



Costs, needs, and integration efforts shape helping behavior toward refugees

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Recent political instabilities and conflicts around the world have drastically increased the number of people seeking refuge. The challenges associated with the large number of arriving refugees have revealed a deep divide among the citizens of host countries: one group welcomes refugees, whereas another rejects them. Our research aim is to identify factors that help us understand host citizens' (un)willingness to help refugees. We devise an economic game that captures the basic structural properties of the refugee situation. We use it to investigate both economic and psychological determinants of citizens' prosocial behavior toward refugees. In three controlled laboratory studies, we find that helping refugees becomes less likely when it is individually costly to the citizens. At the same time, helping becomes more likely with the refugees' neediness: helping increases when it prevents a loss rather than generates a gain for the refugees. Moreover, particularly citizens with higher degrees of prosocial orientation are willing to provide help at a personal cost. When refugees have to exert a minimum level of effort to be eligible for support by the citizens, these mandatory "integration efforts" further increase prosocial citizens' willingness to help. Our results underscore that economic factors play a key role in shaping individual refugee helping behavior but also show that psychological factors modulate how individuals respond to them. Moreover, our economic game is a useful complement to correlational survey measures and can be used for pretesting policy measures aimed at promoting prosocial behavior toward refugees.

refugee acceptance | helping behavior | prosociality | economic games

Migration has always been an integral part of human life. Escaping natural and human threats, as well as harsh economic conditions, are the most important motivations of those leaving their home countries (1, 2). Mass migration creates substantial challenges, however, for refugees themselves, but also for the citizens of the host countries where they seek refuge. Recently, Europe started facing its highest refugee influx in contemporary history. In 2015 alone, the European Union received ~1.3 million first-time asylum applicants (3). Given the ongoing political instability and conflicts in, for example, Syria, Afghanistan, or Somalia, and the resulting threats to the citizens of these countries (e.g., poverty, prosecution, torture, and death), refugee inflow will likely continue in the near future. Moreover, climate change and population growth have been suggested as additional drivers of increasing future migration (4).

The challenges associated with the large number of people seeking refuge have caused political polarization among the citizens of the host countries. On the one hand, there has been substantial opposition toward refugees, including increased support for right-wing political parties (5) and nationalistic movements like the "Patriotic Europeans Against the Islamization of the West" or the "Identitarian Movement." This came with mass protests and attacks on asylum-seeker accommodations (6). However, there are movements like "Refugees Welcome," supporting refugee relief both politically and via collective action (7). The stark differences in attitudes and the diametrically opposed reactions to refugees have caused heated

debates, friction, and sometimes conflicts between the opposing groups of citizens in the host countries.

What are the driving forces behind these very different reactions to refugees? Clearly, psychological factors are at play in shaping attitudes and behaviors toward refugees—the stereotypes that people have (8), the (positive or negative) expectations people embrace (9), and the threats they perceive to their cultural and religious values (10, 11). Simultaneously, it matters how people view the refugee situation economically, i.e., from a monetary cost/benefit perspective (12, 13), as refugees participate in the consumption of collective goods (e.g., welfare benefits, accommodation, security) provided by the citizens of the host country (e.g., via taxes). From this perspective, attitudes and behaviors in favor of (vs. against) refugees may be interpreted as the willingness (vs. reluctance) to share collective resources with refugees. Accordingly, helping refugees constitutes costly prosocial behavior, as it increases the welfare of refugees without any (short-term) economic benefits to the helpers.

The intersection between the psychological and the economic perspectives, i.e., how people construe threats and challenges and how they respond to the costs and benefits they perceive, has received little attention in the literature on refugees and migration so far. Previous research mainly focused on the assessment of attitudes toward immigrants in general, and refugees in particular, relying mostly on large-scale survey studies (14–16). Indeed, attitude surveys offer valuable insights into respondents'

Significance

The recent flow of refugees around the world evokes diametrically opposed reactions by the host countries' citizens. Many people are willing to help refugees, whereas many others are not. Yet, the underlying mechanisms that lead to refugee helping versus rejection are not well understood. We use an economic game to investigate how economic and psychological factors shape citizens' helping behavior toward refugees. We find that costs associated with refugee helping are a key determinant of citizens' willingness to do so. It is especially people with a higher degree of prosociality that are willing to bear the personal cost of helping. Emphasizing the neediness of refugees as well as their integration efforts increases the willingness among citizens to provide help.

