dependent variable:</i>	
	Coop-Coop
With German	–0.223 (0.263)
Age	–0.194 (0.119)
Male	–0.194 (0.302)
Education	0.010 (0.124)
Economic status	–0.126 (0.114)
Married	0.205 (0.324)
Constant	0.537 (0.734)
Observations	113
Log Likelihood	–64.719
Akaike Inf. Crit.	143.439

Probit regressions. The dependent variable is the punishment levels in the setting (cooperator vs. cooperator) among the Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 16: Punishment among Syrian refugees in Germany

<i>Dependent variable:</i>	
	Coop-Def
With German	0.239 (0.256)
Age	0.005 (0.111)
Male	0.057 (0.303)
Education	0.119 (0.122)
Economic status	0.093 (0.113)
Married	0.104 (0.321)
Constant	-1.477** (0.747)
Observations	113
Log Likelihood	-66.936
<u>Akaike Inf. Crit.</u>	<u>147.871</u>

Probit regressions. The dependent variable is the punishment levels in the setting (cooperator vs. defector) among Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 17: Punishment among Syrian refugees in Germany

<i>Dependent variable:</i>	
	Def-Coop
With German	0.493 (0.565)
Age	0.085 (0.242)
Male	0.548 (0.684)
Education	-0.056 (0.297)
Economic status	0.338* (0.205)
Married	-0.127 (0.641)
Constant	-2.119 <u>(1.383)</u>
Observations	30
Log Likelihood	-18.049
Akaike Inf. Crit.	50.097

Probit regressions. The dependent variable is the punishment levels in the setting (defector vs. cooperator) among the Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 18: Punishment among Syrian refugees in Germany

<i>Dependent variable:</i>	
	Def-Def
With German	–0.144 (0.535)
Age	–0.089 (0.228)
Male	–0.185 (0.617)
Education	0.049 (0.278)
Economic status	0.015 (0.178)
Married	–0.075 (0.579)
Constant	0.187 (1.095)
Observations	30
Log Likelihood	–20.565
Akaike Inf. Crit.	55.129

Probit regressions. The dependent variable is the punishment levels in the setting (defector vs. defector) among The Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 19: Anti-social punishment among Syrian refugees in Germany

<i>Dependent variable:</i>	
Anti-social punishment	
With German	0.134 (0.543)
Age	-0.030 (0.231)
Male	-0.106 (0.638)
Education	-0.064 (0.286)
Economic status	0.008 (0.183)
Married	-0.195 (0.587)
Constant	0.690 (1.120)
Observations	30
Log Likelihood	-19.467
Akaike Inf. Crit.	52.935

Probit regressions. The dependent variable is the anti-social punishment levels among the Syrian refugees in Germany. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

D.2 Jordan

Table 20: Punishment among Syrian refugees in Jordan

<i>Dependent variable:</i>	
	Coop-Coop
With Jordanian	0.567 (0.480)
Age	-0.385 (0.240)
Male	-0.292 (0.615)
Education	-0.207 (0.331)
Economic status	-0.138 (0.165)
Married	-0.635 (0.499)
Constant	0.748 (1.257)
Observations	96
Log Likelihood	-21.161
<u>Akaike Inf. Crit.</u>	<u>56.323</u>

Probit regressions. The dependent variable is the punishment levels in the setting (cooperator vs. cooperator) among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 21: Punishment among Syrian refugees in Jordan

<i>Dependent variable:</i>	
	Coop-Def
With Jordanian	–0.405 (0.313)
Age	–0.430*** (0.156)
Male	0.161 (0.361)
Education	–0.091 (0.209)
Economic status	0.015 (0.118)
Married	–0.309 (0.367)
Constant	1.373 (0.844)
Observations	96
Log Likelihood	–48.692
Akaike Inf. Crit.	111.385

Probit regressions. The dependent variable is the punishment levels in the setting (cooperator vs. defector) among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 22: Punishment among Syrian refugees in Jordan

<i>Dependent variable:</i>	
	Def-Coop
With Jordanian	0.499 (0.791)
Age	-0.335 (0.440)
Male	0.451 (0.586)
Education	-0.249 (0.462)
Economic status	-0.096 (0.270)
Married	0.069 (0.821)
Constant	0.372 (1.460)
Observations	29
Log Likelihood	-13.086
Akaike Inf. Crit.	40.172

Probit regressions. The dependent variable is the punishment levels in the setting (defector vs. cooperator) among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 23: Punishment among Syrian refugees in Jordan

<i>Dependent variable:</i>	
	Def-Def
With Jordanian	1.359* (0.748)
Age	-0.570 (0.395)
Male	0.245 (0.586)
Education	0.357 (0.418)
Economic status	-0.099 (0.253)
Married	1.744** (0.863)
Constant	-1.609 (1.304)
Observations	29
Log Likelihood	-14.242
Akaike Inf. Crit.	42.484

Probit regressions. The dependent variable is the punishment levels in the setting (defector vs. defector) among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 24: Anti-social punishment among Syrian refugees in Jordan

<i>Dependent variable:</i>	
Anti-social punishment	
With Jordanian	1.516** (0.746)
Age	-0.438 (0.375)
Male	0.114 (0.561)
Education	0.036 (0.402)
Economic status	-0.143 (0.244)
Married	1.226 (0.808)
Constant	-0.701 (1.243)
Observations	29
Log Likelihood	-15.452
Akaike Inf. Crit.	44.903

Probit regressions. The dependent variable is the anti-social punishment among the Syrian refugees in Jordan. Standard errors are reported in parenthesis. Significance levels: *p < 0.1; **p < 0.05; ***p < 0.01.

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