



## The struggle for Palestinian hearts and minds: Violence and public opinion in the Second Intifada

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### ABSTRACT

This paper examines how violence influences the political preferences of an aggrieved constituency that is purportedly represented by militant factions. Using longitudinal public opinion poll micro data of the Palestinian population linked to data on fatalities from the Second Intifada, we find that although local Israeli violence discourages Palestinians from supporting moderate political positions, this “radicalization” is fleeting, and vanishes completely within 90 days. We do, however, find evidence suggesting that collateral violence affecting Palestinian civilians has a stronger effect on the populations’ political preferences relative to individuals directly targeted by the Israeli military. In addition, we observe that major political events in the Palestinian–Israeli conflict have had a longer-term impact on political preferences. Individuals who were teenagers during the period of the Oslo negotiations tend to have relatively moderate preferences, while those who were teenagers during the First Intifada tend to be relatively radical.

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### 1. Introduction

The Palestinian Intifada is a prototype for many modern conflicts, where an established army is pitted against insurgent militant factions that purportedly represent the interests of a large civilian constituency. In this conflict, as well as in many other modern conflicts, violence is widely used by both insurgents and governments to achieve their goals. Despite its prominence and alarming regularity, there is little systematic evidence on the causal effects of violence on the political attitudes of the aggrieved population. A better understanding of these effects is of paramount importance since the attitudes of this population are critical not only to demoralize or strategically incapacitate the insurgents, who may draw members and support from the civilian ranks, but also affect negotiations to put an end to the violent confrontations. In this paper, we empirically examine how military violence against civilians and insurgents affects the short-run and long-run radicalization of the Palestinian

population during the time of the Second Intifada. This is arguably one of the most contentious questions regarding modern conflicts in general and the Palestinian–Israeli conflict in particular.

Despite the lack of empirical evidence, there is a growing theoretical literature regarding the effects of state violence on the political preferences of the aggrieved population. The prevalent view argues that military actions by the state actor (which may include the targeted killing of militants and political leaders, in addition to actions against the civilian population), have a “boomerang” effect. These harsh measures not only foster hatred and desire for revenge among the aggrieved population, but they also drive rational individuals to support the militant factions. This may occur either because violence diminishes the benefit of “free riding” on the militants’ effort (Wood, 2003), or simply because individuals seek protection (Kalyvas, 2006) or access to public goods (Berman and Laitin, 2008). This theoretical view holds that violence directly causes the radicalization and mobilization of the constituency militants claim to represent, encouraging yet more attacks (Kydd and Walter, 2006; Rubinstein, 2002; Rosendorff and Sandler, 2004; Kaplan et al., 2005; Siqueira and Sandler, 2006).

On the other hand, the opposing theoretical view holds that active violent measures are an effective tool in disrupting the operations of

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militant organizations (Brophy-Baerman and Conybeare, 1994; Ganor, 2005). Zussman and Zussman (2006) report, for example, that the Israeli stock market reacts positively to the assassination of senior Palestinian military leaders, reflecting the expectation that future levels of terrorism will decrease. Similarly, Jaeger and Paserman (2009) find that targeted killings are effective in reducing the level of violence: the overall number of Israeli fatalities and the number of Israelis killed in suicide attacks fall in the first week after a targeted killing. According to this view, a pro-active policy that includes curfews, closures and targeted killings incapacitates militant organizations. Perhaps more importantly, these measures are meant to punish and cause fear among the wider population, thereby deterring regular citizens from committing attacks and supporting militant groups (Lyall, 2009; Padró i Miquel and Yared, 2010). This mechanism is the focus of the recent theoretical analysis of Bueno de Mesquita and Dickson (2007), which captures the two opposing views regarding the overall effect of counter-terrorism on violence, placing special attention on whether counter-terrorism brings about the radicalization or moderation of the aggrieved population. They argue that counter-terrorism brings about the radicalization of the population when its consequences are indiscriminate. That is, when it causes significant suffering and economic damage not only on the terrorists, but also on the civilian population the terrorists claim to represent.

In this paper, we empirically examine the question of how violence affects the political attitudes of the Palestinian population during the Second Intifada. We focus on the Palestinian–Israeli conflict for a number of reasons. First, the conflict has a far greater influence on international politics than other more deadly conflicts, and has proved very difficult to end. Second, the civilian population is heavily involved in the conflict. Between the beginning of the Second Intifada in September 2000 and December 2008, more than 4900 Palestinians and 1000 Israelis were killed as a result of conflict.<sup>1</sup> Third, Israel has engaged in a wide range of military actions against Palestinian militants, from the policy of targeted killing of Hamas leaders to large-scale incursions into Palestinian territories in 2002 and 2009. The military actions against both civilians and militants have had significant social and political consequences for Palestinian society that are arguably more important and persistent than their immediate effect on the level of Palestinian violence against Israel.

For our empirical analysis, we use micro-level data from surveys conducted every 3 months in the Palestinian territories beginning in November 2000. The surveys contain information on the demographic characteristics and political attitudes of a large representative sample of the Palestinian population. From these, we build, to the best of our knowledge, the most detailed and systematic longitudinal data set on the political attitudes of an aggrieved population at the time of the actual conflict. Moreover, we combine the surveys' micro data measuring the preferences of the Palestinian population with daily data on fatalities from the beginning of the Second Intifada in September 2000 to September 2006, allowing us to use the temporal and spatial variation in fatalities and the population's preferences to empirically test the two competing theories regarding the effects of violent attacks discussed above.

The empirical results provide little support for the hypothesis that Palestinian fatalities lead the Palestinian population to move toward more radical positions. Palestinian fatalities inflicted by Israel slightly lower the Palestinian population's support for negotiations with Israel and shift political support away from the relatively moderate Fatah faction only within 1 month of their occurrence. This movement away from moderate positions, however, steadily dissipates over time and totally disappears after 90 days. The overall effect of Palestinian fatalities

(when accumulated over time) on the preferences of the population is not statistically significant. The results also show that Palestinian fatalities in targeted killings have a smaller effect on the population's preferences relative to other fatalities, thus supporting the theory that indiscriminate violence against civilians is more counter-productive for the state than selective violence (Kalyvas, 2006; Benmelech et al., 2010). In addition, we find evidence that the shift away from moderate positions occurs mainly among Palestinians who were a priori expected to be more radical.<sup>2</sup>

While we find little evidence that violence has an effect on Palestinian political preferences in the short run, we do find evidence that suggests important political events in the Palestinian–Israeli conflict have had a longer-term impact. We estimate that individuals who spent their formative years (ages 14–17) during the period of the Oslo negotiations have, on average, more moderate preferences than would be predicted solely by their age and other demographic characteristics. In contrast, individuals who spent their formative years during the first Palestinian uprising (born between 1970 and 1973) have significantly more radical positions than what would be predicted by their age and other demographics. Therefore, it appears that violence, in the long run, leads to a radicalization of the Palestinian population.

## 2. Data

### 2.1. Palestinian public opinion data

The data on Palestinian public opinion comes from a set of surveys conducted by the Development Studies Programme (DSP) at Bir Zeit University. This institute has conducted regular public opinion polls on all aspects of Palestinian life since the year 2000. Every poll has 1200 observations, with approximately 65% of them from the West Bank and Jerusalem and the rest from the Gaza Strip. General information on these polls, including methodology, the wording of the questions, and summary results are available from the DSP web site.<sup>3</sup>

The DSP polls contain information on the gender, age, marital status, education level, refugee status, type of residence (city, village or refugee camp) and, notably, the district of residence of each respondent. This information allows us to estimate the effect of fatalities on public opinion using a high level of spatial variation. In addition, the polls include a wide array of questions on economic conditions, perceptions of corruption, democracy, human rights, and various other social issues. Only a limited number of questions, however, appear repeatedly across polls. We employ the two questions that appear consistently and that inform us about respondents' political preferences: "Do you support or oppose the continuation of negotiations with the Israelis?" and "Which of the following political groups do you support?"

#### 2.1.1. Support for negotiations

In twelve polls, between May 2001 and September 2006, respondents were asked whether they supported or opposed the continuation

<sup>1</sup> These figures are as of December 26, 2008, and do not take into account fatalities occurred during the January 2009 Israeli offensive into the Gaza Strip. Source: [www.btselem.org](http://www.btselem.org).

<sup>2</sup> The current paper focuses on the effect of Israeli violence on the political attitudes of the Palestinian population. In a related paper, we focus instead on the effects of Palestinian violence against Israelis on the attitudes of the Palestinian population (Jaeger et al., 2010). In that paper, we disaggregate Israeli fatalities across Palestinian factions responsible for the attacks and study whether successful attacks are an effective tool used by these factions to compete for the support of their constituency. The results of that analysis suggest that Israeli fatalities have a limited effect on the preferences of the Palestinian population. While Israeli fatalities shift Palestinians' preferences within secular or Muslim factions, they do not shift preferences between the two groups.

<sup>3</sup> The participants for each poll are randomly chosen using sampling techniques applied to statistical cells built using The Housing and Economic Establishment Census conducted by the Palestinian Central Bureau of Statistics. Further information on the surveys can be found at the institute's official website (<http://home.birzeit.edu/dsp/opinionpolls>).