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similarities and differences regarding their views and motivations in specific social settings (e.g., Europeans' support of refugees based on characteristics such as refugees' education, political orientation, or country of origin; ref. 14). However, attitude measures only allow for detecting correlations and are limited in predicting actual prosocial behavior (17, 18). For example, one important shortcoming is that survey responses are hypothetical and have no actual consequences.

Here, we utilize an economic game that models helping behavior toward refugees. The focus of the game is on the monetary consequences of helping refugees for both the citizens of the host country and the refugees. Naturally, we do not want to suggest that citizens and refugees construe their situation exclusively as an economic question. Instead, we use monetary costs and benefits to model the basic interdependence structure of the refugee situation. This allows us to experimentally manipulate specific properties of the situation, both for citizens (e.g., the degree to which helping refugees is personally costly) and for refugees (e.g., their neediness). Thus, our game provides a valuable tool for understanding which economic and psychological factors are causally involved in shaping prosocial helping behavior toward refugees and for pretesting policy measures aimed at increasing refugee acceptance and helping.

Experimental Paradigm

The Refugee Game is played by two types of players: $c = 5$ citizens and a variable number r of refugees. Only citizens are active players, i.e., citizens' behavior determines the payoff of both citizens and refugees. The game consists of two stages.

In stage one, citizens, but not refugees, complete a real-effort task (19), in which each citizen i , $i \in \{1, 2, 3, 4, 5\}$, earns a piece-rate loan w . Thus, depending on their efforts e_i , citizens earn a gross salary of $p_i = we_i$ in stage one. However, analogous to a general income tax, 40% of citizens' gross salaries are withheld. The amount collected through this "tax," $G = \sum_{i=1}^5 0.4p_i$, is available for redistribution among all players, i.e., citizens and refugees, in stage two. The remainders of their salaries, $0.6p_i$, are directly transferred to citizens' private accounts after the completion of stage one.

In stage two, citizens individually and privately make redistribution decisions concerning G . To prevent strategic decision-making, one citizen's redistribution decision is randomly chosen and implemented. Depending on the experimental condition (see below), we either model G as a private good or as a club good (20). In both conditions, citizens have the power to exclude the refugees from benefitting from the redistribution of G within the group of players, and refugees may at most receive as much of the collective good as citizens do. The difference between the conditions is whether sharing access to G with refugees reduces the share of G that citizens themselves obtain (private good) or not (club good), i.e., whether G is rivalrous or not, respectively. For instance, refugees may benefit from infrastructure, e.g., public transportation, that is provided through citizens' tax payments. The additional costs for each citizen caused by refugees' use of this infrastructure are negligible. In contrast, other helping measures, e.g., building new houses for refugees or granting them access to public health systems, may generate nonnegligible additional costs to the citizens.

Redistribution decisions are elicited as follows: In the club good case, citizens each receive a fixed share of one-fifth of G and decide about the proportion s , $0 \leq s \leq 1$, of one-fifth of G that each refugee shall receive. The resulting stage-two payoffs thus are as follows: $sG/5$ per refugee and $G/5$ per citizen. In the private good case, citizens decide about the proportion s , $0 \leq s \leq 1$, of an equal share of G that each refugee shall receive. Thus, when citizens opt to share with the refugees in this scenario, their own shares fall below one-fifth. When $s = 1$, for example, this results in the minimum payoff for citizens and the maximum payoff for refugees, which is $1/(5 + r)$ of G per person. The

general stage-two payoffs are the following: $sG/(5 + r)$ per refugee and $[G - rsG/(5 + r)]/5$ per citizen.

Despite being costly, each citizen's share of G may at most reduce from one-fifth to one-sixth when $r = 1$, and from one-fifth to one-eighth when $r = 3$, meaning relative costs of 16.7% and 37.5%, respectively. When additionally considering citizens' payoffs from their private accounts, the overall costs to citizens are rather low. This mirrors realistic conditions in which the individual cost of helping refugees is typically small because costs are shared among all citizens.

