# Revealing the Zone Of Possible Agreement between parties in conflict: an application to peace agreements between Israelis and Palestinians

**Elisa Cavatorta**[1], **Ben Groom**[2], **and Gilead Sher**[3]

**After Hamas' attack on October 7, 2023 and Israel's subsequent war, a pressing question is the nature of a post-war peace agreement. Peace negotiations often become deadlocked due to difficulties in identifying mutually advantageous agreements. A large-scale survey task and method is developed to identify the strength of preference for components of potential peace deals and changes to the status quo. Analyzing pre-October 7 representative samples of Israelis and Palestinians reveals a Zone of Possible Agreement, demonstrating shared preferences for deals that improve daily life. Violence exposure hampers compromise among Israelis, emphasizing the importance of abstaining from violence for conflict resolution.**



After the trauma inflicted on Israel by Hamas' massacre on October 7, 2023 and the devastation in Gaza resulting from Israel responding with war on Hamas and Islamic Jihad, a key question in the mind of many concerns the 'day after' the war ends: what sort of peace agreement, if any, would Israelis and Palestinians find mutually acceptable? Short of the dream that the diplomatic process that failed for over three decades will suddenly succeed, serious re-thinking about peace agreements that resolve the contentious issues is required and needed more now than ever before.

Designing peace agreements is a complex process, all the more so in intractable conflicts with numerous disputed issues. When parties do negotiate, peace negotiations frequently become deadlocked because the parties aren't able to identify mutually advantageous agreements. Even when such configurations exist, at least in principle, they are often not immediately visible. Finding mutually acceptable agreements requires understanding of the ordering of priorities of one's own group, the acceptable give-and-take one party is willing to engage in to attain a deal, the priorities of the other party and trade-offs they are likely to agree to.

Understanding the acceptability of peace agreements to the public is important for the peace negotiation process. Public opinion matters because it informs political leaders' decisions about the timing of negotiations, their mode (e.g. whether they are held in secret or not, (1)) and the concessions. Leaders who act against strong public opinion risk losing political support. These considerations repeatedly appear in the history of the Middle East peace talks. One famous example comes from the Clinton-led peace talks in late 1999, when Ehud Barak, Israel's Prime Minister at the time, had a change in heart regarding the agreement with Syria despite his reportedly willingness to concede on Israel's withdrawal from the Golan Heights. It is reported he said: "I can't do it. My people won't understand. It's all too quick. I have to prepare my public for a full withdrawal from the Golan and I have to take time." (2, p.78). Knowledge of public opinion on both sides helps negotiators address the core concerns and grievances of the population. This can lead to more effective conflict resolution tactics and trust building techniques (3, 4). By addressing the legitimate concerns of the majority, the agreements can undermine the narratives of those who seek to derail the peace efforts (5, 6).

Public opinion also matters for the outcomes of negotiations and the prospect of success of peace agreements over time. Research shows that negotiations that are more inclusive and take due understanding of public opinions makes peace agreements more effective and sustainable (e.g. 7–9). Public referendums in both Northern Ireland and the Republic of Ireland were crucial in legitimizing the

Author affiliations: [1]King's College London; [2]University of Exeter; [3]Rice University

[2]Corresponding author: E-mail: elisa.cavatortakcl.ac.uk

agreement and ensuring broad support across communities (10, 11). Moreover, agreements that are supported by the public are more likely to be implemented effectively (12).

Yet, public consultation on the design of prospective peace agreements is fraught with difficulty and traditional ways of gathering public preferences are often inadequate in this context. Public opinion surveys on support for the peace process and acceptability of negotiations play an important role in summarising what people think and want. Yet, traditional public opinion surveys are ill suited to inform about the acceptability of peace deals for several reasons. First, questionnaires that ask whether one supports peace negotiations cannot speak to what compromises are acceptable or unacceptable. Second, even when respondents express acceptance or rejection of a particular peace deal configuration, such as the 'two state' solution, it doesn't necessarily imply that no other configuration is acceptable. Questions on support for specific peace deal configurations need to be carefully worded because details matter and respondents may have different ideas about how details left implicit are resolved. For example, supporting a 'two-state solution' doesn't explicitly outline the type of freedom of movement implied for labor and goods. Thirdly, there could be numerous compensatory combinations between components of peace agreements which result in as many peace deal configurations, making direct survey questions impractical. Lastly, traditional surveys typically struggle to disentangle people's valuations of the content of an agreement from people's reactions to the way the negotiation process develops.

In this paper we design a task suitable for large surveys that addresses these shortcomings. The task identifies the components of potential peace deals regarded as most important for each side, the relative strength of preferences for them and the strength of support for agreements that deviate from the status-quo. The task overcomes the difficulty of traditional questionnaires. We implement it in two nationally representative samples of Palestinians living in the West Bank and Gaza Strip and Israelis living in Israel and the occupied territories. We exploit the bilateral nature of our analysis to visualize the Zone of Possible Agreement (ZOPA): the set of agreements preferred by both groups to the status quo; and the Pareto frontier of peace deals: the set that maximizes the gains achievable by combining concessions and demands on components of a peace deal. We also visualize the zones where unacceptable agreements lie.

We then study how the experience of violence among respondents alters support for prospective peace agreements. This information is important to inform campaigns that tries to support peacemaking efforts, and are crucial after the heights of violence on and after October 7th. Previous studies suggest that violence exposure can harden public opinions about the perceived enemy (13), reduce support for peace, at least in the short term (14), and makes retaliatory inclinations more likely (15). However, previous studies lack evidence on why violence exposure makes support for peace more difficult. Are violence-exposed people rejecting compromise altogether? Or do they become more sensitive to certain concessions? The method described here is able to answer these questions.

## Method: Finding the mutually acceptable agreements

In this method individuals are asked to rank hypothetical peace agreements based on their preference. These peace agreements comprise of 'components' representing different aspects of the conflict. Each component signifies either maintaining the current situation (the status quo) or introducing a change from the status quo. Consequently, configurations of peace deals are a mix of these binary 'components', representing variations from or continuations of the existing status quo. We manipulate these combinations experimentally to ensure that each respondent receives a set of peace deals with orthogonal components. This approach enables the causal assessment of the strength of preference for various components within hypothetical peace agreements and their relative desirability. Preferences for individual components are estimated for Israelis and Palestinians, and these preferences are then aggregated for each potential peace agreement. This aggregation identifies peace agreements that are preferred over the status quo, those mutually acceptable to both parties: the Zone of Possible Agreement (ZOPA), and among them, the 'best' agreements that achieve the highest gains for both parties, as well as 'fairer' agreements, that distribute gains equally. Agreements acceptable only to one party and those unacceptable to both are also identified.

In this application, each peace deal comprises of eight components. The choice of a total number of eight components was driven by methodological considerations of statistical ability to estimate the strength of preference for each component causally (i.e. not confounded), power calculations, and feasibility tests, with the understanding that comparing and ranking multiple deals with 8 components was feasible for respondents based on field tests (details reported in SI sections A and B). These eight dimensions of the conflict were selected based on their significance according to public opinion surveys in the region (e.g. https://www.pcpsr.org/, The Peace Index, The Israeli Voice Index, https://en.idi.org.il) and interviews with scholars from the region (further details on issue selection are in the SI, section C). The components include important topics such as Jewish settlements, the recognition of Israel as a nation-state for the Jewish people, the existence of an independent Palestinian State, freedom of movement, right to access the holy sites, the location of capital cities, treatment of prisoners, allocation of water rights. Table 1 outlines the specific wording of each component, which can be either a variation from the status quo (left column) or a continuation of the status quo (right column), each of them supplemented with an explanation SI.1. All components can occur together or separately, and the occurrence of one component does not preclude the occurrence of another.

All components, whether expressed as a change from the status quo or a continuation, are purposefully described in objective and concrete terms (with explicit descriptions, see Figure SI.1) to avoid the pitfall that support on the broad 'issue' masks disagreement on how the issue is resolved in practice. Moreover, we carefully avoided nomenclatures and expressions that, despite being in common usage, can be interpreted differently by different people (such as 'Two-state solution', 'multinational arrangements', 'economic peace').

With eight issues in each peace deal, there are $2^8 = 256$ possible deals. Given the impracticality of asking respondents to

| Component | Change from status quo | Status-quo |
|---|---|---|
| 1 | **Freezing of all settlement building, evacuation of those inside the West Bank. Settlements adjacent to the 1967 line become part of Israel.** | **Israel's settlement building continues** |
| 2 | **Palestinians recognise Israel as the nation-state of the Jewish People** | **Palestinians do not recognise Israel as the nation-state of the Jewish People** |
| 3 | **An independent Palestinian State over the West Bank, Gaza and East Jerusalem with equitable (1:1 in value) land swaps with Israel and no Israeli military presence** | **The civil and military jurisdiction over Israel, the West Bank and Gaza remains as today** |
| 4 | **Freedom of movement for people (no checkpoints/permits), vehicles and goods between West Bank, Gaza and State of Israel for both Palestinians and Israelis** | **Current freedom of trade between West Bank, Gaza and State of Israel. Permit system for labour and vehicles** |
| 5 | **Unrestricted right to access to holy sites and freedom of worship for anyone** | **Current restricted rights to access to holy sites and pray** |
| 6 | **Palestinian capital in Jerusalem's Arab-majority neighbourhoods and Israeli capital in Jewish-majority neighbourhoods. Old City is undivided** | **Israeli capital in West and East Jerusalem and Palestinian capital de-facto in Ramallah** |
| 7 | **Mutual amnesty and release for an agreed number of current prisoners in Israeli and Palestinian jails** | **Current practices of imprisonment, pre-trial detention and occasional prisoner release, continue** |
| 8 | **Water rights in proportion to the population: 60% Israel, 40% Palestinian Authority** | **Oslo II water rights (the same as today): 71% Israel, 29% Palestinian Authority** |

**Table 1. Components of peace agreements:** Respondents had access to a more detailed explanation of the components and their levels in the survey itself. These details and the rationale for the selection of components can be found in Section C of the Supplementary Material and Figure SI.1.



rank all 256 possible deals, we employed an orthogonal fractional (block) design (16). This design optimally reduces the 256 possible deals to 8 blocks of 8 peace deals each, allowing respondents to rank a manageable subset of peace agreements while still enabling the reliable estimation of the average causal effects of each component.

