Terrorism and the Rise of Right-Wing Content in Israeli Books[*]

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Abstract

In the past few years the Western world has witnessed a rise in the popularity of right-wing political discourse promoting nationalistic and exclusionary worldviews. While in many countries such rhetoric has surfaced in mainstream politics only recently, in Israel, right-wing ideology has been popular for almost two decades. Explanations for this surge focus on Israeli citizens' attitudinal change in the face of exposure to terrorism, but largely do not account for why such ideas remain popular over the long term, even after violence subsides. This study examines whether the long-lasting prominence of right-wing nationalistic politics in Israel is linked to the perpetuation of right-wing ideology in popular media. Analyzing the content of more than 70,000 published books, this study finds that content related to the political right has increased in Israeli books after periods of terrorism, a change that has become more pronounced over the years.

Word count: 7,138

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1 Introduction

A growing literature on the political effects of terrorism suggests that terrorist violence increases support for hardline, nationalistic parties. Evidence of this phenomenon has been found in Israel after the Second Intifada,[1] Turkey after the PKK attacks [2] the United States after 9/11,[3] and several European countries that experienced terrorist attacks in recent years.[4] Much of the existing literature argues that increased support for hardline parties can be explained by changed preferences in the target population. After exposure to terrorism, individuals become more sensitive to personal security and resist granting concessions—a policy position primarily promoted by hawkish parties.

While terrorism has been shown in many studies to have strong contemporaneous effects on targeted populations, its deeper and more long-lasting legacies are not well understood. In the context of Israel, for example, popular support for right-wing, nationalistic parties has not diminished since the end of the Second Intifada; instead, it has remained strong, and even increased, over the years (see Figure 1). Public support for peace negotiations has similarly decreased over the last two decades (see Figure 2). And new surveys of Israeli youths reveal that support for right-wing politics is greater than ever among younger generations: in 2016, over 67 percent of Jewish high-school students self-identified as right-wing supporters, and many did not regard peace negotiations with the Palestinians as an important national goal.[5]

What might explain the long-lasting popularity of right-wing ideology in Israel? What can account for the increasing support for hardline nationalistic worldviews in the population, even long after the Second Intifada ended and terrorist violence subsided? There are many

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[1]Berrebi and Klor (2006, 2008); Gould and Klor (2010); Getmansky and Zeitzoff (2014); Grossman, Manekin and Miodownik (2015)
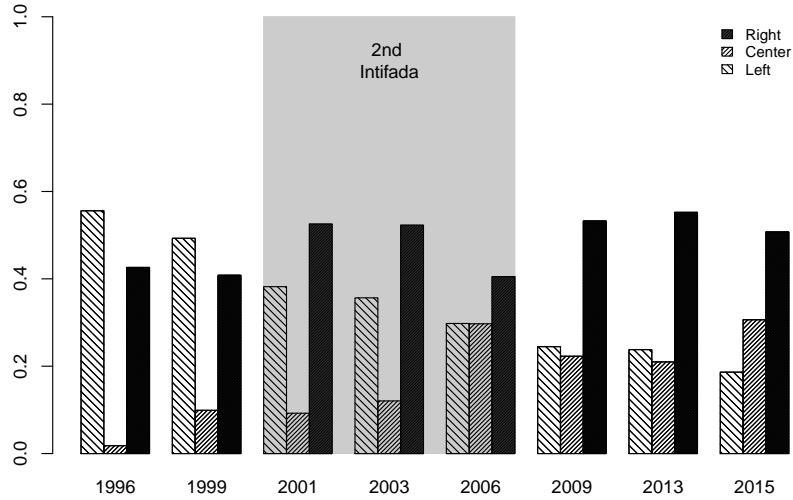
[2]Kibris (2011)

[3] Landau et al. (2004); Gershkoff and Kushner (2005)

[4]Hayoun (2015); Al-Abdali (2015); Gera (2015)

[5]Natanzon et al. (2017)

Figure 1: Rising support for right-wing parties over time

Note: The figure plots the proportion of respondents intending to vote for left-wing, center, and right-wing parties in each election from 1996 to the present. Data come from the The Israeli National Election Studies (2013).

possible explanations, ranging from elite manipulation of public opinion to demographic changes in the population. But an important insight can be found in a long history of inquiry into the roots of nationalism, which has emphasized the role of mass media in spreading and inspiring nationalist sentiment. Anderson suggested that nationalism arose in 18th century Europe with the mass printing of books, which allowed new ideas about the nation-state to disseminate across communities, reproduce, and become normalized over time.[6] Posen argued that media played an essential role in motivating mass armies by facilitating the spread of a cohesive national identity in the population.[7] Other scholars have suggested that mass media can inspire violent conflict, especially when state leaders manipulate the media to stir up patriotic sentiment and out-group antagonism.[8]
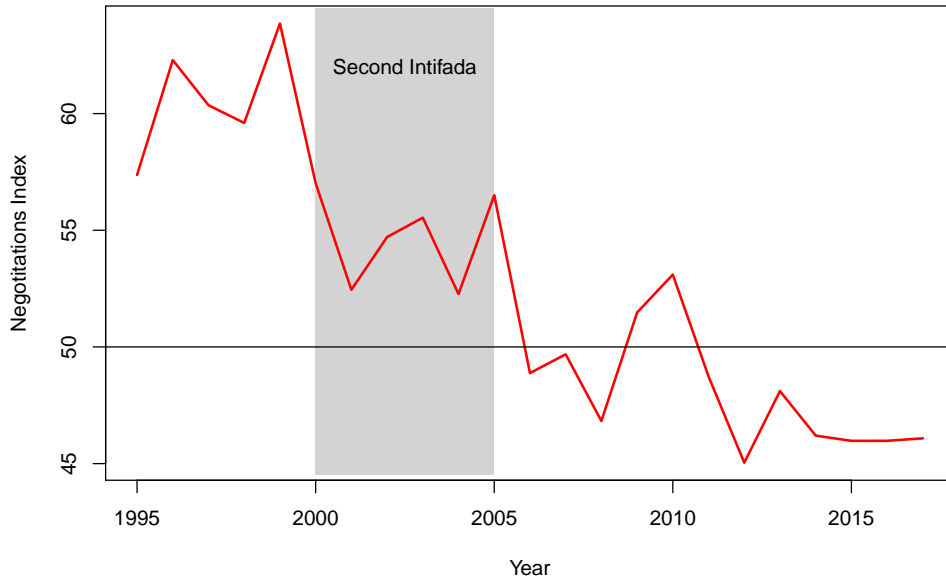
In this paper, I make an empirical contribution to this literature by showing that right-