Results

We conducted three laboratory studies using the Refugee Game. In our studies, we investigated both economic (i.e., citizens' costs of helping, refugees' neediness, and the number of refugees seeking refuge) and psychological (i.e., citizen's prosocial attitudes, their perception of the situation manipulated through framing, and refugees' integration efforts) determinants of prosocial behavior toward refugees. In fact, in real-world refugee situations, host citizens vary substantially in their perceptions, i.e., in how they transform the objective situation into their psychological reality (21, 22). Our studies provide insights into whether people with different subjective representations of the actual situation will also differ in their willingness to help. The experimental manipulations put economic and psychological determinants under scrutiny that may contribute to the large heterogeneity in citizens' reactions to refugees.

In study 1 ($n = 114$), we used a 2 (costs of helping: cost-free vs. costly; within-subjects) \times 2 (number of refugees: 1 vs. 3 refugees; between-subjects) mixed design. The first manipulation addresses citizens' (perceived) costs of helping refugees. Recent evidence from survey research in Germany suggests that some individuals expect personal economic costs due to refugee intake, whereas others do not (23, 24). In reality, citizens' perceived job security or their socioeconomic status might affect this perception. To account for this variety in subjective perceptions regarding personal costs associated with helping refugees and its potential impact on actual prosocial helping behavior, we manipulated the citizens' objective costs of helping refugees. In the cost-free condition, participants faced the club good version of the Refugee Game (see above). Hence, helping refugees increased refugees' payoffs but did not decrease citizens' payoffs. In contrast, in the costly condition, citizens faced the private good version, where helping refugees reduced citizens' personal payoffs.

The second manipulation addresses the substantial differences in refugee intake between countries (e.g., refugee intake in Lebanon amounts to about 21% of the host population, whereas it is less than 1% in Germany; ref. 25), which may further intensify in different regions within countries. Beyond these objective differences, the intensity of refugee intake can be perceived differently between individuals (mediated, e.g., by exposure to different media). To capture such differences, we varied the number of refugees in the Refugee Game, with $r = 1$ vs. $r = 3$ (at a constant level of $c = 5$ citizens across conditions).

We also explored how individuals' personality may contribute to different subjective representations of the actual refugee situation and, hence, helping behavior toward refugees. As a personality trait potentially associated with helping refugees, we assessed citizens' general prosocial orientation (operationalized as individuals' social value orientation, SVO; ref. 26), i.e., how they value their own welfare relative to the welfare of others. Accordingly, we can distinguish between people with a higher degree of prosociality (prosocials) and people with a lower degree of prosociality (proselfs). Although such preferences have been shown to predict prosocial behavior in a variety of social situations (27), research on attitudes and behaviors in the context of refugee helping and migration so far has not taken into

account the role of citizens' differences in prosocial orientation (14–16).

As shown in Fig. 1A, the mean share s of G that citizens are willing to provide to each refugee, “helping” for short, was more than five times larger in the cost-free condition compared with the costly condition ($M_{\text{cost-free}} = 81.63$, $SD = 33.45$; $M_{\text{costly}} = 15.16$, $SD = 26.46$; $P < 0.001$, $\eta_p^2 = 0.73$; model 1 in Table 1). The number of refugees did not affect citizens' willingness to provide help ($M_{1 \text{ refugee}} = 48.96$, $SD = 23.95$; $M_{3 \text{ refugees}} = 47.81$, $SD = 20.84$; $P = 0.786$, $\eta_p^2 < 0.01$; model 1). Moreover, citizens with a higher degree of prosocial orientation were more willing to provide costly help, indicated by a significant interaction between costs of helping and SVO ($P = 0.004$, $\eta_p^2 = 0.07$; model 2). As displayed in Fig. 1B, helping of citizens classified as prosocials vs. proselves did not differ when helping was cost-free. However, when helping was costly, prosocials helped more than proselves did. Helping was independent of citizens' performance in the real-effort task (SI Appendix, Tables S1 and S2).

In study 2 ($n = 116$), we focused on costly helping in the game version with $r = 3$ refugees to explore possibilities of increasing citizens' willingness to help refugees. We applied a 2 (valence: positive vs. negative; within-subjects) \times 2 (framing: neutral vs. refugee; between-subjects) mixed design. Survey research indicates that the willingness to accept refugees increases with their neediness (e.g., being a victim of torture; ref. 14). Therefore, we varied refugees' neediness by manipulating the valence of refugees' financial endowment. In the negative valence condition, refugees' endowment was -20 points and therefore helping them would reduce a loss, whereas in the positive valence condition, refugees' endowment was 0 points (as in study 1) and helping them would provide them with a gain (both relative to the status quo of providing no help).