In practice, the respondent task proceeds as follows: each respondent is randomly allocated to a block. Each block contains 8 hypothetical deals. The respondent is then shown 4 deals, randomly selected from the 8, and visualized as physical or virtual cards (see SI, section E and Figures therein) with each component explained by a tool-tip or the enumerator: the respondent is asked to compare and rank the deals on a 'preference rack' from the most preferred to the least preferred. Then, the remaining deals are shown to them one by one in random order. The respondent is asked to add them to their ranking. The ranking can be modified by moving deals along the rack until the final ordering is confirmed by the respondent. There is no time limit. The sequential way in which deals are shown makes the task easier. When the ranking of the 8 deals is confirmed, the respondent is shown a nineth card, representing the status quo, and asked to add it to their ranking according to their preference.[*]

The ranking exercise combined with fractional design has a number of features that represent advances on previous conjoint experimental designs and make it particularly suitable for multi-attribute and multi-party applications like ours.

First, the ranking approach provides more information on the structure of preferences compared to 'pairwise-choice' designs – which ask respondents to choose (or vote for) one option among two (e.g. 17, 18) – and 'rating' designs – which ask respondents to rate one choice against another on a grading scale (e.g. 19). Ranking of all deals in a set, as in this study, provides information on the *relative* preferences over all alternatives. For example, a deal configuration could be a close second best in terms of preferences: a ranking exercise captures that preference structure, while a 'pairwise-choice' design provides no information.[†] Second, ranking of all deals in a set explicitly reveals which deal is 'best' or 'worst' (most preferred or least preferred) for each individual, without requiring modelling assumptions, e.g. on the shape of the utility function, and it allows the study of the positioning of specific deals of interest within the ranking. This is not possible in designs using pairwise comparisons of a random set of deals, in which each respondent sees different sets. Third, ranking, as opposed to rating, only assumes comparability of ordering and not of rating scale values, which can be subject to framing (e.g. 20). Fourth, and unlike previous studies, including the ranking of an explicitly defined status quo for all respondents avoid imposing the assumption that everyone has a preference for an agreement.[‡] The rank position of the status-quo can be interpreted as a stated-preference measure of the desirability of change from the status-quo for each individual. To identify acceptable deals the only requirement is that they are preferred over the status-quo by each party. Since both parties observe and rank the same peace deals and the same status-quo, this also makes possible to compute measures of support for any specific deal in comparison to the status-quo. Fifth, by design, each respondent is presented with a set of deals with uncorrelated components. This allows to study variations of preferences in sub-groups causally since sub-group analysis does not compromise the orthogonality of the design.[§]

We assume that the individual rankings of deals reflect ordinal rankings of preference and the desirability of a peace agreement can be represented by an utility function $u_{nj}$, for individual $n$ and peace deal $j$, which depends on a vector of

[*] A video-demo of the task in English language, using a 16 deals instead of 8, is available here: https://www.youtube.com/watch?v=kY2SfCTB2Ec

[†] A simple example might be that in a set of 3 deals, the binary choice may elicit that A is preferred to B and C, but not the relative preference for B compared to C (unless this specific pair combination is also randomly selected); instead, the ranking approach taken here makes all comparisons within the same set.

[‡] Our design explicitly reveals the percentage of people who consider the no-agreement status-quo a preferable scenario over all other alternatives.

[§] The typical conjoint analysis with options from the full factorial combination selected at random only guarantees orthogonality at the sample level.

agreement components $x'_j$ and their desirability. Using the property that the utility distribution of the most preferred choice is independent of the ordering of the less preferred choices (21, 22), the joint probability of a ranking (i.e. from the top position $r = 1$ to the last $r = R$) can be written as a product of the logit probabilities and estimated by maximum likelihood.[¶]

$$\begin{aligned} & \Pr\left[u_{r=1} > u_{r=2} > u_{r=3} >, ....., > u_{r=R}\right] \\ = \; & \Pr[u_{r=1} > u_{r=2}] \Pr[u_{r=2} > u_{r=3}] ... \Pr[u_{r=R-1} > u_{r=R}] \\ = \; & \prod_{j=1}^{R} \left[ \frac{\exp(V_j(x))}{\sum_{m=h}^{R} \exp(V_m(x))} \right] \end{aligned}$$

We assume that preferences for peace deals are linear and additively separable in components. We assume that respondents are able to make trade-offs between components. The parameters of interest are the vector $\beta$ in $V_j(x) = x'_j\beta$. Each component has an associated parameter which can be interpreted as the expected *difference* in utility for Israelis or Palestinians when a deal's component is changed from the status quo to an alternative arrangement. The size of the coefficients identifies the relative strength of preferences for the change, with utility as the common metric (the SI, section F discusses methodological considerations regarding the comparability of preferences between components and between societies). The parameters can be aggregated to yield the desirability of each deal *compared* to the status quo, for both parties in the conflict. This provides the 'coordinates' to map each agreement on the utility space, with the utility of the status quo normalized at zero. Peace deals mutually acceptable to both parties are those that yield higher utility compared to the status quo (i.e. are preferred to the status quo) for both parties. Unacceptable deals are those that yield negative utility to one or both parties.

## Data

We collected data from representative samples of Israelis and Palestinians, during approximately the same period of time (end of March 2022-May 2022), and using the same design. Due to low levels of education and computer literacy among the Palestinian population, we adopted an in-person field interview with Palestinians carried out by a professional survey organization[‖] on a sample representative of the Palestinian population in terms of geographical district of residence, gender and age distribution (n=1,197). Israeli respondents were drawn from the database of an Israeli poll company[**] and interviewed via an online interactive web-application we created[††]. We set quotas on participation and used a greedy algorithm of (23) to generate a sample of 679 Israelis that matches as close as possible the census statistics on ethnicity (Arab and Jews), district of residence, gender and age distribution from the Israel's Central Bureau of Statistics. Table SI.3 in SI shows the descriptive statistics of the samples alongside the benchmark Census statistics of reference.

For both samples, we used similar instructions and visual devices to make comparisons and ranking of peace deals intuitive to respondents and appropriately designed for each implementation mode. We designed physical cards for the on-the-field application and comparable virtual cards for the online application (see SI, section E). What makes this design compelling is the collection of arguably complex information using visual instruments that make a quantitative task intuitive and easy to complete for many. This is confirmed by the small percentages of people who provide invalid responses. We embedded two neutral quality checks: i) we numbered the cards to check whether individuals rank the cards in a numerical sequence (e.g. from card 1 to 9 or viceversa) or in the exact (random) order in which they are presented to them. In the Palestinian fieldwork, plausibly the more complex of the two due to the lower levels of literacy, only 3 respondents have ranking and numerical sequences that coincide. In the Israeli sample, 12 respondents display this pattern. ii) We consider responses valid if the task completion time was at least 240 seconds. In pilot testing of the interactive web-application using a larger set (16) of cards it took 240 seconds to read the instructions and order the cards sequentially. This result informed our choice to consider responses valid if the task completion time was at least 240 seconds. We excluded responses that did not satisfy points (i) and (ii).

## Acceptability of deals

All respondents ranked the status quo in addition to the 8 peace deals. Therefore, the position of the status quo in the ranking of deals can serve as a general, unconditional measure of deal acceptability. In Figure 1, it is evident that 75% of Israelis and 95% of Palestinians find at least one deal preferable to the status quo. There is a noticeable difference in the mode of the distribution of the status quo position in the ranking between the two samples. For Palestinians, 41% rank the status quo as the least preferred scenario, making it the most frequently chosen position. In contrast, the Israeli sample appears polarized, with 25% ranking the status quo as the most preferred scenario and 17% ranking it as the least preferred. The demographic composition of these groups differs significantly. The 25% of Israelis favoring the status quo are predominantly male (60% compared to the expected 50%), Jewish Israelis (86% compared to the expected 81%), relatively young (median age 37.5 vs.

[¶] The assumption of Independence of Irrelevant Alternatives is not restrictive in our ranking task, as respondents are permitted to change their ranking multiple times until confirmation, ensuring that the introduction of additional alternatives does not constrain the relative preferences between two options.

[‖] Palestinian Center for Policy and Social Research

[**] iPanel, www.ipanel.com

[††] A demo from pilot testing in English language is available on https://www.youtube.com/watch?v=uaiO8pO_f3k

expected 43 year old in the sample). On the other hand, the 17% who rank the status quo last are older (median age 44), predominantly female (64%), and include a higher proportion of Arab Israelis (56% instead of expected 19%).