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[6]Anderson (2006, p. 44)
[7]Posen (1993)
[8]Snyder and Ballentine (1996); Van Evera (1994)

Figure 2: Decrease in public support for negotiations over time

Note: The figure plots data from the Negotiations Index, derived from a monthly survey conducted by the Israel Democracy Institute. It shows Israeli citizens' support for Israeli-Palestinian peace negotiations over time. The index ranges from 0 to 100, where 0 indicates lack of support for negotiations and 100 represents complete support for the peace process. It can be seen that support for peace talks and belief that negotiations would lead to peace have been steadily decreasing, especially since the end of the Second Intifada. The data/the questionnaires were provided by the Guttman Center under the auspices of the Israel Democracy Institute (R.A.).

wing, nationalistic ideology has been on the rise in tens of thousands of Israeli books since the Second Intifada. Scholars studying mass media in Israel have suggested that state actors, especially in the educational sector, have sought over the years to influence the content of books to inspire nationalist sentiment.[9] Some go further to argue that the intractability of the Israeli-Palestinian conflict is rooted in the perpetuation of a conflict atmosphere in mass media, education, and popular culture.[10] This issue has been salient in Israeli public discourse recently, with the publication of a new version of a widely circulated high school

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[9]Most of this research has focused on school curricula and textbooks. See Bar-Tal (1998); Podeh (2002); Porat (2004).

[10]Podeh (2000); Bar-Tal and Rosen (2009); Adoni and Nossek (2013)

civics textbook, which was significantly revised in 2016 to portray Israel's society and history in a way that aligns with the views of the political right.[11]

Nonetheless, the argument that right-wing ideology has been disseminating in Israeli media has yet to be put to a rigorous empirical analysis. This paper seeks to advance current research by introducing a novel text-as-data method for the large-scale analysis of political content in books, and by presenting a quantitative examination, using this tool, of right-wing content in books published in Israel between 1980 and 2008. Employing a unique data source on the content of tens of thousands of published books—the Google N-gram Corpus[12]—the study systematically analyzes the extent to which right-wing nationalistic content increased in Israeli media after periods of terrorism and over time.[13]

Specifically, I examine how the frequency of phrases reflecting right-wing ideology found in more than 70,000 books changed over time, and in particular, after years of terrorism in the early 2000s. To do so, I constructed a vocabulary of phrases reflecting political ideology on the left-right spectrum, using the content of historical party platforms and the full corpus of the Hebrew edition of Wikipedia. I measured each phrase's yearly frequency in Israeli books using the Google N-gram corpus, and combined this information with yearly data on terrorism casualties. This allows for a systematic examination of the year-by-year changes in the content of Israeli books, and the extent to which these changes are linked to periods of terrorism. While the study's empirical design does not permit making causal claims, it nonetheless enables detecting a systematic pattern in a very granular level of analysis, by

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[11]In the supplementary appendix I present a sentence-by-sentence comparison of the two versions of the civics textbook, showing that sentences reflecting right wing nationalistic ideology increased in the textbook in the 2016 edition, while sentences reflecting more left wing views were omitted from the same paragraphs. One edition was published just at the beginning of the Second Intifada in summer 2001, and another was published 15 years later, in 2016. This allows for nuanced analysis of content within the same book.

[12]Michel et al. (2011); Lin et al. (2012)

[13]I study books as opposed to other types of mass media, such as newspapers or television content, since books are a more stable outlet that is less prone to the volatility of daily events. While published books represent only one aspect of mass media, it is nonetheless an important one, shown in past literature to be central to the rise of national political processes (Anderson, 2006).

making within-phrase comparisons over time.

The results display several interesting patterns. I find that years with high levels of terrorism are associated with a significant increase in the frequency of right-wing ideological content in tens of thousands of popular Israeli books. The increase in right-wing content does not subside, but persists over years, and is especially pronounced in books published in the latter half of the 2000s. These findings hold across multiple specifications, using different measures of terrorism, and are robust to the inclusion of year fixed effects and more than a million phrase fixed-effects. This striking empirical evidence closely tracks the predictions in existing literature on the central role of mass media in cultivating and sustaining nationalist sentiment, especially when considering the continuing popularity of right-wing ideology among the Israeli public since the end of the Second Intifada. Even though the findings do not necessarily imply that the content of the media has *caused* the Israeli public to sustain its support for right wing politics, they nonetheless show — for the first time on a large scale, using tens of thousands of books — this systematic link.

The study therefore advances existing research on nationalism and the media by presenting a new technique to quantitatively study political content in a very large number of mass-produced books. It also contributes to research on terrorism and right-wing politics by showing that right-wing content has been disseminating in Israeli media since the Second Intifada, a finding that closely tracks similar changes in public opinion over the years. The next section describes this method, and presents how it is applied to the study of books published in Israel between 1980 and 2008. The sections that follow outline the study's research design and results. The paper concludes with a discussion of several explanations for the rise of right-wing content in Israeli media, including changes in popular demand, elite manipulation of content, and demographic structural changes in society.