As a second factor, we varied the framing of the game. So far, it is not known whether the label “refugee” alone can evoke a higher willingness to help. Moreover, note that the basic structure of the Refugee Game is similar to other real-world collective helping situations, such as contributing to social security (e.g., supporting unemployed fellow citizens). Therefore, framing the game explicitly as a refugee situation may reveal context-specific helping in the refugee situation due to, for instance, concerns for the refugees' welfare or specific norms regarding helping behavior toward refugees. In one condition, the framing was kept neutral by referring to refugees as “noncontributing players” and citizens as “contributing players” (as in study 1). In the other condition, we addressed players as refugees and citizens to evoke empathy or prosocial norms potentially associated with helping refugees and to rule out the possibility that non-contributing players are perceived as unemployed members of the host society or are seen as unable to contribute for other

Table 1. Repeated-measures analyses of (co)variance predicting helping behavior in study 1 ($n = 114$)

Predictor	Model 1			Model 2		
	F	P	η_p^2	F	P	η_p^2
Number (A)	<1	0.786	<0.01	<1	0.811	<0.01
Costs (B)	307.1	<0.001	0.73	325.7	<0.001	0.75
A \times B	<1	0.511	<0.01	<1	0.582	<0.01
SVO (C)				<1	0.437	<0.01
A \times C				1.4	0.236	0.01
B \times C				8.8	0.004	0.07
A \times B \times C				1.0	0.317	<0.01

Number (of refugees), between-subjects factor; Costs (of helping), within-subjects factor; SVO, continuous covariate (mean-centered).

reasons, thereby increasing the external validity of the experimental setting.

As shown in Fig. 2A, we found a greater willingness to provide help in the negative valence condition compared with the positive valence condition ($M_{\text{positive valence}} = 16.37$, $SD = 27.39$; $M_{\text{negative valence}} = 20.73$, $SD = 31.21$; $P = 0.002$, $\eta_p^2 = 0.08$; model 1 in Table 2). Additionally, costly helping was more pronounced in the refugee framing condition compared with the neutral framing condition ($M_{\text{neutral framing}} = 12.97$, $SD = 25.87$; $M_{\text{refugee framing}} = 24.14$, $SD = 29.87$; $P = 0.033$, $\eta_p^2 = 0.04$; model 1, Fig. 2A). Replicating the finding of study 1, we found a main effect of SVO, indicating that helping behavior increased with citizens' degree of prosocial orientation ($P = 0.001$, $\eta_p^2 = 0.09$, model 2, Fig. 2B). Moreover, prosocials were more sensitive to the framing manipulation, i.e., they provided more help than proselves in the refugee framing condition compared with the neutral framing condition, indicated by the significant interaction of SVO and framing ($P = 0.016$, $\eta_p^2 = 0.05$, model 2, Fig. 2B). Helping behavior was again independent of citizens' performance in the real-effort task (SI Appendix, Tables S1 and S3).

In study 3 ($n = 123$), we tested for behavioral and psychological effects of a policy intervention aimed at increasing citizens' willingness to help refugees. In several countries, e.g., Austria, Germany, Norway, and Sweden, integration courses have been made mandatory for refugees to improve their language skills and basic qualifications for successful labor market integration (28). Moreover, from a psychological perspective, integration is often viewed as crucial—for example, because it facilitates positive contact between citizens and refugees (29). Therefore, we tested whether citizens' mere knowledge of refugees' integration efforts increases their willingness to provide help.

In the control condition, citizens engaged in a framed Refugee Game with extended instructions (Materials and Methods) and faced the same helping decision as in studies 1 and 2. The integration effort condition was identical, except that refugees also completed the real-effort task, in which they had to exert a certain effort level to be eligible for support by the citizens. In contrast to the citizens, however, refugees did not receive any pay for their effort and thus could not contribute to the collective account G . The monetary incentives for citizens are identical in both conditions: any long-term benefits and/or reciprocity potentially resulting from refugees' successful integration are ruled out by design. In addition, we assessed participants' prosocial orientation (26), political left-right orientation (30), and empathy (31) to explore their effects on helping behavior. We also measured behavioral motivations (21) after each helping decision (i.e., competition, egoism, fairness, and altruism) to see how motivations are affected by the different conditions and whether they account for different degrees of helping behavior.