In the Palestinian sample, the demographic composition of those who rank the status quo as the most preferred compared to those who rank it as the least preferred scenario is similar in terms of gender composition (gender ratio are equal), mean age (39 years old in both cases: the sample average) and geographical origin of the respondents (as expected in the sample).

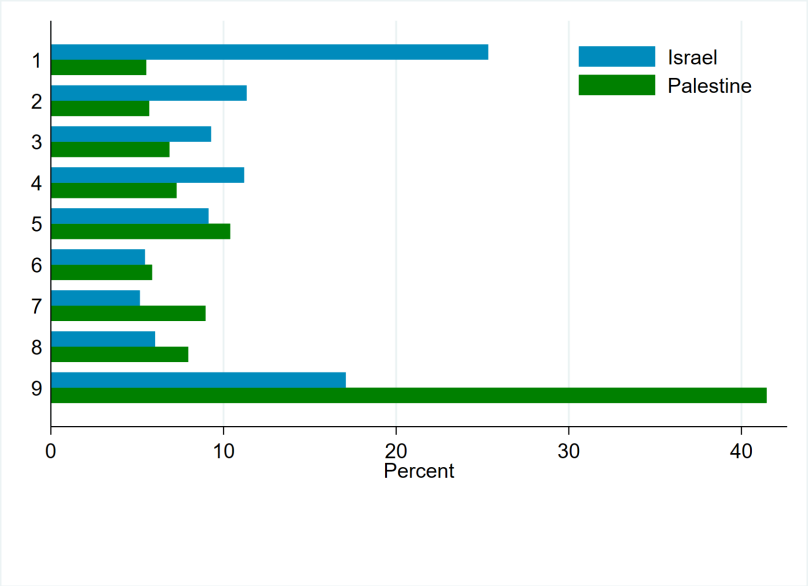



**Fig. 1.** Ranking position of the status quo scenario: 1 (first)=most preferred to 9 (nineth)= least preferred. The status quo is the same scenario for all respondents and all respondents ranked the status quo.

## Visualizing the Zone of Possible Agreements

Figure 2 displays the strength of preferences for Israelis (blue) and Palestinians (green) for each of the eight components of prospective peace agreement. These preferences are visualized as the preference for a *change* from the status quo, which is normalized at zero, and represents the alternative arrangements in column 1 of Table 1. The metric of the x-axis represents the desirability of each component: positive (negative) values indicates that the component being change from the status quo is valued positively (negatively), and thus increase (decrease) the acceptability of a deal. The horizontal lines indicate the 95% confidence interval. For Israelis the most desirable component is 'Palestinians recognizing Israel as the nation-state of the Jewish people'. For Palestinians the most desirable component is the 'freezing of all settlement building'. Some changes from the status quo are valued in an opposing way, as would be expected among parties in conflict. However, the results show points of compromise: the component 'unrestricted rights to access holy sites' is valued positively by Palestinians and is not detrimental for Israelis.

Aggregating the strengths of preference for each component of the peace agreements yields a measure of the acceptability for each one of the 256 prospective peace agreements. Figure 3(a) maps the preferences for peace deals of Israeli and Palestinian people into the space for agreement. The point (0,0) indicates the status-quo. The x-axis measures utility changes arising from each peace agreement compared to the status quo for Israelis. Positive values on the x-axis represents an improvement from the status quo and negative values represents a worsening. The y-axis measures the same for Palestinians. From the status quo, the North-East quadrant of the diagram (i.e., positive x- and y-axis) illustrates the set of peace deals that would be preferred over the status-quo by both parties and, given the estimated preferences, are mutually acceptable to both sides. This is the Zone of Possible Agreement (ZOPA). The ZOPA between the two people is populated by 55 deals out of the 256 deal configurations that our design considers: these deals are preferable over the status-quo for both parties. All other areas of the diagram contain deals that are unacceptable to at least one party.

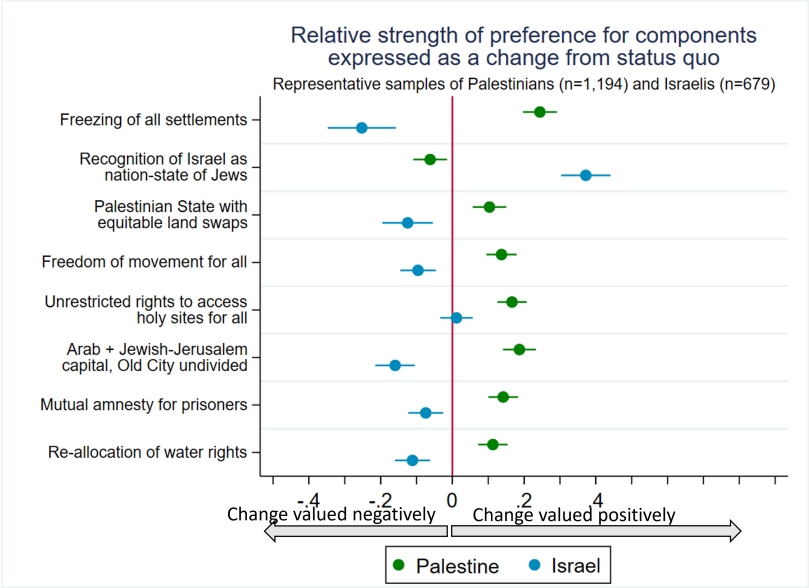
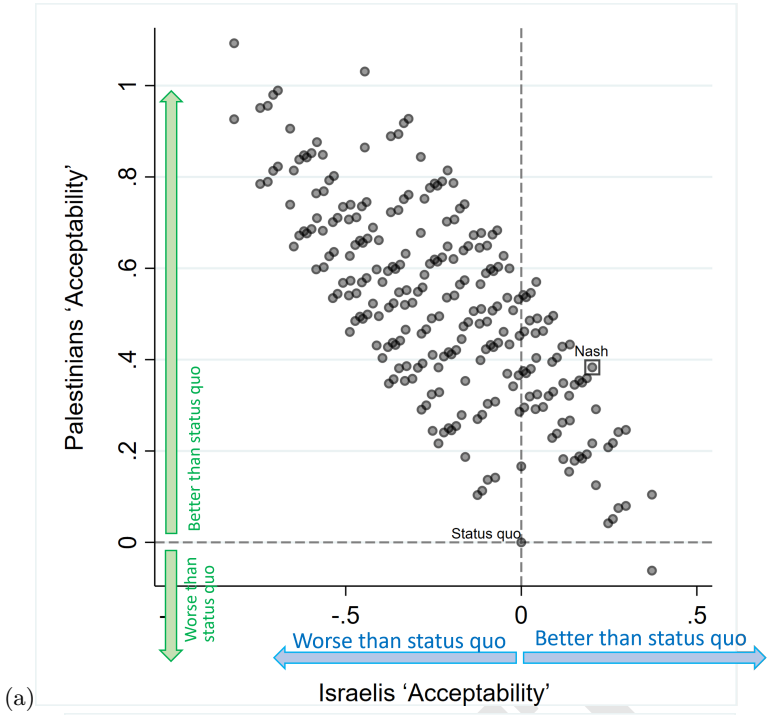
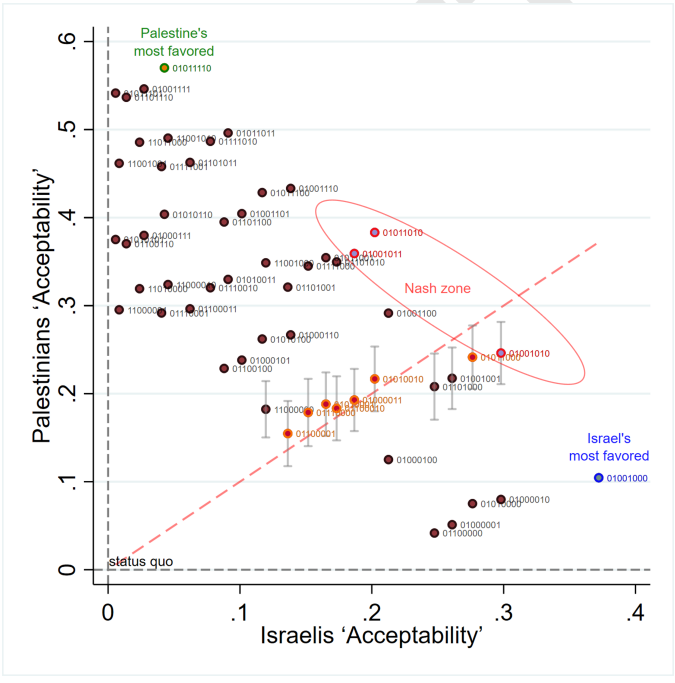



**Fig. 2.** Strength of preferences for Israelis (blue) and Palestinians (green) for each of the eight components of prospective peace agreement expressed as the preference for a change from the status quo (zero).




(a)




(b)

**Fig. 3.** (a) Acceptability of 256 prospective peace agreements for Israelis (x-axis) and Palestinians (y-axis). Point (0,0) is the status quo. (b) Deals in the ZOPA. Labels indicates whether a component is changed from the status quo with '1' and a continuation of the status quo with '0'. The Nash zone groups the three deals with highest joint utility gains, $\Delta u_{Pj}^{0.5} \cdot \Delta u_{Ij}^{0.5}$ (red dots). The deals in orange are 'fair' deals that share utility gains equally.