2 Text as data: Studying the political content in thousands of books

I use automated text analysis to quantitatively measure right-wing content in books over time. Since the goal is to uncover systematic patterns in a large number of books, I use a unique dataset, the Google N-gram, which contains granular information on the content of tens of thousands of books published in Israel over more than two decades.[14] The content of books is analyzed using two-word phrases as the unit of analysis. I examine how the usage of specific phrases reflecting right-wing ideology changed over time and after periods of terrorism.

The Google N-gram dataset was created from a corpus of digitized books in eight languages, including English, French, Russian, and Hebrew, among others, drawn from several dozen universities around the world and direct contributions by publishers. The latest version of the dataset consists of more than 8 million volumes, which is about 6% of books ever published. The textual information was collected by scanning books and digitizing their content with optical character recognition, and includes metadata on the year and place of publication. In order to not violate copyright restrictions, the dataset does not provide the content of books in full text format, but consists of a matrix of n-gram frequencies by year. An n-gram is a sequence of several words. Google N-gram includes phrases of different lengths, up to five-word phrases, and is limited to phrases that appear 40 times or more in the corpus.[15] This study uses the "2-gram" (i.e., two-word phrases) version of the Google N-gram corpus in Hebrew, which consists of more than 70,000 books and over 8 billion words.[16]

This section briefly describes the data collection process. More information is provided in the supplementary appendix. First, I create a vocabulary of phrases reflecting right-wing ideology using political party platforms and the full corpus of the Hebrew version of

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[14]Michel et al. (2011); Lin et al. (2012)

[15]Michel et al. (2011)

[16]Lin et al. (2012)

Wikipedia. Second, I obtain the yearly frequency of each phrase's appearance in books over a period of 28 years using data from the Google N-gram corpus in Hebrew. Third, I link the frequency of phrases in published books to the timing of terrorist attacks in Israel. All textual sources analyzed in this paper are cleaned and preprocessed using standard text analysis procedures.[17] As stemming in Hebrew is a more complicated process than other languages, I apply an original method for stemming words in Hebrew that takes into account the rich and complex structure of Hebrew morphology. More details on the Hebrew stemming method is described in the supplementary appendix.

2.1 Creating a vocabulary of right-wing phrases

I employ two textual sources to find words that are linked to right-wing ideology. First, I use Israeli political party platforms from elections taking place between 1981 and 2013 to generate a "core vocabulary" of two-word phrases that represents political issues on the right-left ideological space.[18] This corpus consists of 51 platforms from right-wing, center, and left-wing parties. Table A1 in the supplementary appendix lists the parties that competed in elections from 1981 to 2013, divided by blocs. Second, I use the full text of the Hebrew edition of Wikipedia, which consists of 156,531 articles, to expand the core vocabulary. Since the vocabulary of the party platforms is limited to words that parties use in their official documents, it is likely to not fully capture the range of words used in popular books to describe the same political ideas. To better measure the usage of political phrases in books, I expand the party platform vocabulary by adding associated terms from Wikipedia. I divide each Wikipedia article into paragraphs, and calculate the paragraph-level association between core phrases coming from party platforms and associated phrases appearing in Wikipedia.

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[17]Grimmer and Stewart (2013)

[18]The full text formats of these platforms were obtained from The Israel Democracy Institute. The platforms can be found at: http://en.idi.org.il/tools-and-data/israeli-elections-and-parties/

Figure 3 shows a random sample of phrases that are most strongly linked to the political ideology of parties from the right and left blocs. All phrases are translated from Hebrew to English by the author. Although there is some noise, the overall pattern shows that phrases linked to right-wing parties tend to focus on Jewish nationalism, Jewish land, and wars; for example: "Jewish people," "Conquest land," and "After war." On the other hand, phrases linked to left-wing parties relate to topics such as civil rights, Arab citizens of Israel, and peace; for example: "Situation of rights," "Arab population," and "Just peace." While these phrases, on their own and in the abstract, do not necessarily imply right- or left-wing ideology, their usage in Israeli discourse in Hebrew signals different political slants. Thus, for example, the phrase "Jewish people" is frequently used in the context of Jewish nationalism, while the phrase "Just peace" is a commonly used by the left to discuss the resolution of the Israeli-Palestinian conflict.

Furthermore, this distribution of phrases generally aligns with what is usually conceived of as right and left in Israeli politics. While policy preferences are multidimensional, much of the divide between the right and the left in Israel revolves around the Israeli-Palestinian conflict.[19] In general, the left believes that the best way to end the conflict is through peace negotiations and concessions, while the right is skeptical about the success of concessions, stressing the importance of military force for defense and deterrence.

To illustrate how these ideological phrases might appear in books, Figure 4 presents an example of sentences from books published in Israel that include phrases linked on right-wing and left-wing parties. These sentences were originally written in Hebrew, and were translated to English by the author. It can be seen that phrases linked to right-wing parties, such as "Jewish people" and "After war" are located in sentences that discuss the value of territory for the Jewish people and the importance of security for the state of Israel. These

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[19]Arian and Shamir (2008)

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are issues that reflect the ideology of the right-wing bloc, which tends to prioritize territory and national security. On the other hand, phrases that are linked to left-wing parties, such as "Situation of rights" and "Just peace" are found in sentences that discuss human rights violations and peace negotiations—issues advanced by left-wing parties.