We applied a one-factorial design on two subsequently played Refugee Games. In the first game, the integration policy was

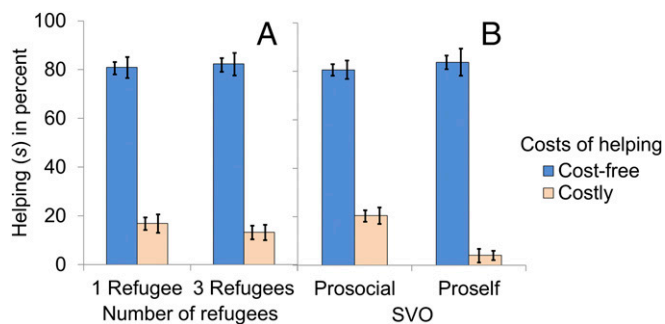


Fig. 1. Mean helping behavior in study 1 ($n = 114$) by number of refugees and costs of helping (A), and by SVO and costs of helping (B). Left/right error bars represent within-/between-subjects SEs, respectively. SVO is dichotomized based on theoretically derived cutoff values (26).

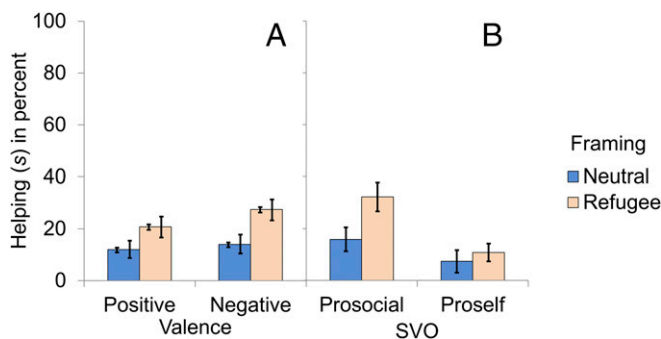


Fig. 2. Mean helping behavior in study 2 ($n = 116$) by valence and framing (A), and by SVO and framing (B). In A, left/right error bars represent within-/between-subjects SEs. In B, error bars represent between-subjects SEs. SVO is dichotomized based on theoretically derived cutoff values (26).

randomly varied (between-subjects) to test for the isolated effect of refugees' integration efforts. In the second game, participants learned about the second policy and made a decision in this setting as well. This was implemented to test the effectiveness of a policy change after participants had already made a helping decision under a specific policy.

In the first decision, citizens' helping intent almost doubled when refugees had to complete the real effort task without pay ($M_{\text{integration effort}} = 40.82$, $SD = 40.89$; $M_{\text{control}} = 21.40$, $SD = 29.52$; $P = 0.003$, $\eta_p^2 = 0.07$, model 1 in Table 3). As shown in Fig. 3, this effect was moderated by citizens' prosocial orientation ($P = 0.033$, $\eta_p^2 = 0.04$, model 2 in Table 3), i.e., citizens classified as prosocials increased their willingness to help when refugees showed effort ($M_{\text{prosocials, integration effort}} = 50.65$, $SD = 40.08$; $M_{\text{prosocials, control}} = 24.31$, $SD = 30.42$), whereas prosocials did not ($M_{\text{proselfs, integration effort}} = 15.94$, $SD = 32.10$; $M_{\text{proselfs, control}} = 16.67$, $SD = 27.97$). Independent of prosocial concerns, helping intent was greater when participants had a rather liberal/left political orientation ($P = 0.043$, $\eta_p^2 = 0.03$) or had greater levels of empathy ($P = 0.027$, $\eta_p^2 = 0.04$; see model 3 in Table 3). Citizens' prior performance in the real-effort task had no effect (SI Appendix, Tables S1 and S4). Moreover, a multiple moderated mediation analysis suggests that prosocials' increased helping intent in the integration effort condition is mediated by their reduced egoistic concerns (index of moderated mediation; ref. 32: 0.39, $SE = 0.22$, 95% CI = [0.060, 0.907], based on 5,000 bootstrap iterations). The other motivations, i.e., competition, fairness, and altruism, were no significant mediator variables.