Figure 3(b) provides a focused view of the ZOPA with each deal labelled as a sequence of '1's and '0's indicating that the relevant component is a change from the status quo ('1') or a continuation of the status quo ('0') ordered as in Table 1. Deals furthest away from the status quo increase the acceptability for both parties.

Within the ZOPA, theoretical solutions suggest deals of interest as focal points embodying principles of efficiency and fairness. The Nash solution with equal bargaining power maximizes efficiency (i.e. maximizing the joint utility gain, $\Delta u_{Pj}^{0.5} \cdot \Delta u_{Ij}^{0.5}$) and represents a mutually desirable deal in the ZOPA that exhausts the 'integrative potential' gains over the status quo. In our empirical application, we refer to deals closely approximating this solution as the 'Nash zone'. In Figure 3(b), the three red-marked deals exemplify these options. As an illustration, the highest gains for both parties are achieved by a deal in the Nash Zone that has four components changed from the status quo: 'Palestinians recognize Israel as a nation-state of the

Jewish people', 'freedom of movement for people, vehicles and goods between the West Bank, Gaza and the State of Israel for both Palestinians and Israelis', 'unrestricted right to access the holy sites and freedom of worship for anyone', 'mutual amnesty and release for an agreed number of current prisoners' and the remaining components unchanged from the status quo: settlements building continues, the civil and military jurisdiction is like today, the Israeli capital in East and West Jerusalem and the Palestinian capital de-facto in Ramallah, today's unequal distribution of water rights. These components made up a deal configuration reminiscent of the confederal model as a framework for resolving the Israeli-Palestinian conflict (24).

Assuming the metric of acceptability are comparable between Israelis and Palestinians, deals that lie close to the 45 degree line of the ZOPA are all characterized by the property of fairness: these deals share gains from compromise evenly among the two parties.[‡‡] We consider deals 'close' if the 45 degree line is less than 1 standard error from the location of the deal in the ZOPA.[§§] Figure 3(b) shows them in orange. These deals have two or three components changed from the status-quo. Among these deals, the deal displaying 'An independent Palestinian state with equitable land swaps' and 'per capita water rights' alongside 'Palestinians recognizing Israel as a nation-state of the Jewish people' (and all other issues unchanged from the status quo, deal 01100001) is less preferred by *both* parties compared to an agreement in which 'Palestinians recognize Israel as a nation-state of the Jewish people' and the 'freedom of movement between Gaza, West Bank and Israel for everyone' and 'unrestricted right to access holy sites for anyone' are guaranteed (deal 01011000).

All deals in the ZOPA include 'Palestinians recognizing Israel as a nation-state of the Jewish people'. Deals that include 'freezing of all settlement building' are favored by Palestinians and lie above the 45 degree line; while deals favored by Israel and below the 45 line have at most one concession to Palestinians.

## Does violence facilitate or hinder compromise?

In an ongoing conflict, understanding how direct or indirect experiences of violence influence the perspectives of individuals on prospective peace agreements is crucial. To capture these individual experiences, we crafted a bespoke questionnaire tailored to discern whether the respondent, any of their family members, friends or acquaintances were victim of an incidence of violence related to the conflict, the timeline of the incident, and its outcomes (e.g. whether a person died, remained physically impaired, remained traumatized, or recovered). We were able to collect this information exclusively on the Israeli sample due to contractual constraints on the length of the survey on the Palestinian side. For Palestine, we use the geographical residence of the respondent, the Gaza Strip or West Bank, to distinguish different levels of exposure to violence related to the conflict. Gaza has 4 times the number of casualties compared to the West Bank in the period 2008-2022[¶¶]: this means that, once the population count is taken into account, there is roughly a 6 times higher probability of casualties in Gaza compared to the West Bank.

Approximately 6.2% of the Israeli sample report being victim of an incident of violence related to the conflict with the Palestinians. A total of 30% report knowing someone who was a victim. Out of this 30% nearly half of the incidents (42%) concerned a person who died. Reported incidents occurred between 1986 and 2022 (up to the time of the data collection), with the highest number of violent events recorded in 2022 (11%), 2021 (9%) and cumulatively during the years of the second Intifada (20% between 2000-2005, see Figure SI.4). The victimized group is, as expected, demographically different from the non victimized: it includes more men, a higher proportion of residents in the Jerusalem district (which border the West Bank) and the Judea and Samaria area (i.e. Israeli settlements) and younger respondents (Table SI.4). Figure 4(a) shows a reduced ZOPA for victimized Israelis (black dots): only 23 deals are acceptable for this group, compared to 99 for the non-victimized (hollow dots). The analysis of preferences (Figure SI.5(a)) reveals that the deviation into non-ZOPA quadrants is primarily influenced by two components: the freezing of settlements and the arrangement over the capital. Victimized individuals express a significantly stronger aversion to these changes from the status quo compared to their non-victimized counterparts, six times and twice as much, respectively. These differences are not explained away when we control for additional demographic heterogeneity by gender, age and Jerusalem and Judea and Samaria districts (Table **??**) Wald tests reported in Table **??** show the differences in valuations of peace deals' components by exposure to violence remain jointly significant across specifications.

Within the group of victimized people, those who report knowing someone who died tend to have stronger aversion to peace deals than the average individual (Figure SI.5(b)). These latter results should be interpreted with caution because standard errors are large due to the small sample size of the sub-group who knows a casualty (n=85). Yet, the result is replicated in a larger (n=392) yet non-representative sample of Israeli citizens (Figure SI.5(c)). With these limitations duly noted, the results suggests violence negatively influences the willingness to compromise, with most traumatic experiences reducing it most.

For Palestinians, Figure 4(b) shows the ZOPA is almost equally populated for Gaza and West Bankers, with 56 and 53 deals respectively. This is explained by the analysis of preferences: Gazans value all changes from the status quo positively, including the 'recognition of Israel as the nation-state of the Jewish people', albeit with significantly smaller strengths of preferences compared to West Bankers for 'freezing of all settlement building', 'freedom of movement for people, vehicles and goods between the West Bank, Gaza and the State of Israel for both Palestinians and Israelis' and 'Palestinian capital in Jerusalem's Arab-majority neighbourhoods and Israeli capital in Jewish-majority neighbourhoods'. These results chime with the finding from Palestinian polls, which find Gazans historically being more supporting of permanent peace settlements and more critical of Hamas than West Bankers (28, Figure 13).

[‡‡] Identification of fair deals as those along the 45 degree lines relies on the assumption of inter-group comparability between utilities of Israelis and Palestinians. Assumptions on inter-personal comparability of utility are commonly made in the egalitarian solution by (25), as explained in (26) and (27). For further discussion, see SI. section F.

[§§] Figure 3(b) shows confidence intervals using the standard errors from the point of view of Palestinians (y-axis). One could use the standard errors from the point of view of Israelis (x-axis). It makes no difference in our case.

[¶¶] https://www.ochaopt.org/data/casualties

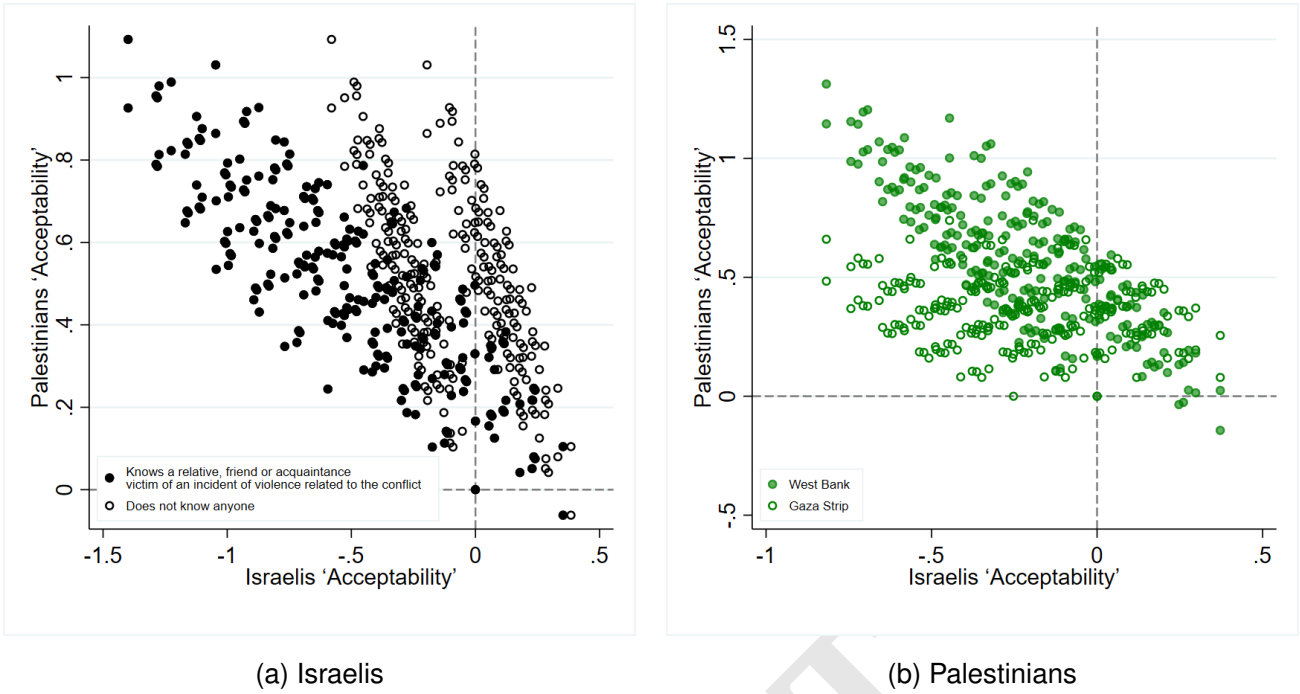



**Fig. 4.** ZOPA by exposure to violence in (a) Israel and (b) Palestine

## Conclusions

This study develops a method to reveal the Zone of Possible Agreement (ZOPA) between parties in conflict. Using representative samples of Israelis and Palestinians we show that a ZOPA existed: out of 256 potential deals considered, 55 are valued superior to the status quo by both groups. The most favored deals by both parties include changes from the status quo that hold tangible benefits for the daily lives of the people involved. Elements such as freedom of movement for everyone, unrestricted access to holy sites for all, prisoner releases, and recognition of Israel as a nation state for the Jewish people emerge as common ground. Deals that include these components are generally valued more favorably than deals advocating the constitution of an independent Palestinian state with territorial gains. The ZOPA that we identify is conditional on the component levels that were presented to the respondents. It may be possible to find a larger or smaller ZOPA if different levels for the components were used, for example if fractional components, such as freedom of movement for a proportion of people rather than all people, were used. Whether the ZOPA would increase or decrease in size at these different levels, compared to the ZOPA in this study, would require an understanding of how utilities change on each side in response to changes in the component levels. Undoubtedly, this would be a fruitful extension of our work.