**Table 1**  
Attitudes toward the conflict and support for different factions.

Attitudes	N	Number of polls	Percentage in favor of moderate position among supporters of:					
			Fatah	Hamas	PIJ	Others	No one	All
DSP data								
Support for negotiations	9724	9	72.0	48.0	48.0	57.4	61.3	59.6
JMCC data								
Supports for peace negotiations	4252	4	75.2	31.1	32.9	37.6	54.3	52.2
Support for Oslo peace process	5149	5	61.2	18.1	18.0	22.6	36.9	38.1
Opposes continuation of the Intifada	8550	8	30.4	13.6	14.2	19.1	31.9	21.7
Support for popular Intifada only	5975	6	32.8	12.5	16.4	24.1	28.3	24.8
Best way to achieve national goals is through negotiations	6323	6	21.3	7.0	10.4	13.1	16.4	15.0
Opposes resumption of military operations	11,447	11	51.6	26.4	18.0	40.6	43.9	36.8
Opposes suicide bombings	9500	9	49.5	24.4	20.0	42.7	46.2	35.6
End result of the intifada: NOT liberation of all historic Palestine	5245	5	67.0	36.0	37.4	49.2	59.2	54.0
Preferred solution to the conflict: NOT Islamic/Palestinian state	12,250	11	92.0	76.4	74.8	86.3	88.7	85.6

Source: Authors' calculations using poll data from DSP and JMCC.

of negotiations with Israel, giving a total of 13,207 observations on this variable. Over the whole period of interest, an average of 59.6% of Palestinians supported negotiations with Israel, 36.9% opposed negotiations, while the remainder did not know or did not answer. We characterize support of negotiations as being a more moderate position than being opposed to negotiations.

### 2.1.2. Political faction supported

The available options included all the major Palestinian factions.<sup>4</sup> In addition, respondents who stated that they were independent were asked whether their preferences leaned toward Fatah, to one of the Islamic factions, or to one of the leftist factions.<sup>5</sup> Independents leaning toward one of the factions were coded as outright supporters of that faction. The question on political support appeared in 17 polls between February 2001 and February 2007, for a total of 19,891 observations. Fatah received 29.4% support on average over the whole period, while Hamas received 22.6%. Notably, the proportion of respondents that do not support any group was 28.3%, nearly as large as the proportion supporting Fatah. This suggests that a large fraction of the Palestinian population feels disaffection from the Palestinian political parties.<sup>6</sup>

In Table 1 we characterize supporters of the different factions in terms of their level of radicalization.<sup>7</sup> The first row of the table shows the percentage of individuals that support peace negotiations among the supporters of the different factions. Among supporters of Fatah, we find that 72% support peace negotiations, while only 48% of Hamas supporters do; clearly, Fatah supporters exhibit a more moderate position than Hamas supporters regarding peace negotiations. Moreover, we observe that individuals dissatisfied with the existing factions exhibit on average a more radical position than

Fatah supporters, but a more moderate position than Hamas supporters.

As corroborative evidence, in rows 2 to 10 we present results from a series of public opinion polls conducted by a different polling institute, the Jerusalem Media and Communication Center (JMCC). In these polls, Palestinians were asked which of the political factions they "trusted most" in addition to a broader series of questions on attitudes toward the conflict.<sup>8</sup> In each of the rows, the questions are coded so that high values indicate the more moderate position. In each case, we find strong evidence that Fatah supporters are more likely to hold a moderate position than those who support Hamas or the other factions. In addition, dissatisfied individuals are consistently more moderate than Hamas supporters but more radical than those in favor of Fatah.

### 2.2. Data on fatalities

The data on fatalities are the same as those used in Jaeger and Paserman (2006, 2008, 2009). The data are taken from the web site of B'Tselem ([www.btselem.org](http://www.btselem.org)), an Israeli human rights organization. Widely thought to be accurate and reliable, the data published by B'Tselem record in detail every fatality (excluding suicide bombers) on both sides of the conflict during the Second Intifada. They include information on the date, location and circumstances of the fatal wounding, and the age, gender and locality of residence of the victim. The main advantage of these data is their comprehensiveness and the symmetrical treatment of fatalities on both sides of the conflict, something that is unavailable in the official statistics compiled by either side.

We classify each Palestinian fatality according to the district where the fatal wounding took place, and whether or not he or she was killed during a targeted killing operation. We perform a similar classification of Israeli fatalities according to the district where the attack originated. Fig. 1 presents the geographic variation in the average number of fatalities in the 12 weeks preceding each poll. For Palestinian fatalities and for Israeli fatalities occurring in the occupied territories, we record the district where the fatal wounding occurred; for Israeli fatalities in Israel, we record the Palestinian district from which the attack originated. The figure also highlights Palestinian

<sup>4</sup> The two main Palestinian political factions are Fatah and Hamas. Fatah was founded in 1959, and since 1969 it has been the controlling group of the Palestinian national movement, first in the Palestinian Liberation Organization, and subsequently in the Palestinian National Authority, after it was established in 1993 following the Oslo Peace Accords. As the majority party in the Palestinian Legislative Council (PLC) up until 2006, Fatah was the primary negotiator with the Israeli government. It adopted the two-state approach to the solution of the conflict, agreeing in principle to a partition of mandatory Palestine between an Israeli and a Palestinian state, although the issues of Jerusalem, the final borders of the Palestinian state, and the status of refugees were postponed to final status negotiations. Unlike Fatah, Hamas does not entertain the possibility of a two-state solution. Hamas has expressly called for the destruction of Israel and the establishment of an Islamist state in all of mandatory Palestine (Mishal and Sela, 2006).

<sup>5</sup> The two main leftist factions are the Popular Front for the Liberation of Palestine (PFLP) and the Democratic Front for the Liberation of Palestine (DFLP).

<sup>6</sup> The other factions that received a significant amount of support are the Palestinian Islamic Jihad (9.46% when grouped with other Islamic factions) and the Popular Front for the Liberation of Palestine (2.75%).

<sup>7</sup> The number of observations available for analysis is slightly smaller than the numbers reported above, because we can only use observation from polls in which both questions are asked.

<sup>8</sup> The JMCC has conducted polls on Palestinian political opinions since 1993, though the data in Table 1 focus exclusively on those polls conducted since the outbreak of the second Intifada in September 2000. The main analysis in the body of the paper uses only the DSP data because the JMCC polls only identify the broader region of residence of the respondents (West Bank, Jerusalem and Gaza Strip) but not their district. The results using the JMCC data, found in Appendix A, are qualitatively similar to those using DSP data. See the JMCC website (<http://www.jmcc.org>) for general information on the polls.



Note: The numbers in parentheses show, for each district: a) the average total number of Palestinian fatalities in the 12 weeks preceding a poll; b) the average number of Palestinian fatalities in targeted killings in the 12 weeks preceding a poll; c) the average total number of Israeli fatalities originating in the district in the 12 weeks preceding the poll.

Fig. 1. Average Palestinian and Israeli fatalities within 90 days of polls, by district (2000–2007).

fatalities occurring in targeted killings. An average district suffered slightly over 9.3 Palestinian fatalities and claimed almost 2.4 Israeli fatalities per 12-week period.

The figure depicts the high variation across districts in the number of fatalities that occur 90 days before each poll. There are a number of very violent districts in the West Bank like Jenin, Nablus and Hebron with a high number of Palestinian and claimed Israeli fatalities, whereas other districts exhibit a total number of fatalities well below the average. In Gaza, the average number of Palestinian fatalities of every district is above the average, while the average number of Israeli fatalities originating in these districts is below the overall average. Particularly noteworthy is the number of fatalities in Gaza City, showing an average of almost 21 Palestinian fatalities within 12 weeks of each poll (with almost 7 of them as a result of targeted killings) and only 1.68 Israeli fatalities originating there. This gap between Palestinian and claimed Israeli fatalities in Gaza is perhaps due to the fact that border closures in the Gaza Strip are easier to implement and enforce, thus keeping its residents away from Israeli territory.

### 3. Empirical framework

Our empirical specification allows us to examine how violence affects the radicalization of the Palestinian population. Our general

specification for the relationship between public opinion and violence is:

$$Y_{ijt} = \alpha_1 \sum_{k=1}^4 P_{j,t-k} + \alpha_2 \sum_{k=5}^8 P_{j,t-k} + \alpha_3 \sum_{k=9}^{12} P_{j,t-k} + \beta_1 \sum_{k=1}^4 I_{j,t-k} + \beta_2 \sum_{k=5}^8 I_{j,t-k} + \beta_3 \sum_{k=9}^{12} I_{j,t-k} + \mathbf{X}_{ijt} \Phi + Z_t \delta + c_j + u_{ijt} \quad (1)$$

where  $Y_{ijt}$  is a binary indicator for whether individual  $i$  in district  $j$  and poll conducted at time  $t$  expresses a moderate preference;  $P_{j,t-k}$  is the number of Palestinian fatalities in district  $j$  that occurred  $k$  weeks prior to date  $t$ ;  $I_{j,t-k}$  is the number of Israeli fatalities that originated in district  $j$  and occurred  $k$  weeks before date  $t$ ;  $\mathbf{X}_{ijt}$  is a vector of individual, time-varying district characteristics as well as period dummies;  $Z_t$  is a vector of time dummies which are common to all districts at time  $t$ ;  $c_j$  is a district fixed effect; and the  $\alpha$ 's,  $\beta$ 's and the vector  $\Phi$  are unknown parameters that need to be estimated. Non-systematic determinants of the support for a moderate position are captured by the error term,  $u_{ijt}$ .