Figure 3: Phrases most strongly linked the ideology of political blocs

Figure 4: Examples of phrases in books

Right-wing:

Jewish people *"Throughout the exile period the **Jewish people** longed to return to the Land of Israel and Jerusalem"* (Citron, 2007, p. 87)

After war *"David Ben-Gurion knew that while the Arabs can lose war **after war**, Israel cannot lose even one war because this would lead to its extermination"* (Sagi, 2005, p. 57)

Left-wing:

Situation of rights *"The Human **rights situation** in a country is not a private affair of that country, the whole world has an interest in that country if it violates human rights"* (Almog, 1997, p. 32)

Just peace *"A **just peace** agreement between Israelis and Palestinians will be reached, which will recognize the right to self-determination"* (Ophir, 2001, p. 65)

2.2 Measuring the usage of right-wing phrases in books

I measure the yearly frequency of phrases linked to right-wing ideology in the Google N-gram corpus. The yearly frequency of each phrase reflects the number of times in which it appears in *new* books published each year. I also measure the frequency of phrases reflecting left-wing and centrist ideology, for comparison purposes. The frequency is translated to a percentage of the sum of the frequencies of all phrases in my vocabulary. This takes into account the fact that not all phrases appearing in Google N-gram each year are in the vocabulary of political phrases that I generated. Controlling for this possibility ensures that changes in frequencies of phrases outside my dataset do not lead to artificial changes in the frequencies of phrases in my dataset.[20]

2.3 Data on terrorism in the Second Intifada

Since a large literature has suggested that the rising support for the right in Israel is driven by terrorism in the Second Intifada,[21] and that sustained support for nationalist ideology is likely to be enhanced by its dissemination in mass media,[22] I examine whether there is a systematic relationship between over-time changes in right-wing content in books and terrorist violence in Israel. To do so, I match the frequency of phrases found in books to two aggregate measures of terrorist violence, both based on the number of casualties during the conflict. The first compares the content of books before and after terrorism peaked in the Second Intifada in the year 2002 (see Figure 5). I compare the frequency of phrases reflecting the ideology of right-wing parties before and after this peak, by carrying out various estimations with different year intervals. The first estimation measures the usage of right-wing phrases six years before and six years after the peak of terrorism. In the second

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[20]See the supplementary appendix for more details.

[21]Berrebi and Klor (2006, 2008); Gould and Klor (2010); Getmansky and Zeitzoff (2014); Grossman, Manekin and Miodownik (2015)

[22]Anderson (2006); Posen (1993); Bar-Tal (1998); Bar-Tal and Rosen (2009)

estimation, I observe changes in phrase frequency using a greater distance from the peak, where I utilize six years before and after the peak of terrorism but exclude the three years on either side of the peak. The third estimation narrows the before and after window to three years. In interval notation, the first estimation measures $[-6, -1]$ and $[1, 6]$ years from the peak, the second estimation measures $[-6, -4]$ and $[4, 6]$ years from the peak, and the third estimation measures $[-3, -1]$ and $[1, 3]$ years from the peak. Measured in this way, all estimations allow for at least a one-year difference between the peak of violence and the year in which books are published.[23]

The second measure uses the yearly number of casualties during the conflict. Data on Israeli casualties come from B'Tselem, the Israeli Information Center for Human Rights in the Occupied Territories.[24] First, I calculate the cumulative number of casualties in the Intifada, in order to understand whether the frequency of hawkish ideology increases with the number of victims from terrorist violence. Second, I create five-year lags and moving averages of the number of casualties, to estimate patterns over time. Finally, I break down the types of casualties between civilians and soldiers, to examine whether the frequency of right-wing ideology in popular books changes differently between combatant and non-combatant casualties.

This data collection process resulted in an original, phrase-level dataset on the political content of books over time. This dataset includes over a million phrases whose frequency is measured over the course of 28 years, from 1980 to 2008. Each phrase is linked in probability to political parties, measured as a weight ranging from 0 to 1.[25] Figure 8 in the Appendix describes this text extraction process visually. Table 1 presents summary statistics for the

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[23] In the supplementary appendix, I also examine how these patterns hold for First Intifada (1987-1991), by examining the content of books surrounding the year 1989, which was the year with the highest number of casualties in that uprising.

[24]B'Tselem (2011)

[25] The supplementary appendix provides details on the weighting procedure.

entire dataset by year.