Lastly, in the second decision, we also found that integration effort had a positive effect on citizens' helping intent ($M_{\text{integration effort}} = 33.92$, $SD = 40.14$; $M_{\text{control}} = 21.86$, $SD = 30.41$; $P = 0.002$, $\eta_p^2 = 0.08$, SI Appendix, Table S5). However, for the most part, helping behavior in the second decision was determined by helping in the first decision ($P < 0.001$, $\eta_p^2 = 0.90$), indicating a strong consistency/reference point effect. We found no other significant effects for second decisions.

Discussion

Migration is a pervasive societal challenge. Our results suggest that both economic and psychological factors need to be included to understand the divide in host populations' reactions to incoming refugees. In three experimental studies, we show that individual costs strongly affect citizens' helping behavior toward refugees. Trenchantly put: helping is not only a matter of values and good manners, it is also about money. This finding is in line with much evidence in other areas showing that financial incentives affect individual behavior, such as work performance (33) or health behavior (34). However, the particularly large effect of costs in the context of refugee helping is remarkable

since each citizen's personal cost of helping was quite low compared with their overall earnings. Thus, our results indicate that the perception of even small individual costs may decrease citizens' willingness to support refugees substantially.

Relatedly, the results show that there is considerable interindividual heterogeneity in the reactions to the costs of helping. Individuals with a larger degree of prosocial orientation are more likely to provide costly help to refugees. Hence, helping refugees is—at least to a certain degree—motivated by a general prosocial concern toward others. This insight goes beyond previous survey research on individuals' attitudes toward refugees. Moreover, it contributes to recent discussions about whether individuals' prosocial orientation is universal or bounded by group membership (35). Our finding that prosocials helped more than prosocials did, especially when the game was framed as an intergroup interaction (i.e., when players were labeled as citizens and refugees), supports the perspective of a universal prosocial orientation—at least under some circumstances (i.e., when out-group members are in strong need of help and when they exert effort toward integration).

Our findings also provide insights for policymakers on how to promote positive attitudes and behaviors toward refugees. First, acceptance of and support for refugees are likely to be higher when policymakers can credibly communicate that individual costs for citizens are negligible, or at least much smaller than many might anticipate. Second, we show that costly helping increases when refugees are more in need, i.e., helping that reduced a loss for refugees was more pronounced than helping that increased a gain. The external validity of this finding is supported by recent survey evidence that people's attitudes toward asylum-seekers are more positive when asylum-seekers are more vulnerable, e.g., when they have been victims of torture (14). Hence, policies aimed specifically at helping migrants in need of humanitarian aid may be more likely to be accepted by voters compared to policies that benefit migrants who are not as much perceived as needy. Lastly, the results suggest that mandatory integration courses for refugees may not only benefit refugees directly (e.g., by improving their chances for successful labor market integration) but also indirectly, by increasing citizens' willingness to provide help. The communication of refugees' integration efforts could increase refugee acceptance particularly among individuals with larger prosocial concerns.

We had to limit our focus to some specific variables presumably relevant to refugee helping behavior. The Refugee Game can be easily adapted to test further aspects and potential interventions regarding individuals' willingness to support refugees. For instance, the game can be extended to investigate several groups of citizens (e.g., nations) that have to decide independently whether to help refugees or not. Citizens from different nations could be modeled as differing in their payoffs from the real-effort task to capture differences in wealth.

Table 2. Repeated-measures analyses of (co)variance predicting helping behavior in study 2 ($n = 116$)

Predictor	Model 1			Model 2		
	F	P	η_p^2	F	P	η_p^2
Framing (A)	4.6	0.033	0.04	5.7	0.019	0.05
Valence (B)	9.9	0.002	0.08	10.3	0.002	0.08
A × B	2.8	0.097	0.02	2.9	0.094	0.03
SVO (C)				11.0	0.001	0.09
A × C				5.9	0.016	0.05
B × C				<1	0.800	<0.01
A × B × C				3.1	0.080	0.03

Framing, between-subjects factor; valence, within-subjects factor; SVO, continuous covariate (mean-centered).