We aggregate the key right hand side variables on the number of fatalities in four-week periods because it is difficult to estimate the effect of fatalities at a higher frequency with a sufficient degree of precision. This specification imposes the restriction that the effect of fatalities is the same within each month (i.e. four-week period)

**Table 2**  
Faction support by demographic characteristics.

	Share supporting:					Fatah share out of Fatah, Hamas and PIJ alone	Support for negotiations
	Fatah	Hamas	PIJ	Others	No one		
All	29.12	22.64	9.53	10.35	28.36	47.51	61.72
Demographic characteristic							
Area of residence							
Jerusalem	19.87	19.67	12.02	8.55	39.89	38.54	58.83
West Bank	30.06	21.50	9.72	11.56	27.16	49.06	62.01
Gaza Strip	29.65	24.86	8.76	9.00	27.73	46.86	61.93
Type of residence							
Cities	28.10	23.81	9.05	9.82	29.21	46.09	61.39
Villages	29.57	20.72	10.27	11.10	28.35	48.83	62.62
Refugee camps	30.40	24.25	8.98	9.90	26.47	47.78	60.36
Refugee status							
Non-refugees	28.19	21.98	9.67	10.91	29.25	47.10	62.97
Refugees	29.94	22.34	9.49	9.86	28.37	48.47	60.15
Gender							
Males	33.70	18.32	9.30	12.66	26.02	54.96	59.76
Females	24.67	26.85	9.75	8.11	30.62	40.27	63.69
Marital status							
Married	28.39	21.90	9.69	10.29	29.73	47.33	64.30
Non-married	30.87	22.74	9.55	11.09	25.76	48.88	53.62
Age							
15–29	29.59	24.69	9.88	10.06	25.77	46.12	56.83
30–44	31.12	22.78	9.56	10.39	26.15	49.04	62.55
45–59	26.84	20.42	10.01	10.25	32.48	46.87	67.56
≥60	22.89	17.30	6.91	11.58	41.32	48.60	69.66
Education							
Illiterate	25.56	19.37	8.20	9.36	37.50	48.10	70.64
Elementary	30.43	23.51	8.78	8.40	28.89	48.52	67.25
Middle school	28.13	25.48	9.81	9.79	26.79	44.36	59.77
Secondary	30.41	23.80	9.55	10.29	25.95	47.70	58.80
Some college	30.24	19.79	10.10	12.66	27.20	50.29	57.31
College degree	30.23	16.64	11.04	14.95	27.13	52.21	58.07
Local economic indicators							
Local unemployment rate							
≤30%	30.21	23.56	8.89	10.34	26.99	48.21	62.79
30%–40%	30.38	21.7	10.92	8.93	28.08	48.22	59.59
≥40%	26.01	22.79	8.4	12.35	30.45	45.47	63.04
Daily wage (in year 2000 NIS)							
≤55 NIS	26.83	21.79	9.73	8.74	32.91	45.98	61.89
55 NIS–65 NIS	31.69	24.44	8.91	9.22	25.75	48.72	62.56
≥65 NIS	26.46	20.28	10.4	13.26	29.61	46.31	60.15

Source: Authors' calculations using poll data from DSP.

prior to the poll at time  $t$  but may vary between months. Specifically,  $\alpha_1$  represents the effect of one Palestinian fatality that occurred in the first month that preceded the poll (we call this the *immediate* effect) while  $\alpha_2$  and  $\alpha_3$  represent the effect of one Palestinian fatality that occurred 2 and 3 months before the poll, respectively.<sup>9</sup>

Two additional remarks about our empirical specification are in order. First, if we restrict  $\alpha_1$ ,  $\alpha_2$ , and  $\alpha_3$  to be equal, we essentially constrain the effect of every Palestinian fatality in the 12 weeks preceding the poll to be constant. The same interpretation is given to  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  with respect to Israeli fatalities. We present results for both the constant-effect specification and for the dynamic specification, where we allow the effects of fatalities to differ over time.<sup>10</sup>

<sup>9</sup> By focusing on broader time intervals we are employing cells with a relatively large number of fatalities as well as a significant variance, which allows us to estimate the coefficients of Eq. (1) with a satisfactory level of precision. For example, the average number of Palestinian fatalities per district in the 4 weeks prior to the poll dates is 2.26, with a standard deviation of 4.66. The comparable average and standard deviation for Israeli fatalities per district in the 4 weeks prior to the poll dates are 0.56 and 2.12 respectively, and the average and standard deviation for overall Israeli fatalities are 8.88 and 8.53, respectively.

<sup>10</sup> We have experimented with different lag structures. In no case did we find statistically significant effects past the third month prior to the poll. Moreover, based on model specification tests, for both the Akaike and Bayesian information criteria it is never the case that a model with more than 3 monthly lags is the best-fitting model. We therefore use a specification with 3 monthly lags as one that captures the relationship between public opinion and violence with a sufficient degree of parsimony.

Second, in the above specification the individual coefficients tell us the effect of a one-time increase in violence, occurring exactly  $k$  weeks before the poll. We may also be interested in the overall effect of a permanent increase in the level of violence. Taking into consideration the lengths of the periods captured by each coefficient, the overall effect of a permanent increase in Palestinian fatalities equals  $4(\alpha_1 + \alpha_2 + \alpha_3)$ , while the overall effect of an increase in Israeli fatalities equals  $4(\beta_1 + \beta_2 + \beta_3)$ . We report these overall effects in each table alongside the individual coefficients.

The inclusion of the district fixed effect is key for our analysis. As evidenced in Fig. 1, there is substantial variation in the number of fatalities across Palestinian districts. If the Palestinian population is sorted across districts according to their political preferences and violence occurs mainly in radical districts, a simple cross-sectional analysis would yield a spurious correlation between radical attitudes and violence, while the actual direction of causality runs from attitudes to violence, and not the other way round. The availability of longitudinal data allows us to exploit both the time series and the cross-sectional variation in our analysis. The inclusion of district fixed effects allows to hold constant time-invariant district attributes, and to achieve identification only from the within-district variation in political attitudes and in the number of fatalities.

Finally, the specification of the vector of time dummies also deserves some attention. One possibility would be to include a separate dummy for each poll; however, we believe that, at least in part,

**Table 3a**  
The effect of violence on support for negotiations with Israel.

Variable	(1)	(2)	(3)	(4)
Palestinian fatalities prior to poll (100s):				
1 to 12 weeks	0.055 [0.044]			
1 to 4 weeks		−0.202* [0.121]	0.037 [0.084]	−0.273** [0.118]
5 to 8 weeks		−0.039 [0.098]	−0.006 [0.069]	−0.081 [0.100]
9 to 12 weeks		0.191** [0.078]	0.052 [0.051]	0.204** [0.083]
Permanent effect of Palestinian fatalities	0.658 [0.524]	−0.203 [0.633]	0.335 [0.522]	−0.599 [0.680]
Local Israeli fatalities prior to poll (100s):				
1 to 12 weeks	−0.137 [0.119]			
1 to 4 weeks		−0.151 [0.222]	−0.305** [0.118]	−0.182 [0.237]
5 to 8 weeks		−0.084 [0.122]	−0.198* [0.082]	−0.053 [0.131]
9 to 12 weeks		−0.030 [0.227]	−0.300* −[0.020]	−0.034 [0.221]
Permanent effect of Israeli fatalities	−1.639 [1.431]	−1.059 [1.655]	−3.214*** [0.977]	−1.071 [1.698]
District fixed effects	Yes	Yes	Yes	Yes
District-specific time trends	No	No	No	Yes
Time effects	Two period dummies	Two period dummies	10 poll dummies	Two period dummies
N	13,159	13,159	13,159	13,159
Number of poll × district clusters	188	188	188	188

Note: Estimated via OLS. Dependent variable is an indicator variable for supporting peace negotiations. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, and the number of closure days in the 30 days preceding the poll. See text for the definition of the period dummies. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

**Table 3b**  
The effect of violence on support for Fatah.

Variable	(1)	(2)	(3)	(4)
Palestinian fatalities prior to poll (100s):				
1 to 12 weeks	0.028 [0.039]			
1 to 4 weeks		−0.110 [0.077]	−0.105 [0.071]	−0.101 [0.074]
5 to 8 weeks		0.030 [0.093]	−0.006 [0.078]	0.024 [0.086]
9 to 12 weeks		0.101*** [0.041]	0.045 [0.039]	0.109** [0.043]
Permanent effect of Palestinian fatalities	0.335 [0.467]	−0.392 [0.510]	−0.267 [0.428]	0.128 [0.480]
Local Israeli fatalities prior to poll (100s):				
1 to 12 weeks	0.034 [0.087]			
1 to 4 weeks		−0.095 [0.124]	−0.139 [0.100]	−0.167 [0.129]
5 to 8 weeks		0.206* [0.119]	0.246** [0.117]	0.162* [0.124]
9 to 12 weeks		−0.136 [0.146]	−0.076 [0.127]	−0.194 [0.144]
Permanent effect of Israeli fatalities	0.414 [1.041]	−0.098 [0.915]	0.125 [0.815]	−0.794 [0.940]
District fixed effects	Yes	Yes	Yes	Yes
District-specific time trends	No	No	No	Yes
Time effects	Two period dummies	Two period dummies	13 poll dummies	Two period dummies
N	19,830	19,830	19,830	19,830
Number of poll × district clusters	266	266	266	266

Note: Estimated via OLS. Dependent variable is an indicator variable for supporting Fatah. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, the number of closure days in the 30 days preceding the poll. In columns 1–3, the two period dummies are for Phases 2 and 3 of the conflict, as defined in Table 1. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

changes in attitudes are driven by the time-series variation in the number of fatalities. Therefore, it may be undesirable to sweep away all of this time-series variation with the inclusion of a full set of poll dummies. Instead, our preferred specification includes only two period dummies to capture broad trends in violence and public opinion in the different phases of the conflict (before Operation Defensive Shield (ODS), between ODS and the death of Yasser Arafat, and after Arafat's death).<sup>11</sup> We will then assess the sensitivity of the results to the exact specification of the time effects.