Table 1: Summary Statistics

Year	Phrases (N)	Frequency				Volumes				Killed (N)
		Mean	SD	Min	Max	Mean	SD	Min	Max	
1980	1008634	0.0000486	0.0003109	2.07E-07	0.0074346	87.24895	279.0374	1	5053	0
1981	1454111	0.0000374	0.000215	1.69E-07	0.0048933	83.67148	258.4522	1	4861	0
1982	1162042	0.0000371	0.0002366	1.79E-07	0.005747	72.29514	249.8572	1	4954	0
1983	1239501	0.0000448	0.0002947	2.41E-07	0.0071962	62.79942	202.3185	1	4478	0
1984	1256329	0.0000452	0.0003039	1.78E-07	0.0060665	79.26538	274.558	1	5089	0
1985	1154575	0.0000468	0.0003473	2.55E-07	0.0083447	61.42195	216.5409	1	4465	0
1986	926586	0.0000665	0.0003999	2.38E-07	0.0074282	79.85955	255.6332	1	4068	0
1987	789774	0.0000611	0.0004048	2.60E-07	0.0074678	73.61474	251.3096	1	4707	0
1988	1210498	0.0000532	0.000344	1.50E-07	0.0067895	100.5409	308.8277	1	5532	12
1989	1179264	0.0000416	0.0002884	1.58E-07	0.0069362	86.60441	279.4332	1	4651	31
1990	1277378	0.0000528	0.00034	1.29E-07	0.0057054	113.3165	370.4312	1	5447	22
1991	1463603	0.00004	0.0002602	9.64E-08	0.0056542	129.5782	391.3454	1	7512	19
1992	1811313	0.0000367	0.0002505	6.49E-08	0.0050182	173.1321	550.703	1	10078	34
1993	1241028	0.0000532	0.0003694	1.35E-07	0.0086834	110.2941	341.8145	1	6457	72
1994	1201529	0.0000633	0.000423	1.21E-07	0.0061274	137.0529	461.9895	1	8418	74
1995	1350444	0.0000366	0.0002428	9.28E-08	0.007403	134.9604	431.9707	1	7757	46
1996	1213148	0.0000438	0.0002674	1.01E-07	0.0050061	142.7983	444.7022	1	8255	75
1997	1740604	0.0000311	0.0001986	6.94E-08	0.00503	149.6641	468.9949	1	7694	29
1998	1643306	0.0000393	0.0002786	7.27E-08	0.0069947	156.139	514.7471	1	8548	12
1999	1261831	0.0000512	0.0003787	7.58E-08	0.0083168	183.8701	598.1633	1	9469	4
2000	1174531	0.0000451	0.0003199	7.32E-08	0.007296	188.3799	671.4685	1	11581	43
2001	1352533	0.0000537	0.0004185	6.98E-08	0.0094087	196.5174	676.8493	1	10503	192
2002	1421839	0.0000504	0.0003827	5.90E-08	0.0080147	215.137	749.6917	1	11881	411
2003	1611913	0.0000329	0.0002033	5.59E-08	0.0071323	195.6324	580.5608	1	11493	171
2004	1525955	0.0000452	0.0003154	5.82E-08	0.0077463	208.9538	638.5593	1	10382	108
2005	1168069	0.0000592	0.0004814	8.97E-08	0.0107891	174.6025	607.7769	1	9779	51
2006	1937119	0.0000395	0.0003024	6.16E-08	0.0072415	176.8622	540.1503	1	10443	23
2007	1226312	0.0000546	0.000428	1.13E-07	0.0097271	125.2397	407.7997	1	6089	13
2008	1779447	0.0000434	0.000325	9.42E-08	0.0088393	124.8737	363.6265	1	6445	31

Note: The table presents summary statistics for the entire dataset by year. The table provides information on the yearly frequency of phrases, as well as the number of volumes in which they appear, for a panel of over a million phrases from 1980 to 2008. The yearly total of phrases changes from year to year, because some phrases never appear in certain years. The table also provides information on the yearly number of casualties from terrorism.

Figure 5: Israeli casualties in the Intifadas

Number of casualties

First Intifada

Second Intifada

1990   1995   2000   2005

Year
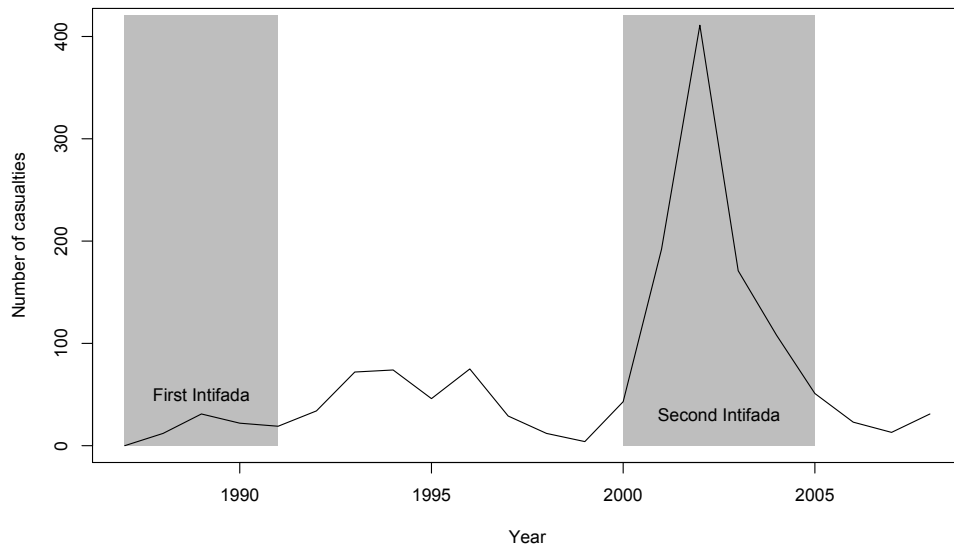
Source: B'Tselem - The Israeli Information Center for Human Rights in the Occupied Territories (B'Tselem, 2011).

3 Estimation

I examine the relationship between terrorism and right-wing content in books using several ordinary least squares models. First, I estimate a model that compares the frequency of phrases linked to right-wing, left-wing, and centrist parties before and after the peak of violence in the Second Intifada:

$$y_{i,t} = \beta_1(R_i \times T_{i,t,w}) + \beta_2(C_i \times T_{i,t,w}) + \beta_3(L_i \times T_{i,t,w}) + \gamma_1 R_i + \gamma_2 C_i + \gamma_3 L_i + \alpha_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

In the equation above, $y_{i,t}$ represents the frequency of phrase i at year t in Google N-gram; R_i, C_i, and L_i are indicator variables coded 1 when a phrase is linked to a party from the right, center and left-wing blocs, respectively, and 0 otherwise; $T_{i,t,w}$ is an indicator variable coded 1 when phrase i at year t appears after the peak of terrorism and 0 if before; and the subscript w indicates the size of the before and after window around the terrorism peak in the Second Intifada. Finally, α_i and δ_t correspond to phrase and year fixed effects, and $\varepsilon_{i,t}$ is the error term.