The findings also reveal that exposure to violence hampers the prospects of achieving compromise among Israelis, reducing the ZOPA to 29 deals. For Palestinians, people from Gaza, where historically violence has been higher, appear to value positively all changes from the status quo, including the recognition of Israel as a nation state for the Jewish people. It is difficult to say if or how preferences may have changed in the aftermath of October 7th, but one message prevails from these findings: at the time of the study, Palestinians and Israelis harbored a genuine desire for peace and constructive steps towards a permanent resolution of the conflict involve abstaining from violence.

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Data curation: EC
Design: EC, GS
Power calculations: BG
Implementation (fieldwork instruments): EC
Software: EC (and Research Assistant Alex Burtusel)
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Visualization: EC
Funding acquisition: EC, BG
Project administration: EC
Supervision: EC
Writing – original draft: EC
Writing – review editing: EC, BG, GS

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**Data and materials availability.** : All data and codes used in the analysis will be deposited in a public repository and be available to any researcher for purposes of reproducing the analysis.

**Supporting Information Appendix (SI).** Supplementary material includes:
Sections A to F
Figs. SI.1 to SI.5
Tables SI.1 to SI.5

# SUPPORTING INFORMATION

Article: "Revealing the Zone Of Possible Agreement between parties in conflict: an application to peace agreements between Israelis and Palestinians"

by Elisa Cavatorta, Ben Groom and Gilead Sher

**A. Reasons for choosing 8 binary components.** The choice of 8 binary components is a trade-offs between the ability to estimate the desirability of each component separately and unconfounded, and feasibility tests with respondents on the field. Using a fractional design in 8 blocks of 8 deals, each with 8 binary components, allows to achieve Resolution IV in which no main effects are confounded with any other main effect or 2-factor interactions. Four main effects are potentially confounded with 3-factor interactions, the effect of which is commonly assumed null. These components are: right to access the holy sites, the location of capital cities, treatment of prisoners and allocation of water rights. Adding a nineth component would have compromised identification: some main effects which would have been confounded with 2-factor interactions. Opting for a design in which main effects are confounded with 3-factor interactions (Resolution IV) is typically preferable compared to selecting a design where main effects are confounded with 2-factor interactions (Resolution III).

Moving from binary components to 3 (or more) category components rapidly increases the total number of peace deals and thus it increases the sample requirements and the number of deals each respondent is required to rank, increasing cognitive burden and time of task completion. As an example, if we were to include 3 categories, instead of two, for only two components the total number of potential peace deals would more than double: $2^6$ x $3^2 = 576$ instead of 256. If we had 8 blocks, each respondent would have been required to rank 18 deals. While the number of blocks could have, in principle, been increased to reduce the number of deals each respondent faced, using random blocks was already considered a significant complication by the enumerators on the field. Using a large number of blocks would have been impractical and posed the risk of jeopardising the quality of data with mistakes.

**B. Power analysis.** For the purpose of the power calculations, the ranking task can be seen as an 'exploded' choice experiment in which the ranking of the 8 peace deals consists of a number of decisions between different alternatives. (21) This allows us to calculate the power according to the approach outlined in (29, Section 4) for binary choice experiments. If a respondent has to rank $n$ cards, there are $(n(n-1))/2$ pairwise comparisons possible and all of these would be required in order to reveal the complete ordering of the $n$ cards. This means that 36 pairwise comparisons would be required to be equivalent to our ranking task of 9 deals. Table SI.1 shows the sample size calculation for an orthogonal design with 36 pairwise comparisons of peace deals. This might be an overestimate of the required number of paired comparisons if preference transitivity is assumed. Therefore Table SI.2 shows the power calculation for an orthogonal design where each person faces 18 pairwise choices. In the former case the sample size required to be able to detect an effect size of 0.05 (0.1, 0.15) at 5% significance level in at least 80% of the cases is 289 (73, 33). In the latter the sample sizes are 583 (148, 67). Our sample sizes are therefore sufficiently powered for these effect sizes.



| $\alpha$ | $1-\beta$ | ES = 0.05 | ES = 0.1 | ES = 0.15 | ES = 0.2 | ES = 0.3 |
|---|---|---|---|---|---|---|
| 0.10 | 0.8 | 211 | 54 | 24 | 14 | 7 |
| 0.10 | 0.7 | 152 | 39 | 18 | 10 | 5 |
| 0.10 | 0.6 | 110 | 28 | 13 | 7 | 4 |
| 0.05 | 0.8 | 289 | 73 | 33 | 19 | 9 |
| 0.05 | 0.7 | 220 | 56 | 25 | 15 | 7 |
| 0.05 | 0.6 | 168 | 43 | 19 | 11 | 6 |
| 0.01 | 0.8 | 469 | 119 | 54 | 32 | 15 |
| 0.01 | 0.7 | 380 | 96 | 44 | 26 | 12 |
| 0.01 | 0.6 | 311 | 79 | 36 | 21 | 10 |

**Table SI.1. Minimum sample size to obtain power $1-\beta$ when testing at significance level $1-\alpha$ from an orthogonal design with 36 pairwise choices**

| $\alpha$ | $1-\beta$ | ES = 0.05 | ES = 0.1 | ES = 0.15 | ES = 0.2 | ES = 0.3 |
|---|---|---|---|---|---|---|
| 0.10 | 0.8 | 425 | 108 | 49 | 28 | 14 |
| 0.10 | 0.7 | 307 | 78 | 35 | 21 | 10 |
| 0.10 | 0.6 | 222 | 56 | 26 | 15 | 7 |
| 0.05 | 0.8 | 583 | 148 | 67 | 39 | 19 |
| 0.05 | 0.7 | 444 | 112 | 51 | 30 | 14 |
| 0.05 | 0.6 | 340 | 86 | 39 | 23 | 11 |
| 0.01 | 0.8 | 946 | 240 | 109 | 63 | 31 |
| 0.01 | 0.7 | 766 | 194 | 88 | 51 | 25 |
| 0.01 | 0.6 | 627 | 159 | 72 | 42 | 20 |

**Table SI.2. Minimum sample size to obtain power $1-\beta$ when testing at significance level $1-\alpha$ from an orthogonal design with 18 pairwise choices**

**C. Reasons for choosing the components' topics and levels.** Since the focus was on citizens preferences, the components' reflect a selection of issues 'on the ground' that are considered important by Palestinians and Israelis themselves. For this reason, we prioritize issues perceived as important for the quality of citizens' daily life over issues related to the diplomatic process or international politics (e.g. the role of international mediators, external guarantees, membership of international organizations, ending of Israel boycott, etc.).

The selection of issues was guided by available data in the Peace Index and the priorities identified in the Palestinian-Israeli Pulse data: a joint poll conducted by the Palestinian Center for Policy and Survey Research and the Evens Program in Mediation and Conflict Management at Tel Aviv University. For example, in September 2018, the Peace Index found that 83% of Jewish-Israelis think "the Palestinians must recognize Israel as the nation-state of the Jewish people before peace talks with them can be revived".(30) The changes from the status quo on settlements, borders and access to holy sites was informed by past peace proposals and consultation with negotiators. The water distribution issues was informed by research in warfare ecology and consultation with Prof Michael Mason (31).

The choice of levels and related wording was also guided by experts' comment we received, the opinion of one of the authors, who has been an official peace negotiator, methodological reasons and clarity of the wording for respondents. For example, for the component related to the issue on Israeli settlements, we use a pragmatic resolution frequently considered in previous peace proposals: 'freezing the construction of new Israeli settlements, settlements adjacent to the 1967 line will become part of Israel and West Bank east of the wall/fence will be evacuated'. For some components we used limiting levels: e.g. freedom of movement for *all* people rather than a given proportion of people. This choice, in addition of helping with respondents' comprehension, provides an interesting upper bound of the like (or dislike) of that component.