## 4. Results

### 4.1. Political preferences by demographic characteristics

We first examine how support for the Palestinian factions and negotiations varies by demographic group by pooling all the surveys. The first five columns of Table 2 show the share of each demographic group that supports each of the major factions (the columns sum to 100% within each row). The sixth column shows the percentage of respondents who support Fatah among those who support Fatah, Hamas or PIJ, while the last column shows the percentage who support the continuation of negotiations with Israel.

The results in Table 2 suggest that there are no clear differences between Fatah and Hamas supporters regarding areas and types of residency, refugee status, marital status and age. Females, however, show a greater tendency to support Hamas relative to males. At the same time, a larger percentage of females support negotiations relative to males. Also, in a separate analysis using the JMCC polls (not reported), we find that for every question, females express more moderate views than males, but express a higher level of trust in Hamas.<sup>12</sup> This leads us to conclude that females show a higher support for Hamas because of the greater degree of social services provided by Hamas (and of which women tend to be the greater beneficiaries). With regard to education, support for Fatah relative to Hamas does not increase monotonically, but follows a U-shape pattern. This is driven by individuals with some college or more advanced education being less likely to support Hamas and more likely to support one of the smaller factions, with the support for Fatah relatively unaffected.

We observe similar patterns in the demographic groups' support for negotiations, with two noteworthy differences. First, as noted above, women show a greater degree of support for negotiations than males. Second, support for negotiations increases monotonically with age. We do not observe a similar pattern in the support for Fatah because disaffection from all political factions also increases monotonically with age.

The bottom of Table 2 depicts the relationship between local economic indicators and political preferences. The economic indicators, calculated using micro data from the Palestinian Labor Force Survey, measure the quarterly unemployment rate and average hourly wage in each district. These figures indicate that there is no strong correlation between economic conditions and support for a given political party, even though support for Fatah decreases in districts with high unemployment rates and low average wages. This is consistent with

the economic voting hypothesis whereby voters assign the responsibility for bad economic outcomes to the governing party (Lewis-Beck and Stegmaier, 2000).<sup>13</sup> It is also consistent with the notion that recessionary economies make mobilization for radical causes more attractive because of the lack of economic opportunity (Bueno de Mesquita, 2005; Bueno de Mesquita and Dickson, 2007; Dube and Vargas, 2010). Given that the variation in the support for negotiations does not show a definitive pattern, it is important to control for economic conditions in Eq. (1) to differentiate between radicalization induced by political or economic reasons.

### 4.2. Main results

In Table 3a–3b we present results from estimating Eq. (1) using as our dependent variable an indicator for support for negotiations (Table 3a) and an indicator for support for Fatah (Table 3b). The models are estimated with ordinary least squares (OLS) and the estimated heteroskedasticity-consistent standard errors allow for temporal and spatial clustering.<sup>14</sup> All regressions include controls for sex, age, marital status, education, the local unemployment rate, the local average wage, a measure of border closings (provided by the Palestinian Ministry of Labor) and, as described above, a full set of district dummies and two period dummies.

Column 1 of Table 3a and 3b presents estimates of the constant-effect specification, in which every fatality within 12 weeks of the poll is constrained to have the same effect on the Palestinians' political preferences. Using this specification, there is no statistically significant relationship between violence and support for negotiations or Fatah. The dynamic-effect specification depicts a slightly different picture. When we do not constrain the coefficients to be equal, Palestinian fatalities cause an immediate radicalization of the population, but this effect falls off rather quickly. The coefficient on fatalities in the 4 weeks preceding the poll is statistically significant when the dependent variable is support for negotiations, and marginally insignificant when the dependent variable is support for Fatah. The magnitude of the effect is not large. Specifically, a one standard deviation increase in Palestinian fatalities in the respondent's district of residence reduces support for negotiations in the first month after they occur by only 1.2 percentage points, and it reduces the support for Fatah by 0.55 percentage points. The effect of Palestinian fatalities is not statistically significant 2 months after the incident, and changes sign within 3 months of their occurrence. Consequently, the overall effect of a permanent increase in Palestinian fatalities on the preference for moderate attitudes, while negative, is not statistically significant.<sup>15</sup>

With regard to Israeli fatalities, we find that fatalities claimed by individuals living in or occurring in the different districts have essentially no effect on either support for negotiations with Israel or

<sup>11</sup> We control for these different periods because of the significant shifts that they caused on the variables of interest. Between October 2000 and ODS there was a steady increase over time in the number of Israeli and Palestinian fatalities. After ODS, the overall trend in Israeli fatalities sloped downward while the number of Palestinian fatalities remained at a high level until the beginning of 2005 (see Fig. 1 in Jaeger and Paserman, 2008). Finally, Arafat's death caused a significant jump on the support for Fatah and moderate positions. This increase slowly dissipated over time.

<sup>12</sup> However, the gender gap in trust for Hamas in the JMCC data is substantially smaller than the one found in the DSP data set. This is the only qualitative difference in the summary statistics between the data sets.

<sup>13</sup> Fatah held both the presidency of the Palestinian National Authority, the majority in the Palestinian Legislative Council (PLC), and the Prime Minister's office for the overwhelming majority of the period under examination. Hamas became the majority party in the PLC and took hold of the Prime Minister's Office following its success in the legislative elections in January 2006.

<sup>14</sup> We estimate all our models as linear probability models for simplicity and ease of interpretation of the coefficients, even though the dependent variable is binary. None of our qualitative or quantitative conclusions would have been affected if we had used a probit or logit model instead.

<sup>15</sup> Table 1 in Appendix A presents the same estimations as Table 3a–3b using an average index of moderation based on all the relevant questions asked by the JMCC as the dependent variable (see the Data Appendix A for details on the construction of this index). These results lead us to the same main conclusion: we observe a fleeting radicalization effect that completely disappears within 90 days. The radicalization effect according to JMCC, however, occurs in the second month after the incident. This difference may be caused by the lack of information on the respondents' district of residence, which precludes us from estimating the regressions with a great deal of geographic precision.

**Table 4**  
The effect of violence on attitudes of Palestinian population—dynamic analysis.

Variable	A. Support for negotiations		B. Support for Fatah	
	OLS fixed effects (1)	Arellano–Bond (2)	OLS fixed effects (3)	Arellano–Bond (4)
Palestinian fatalities prior to poll (100s):				
1 to 4 weeks	−0.301** [0.107]	−0.366*** [0.124]	−0.196*** [0.065]	−0.201*** [0.044]
5 to 8 weeks	−0.115 [0.106]	−0.160 [0.120]	−0.111 [0.107]	−0.198** [0.091]
9 to 12 weeks	0.226*** [0.072]	0.331** [0.129]	0.123*** [0.050]	0.146** [0.058]
Local Israeli fatalities prior to poll (100s):				
1 to 4 weeks	−0.125 [0.220]	0.021 [0.195]	−0.067 [0.119]	0.015 [0.180]
5 to 8 weeks	−0.077 [0.136]	−0.090 [0.199]	0.276* [0.155]	0.326** [0.142]
9 to 12 weeks	−0.176 [0.261]	−0.160 [0.231]	−0.105 [0.165]	−0.193 [0.184]
Lag of dependent variable	−0.333*** [0.072]	−0.322*** [0.056]	−0.077 [0.085]	−0.162** [0.066]
Number of observations	171	154	247	229

Note: Dependent variable is an indicator variable for supporting peace negotiations or support for Fatah. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, and the number of closure days in the 30 days preceding the poll. See text for the definition of the period dummies. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

support for Fatah. The coefficients for the first lag are negative, but estimated with little precision. This result holds in both the constant-effect and in the dynamic effects specification.

In column 3 we assess the sensitivity of our results to controlling for time non-parametrically by including a full set of poll fixed effects. These fixed effects absorb all of the fluctuations in attitudes that are common to all Palestinians at each point in time. Hence, the model is identified by deviations in violence and attitudes at the district level from the common time effects (and from the district-level averages).<sup>16</sup> The first lag of Palestinian fatalities becomes essentially zero in the “support for negotiations” regression but remains unchanged in the “support for Fatah” regression. On the other hand, we now find a large and significant radicalization effect of Israeli fatalities at all lags on support for negotiations. This would imply that attacks successfully carried out by Palestinian factions embolden the Palestinian population. However, we see no such effect in the “support for Fatah” regression.<sup>17</sup> Ultimately, we do not think that one should put too much weight on these results, since they appear to be sensitive to the choice of dependent variable. Moreover, it is not clear that we would want to absorb all of the time-series variation with the poll fixed effects, as much of the variation in public opinion is probably driven precisely by changes in the overall level of violence over

time. By including a full set of time effects we run the risk of overfitting, as many of the other potential confounders of the effect that vary over time (economic conditions, freedom of movement) are already controlled for through the inclusion of the unemployment rate, the average daily wage, and the number of closure days.<sup>18</sup>

Column 4 of the table reports the results of a specification with district fixed effects and a district specific time trend, to account for the possibility that attitudes may change over time within districts. The results are qualitatively identical to those of column 2, in terms of both size and significance of the coefficients.