The second set of models is based on the same structure, but examines the relationship between the number of casualties from terrorist violence and the usage of right, center, and left-wing phrases in subsequent years:

$$y_{i,t} = \beta_1(R_i \times K_{i,t,\tau}) + \beta_2(C_i \times K_{i,t,\tau}) + \beta_3(L_i \times K_{i,t,\tau}) + \gamma_1 R_i + \gamma_2 C_i + \gamma_3 L_i + \alpha_i + \delta_t + \varepsilon_{i,t} \quad (2)$$

Here, $K_{i,t,\tau}$ captures the number of people killed in terrorist attacks in time period $\tau \neq t$, which is measured differently in each model. First, I estimate the cumulative number of casualties in the Second Intifada. In this estimation, each additional year increases the number of individuals killed. The second set of estimations use five-year lags and moving averages of the total number of casualties. Finally, I estimate lags and moving averages

where the number of casualties is broken down between civilians and soldiers.

In all models, the main coefficient of interest is β_1, which estimates the relationship between terrorism and the frequency of the use of phrases related to right-wing ideology. All regressions are estimated with probability weights to account for phrases' proximity to the ideology of political parties (see the supplementary appendix for a more detailed explanation).

The use of phrase and year fixed effects is an important part of my estimation strategy for several reasons. First, it enables analyzing the relationship between terrorist violence and right-wing content in books more cleanly, by making comparisons within phrases over time, taking into account yearly trends in phrase frequencies. Second, it allows for a more accurate estimation of the standard errors. One of the drawbacks of using time-series data in difference-in-difference models is that unmodeled mechanical trends in the dependent variable can lead to understating the standard errors, due to serial correlation in the error term.[26]

While language is trended in some sense, especially when certain topics become more popular over time, any variation in the frequency of phrases that remains after controlling for time trends, differences across phrases, and terrorist events that might affect the use of language, is likely to be i.i.d white noise. The year fixed effects absorb linear trends in the linguistic popularity of all phrases in a given year; the phrase fixed effects subtract out time-invariant variation in the frequency across phrases, and the variable capturing terrorist violence accounts for theoretically substantive variation in phrase frequency over time.

In addition, the yearly frequency of phrases reflects the number of times in which phrases appear in *new* published books each year. These books are written by many different independent authors in various types of books. For example, in the year 2003, there were 7,128

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[26]Bertrand, Duflo and Mullainathan (2002)

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new books published in Israel, 82% of them were published by commercial, non-governmental, or private publishers. In 2007, there 5,850 new books were published, of which 86% were printed by commercial, non-governmental, or private publishers.[27] Thus, it is plausible to assume that any residual variation in the frequency of phrases not accounted for by the model is not systematically trended. The supplementary appendix provides statistical tests showing that residual variation is uncorrelated over time.

4   Results

Figure 6 reports the paper's main results. The left panel shows results from the model in equation 1, which uses the peak of terrorism as the predictor. All points in this panel present the coefficient and 95% confidence intervals for the interaction term: *After peak of terrorism* × *Right*, which captures the change in the frequency of phrases linked to the ideology of right-wing parties after the peak of terrorism. The numbers next to the points present the percent change in the frequency of right-wing phrases associated with each coefficient. The leftmost point presents the coefficient obtained when measuring phrase frequency $[-6, -1]$ and $[1, 6]$ years from the peak of terrorist violence; the middle point plots the coefficient when phrase frequency is measured $[-6, -4]$ and $[4, 6]$ years from the peak of violence; and the rightmost point reports the coefficient estimated using measures of phrase frequency $[-3, -1]$ and $[1, 3]$ years from the peak.

The right panel reports the results from the model in equation 2, which uses the number of casualties to measure terrorism. Here, all points represent the coefficient on the interaction *Number of casualties* × *Right*, along with 95% confidence intervals. The leftmost point shows the coefficient estimated when using the cumulative number of casualties in the Second Intifada as the predictor; the middle point shows the result obtained when using a five-year moving average of the number of casualties; and the rightmost point shows the coefficient

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[27]National Library of Israel (2016)

estimated when using a five-year lag of the number of casualties. In these models, the relationship is measured as an increase of one casualty, so the coefficients are notably smaller than in the left-panel, which measures differences across several years. In all estimations, results are calculated with phrase and year fixed effects. In addition, all coefficients are multiplied by 10,000,000 for easier presentation, because the phrase-level unit of analysis renders the magnitude of the original coefficients very small. The full regression results are reported in Tables 2 and 3 in the Appendix.

As can be seen in Figure 6, the results show a consistent pattern, whereby phrases linked to right-wing parties increase in popular books in years succeeding periods of terrorism in Israel. When comparing the content of books $[-6, -1]$ and $[1, 6]$ years or $[-6, -4]$ and $[4, 6]$ years from the peak of terrorism, the frequency of phrases reflecting the ideology of right-wing parties significantly increases. This change is substantively significant: the frequency of phrases reflecting hawkish ideology is about 2-6% higher in books published after the peak of the Second Intifada, compared to their frequency in pre-Intifada years. Given that any given phrase can only appear a limited number of times in a document, this increase is notable. Interestingly, this relationship does not hold when comparing phrase frequency $[-3, -1]$ and $[1, 3]$ from the peak of terrorism. One explanation is that it takes more than three years for book content to change, especially considering the time it takes to develop an idea for a book, write a draft, and undergo the process of review, revision and publication.