Two notable issues were not included among the list of eight components: a resolution on the (over 6 millions) Palestinian refugees living abroad and the issue is Israeli security. The decision regarding the situation of Palestinian refugees was guided by the results of Palestinian surveys which shows that the Palestinian refugee issue is not among the top-priorities in the mind of the people. In a 2018 survey of conditions required by Palestinians to support a peace agreement with Israel, the condition that 'Israel acknowledges responsibility for refugee problem' ranked last out of 10 conditions (32, p.8). In 2020, studying the hierarchy of priorities of demands on each sides, the survey findings show again that only between 6-7% of Palestinians selected the request to 'allow Palestinian citizens, such as refugees, to live in Israel without becoming Israeli citizens' in exchange for various Israelis demands (33, p.21).

The exclusion of a component focusing on Israeli security was methodological. At the time of the survey, the Palestinian-Israeli security cooperation was in place and Israel controlled border crossings, airspace and sea waters. This security cooperation arrangements and Israel control represents the status quo. Looking at previous peace proposals, the most reasonable expectation in any peace agreement proposal is that Israel would continue to maintain its security apparatus and a security cooperation with any future Palestinian State. In our design, unless the attribute on security could be conjugated as a change different from the status quo, the valuation of security would not have been an identifiable parameter.

Our design also omits the monetary dimension, which removes one common source of incommensurability of strength of preferences and potential taboo (34).

| |
|---|
| **Freezing of all settlement building, evacuation of those inside the West Bank. Settlements adjacent to the 1967 line become part of Israel.**<br>Explanation: The expansion of Israeli settlements in the West Bank and East Jerusalem will cease. Settlement adjacent to the 1967 line will be part of Israel. West Bank settlements east of wall/fence will be evacuated.<br><br>**Israel's settlement building continues.**<br>Explanation: Building of Israeli settlements in the West Bank and East Jerusalem continues at the same rate as in recent years. |
| **Palestinians recognise Israel as the nation-state of the Jewish People.**<br>Explanation: Recognition by all Palestinians (those currently living in Israel and those elsewhere) that the territories of Israel are the Land of the Jewish civilization, alongside non-Jewish minorities, with equal rights and duties.<br><br>**Palestinians do not recognise Israel as the nation-state of the Jewish People.**<br>Explanation: No recognition by Palestinians of the Jewish customs, religion and traditions of the State of Israel. |
| **An independent Palestinian State over the West Bank, Gaza and East Jerusalem with equitable (1:1 in value) land swaps with Israel and no Israeli military presence.**<br>Explanation: An independent Palestinian State is established as a single territorial unit and connected territories within the 1967 borders. Land swaps based on 1:1 value, with value based on size and economic factors.<br><br>**The civil and military jurisdiction over Israel, the West Bank and Gaza remains as today.**<br>Explanation: The administrative jurisdiction remains as today: Areas A, B and C in the West Bank, current jurisdiction for the Gaza Strip and in Israel. No land swaps compensation. |
| **Freedom of movement for people (no checkpoints/permits), vehicles and goods between West Bank, Gaza and State of Israel for both Palestinians and Israelis.**<br>Explanation : Free movement means removal of work permit system, checkpoints and other movement restrictions to allow people to work, travel and trade between the current territories of the West Bank, Gaza, Jerusalem and State of Israel.<br><br>**Current freedom of trade between West Bank, Gaza and State of Israel. Permit system for labour and vehicles.**<br>Explanation : Goods are free to move between Israel and the West Bank, there are restrictions of trade of goods to and from Gaza; work permit regime for labour movement (as of today). |
| **Unrestricted right to access to holy sites and freedom of worship for anyone.**<br>Explanation : Anyone (Jewish, Muslim, Christian or other) from Israel and the Palestinian territories can access and pray in all holy sites (including Temple Mount/Haram al-Sharif and the Holy Sepulchre).<br><br>**Current restricted rights to access to holy sites and pray.**<br>Explanation : Access and right to pray as today: e.g. Haram al-Sharif/Temple Mount: Muslims can pray and non-Muslims allowed to visit but not pray. |
| **Palestinian capital in Jerusalem's Arab - majority neighbourhoods and Israeli capital in Jewish - majority neighbourhoods. Old City is undivided.**<br>Explanation : The Arab majority neighbourhoods in Jerusalem will be under Palestinian control and form the capital of Palestine; Jewish-majority neighbourhoods in Jerusalem will be under Israeli control and be the capital of Israel. The Old city administered by a council representing Christians, Muslims and Jews.<br><br>**Israeli capital in West and East Jerusalem and Palestinian capital de-facto in Ramallah.**<br>Explanation : Israeli capital designated as being West and East Jerusalem and Palestinian capital being de-facto located in Ramallah. |
| **Mutual amnesty and release for an agreed number of current prisoners in Israeli and Palestinian jails.**<br>Explanation : An agreed number of Palestinian prisoners held by Israel and Israelis prisoners held by Palestinians will receive amnesty and be released.<br><br>**Current practices of imprisonment, pre-trial detention and occasional prisoner release continue.**<br>Explanation : The use of imprisonment, administrative (pre-trial) detention and prisoner release and prisoner exchanges continues as seen in recent years. |
| **Water rights in proportion to the population: 60% Israel, 40% Palestinian Authority.**<br>Explanation: The water from the aquifers is allocated proportional to the current population in the Palestinian territories (approx. 5m people) and Israel (approx. 9m).<br><br>**Oslo II water rights (the same as today): 71% Israel, 29% Palestinian Authority.**<br>Explanation: The water from the aquifers is allocated according to the Oslo II Accord (1995, Article 40): 71% Israel, 29% Palestinian Authority. |

**Fig. SI.1.** Components and related descriptors given to respondents.

**D. Data and national representativeness.** Table SI.3 shows the descriptive statistics of the Israeli and Palestinian samples alongside the benchmark Census statistics of reference.

| | Sample of Israeli citizens (n=679) | Population Statistics from CBS | Sample of Palestinians (n=1,197) | Population Statistics from PCBS |
|---|---|---|---|---|
| **Population group (%)** | | | | |
| Arab Israelis | 19.0 | 19.0 | | |
| **District of residence (%)** | | | | |
| Jerusalem | 10.7 | 11.2 | | |
| Northern | 19.7 | 16.2 | | |
| Haifa | 15.0 | 12.2 | | |
| Central | 23.1 | 25.1 | | |
| Tel Aviv | 15.0 | 17.4 | | |
| Southern | 13.4 | 13.9 | | |
| Judea and Samaria | 3.0 | 3.6 | | |
| West Bank | | | 65.83 | 61.91 |
| Gaza Strip | | | 34.17 | 38.09 |
| **Sex (%)** | | | | |
| Male | 46.5 | 48.7 | 49.83 | 50.50 |
| Female | 53.5 | 51.3 | 50.17 | 49.50 |
| **Age (%)** | | | | |
| Age (mean years of age) | 42.9 | 44.7 | 37.46 | 36.54 |
| Between 18-29 yrs old | 26.8 | 25.5 | 35.93 | 41.94 |
| Between 30-39 yrs old | 21.8 | 19.6 | 24.29 | 21.98 |
| Between 40-49 yrs old | 17.5 | 17.5 | 16.67 | 16.01 |
| Between 50-59 yrs old | 13.4 | 13.6 | 13.32 | 10.95 |
| Between 60-69 yrs old | 11.1 | 12.1 | 6.70 | 5.51 |
| Equal and above 70 yrs old | 9.4 | 11.6 | 3.10 | 3.61 |

**Table SI.3. Sample statistics and target population statistics. The table shows the descriptive statistics for the Israeli citizens sample (column 1) and target population statistics from the Central Bureau of Statistics of Israel (2019 data, column 2), available on https://www.cbs.gov.il/en/publications/Pages/2020/Statistical-Abstract-of-Israel-2020-No-71.aspx. We use table 2.3a (sex and age), table 2.19 (district), and table 28 (education). The table also shows the descriptive statistics for the Palestinian sample (column 3) and target population statistics from the Palestinian Central Bureau of Statistics (column 4), available on https://www.pcbs.gov.ps/pcbs_2012/Publications.aspx. We use table 2 (sex and age), table 20, and 21 (education) from the Census Final Results - Detailed Report Palestine 2017 (the latest Census data available), and table 2 from Census Final Results - Detailed Report West Bank 2017 and Census Final Results - Detailed Report Gaza Strip 2017.**



**E. Task and application interface.** The Palestinian sample was collected via in-person interviews conducted in Arabic by trained enumerators hired by a professional poll company. The fieldwork used a nationally representative sampling frame. The task was implemented using physical cards, like the one in Figure SI.2.

To collect the data on the Israeli sample we designed a bespoke interactive online application. Two versions of the application were made available: one in Hebrew for Jewish-Israeli respondents and one in Arabic for Arab(Palestinian)-Israeli respondents. The data collection used the database of respondents of an Israeli poll company. The task interface looks like the one in Figure SI.3. Respondents were given written instructions to complete the ranking exercise and instruction videos always available to them throughout the task.