One possible concern with the model used in Table 3a–3b is that it may be too simplistic to account for the complex dynamics of violence and political attitudes. It is possible that the results it delivers are affected by the persistence over time of Palestinians' political attitudes. We address this concern by using alternative models for panel data. In particular, we aggregate the data to the district-poll level and estimate two different dynamic models that capture the idea that political attitudes may be moving slowly, so that attitudes expressed in poll  $t$  are correlated with those at  $t-1$ , and violence may introduce an innovation to the evolution of Palestinians' preferences.<sup>19</sup>

As a baseline, we estimate the preferred fixed-effect model used until now (column 2 of Table 3a–3b) at that level of aggregation and adding a lagged dependent variable as a control variable. The results in columns 1 and 3 of Table 4 are very similar to the evidence presented in Table 3a–3b. That is, Palestinian fatalities within 4 weeks of the polls cause the Palestinian population to be less supportive of negotiations and Fatah; within 1 and 2 months of their occurrence, Palestinian fatalities do not have a significant effect on attitudes. Finally, within 3 months of their occurrence, the effects of

<sup>16</sup> We also estimated specifications without including district fixed effects or time effects. Consistent with our prior expectations, the coefficients on the first lag of both Palestinian and Israeli fatalities increase markedly (in absolute value) relative to specification (2), and the latter becomes statistically significant in the regression for Fatah support. This increase reflects the fact that districts (or periods) with more radical attitudes are more likely to engage in violence against Israelis, and hence are also more likely to be targeted by Israeli military activity. This analysis establishes that we need to be cautious regarding the interpretation of results based only on cross-sectional or time series data. In the absence of longitudinal data, a strong, but spurious, correlation between violence and radicalization may emerge.

<sup>17</sup> It may be that Palestinian sentiment is driven more by the overall level of violence against Israelis, rather than violence originating in a specific locality. We evaluated this hypothesis by replacing the number of Israeli fatalities attributed to the district with the overall number of Israeli fatalities. The results for the effect of Israeli fatalities were imprecisely estimated, while the results for the effects of Palestinian fatalities were robust to this alternative specification.

<sup>18</sup> The concern of overfitting applies particularly to Israeli fatalities, which show a high fluctuation over time, with a significant peak in March and April of 2002 before Operation Defensive Shield (see Fig. 1 in Jaeger and Paserman, 2008). These 2 months account for over 20% of Israeli fatalities during the entire period under investigation.

<sup>19</sup> These results should be viewed with some caution, as the data is not really a panel because the polls are not equally spaced in time. Nevertheless, we believe that the specification is adequate for capturing any slow-moving adjustments in preferences that may bias our results.

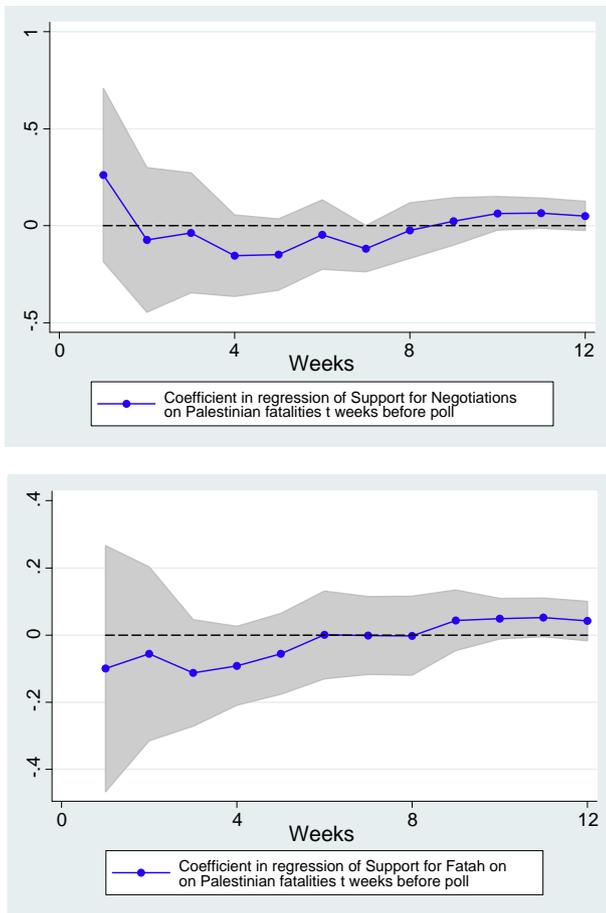


Fig. 2. The dynamic effect of Palestinian fatalities on Palestinians' attitudes toward the conflict.

Palestinian fatalities on political attitudes completely vanish. The similarity of the results is striking given that we control for the persistence of preferences at the district level, which is statistically significant, and the number of observations substantially declines to 171 (for support for negotiations) or 247 (for support for Fatah).<sup>20</sup>

In columns 2 and 4 we estimate the same model with GMM following Arellano and Bond (1991). This method addresses the concerns related to whether OLS yields consistent estimates when a lagged dependent variable is included in the fixed-effects model. The results using the Arellano–Bond estimation are essentially identical to the previous ones. Overall, we observe that Palestinian fatalities bring about a short-term radicalization of the Palestinian population (both in terms of their willingness to support negotiation and support for Fatah) that completely disappears within 3 months of their occurrence.

To get a more concrete sense of the duration of the effects of Palestinian fatalities on the attitudes toward the conflict, we next run a series of 12 regressions for each dependent variable using the following specification:

$$Y_{ijt} = \gamma_m \sum_{k=1}^m P_{j,t-k} + \beta_1 \sum_{k=1}^4 I_{j,t-k} + \beta_2 \sum_{k=5}^8 I_{j,t-k} + \beta_3 \sum_{k=9}^{12} I_{j,t-k} + X_{ijt} \Phi + Z_t \delta + c_j + u_{ijt} \quad m = 1, \dots, 12. \tag{2}$$

<sup>20</sup> This regression also differs from the one using individual-level data by giving equal weight to all district-poll cells, while the models based on individual-level data essentially give more weight to district-poll cells with more observations. Weighting by cell size gives almost identical results.

Each coefficient  $\gamma_m$  represents the effect of all Palestinian fatalities that occurred up to  $m$  weeks before the poll at time  $t$ . If Palestinian fatalities generate an immediate radicalization of attitudes that fades away with time, we would expect to find that the  $\gamma$ 's are large and negative at low values of  $m$ , and revert toward zero at longer lags. Fig. 2 presents the estimated  $\gamma$  coefficients for support for negotiations and Fatah support, together with 90% confidence bands. With the exception of the very first coefficient in the “support for negotiations” equation, the pattern of coefficients confirms the results from Table 3a–3b. Fatalities that occur in the first few weeks before the poll induce a shift toward more radical positions, but this effect is attenuated with time. However, the confidence bands always include zero, meaning that none of the  $\gamma$  coefficients are statistically significant. Again, we find that any shift in Palestinian political preferences is fleeting and small in magnitude.

In addition to the results of Table 3a–3b, we estimated separately a multinomial logit model for faction supported (results not presented). The results from this estimation confirm that increases in Palestinian fatalities shift support away from Fatah only in the short run. This shift is not toward more radical groups but rather toward more disaffection, i.e., support for none of the factions. The shift away from Fatah may also represent a form of radicalization: the evidence in Table 1 shows that individuals who support no faction have more radical preferences than Fatah supporters on all other measures. It is also possible that fatalities induce secular Palestinians to avoid expressing support for Fatah, without leading them to shift their allegiance to an Islamic or Marxist faction, whose ideology they do not share.

To summarize, our results provide little support for the notion that Palestinian fatalities cause the radicalization of the Palestinian population. Although a specification that does not properly control for districts' characteristics suggests the existence of a radicalization effect of fatalities, we establish that this effect is spurious. If a radicalization effect of Palestinian fatalities exists at all, our analysis shows that it is short-lived and completely dissipates over 3 months.

### 5. Robustness checks

#### 5.1. Testing for reverse causality

One methodological concern regarding our identification strategy is that we are not correctly identifying the direction of causality. It is possible that radicalization leads to more Israeli violence rather than vice versa, or that both processes are governed by a common, unobserved third factor. To test for this possibility we aggregate the data to the poll  $\times$  district level and estimate the following specification:

$$F_{j,t+k} = \alpha P_{j,t-12} + \beta I_{j,t-12} + \gamma M_{jt} + X_{jt} \Phi + Z_t \delta + c_j + u_{jt}. \tag{3}$$

where  $F_{j,t+k}$  is the number of either Palestinian or Israeli fatalities in district  $j$  that occurred in the  $k$  weeks after date  $t$ ;  $M_{jt}$  is the average support for moderate positions of the population in district  $j$  according to a poll conducted at time  $t$ ; and the rest of the variables are as in Eq. (1).<sup>21</sup> Note that a consistently negative and significant  $\gamma$  implies that the radicalization of the population causes increases in the number of fatalities. This would suggest that there is a third factor that jointly causes both radicalization and fatalities.<sup>22</sup>

<sup>21</sup> In Eq. (3) we must aggregate the data because there is no individual variation in the left-hand side variable.