Looking at the results using the number of casualties as the predictor, we find a similar pattern. Phrases linked to right-wing content significantly increase with the number of casualties from terrorist violence. In substantive terms, each person killed is associated with a $.02 - .04\%$ increase in the frequency of right-wing phrases. While the percent change seems small, it should be noted that it reflects the change in the frequency of one phrase that is associated with one casualty. In the supplementary appendix I report additional estimations, showing that the results hold also when breaking down the casualties between civilians and

18
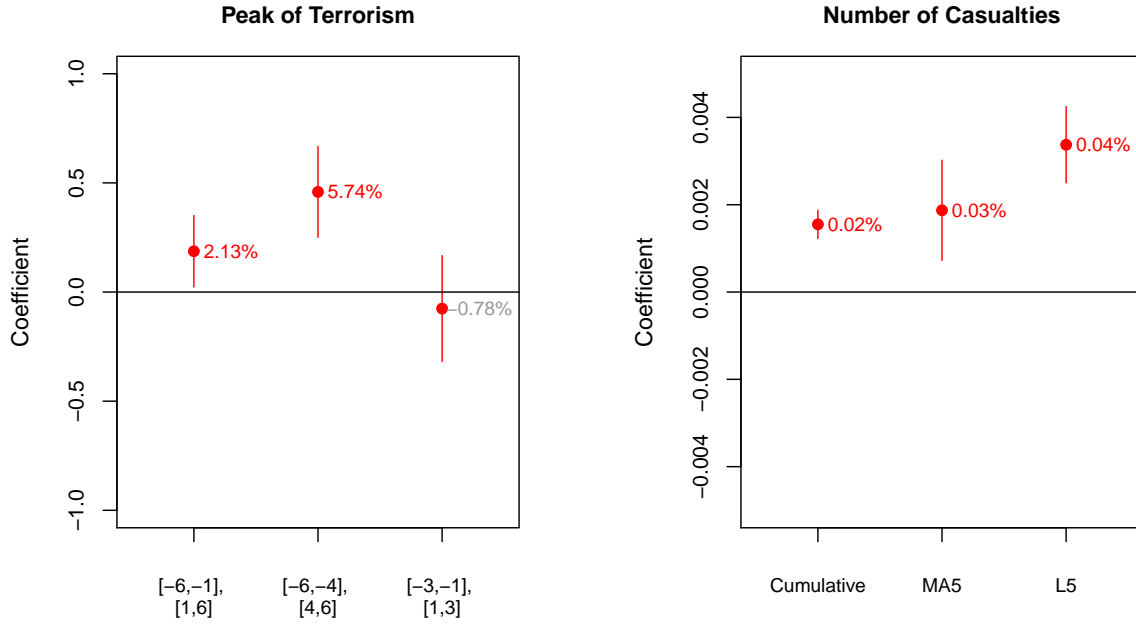
Figure 6

Note: The figure plots regression results from different models reported in the paper. Each point reflects the change in the frequency of phrases reflecting right-wing ideology in the aftermath of terrorist violence, compared to their frequency in pre-Intifada years, along with 95% confidence intervals. All models used in this figure are estimated with phrase and year fixed effects. The left panel shows results from the model in equation 1, which uses the peak of terrorism as the predictor. The leftmost point presents the coefficient obtained when measuring phrase frequency $[-6, -1]$ and $[1, 6]$ years from the peak of terrorist violence; the middle point plots the coefficient when phrase frequency is measured $[-6, -4]$ and $[4, 6]$ years from the peak of violence; and the rightmost point reports the coefficient estimated using measures of phrase frequency $[-3, -1]$ and $[1, 3]$ years from the peak. The right panel reports the results from the model in equation 2, which uses the number of casualties to measure terrorism. The leftmost point shows the coefficient estimated when using the cumulative number of casualties in the Second Intifada as the predictor; the middle point shows the result obtained when using a five-year moving average of the number of casualties; and the rightmost point shows the coefficient estimated when using a five-year lag of the number of casualties.

combatants, as well as when using measures of terrorist violence from the First Intifada.

Comparing these findings to the results obtained for phrases linked to left-wing and centrist parties (see Tables 2 and 3 in the Appendix and additional results in the supplementary appendix), I find that left-wing phrases either do not change, or even significantly decrease after the peak of terrorism in some models. To recall, phrases reflecting left-wing ideology are related to topics such as as civil rights, Arab citizens of Israel, and peace negotiations.

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Interestingly, phrases linked to centrist parties significantly increase in books after periods of terrorism, a result which holds in almost all model specifications. It is hard to evaluate what types of issues are captured by centrist phrases, as these phrases come from a somewhat noisy vocabulary mixing right-wing and left-wing positions (see Figure A1 in the supplementary appendix).

Finally, I examine the sensitivity of my results to the choice of arbitrary placebo "peaks" in terrorist violence, by estimating the model described in equation 1 for each year in my dataset. The choice of the peak of violence in my main estimations is based on the notion that the year with the highest number of casualties (the year 2002) can plausibly capture the relationship between terrorism and the usage of right-wing content in popular books. However, it is equally likely that other years during the Intifada also capture this association. If terrorist violence has a systematic relationship with the usage of right-wing content in mass media, we would expect other Intifada years to have a positive relationship with the frequency of right-wing content in books in subsequent years. Furthermore, this logic implies that arbitrary "peak" years outside of the Intifadas should not show an increase in the usage of right-wing phrases.

Figure 7 shows the results. The figure plots, for each year, the coefficient on the interaction term *After peak of terrorism* × *Right*, where the before and after windows around the peak are set to six years. As such, for each year, the point represents the change in the frequency of phrases linked to right-wing parties in the six subsequent years, compared to their 'baseline' frequency in the six prior years. The figure also plots the yearly number of casualties from terrorist violence, and shades in gray the Intifada years. It can be seen that overall, there is a systematic increase in the usage of phrases linked to right-wing ideology in books published in years succeeding the Intifada years. These results are stronger for the Second Intifada, especially for phrases appearing in books published in the second half of the 2000s. The figure also shows that non-Intifada years are not systematically related to

an increase in the right-wing content of books.