Table 3. Analyses of (co)variance predicting first-round helping behavior in study 3 ($n = 123$)

Predictor	Model 1			Model 2			Model 3		
	<i>F</i>	<i>P</i>	η_p^2	<i>F</i>	<i>P</i>	η_p^2	<i>F</i>	<i>P</i>	η_p^2
Integration effort (A)	9.2	0.003	0.07	10.1	0.002	0.08	7.9	0.006	0.06
SVO (B)				9.6	0.002	0.08	3.3	0.073	0.03
A × B				4.7	0.033	0.04	6.1	0.015	0.05
Political Orientation							4.2	0.043	0.03
Empathy							5.0	0.027	0.04

Integration effort, between-subjects factor; SVO, political orientation, and empathy, continuous covariates (all mean-centered).

Moreover, the Refugee Game can also be played repeatedly with refugees being allowed to contribute to the group’s collective account in later rounds. Refugees might also differ in their ability to contribute to the collective account, which could affect the willingness to help them (14). Finally, underscoring the validity of the Refugee Game, study 3 also suggests that interindividual differences in political orientation and empathy predict refugee helping. Given that these findings prove to be robust, future research could focus on identifying circumstances that increase citizens’ willingness to provide help to refugees, irrespective of, for instance, their political orientation.

Overall, the present research makes a first step toward a better understanding of the interplay of economic and psychological factors in predicting helping behavior toward refugees. Our method facilitates investigating the independent and joint effects of such factors under controlled laboratory conditions and provides a flexible “sandbox” for testing interventions aimed at promoting refugee support. Our experiments show that personal costs for helpers, but also the neediness and efforts of refugees matter. How they matter, however, depends on the degree to which a person is inclined to value others’ welfare. Thus, a nexus of economic and psychological factors explains helping behavior toward refugees.

Materials and Methods

Ethics Statement. The studies included human subjects and were conducted in accordance with the guidelines of the Helsinki Declaration and the German Psychological Association. All participants gave written informed consent to use and share their data for scientific purposes without disclosure of their identity. The studies were conducted at a German university, where institutional review boards or committees are not mandatory.

Study 1.

Participants. Participants in the role of citizens are statistically independent because they received no feedback about others’ performance or behavior before decision-making. An a priori power analysis advised $n = 98$ participants for sufficient test power ($1 - \beta = 0.80$, given $\alpha = 0.05$) to detect a medium-sized effect ($f = 0.25$) in a repeated-measures analysis of variance with one additional between-subjects factor. To have a balanced number of participants across conditions and to be able to divide sessions into groups of five citizens, we recruited $n = 120$ participants (50 females; age: median [Mdn] = 23 y, range = [19, 55]) in six experimental sessions (i.e., three sessions per between-subjects factor). We excluded $n = 6$ participants who negatively deviated more than two SDs from the mean value of mistakes in the test questions (see below; first version: $M = 1.53$, $SD = 2.23$, second version: $M = 1.08$, $SD = 0.51$). Specifically, participants had to answer three test questions for both the cost-free condition and the costly condition. Since the within-subjects factor was counterbalanced, the first version may refer to either the costly condition or the cost-free condition, respectively. Results do not change qualitatively when including all participants in the analyses. **Procedure.** Participants were invited via email to the experimental sessions. Upon arrival, they drew an index card that assigned them to a private computer cubicle. The whole experiment was computer-mediated with

audio-video instructions (using headphones), implemented via the software z-Tree (36).

First, participants completed the SVO Slider Measure to assess their general prosocial orientation (ref. 26 and *SI Appendix*). In this task, participants could earn between 15 and 100 points, with a conversion rate of 100 points = 1 Euro. Next, participants learned about the second part of the experiment, in which they engaged in two independent versions of the Refugee Game. In case of a negative payoff, which was only possible in the negative endowment condition of study 2, the amount was subtracted from the accumulated payoff of the first part of the study. Each version represented one of the within-subjects conditions (cost-free vs. costly helping, counterbalanced order). Only after participants completed the first version of the Refugee Game, they learned about how the second one differed. Before they started, they completed a practice round of the real-effort task in stage 1 of the Refugee Games (Slider Task, ref. 19; for details, see *SI Appendix*). To assure that all participants understood the structure and consequences of their helping decisions (i.e., stage 2 of the Refugee Game), they had to correctly answer three test questions. The attempts to correctly answer the questions were tracked by the software, and the experimenter only helped participants to answer questions if they did not find the correct answers within a reasonable time. Afterward, participants made their helping decision by indicating how much they wanted to share with the refugees. At the end of the experiment, it was randomly determined which game version became payoff-relevant, with a conversion rate of 100 points = 10 Euro. Note that neutral terms were used to refer to the citizens (i.e., contributing players) and refugees (i.e., noncontributing players).