**Fig. SI.2.** An example of the cards representing peace agreements for the in-person fieldwork in Arabic language.

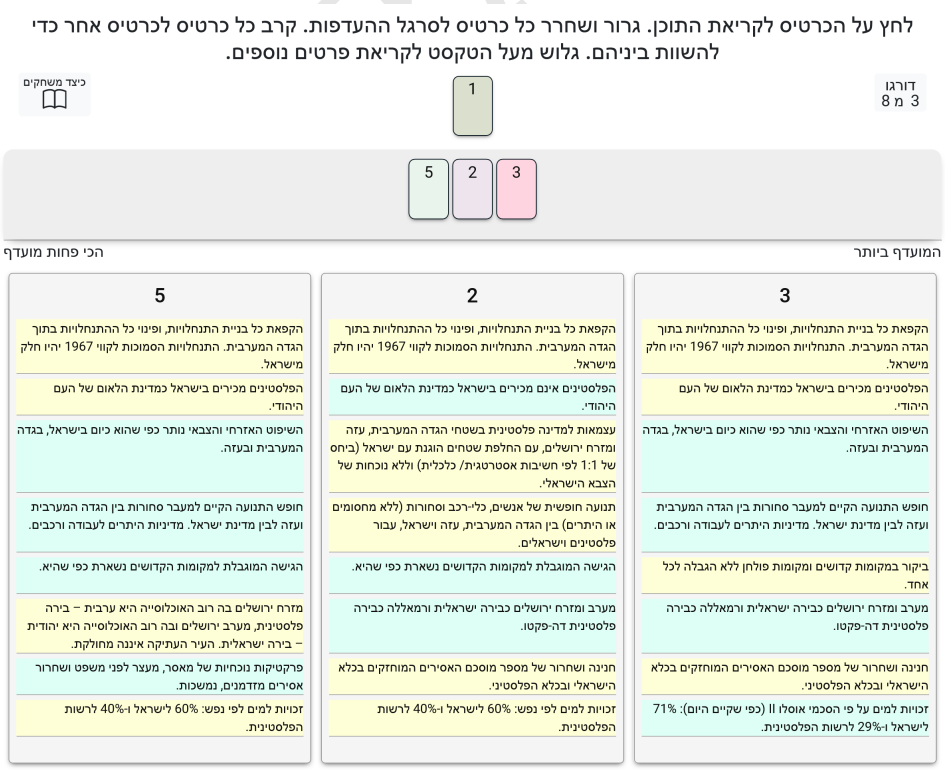



**Fig. SI.3.** An example of user interface of the online application in Hebrew language.

**F. Considerations on the comparability of preferences.** The model assumes that the individual rankings of peace agreements reflect ranking of preference/utility from peace agreements as in a Random Utility model. Utility of a deal $j$ is assumed linear, $V_j(x) = x'_j\beta$, where $x'_j$ is a vector of the agreement (binary) components – and separable in the contributions of each component. In the empirical model, the joint probability of a ranking is estimated as the product of logit probabilities: the estimated vector of parameters $\beta$s in the rank-ordered logit model can be interpreted as the expected *change* in utility for Israelis or Palestinians when a deal's component is changed from the status quo to an alternative arrangement.

Two linear utility functions are estimated, one for Israelis and one for Palestinians, and the two vectors of estimated $\beta$s are plotted in Figure 2 using a single metric: utility changes from the status quo. This process gives rise to two sets of considerations of commensurability/comparability of preferences: i) Between components; and, ii) Between Israelis and Palestinians.

**Commensurability/comparability between components**. Comparability between components means that if $\beta_m = 2\beta_k$, a change away from the status quo on component $m$ is worth twice as much or is twice as desirable as a change from $k$. Under the assumptions made above, this statement is possible and components can be evaluated in the same metric. When preferences for components are aggregated into preferences for deals, commensurability between components implies that a deal that changes component $m$ from the status quo compensates for the absence of a change from the status quo on component $k$ if changes from the status quo in both $m$ and $k$ are valued positively.

The concern on commensurability/comparability between components arises when trade-offs between components cannot be done, for example because some component is considered a taboo (35) or an inviolable principle (36). It is worth noting that trade-offs among different dimensions of peace deals are an inevitable part of the process of negotiation. However, to shed light on the potential commensurability problem, we ask Israeli respondents to indicate whether conceding on the list of agreement's components (e.g. giving up the recognition of Israel as a Jewish state, conceiving the re-allocation of water rights between Israel and Palestinians under some mutually agreed criterion, etc.) was a list of 'inviolable principles, meaning that they can never be justified or be permissible under any circumstance, no matter what the material or human benefits, costs or consequences (e.g. no matter the monetary implications, efforts and resources required etc.)'. Only 2.5% of respondents indicated that the actions underpinning concessions on the eight components could never be justified.

**Comparability between Israelis and Palestinians**. It is known that utility functions are equivalent under positive affine transformation, that is $u'(x) = au(x) + b$, where $a$ is a positive scale parameter and $b$ is a translation/shift constant, and $u(x)$ reflect the same preferences. This implies that statements like 'Israelis prefer component X twice as much as Palestinians' are impossible to make because $a$ and $b$ for each group remain unidentified. As a result, mere differences in utility of a single deal between Palestinians and Israelis cannot be pinned down, because of scale, but differences in utility of a deal from a commonly valued deal, e.g. the status quo, can. We are merely concerned with these differences, hence the shift constant can be ignored. The differences in utility between each deal and the status quo are what is estimated by the rank-ordered logit model and then plotted in Figure 3. To identify the mutually acceptable deals and Pareto efficient deals in the sense of a Nash bargaining solution all that is required is the comparison of the utility of the peace deal with the utility of the status quo for each party. Ratios of differences in utility for Palestinians ($P$) and Israelis ($I$) can also be evaluated: $\frac{u^P(j)-u^P(sq)}{u^I(j)-u^I(sq)}$, for deal $j$ and status quo $sq$, meaning that statements saying: 'it is X times as good to go from the status quo to deal j for Palestinians as to go from the status quo to deal j for Israelis' are reasonable.

Identification of fair deals as those along the 45 degree line in the sense that they achieve an egalitarian split of utility gains (25) rely on stronger inter-group comparability between Israelis and Palestinians, namely that the positive scale parameter $a$ for each group is identical.