<sup>22</sup> There is a temporal mismatch between these regressions and those in Table 3. Because the polls occur at somewhat irregular intervals, the values for the fatalities variables that occur after the polls are not the same as the values for the fatalities variables that are used in Table 3a–3b. While there is no reason that this should a priori lead to different results from those that would obtain if polls occurred at regular intervals, it is at least possible that the selection of different time periods leads to the results in Table 4.

**Table 5**  
Testing for reverse causality.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Palestinian fatalities in 4 weeks after poll (100s)	Palestinian fatalities in 8 weeks after poll (100s)	Palestinian fatalities in 12 weeks after poll (100s)	Israeli fatalities in 4 weeks after poll (100s)	Israeli fatalities in 8 weeks after poll (100s)	Israeli fatalities in 12 weeks after poll (100s)
A: Support for negotiations	0.374*** [0.139]	1.533*** [0.520]	3.340*** [1.066]	−0.030** [0.051]	0.162 [0.193]	0.587 [0.430]
N	188	188	188	188	188	188
B: Support for Fatah	0.055 [0.112]	0.228 [0.403]	0.338 [0.878]	−0.061 [0.059]	−0.113 [0.171]	−0.190 [0.372]
N	266	266	266	266	266	266

Note: Estimated via OLS. Regressions are run at the district × poll level. All regressions include controls for number of Palestinian and Israeli fatalities in the 12 weeks before the survey; the averages of residence type, gender, age, marital status, refugee status, education dummies; the local unemployment rate, the local wage rate, and the number of closure days in the 30 days preceding the poll; two time dummies (as defined in Table 3a–3b); and district fixed effects. Robust standard errors in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

Table 5 displays the result of the estimation of Eq. (3) using as the dependent variable Palestinian and Israeli fatalities 1, 2 and 3 months after every poll. In panel A, we find that there is a significant and positive relationship between support for negotiations and subsequent Palestinian fatalities, increasing in magnitude as the temporal distance between the poll date and the date of subsequent fatalities increases. In panel B, however, we do not find any statistically significant relationship between support for Fatah and future fatalities. We are encouraged by these results: the fact that we do not find any evidence for a negative and significant effect of current moderate position on future fatalities seems to rule out the possibility that the immediate radicalization found in Table 3a–3b is driven by a common factor that affects both radicalization and Israeli violence.<sup>23</sup> If anything, the results seem to indicate that Israel uses force to spoil the peace process.<sup>24</sup> We are reluctant to place too much emphasis on these results, however, because they are not robust to the choice of the political preference variable.<sup>25</sup>

A more subtle methodological concern for the results in Table 3a–3b arises if Israeli security forces preemptively increase the level of violence in anticipation of a shift to more radical attitudes in the Palestinian population. However, to threaten the validity of the results in Table 3a–3b, it would have to be the case that Israel could forecast at the district level the direction in which public opinion was moving and act accordingly. Although we cannot completely rule out this possibility, it strikes us as implausible.

## 5.2. Do targeted killings have a different effect on Palestinian preferences?

Jaeger and Paserman (2009) have noted that targeted killings of Palestinian leaders reduce subsequent Israeli fatalities in the short run, even though they may lead to an increase in intended violence. We examine how targeted killings and other fatalities affect public opinion in Table 6. In columns 1 and 3 we differentiate between total fatalities in targeted killings (including collateral fatalities) and other fatalities, while in columns 2 and 4 we separate out the targets of the targeted killing and collateral fatalities. Both specifications give very similar results—support for moderate attitudes is affected only by the deaths of Palestinians not in targeted killings, and, as in Table 3a–3b, the effect is short lived and dissipates after 1 month.

<sup>23</sup> Adding leads of Palestinian and Israeli fatalities in the specifications of Table 3a–3b has essentially no effect on the estimated coefficients of interest.

<sup>24</sup> Kydd and Walter (2002) propose that extremists commit attacks during peace negotiations to force the government to retaliate. According to their model, the government retaliation causes the radicalization of the moderate population thus spoiling the negotiations.

<sup>25</sup> Moreover, results using our index of moderation and the JMCC data (available upon request) show a negative but insignificant relationship between moderation and subsequent Palestinian fatalities.

Consistent with the theoretical analysis of Bueno de Mesquita and Dickson (2007) and Kalyvas (2006), the assassination of leaders (a focused policy with low levels of negative externalities on the general population) does not lead to the radicalization of the population.

## 5.3. Do radicals and moderates have a similar reaction to violence?

We now examine the effects of violence on sub-samples of the population, grouped according to their political preferences, predicted on the basis of their time-invariant location and demographic characteristics. This analysis allows us to establish whether or not Palestinian and Israeli fatalities cause the ideological polarization of the Palestinian population. It is important to explore this issue since the polarization of the population might be one of the main causes behind internal social and political conflicts (Sartori, 1976). Even if the attitudes of the large majority of the population are unaffected, Israeli military actions could still have important implications for the long-run dynamics of the conflict if enough people with a high propensity for radicalism are spurred by violence to join militant factions. Several related theoretical studies argue that extremist groups commit attacks with the clear goal of causing a backlash that would radicalize moderate supporters (Baliga and Sjöström, 2011; Bueno de Mesquita and Dickson, 2007; Rosendorff and Sandler, 2004, 2010; Siqueira and Sandler, 2006). Our analysis therefore examines these theoretical predictions, which posit that violence should affect mostly moderates and lower the ideological polarization of the population.

To study this issue, we construct a measure of radicalism for every individual in our sample, based on his or her demographic characteristics, and then test separately the effects of fatalities for more and less radical Palestinians. We adopt the following procedure: (a) we draw a 25% random sample from our population, and use a probit model to estimate, separately by gender, the probability that an individual supports Fatah based only on the pooled cross-sectional variables on demographic characteristics described in Table 2;<sup>26</sup> (b) based on these estimates, we calculate fitted probabilities of supporting Fatah for every individual in the sample; (c) we define as “radicals” people with a fitted probability below 0.285, the median predicted value over 200 replications, and non-radicals those with a fitted probability above the median; d) we estimate Eq. (1) on the

<sup>26</sup> We present separate estimations for males and females on the full sample in Appendix A Table 2. The results show that whereas support for Fatah increases among women with refugee status and among married men, it decreases among older men. Consistent with related research by Krueger and Maleckova (2003), an individual's level of education does not seem to affect their level of radicalization. The results are qualitatively the same when using support for negotiations instead of support for Fatah as the dependent variable. We present the results of support for Fatah because this question appeared in more polls and therefore gives more precise predictions.

**Table 6**  
The Effect of violence on support for negotiations and Fatah: Targeted killings and other fatalities.

Variable	A. Support for negotiations		B. Support for Fatah	
	(1)	(2)	(3)	(4)
Palestinian fatalities not in targeted killings prior to poll (100s)				
1 to 4 weeks	−0.213*	−0.246**	−0.197**	−0.195**
	[0.119]	[0.122]	[0.078]	[0.078]
5 to 8 weeks	−0.119	−0.143	−0.260	−0.260
	[0.111]	[0.107]	[0.196]	[0.200]
9 to 12 weeks	0.230**	0.229**	0.197***	0.199***
	[0.100]	[0.095]	[0.052]	[0.053]
Permanent effect	−0.411	−0.640	−1.043	−1.024
	[0.604]	[0.609]	[0.746]	[0.760]
Palestinian fatalities in targeted killings prior to poll (100s)				
1 to 4 weeks	−0.279		−0.018	
	[0.259]		[0.090]	
5 to 8 weeks	−0.121		0.043	
	[0.252]		[0.113]	
9 to 12 weeks	−0.540		0.051	
	[0.483]		[0.268]	
Permanent effect	−3.762		0.301	
	[3.142]		[1.212]	
Palestinian fatalities in targeted killings prior to poll, not object of targeted killing (100s)				
1 to 4 weeks		−0.988***		0.140
		[0.375]		[0.216]
5 to 8 weeks		1.368		−0.147
		[1.028]		[0.296]
9 to 12 weeks		−0.100		0.021
		[1.265]		[0.409]
Permanent effect		1.115		0.057
		[8.168]		[2.236]
Palestinian fatalities in targeted killings prior to poll, object of targeted killing (100s)				
1 to 4 weeks		0.287		−0.165
		[0.192]		[0.187]
5 to 8 weeks		−1.110		0.294
		[0.734]		[0.485]
9 to 12 weeks		−0.953*		0.086
		[0.510]		[0.499]
Permanent effect		−7.106		0.862
		[4.776]		[2.702]
N	12,017	12,017	18,598	18,598
Number of poll × district clusters	188	188	266	266

Note: Estimated via OLS. Dependent variable is indicator for supporting Fatah or support for peace negotiations. All regressions include controls for overall number of Israeli fatalities, residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, the number of closure days in the 30 days preceding the poll, period dummies, and 15 district fixed effects. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

remaining 75% of the sample (the part not used in estimating the probit models), adding the “radical” dummy, and its interaction with all lags of Palestinian and Israeli fatalities; e) we repeat steps (a)–(d) 200 times, so that our results are not affected by one particular draw of the estimation sample. In Table 7, we report the mean and the standard deviation of the parameters of interest from these 200 replications.<sup>27</sup>

We find some evidence that Palestinian fatalities occurring 1 month before the survey lead to a polarization in public opinion in the short run: support for Fatah and for peace negotiations decreases significantly among individuals with a high propensity to be radical, while those with a low propensity for radicalism are essentially unaffected. In both specifications, the difference in the effect is marginally insignificant. As in Table 3a–3b, we find that more temporally distant Palestinian fatalities have a moderating effect, for both radicals and non-radicals. Consequently, even for radicals we do not find any evidence of a persistent effect of violence on political preferences.