At the end, participants answered a postexperimental questionnaire (including demographics), which was followed by payoff information and private payment. Experimental sessions lasted for about 60 min. Participants earned on average 9.00 Euro. The instructions and test questions are available in *SI Appendix*. Note that because refugees had an inactive role in the game, they were not part of the actual experimental sessions. Participants from a different study received the payments as refugee players. In detail, in the first part, individuals participated in another, unrelated task, in which they accumulated positive payoffs due to some fixed show-up fee and an additional behaviorcontingent payoff. In the second part, they were paid the payoff as a refugee player depending on the helping behavior of the citizens in the Refugee Game.

Study 2.

Participants. Because the experimental design was structurally identical to study 1, we built our sample size estimation on the same power analysis. Accordingly, we recruited $n = 120$ (46 females; age: Mdn = 24 y, range = [17, 58]) participants in six experimental sessions with 20 participants each. We excluded $n = 4$ participants who negatively deviated more than two SDs from the mean value of mistakes in the test questions (first version: $M = 1.53$, $SD = 2.46$, second version: $M = 1.13$, $SD = 0.79$). Specifically, participants had to answer four test questions for both the positive and negative valence condition. Since the within-subjects factor was counterbalanced, the first version may refer to either the positive or negative valence condition,

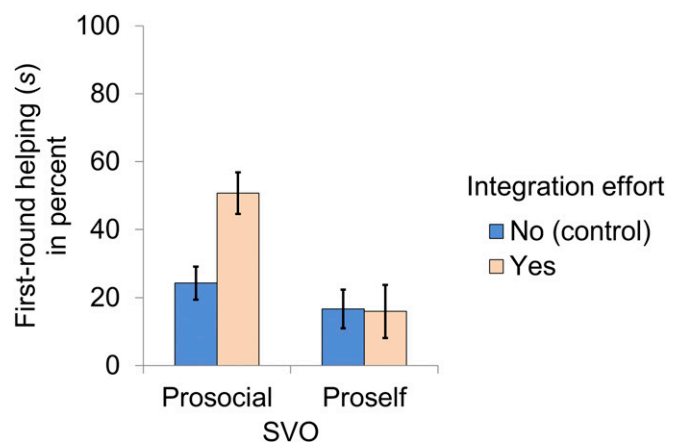


Fig. 3. Mean first-round helping behavior in study 3 ($n = 123$) by integration effort and SVO. Error bars represent between-subjects SEs. SVO is dichotomized based on theoretically derived cutoff values (26).

respectively. Results do not change qualitatively when including all participants in the analyses.

Procedure. The procedure of study 2 was identical to that of study 1. Participants earned on average 8.70 Euro for the 60-min study.

Study 3.

Participants. An a priori power analysis advised $n = 128$ participants for sufficient test power ($1 - \beta = 0.80$, given $\alpha = 0.05$) to detect a medium-sized effect ($f = 0.25$) in an analysis of variance. We conducted seven experimental sessions with a total of $n = 130$ participants (55 females; age: $Mdn = 23$ y, range = [18, 32]). We excluded $n = 7$ participants who negatively deviated more than two SDs from the mean value of mistakes in the test questions ($M = 1.06$, $SD = 0.13$). There were 11 test questions. Results do not change qualitatively when including all participants in the analyses.

Procedure. The procedure of study 3 was largely identical to that of studies 1 and 2, except for the following changes. First, we used extended instructions to make sure that participants (i) did not erroneously believe that refugee players would be real refugees and (ii) did understand the payoff structure

properly. This was tested using an extended battery of test questions. Second, we additionally assessed participants' behavioral motivation after each decision (ref. 21; competition, egoism, fairness, and altruism), as well as interindividual differences in political orientation (30) and empathy (31) in a postexperimental questionnaire (for details on these measures, see *SI Appendix*; zero-order correlations among prosocial orientation, political orientation, empathy, and helping are provided in the *SI Appendix, Table S6*). The experiment took about 60 min. Participants earned on average 10.20 Euro.

Data Access. The data of all studies are publicly available at <https://osf.io/7a94r/>.

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