**G. Heterogeneity by violence exposure (Israeli sample).**

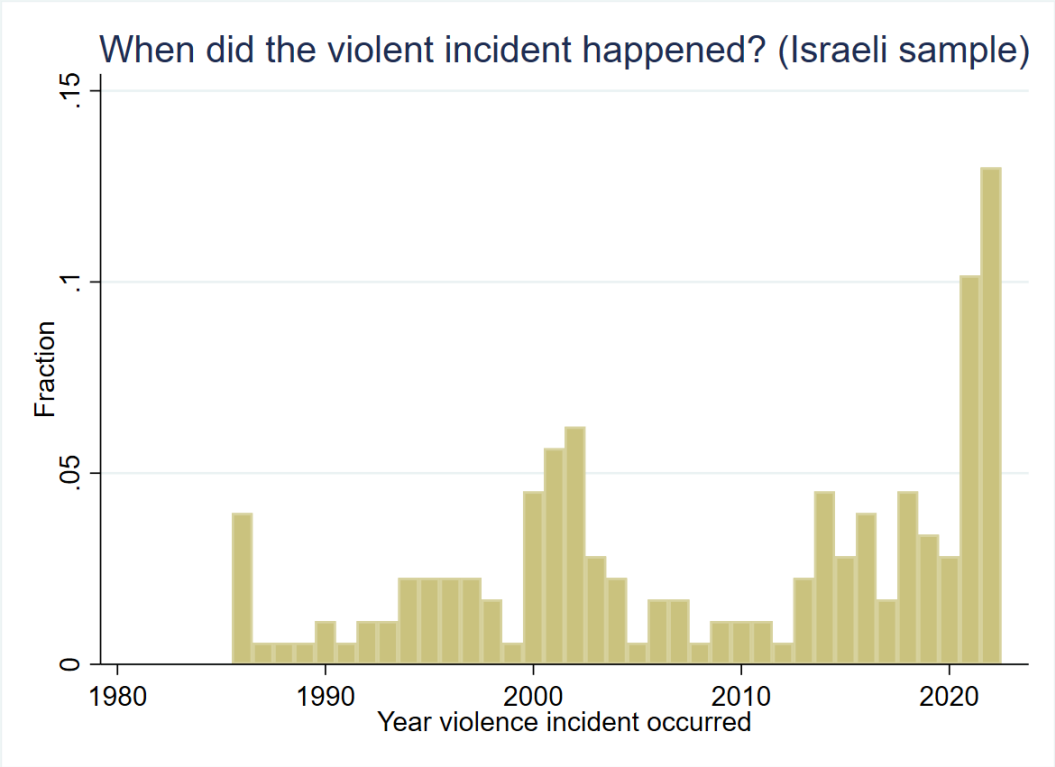


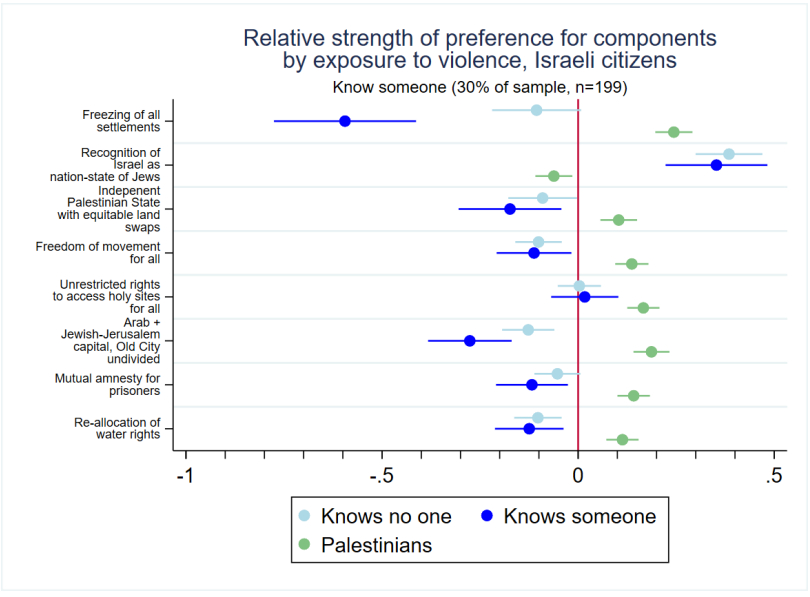

**Fig. SI.4.** Timeline of reported violent incidents, Israeli sample.



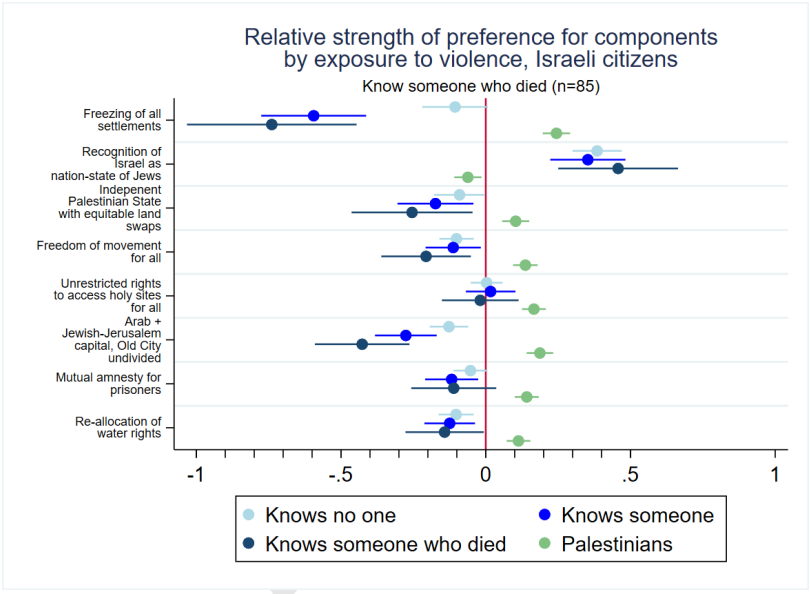
**Demographic profile of Israelis exposed and not exposed to violence**

| | Know someone victim of an incidence of violence | Does not know anyone |
|---|---|---|
| Male (%) | 52.76 | 43.96 |
| Age (mean) | 38.41 | 44.79 |
| Aged 25 (%) | 23.10 | 16.04 |
| Arab (%) | 16.58 | 20.00 |
| Jerusalem (%) | 18.09 | 7.71 |
| Northern (%) | 18.59 | 20.21 |
| Haifa (%) | 13.57 | 15.63 |
| Central (%) | 19.10 | 24.79 |
| Tel Aviv (%) | 13.07 | 15.83 |
| Southern (%) | 12.56 | 13.75 |
| Judea and Samaria (%) | 5.03 | 2.08 |

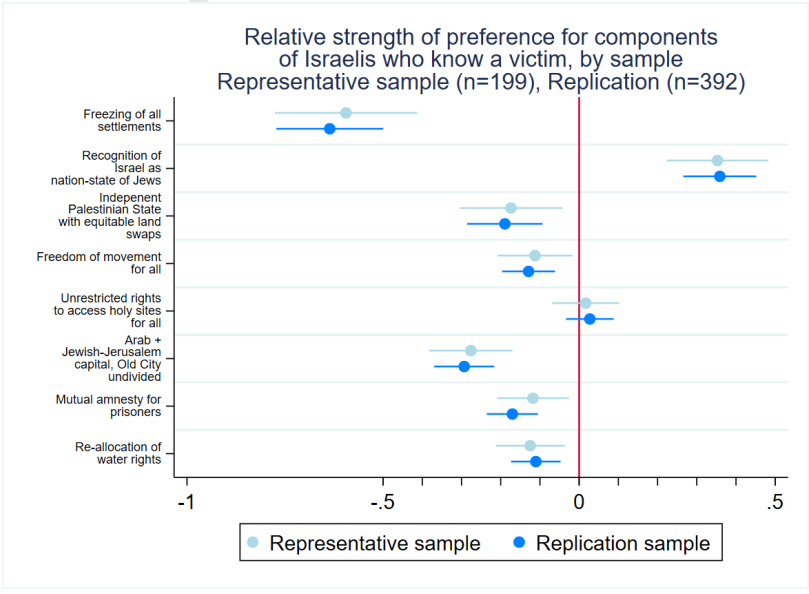
**Table SI.4. Demographic characteristics of Israeli respondents who report knowing someone who was victim of an incident of violence related to the conflict with the Palestinians and those who did not know any victim.**




(a)




(b)




(c)

**Fig. SI.5.** Relative strengths of preference for components in sub-groups of (a) Israelis who know a victim or don't; (b) Israelis who know a victim, a victim who died or don't know anyone; (c) Replication of results in (b) using a non-representative sample of Israeli respondents.

Robustness of heterogeneity results by Exposure to Violence (EtV)

| | Exposure to Violence heterogeneity | Additional controls (interacted with components) | | | |
|---|---|---|---|---|---|
| | | J+J&S district | J+J&S district Age | J+J&S district Age Gender | Age Gender |
| (a) Freezing of all | -0.1151** | -0.0645 | -0.3162** | -0.1586 | -0.2511* |
| settlements | (0.057) | (0.058) | (0.142) | (0.151) | (0.149) |
| (b) Recognition of Israel as | 0.3847*** | 0.3915*** | 0.1568 | 0.2151* | 0.2088* |
| nation state of Jews | (0.042) | (0.043) | (0.108) | (0.114) | (0.112) |
| (c) Palestinian state with | -0.1024** | -0.0917** | -0.2881** | -0.2469** | -0.2635** |
| equitable land swaps | (0.043) | (0.045) | (0.113) | (0.118) | (0.115) |
| (d) Freedom of movement for all | -0.0922*** | -0.0952*** | -0.2533*** | -0.2295*** | -0.2306*** |
| | (0.030) | (0.031) | (0.078) | (0.082) | (0.080) |
| (e) Unrestricted rights to | 0.0105 | 0.0128 | -0.1223* | -0.0976 | -0.0957 |
| access holy sites for all | (0.027) | (0.028) | (0.073) | (0.076) | (0.074) |
| (f) Arab + Jewish Jerusalem | -0.1168*** | -0.1074*** | -0.2343*** | -0.1927** | -0.2075** |
| Old City undivided | (0.033) | (0.035) | (0.086) | (0.089) | (0.086) |
| (g) Mutual amnesty for prisoners | -0.0575* | -0.0584* | -0.1598** | -0.1511* | -0.1478* |
| | (0.030) | (0.031) | (0.079) | (0.083) | (0.082) |
| (h) Re-allocation of water rights | -0.1140*** | -0.1072*** | -0.1252* | -0.1027 | -0.1137 |
| | (0.030) | (0.031) | (0.074) | (0.077) | (0.075) |
| EtV#(a) | -0.4794*** | -0.4134*** | -0.3827*** | -0.3480*** | -0.4046*** |
| | (0.108) | (0.110) | (0.111) | (0.112) | (0.110) |
| EtV#(b) | -0.0319 | -0.0255 | 0.001 | 0.0126 | 0.0097 |
| | (0.078) | (0.081) | (0.082) | (0.082) | (0.081) |
| EtV#(c) | -0.0713 | -0.0677 | -0.0444 | -0.0273 | -0.0303 |
| | (0.080) | (0.082) | (0.083) | (0.083) | (0.082) |
| EtV#(d) | -0.0202 | -0.0118 | 0.0039 | 0.0066 | 0.001 |
| | (0.057) | (0.059) | (0.059) | (0.060) | (0.059) |
| EtV#(e) | 0.0064 | 0.0091 | 0.0284 | 0.0282 | 0.0279 |
| | (0.052) | (0.052) | (0.053) | (0.054) | (0.053) |
| EtV#(f) | -0.1593** | -0.1461** | -0.1305** | -0.1127* | -0.1240* |
| | (0.064) | (0.064) | (0.065) | (0.066) | (0.066) |
| EtV#(g) | -0.0603 | -0.0596 | -0.0435 | -0.0508 | -0.0503 |
| | (0.055) | (0.056) | (0.057) | (0.058) | (0.058) |
| EtV#(h) | -0.0107 | -0.0007 | 0.0111 | 0.0083 | -0.0006 |
| | (0.054) | (0.055) | (0.055) | (0.056) | (0.055) |
| Assumption of constant valuation weights: Wald test's p-value of null of no heterogeneity by | | | | | |
| Exposure to Violence | 0.0041 | 0.0246 | 0.0509 | 0.123 | 0.0446 |
| Jerusalem district & Settlements | | 0.0919 | 0.1404 | 0.1369 | |
| Years of age | | | 0.0041 | 0.003 | 0.0018 |
| Gender | | | | 0.004 | 0.0041 |

**Table SI.5. Robustness of Exposure to Violence differences in preferences for deals' components controlling for heterogeneity in components by demographic characteristics listed at the top of each column: Jerusalem and Judea and Samaria district (J+J&S district), age (in years) and gender. Characteristics of the individual do not vary between alternatives and the average additive effect of these characteristics on the valuation of alternative deals cannot be identified, but interactions with components can. The panel at the bottom of the table reports the p-values of Wald test statistics of the null hypothesis that valuations of components do not vary (that is, there is no heterogeneity) by each characteristic (row) across the various specification (column).**