## 6. The effect of violence on preferences: a long-run analysis

We have focused up to this point only on the short-run effect of violence on political preferences. This subsection departs from that analysis to address whether individuals' experiences of important political processes affect their long-term attitudes toward the conflict. In particular, we focus on cohorts whose views were potentially shaped during the first Palestinian uprising and the signing of the Oslo agreements, to analyze whether these events significantly affected their long-term preferences. To achieve this, we adopt the view that the first exposure of young individuals (between the ages of 14 and 17, inclusive) to significant events has a long lasting effect on their preferences.<sup>28</sup> We believe that the age band we choose is a reasonable approximation of the time at which youngsters are first exposed in full to the realities of the conflict: internal closures and checkpoints that limit mobility within the Palestinian territories, political activism in

<sup>27</sup> The estimated effect for non-radicals is simply the coefficient on fatalities, the difference is the coefficient on the interaction between the radical dummy and fatalities, and the effect for radicals is the sum of the two.

<sup>28</sup> This effect is not particularly restricted to violent conflicts. Individuals' that vote for a candidate in the first election in which they are eligible to vote have a more favorable opinion of the candidate in the future (Mullainathan and Washington, 2009). Similarly, different macro-economic shocks affecting young adults have a significant impact on their long-term risk attitudes (Malmendier and Nagel, 2011).

**Table 7**  
The effect of violence on support for Fatah and negotiations by predicted level of radicalism.

	A. Support for negotiations			B. Support for Fatah		
	Non-radical	Radical	Difference	Non Radical	Radical	Difference
Palestinian fatalities prior to poll (100s):						
1 to 4 weeks	−0.059 [0.150]	−0.328* [0.171]	−0.269 [0.193]	−0.017 [0.112]	−0.195* [0.100]	−0.178 [0.122]
5 to 8 weeks	−0.098 [0.117]	0.030 [0.128]	0.127 [0.141]	−0.047 [0.127]	0.116 [0.132]	0.163 [0.157]
9 to 12 weeks	0.198** [0.098]	0.180** [0.090]	−0.018 [0.099]	0.128* [0.074]	0.076*** [0.066]	−0.052 [0.103]
Permanent effect	0.164 [0.739]	−0.473 [0.822]	−0.636 [0.804]	0.257 [0.651]	−0.010 [0.697]	−0.267 [0.768]
N		13,159			19,830	
Number of poll × district clusters		188			266	

Note: The coefficients in the table represent the means of estimated parameters from 200 bootstrap replications. The bootstrap procedure involved estimating first the probability of supporting Fatah on 25% of the sample, calculating the “radical” dummy based on whether one’s predicted probability of supporting Fatah fell below or above the median, and then estimating the main model on the remaining 75% of the sample. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, two period dummies and 15 district fixed effects.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

schools, discrimination in the labor market, involvement in skirmishes and rock-throwing incidents with Israeli soldiers, or administrative detention in Israeli jails.

Since it is no longer key for us to be able to identify individuals at the district level, we can now take advantage of the richer set of questions in the JMCC surveys to estimate how political preferences vary across different birth cohorts.<sup>29</sup> We first construct an index of moderate preferences toward the conflict using factor analysis based on the ten recurrent questions on political preferences presented in Table 1.<sup>30</sup> The index is then standardized to have mean zero and standard deviation 1, so that the regression results are easily interpretable. Then, we regress this index of moderate preferences on a set of cohort dummy variables, age, demographic characteristics, lagged Palestinian and Israeli fatalities in the macro-area (Jerusalem, West Bank and Gaza), economic variables (unemployment rates, hourly wages, and border closings), and a full set of area and poll fixed effects. Because we have polls observed over a span of 7 years, we are able to separately identify both cohort and age effects in the data.

The results of these regressions are presented in Table 8. The table shows that individuals born between 1976 and 1979 (ages 14–17 at signing of Oslo agreements) express significantly more moderate political preferences than what would be predicted by their year of birth. In contrast, individuals born between 1970 and 1973 (ages 14–17 at the outburst of First Intifada) have significantly more radical positions than what would be predicted by their year of birth. This is true regardless of whether the cohort dummies are entered separately (columns 1 and 2) or jointly (column 3). In column 4 we control for a higher order polynomial and for dummies for the adjacent birth cohorts. The coefficients on the main cohorts of interest remain essentially unchanged, whereas the adjacent cohorts were not affected as much by these major political events. The preferences of the 1980–1981 birth cohort (13 or younger at the time of the Oslo accords) and of the 1974–75 cohort (18 or older at the time of Oslo, but 13 or younger at the time of the First Intifada) are essentially indistinguishable from the year of birth trend. Interestingly the 1968–1969 birth cohort (18–19 at the outburst of the First Intifada) appears a fair bit more moderate than the trend.

The differences are highly statistically significant in most specifications, and quantitatively important. For example, the coefficients

in column 4 imply that the index of moderation was 0.05 standard deviations higher than the trend for those aged 14–17 at the time of Oslo, and 0.05 standard deviations lower than the trend for those aged 14–17 at the time of the First Intifada. This is equivalent to roughly one half the effect of being male (0.10 of a standard deviation decrease in the index), and about one quarter of the effect of going from zero years of education to having a college degree (0.21 standard deviations decrease in the index).

Finally, columns 5 and 6 look at the effects separately by gender. Interestingly, the cohort effects are substantially different for the two sexes. The first Intifada had a strong radicalization effect for boys who were between 14 and 17 years old at its outburst, but no effect for girls. By contrast, the Oslo process had a strong moderation effect for girls in the relevant age range, but not for boys. These results are consistent with our hypothesis that the 14–17 age band is indeed the one in which long-term political preferences are formed. The First Intifada is likely to have a much larger effect on boys than on girls, because it was exactly the 14–17 year old boys who were primarily involved in the demonstrations and confrontations with Israeli soldiers.<sup>31</sup> On the other hand, it is probably women who built greater aspirations around the Oslo peace process, and they would probably have benefited more from the normalization of relations with Israel and the ensuing demilitarization of the Palestinian society.

## 7. Conclusions

This paper empirically investigates the effects of violence on the political preferences of an aggrieved population using detailed micro data and rigorous statistical analysis. This is one of the central and more contentious questions regarding asymmetric conflicts, which divides scholars and policy makers alike. Despite its importance, to the best of our knowledge there has been no study providing systematic empirical evidence on this matter. Therefore, the claims that violence increases, does not affect, or decreases the radicalization of a constituency that militant factions claim to represent were based on casual empiricism only.

We find that the average member of the Palestinian population holds more radical positions immediately after the occurrence of a Palestinian fatality in their district of residence. This effect is temporary and vanishes completely within 90 days. As a consequence, the overall

<sup>29</sup> The results were similar in terms of magnitude and statistical significance when we used the “Support for negotiations” variable from the DSP data as the dependent variable. Results were qualitatively similar but not significant when we used “Support for Fatah” as the dependent variable.

<sup>30</sup> See the Data Appendix A for the details of how the moderation index was created.

<sup>31</sup> Our data on Palestinian fatalities in the Second Intifada confirms that this is the case: the percentage of boys among Palestinian fatalities in the 14–17 age group is 97%, as opposed to 87% in the 11–13 age group, and only 63% in the 0–10 age group. This indicates fairly unambiguously that boys were substantially more likely to be actively engaged in the uprising and in confrontations with Israeli soldiers.

**Table 8**  
The Effect of political processes on support for moderate positions (JMCC).

Variable	(1) Full sample	(2) Full sample	(3) Full sample	(4) Full sample	(5) Males	(6) Females
Ages 14–17 at signing of Oslo agreements	0.061*** [0.020]		0.043** [0.021]	0.051** [0.025]	0.002 [0.036]	0.109*** [0.036]
Ages 14–17 at outburst of First Intifada		−0.082*** [0.021]	−0.072*** [0.022]	−0.049* [0.026]	−0.116*** [0.038]	0.022 [0.038]
Age	0.106*** [0.010]	0.105*** [0.010]	0.105*** [0.010]	0.104*** [0.010]	0.071*** [0.012]	0.099*** [0.015]
Year of birth	0.102*** [0.010]	0.102*** [0.010]	0.102*** [0.010]	0.102*** [0.025]	0.052* [0.030]	0.109*** [0.041]
Year of birth squared ( $\div 10^2$ )				−0.022 [0.044]	0.021 [0.055]	−0.064*** [0.001]
Year of birth cube				0.022 [0.027]	−0.006 [0.034]	0.056 [0.045]
Year of birth 1980–1981				0.021 [0.031]	0.047 [0.045]	0.014 [0.043]
Year of birth 1974–1975				0.001 [0.032]	−0.087* [0.046]	0.083* [0.044]
Year of birth 1968–1969				0.049 [0.032]	−0.025 [0.046]	0.124*** [0.046]
Area fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Poll fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	19,885	19,885	19,885	19,885	19,885	19,885

Note: Estimated via OLS. Dependent variable is an aggregate measure of “moderation” constructed from ten different variables available in JMCC data set. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, the number of closure days in the 30 days preceding the poll, district fixed effects, and a full set of poll fixed effects. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

effect of Palestinian fatalities is not statistically significant. The radicalization effect of Palestinian fatalities is not homogenous across individuals with ex ante different preferences. Rather, only individuals that are more radical a priori (based on their demographic characteristics) are affected by the violence, and it therefore brings about the polarization of the Palestinian population. The results are robust to using different measures of public opinion as well as to Palestinian fatalities incurred during targeted killing operations and other fatalities.

These results bear some similarity to, but also contrast with, the estimated effects of violence on the preferences of the Israeli electorate found in the related literature. As in Berrebi and Klor (2006), we find that violent attacks have a significant effect on the preferences of the aggrieved population. The local effect of fatalities on the preferences of the Palestinian population is similar in nature to the increase in the electoral support for more radical Israeli political parties as a consequence of local Israeli fatalities.<sup>32</sup> In contrast to our findings, Berrebi and Klor (2008) and Gould and Klor (2010) find that the political impact of terror attacks on the preferences of the Israeli electorate remains significant for over a year after their occurrence. The different reactions of Israelis and Palestinians suggest that the number of fatalities affects the duration of the political impact of violence. The number of Palestinian fatalities has been substantially higher than the number of Israeli fatalities throughout the past 20 years. Hence, it appears that there are diminishing returns in the impact of violence on political preferences, and that above certain levels of violence fatalities just become another fact of life for the aggrieved population.

The temporary nature of the movements in Palestinian attitudes implies that outbursts of violence have little consequences for the overall level of animosity in Palestinian society, and one therefore should look elsewhere for the causes of secular shifts in public opinion. Our investigation of the effects of significant political events on the long-term preferences of the Palestinian population provides a promising first step in that direction. We find that there are significant differences across

cohorts in the long-term effects of events in the conflict. Palestinians who were teenagers at the outburst of the first Intifada have, between the years 2000 and 2006, more radical preferences than other cohorts, whereas Palestinians who were teenagers during the period of negotiating the Oslo agreements have, in the period at issue, more moderate preferences than other birth cohorts. These results show that, contrary to local fluctuations on the level of fatalities, significant political processes may perpetuate or alleviate the conflict by sowing the seeds of hatred or moderation among younger generations of Palestinians.

While one must be cautious in extrapolating our analysis to a different context, we believe that important insights of our study on the effects of violence on attitudes and public opinion apply to other conflicts as well. Many of the tactics used by Israel have been adopted by the U.S. military in its engagements in Iraq and Afghanistan. In that respect, concerns have been raised that the targeted killings of al-Qaeda militants in Northern Pakistan may have been counterproductive, by inducing the local population to support the militants and their causes. For example, the *New York Times* reports that “Pakistani authorities have protested that the strikes [against Al-Qaeda operatives] ...harm the government's efforts to persuade the Pakistani public that the war against the militants is in the country's interest.”<sup>33</sup> While more work is necessary, this paper presented a first step toward a better understanding of the effects of these tactics on the preferences of the civilian population.

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<sup>32</sup> By contrast, Karol and Miguel (2007) find that U.S. casualties in the Iraq war from a particular state significantly depressed the vote share for George W. Bush in the 2004 presidential elections in that state.

<sup>33</sup> “Airstrike Kills Qaeda-Linked Militant in Pakistan,” November 23, 2008.

## Appendix A

Appendix Table 1

The effect of violence on support for moderate positions (JMCC).

Variable	(1)	(2)	(3)	(4)	(5)
Palestinian fatalities prior to poll (100s):					
– 1 to 12 weeks	0.009 [0.035]				
– 1 to 4 weeks		–0.031 [0.087]	–0.048 [0.086]	0.053 [0.095]	–0.208** [0.091]
– 5 to 8 weeks		–0.231*** [0.081]	–0.236*** [0.094]	–0.427*** [0.124]	–0.363*** [0.088]
– 9 to 12 weeks		0.165*** [0.064]	0.156*** [0.066]	0.343*** [0.081]	0.160*** [0.058]
Overall effect of Palestinian fatalities	–0.587 [0.670]	–0.387 [0.454]	–0.510 [0.437]	–0.122 [0.526]	–1.643*** [0.484]
Local Israeli fatalities prior to poll (100s):					
– 1 to 12 weeks	–0.086 [0.101]				
– 1 to 4 weeks		–0.037 [0.200]	0.019 [0.201]	–0.384* [0.201]	–0.156 [0.158]
– 5 to 8 weeks		–0.340 [0.457]	–0.189 [0.495]	–0.344 [0.473]	0.097 [0.345]
– 9 to 12 weeks		0.171 [0.285]	0.185 [0.287]	0.315 [0.280]	0.288 [0.248]
Overall effect of Israeli fatalities	–1.137 [0.828]	–0.823 [1.155]	0.060 [1.004]	–1.651 [1.460]	0.916 [1.128]
Daily wage	–0.002 [0.005]	–0.001 [0.004]	–0.003*** [0.001]	0.005 [0.005]	0.001 [0.004]
Local unemployment rate	–0.878* [0.486]	–1.071*** [0.368]	–1.355*** [0.263]	–2.232*** [0.405]	–0.945** [0.412]
Closure days out of past 30 days	0.0004 [0.0015]	–0.0007 [0.0014]	–0.0008 [0.0015]	–0.0037* [0.0020]	0.0026* [0.0014]
Region fixed effects	Yes	Yes	No	Yes	Yes
Time effects	Two period dummies	Two period dummies	Two period dummies	No time dummies	13 poll dummies
N	19,885	19,885	19,885	19,885	19,885
R <sup>2</sup>	0.066	0.067	0.067	0.064	0.074
Number of poll × area clusters	54	54	54	54	54

Source: Authors' calculations using fatality data from B'Tselem, poll data from JMCC, labor market data from the Palestinian Labor Force Survey and border closures data from the Palestinian Ministry of Labor.

Note: Estimated via OLS. Dependent variable is an aggregate measure of "moderation" constructed from ten different variables available in JMCC data set. All regressions include controls for residence type, gender, age, marital status, refugee status, education dummies, local unemployment rate, the local wage rate, the number of closure days in the 30 days preceding the poll. In columns 1–3, the two period dummies are for Phases 2 and 3 of the conflict, as defined in Table 1. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

Appendix Table 2

Probability of supporting Fatah based on pooled cross-sectional demographic and economic characteristics.

Variable	Males	Females
Type of residence		
City	–0.010** [0.038]	–0.077* [0.041]
Refugee Camp	0.031 [0.061]	–0.047 [0.058]
Refugee	0.040 [0.034]	0.078* [0.042]
Married	0.115*** [0.042]	–0.018 [0.045]
Age	–0.007*** [0.001]	0.000 [0.001]
Education		
Elementary school	0.105* [0.060]	0.079 [0.054]
Middle school	–0.045 [0.063]	0.024 [0.056]

Appendix Table 2 (continued)

Variable	Males	Females
Secondary education	0.080 [0.064]	0.028 [0.057]
Some college	0.042 [0.072]	0.110 [0.075]
College degree	0.036 [0.068]	0.007 [0.080]
N	8111	8363
R <sup>2</sup>	0.011	0.011
Number of poll × district clusters	221	221

Source: Authors' calculations using fatality data from B'Tselem, poll data from DSP, labor market data from the Palestinian Labor Force Survey and border closures data from the Palestinian Ministry of Labor.

Note: Estimated via probit. Dependent variable is indicator for supporting Fatah. Both columns include 15 district fixed effects. Robust standard errors, adjusted for clustering at the poll-district level, in brackets.

\* Indicates statistically significant at 10% level.

\*\* Indicates statistically significant at 5% level.

\*\*\* Indicates statistically significant at 1% level.

**Appendix Table 3**  
Factor analysis.

Variable	Factor loading	Uniqueness	Scoring coefficient on the aggregate measure of moderation
V1: Support for negotiations	0.6399	0.5905	0.1473
V2: Support for Oslo peace process	0.7384	0.4547	0.2343
V3: Opposes continuation of Intifada	0.5765	0.6676	0.1184
V4: Best way to achieve national goals	0.7326	0.4634	0.2082
V5: Intifada's final goal	0.4519	0.7958	0.0865
V6: Intifada's character	0.4558	0.7922	0.0762
V7: Resumption of military operations	0.6345	0.5974	0.1566
V8: Opposes suicide bombings	0.6904	0.5233	0.1956
V9: Solution to the conflict	0.4280	0.8168	0.0843
V10: Faction supported.	0.4132	0.8293	0.0658

Source: Authors' calculations using poll data from JMCC surveys.

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