Figure 7: Placebo: Usage of Right-Wing Phrases in Different Specifications of "Peak" Years
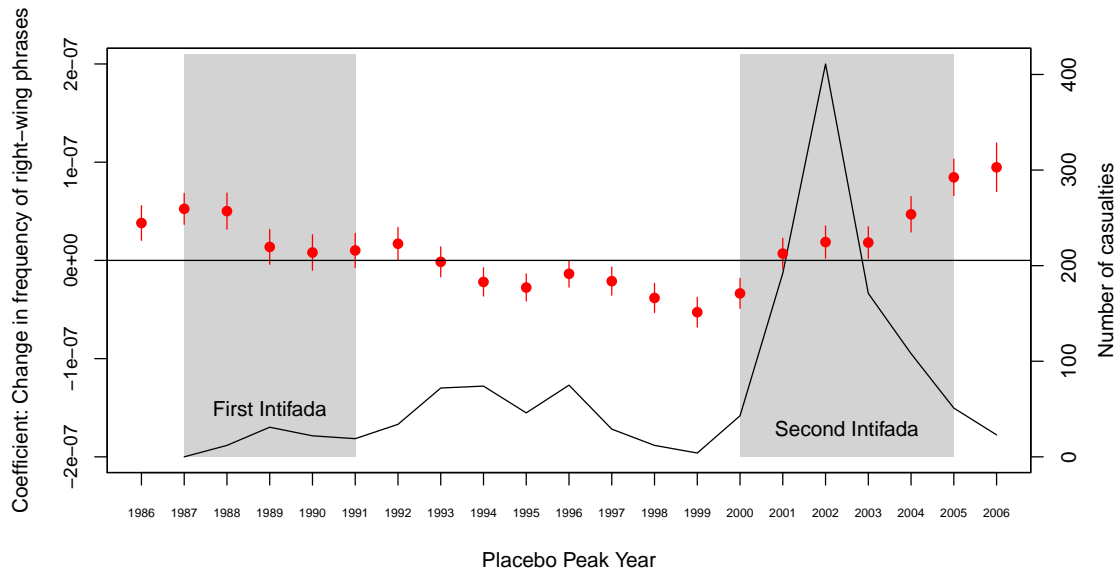
Note: The figure plots regression results from different models using placebo "peak" years of Palestinian violence, where the before and after windows around the peak are set to 6 years. For each year, the point represents the change in the frequency of phrases linked to right-wing parties in the six succeeding years, compared to the six years before the peak, along with 95% confidence intervals. The black line shows the yearly number of casualties from Palestinian violence. All models are estimated with phrase and year fixed effects.

Overall, the results show that terrorism is associated with a systematic increase in the frequency of content relating to right-wing ideology in Israeli books, an increase that has become more pronounced over time. These findings hold in tens of thousands of books, using different measures of terrorist violence, and are robust to various model specifications and a battery of robustness tests.[28] As the Google N-gram dataset ends in 2008, it is not possible to say how the dissemination of right-wing content would have looked in the 2010s, but qualitative evidence from a recently-published educational textbook suggests that this trend

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[28]The supplementary appendix presents additional results from various alternative specifications, including results from the First Intifada (1987–1991), as well as placebo and sensitivity checks that test the assumptions of this study's empirical strategy.

is continuing.[29] The empirical findings presented in this paper thus support the argument that mass media has played an important role in promoting and sustaining long-lasting right-wing nationalism in Israel. The next section discusses possible explanations for this phenomenon and evaluates them against existing evidence.

5 Possible explanations for the rise of right-wing content in books

5.1 Changes in popular demand for right-wing content

One possible explanation for the rise in right-wing content in Israeli books is that profit-maximizing book sellers respond to changes in popular demand by consumers. A growing number of studies from Israel have found that terrorism in the Second Intifada increased public support for right-wing parties,[30] a trend that has also been documented in Israeli national elections and public opinion polls.[31] After the Second Intifada, public support for right-wing politics has been constantly growing, even among younger generations.[32] Thus, it is possible that book publishers have been considering these shifts in population preferences when choosing content for publication.

This notion is consistent with existing research on mass media markets, which views media as commercial in nature, where works are produced primarily to make profit.[33] It also aligns with Anderson's argument in the context of European nationalism, that print capitalism incentivized book publishers to sell books on topics that interested the masses.[34] Genzkow and Shapiro's finding that political slant in American newspapers is driven by consumer demand also supports this notion.[35] Thus, it is possible that overtime changes in

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[29]See supplementary appedix for more information.

[30]Berrebi and Klor (2006, 2008); Gould and Klor (2010); Getmansky and Zeitzoff (2014); Grossman, Manekin and Miodownik (2015)

[31]The Israeli National Election Studies (2013); The Israel Democracy Institue (2017)

[32]Natanzon et al. (2017)

[33]Macdonald (1998); Strinati (2004)

[34]Anderson (2006)

[35] Gentzkow and Shapiro (2010) developed and tested a theory of the determinants of political slant

public demand for right-wing content, especially since the end of the Second Intifada, have led to increased production of such content in the Israeli market for popular books.

5.2 Elite manipulation of mass media content

Nonetheless, the causality may also run in reverse: ongoing public support for right-wing politics in Israel may have been facilitated by the dissemination of right-wing content in Israeli mass media. Thus, a second equally plausible explanation is that political elites have been strategically influencing what gets published in order to inspire nationalist sentiment in the population. Qualitative evidence from Israeli high school textbooks suggests that elite manipulation of content has been taking place for decades.[36] The most recent examples include the banning in 2015 of a popular book narrating a love story between a Jewish Israeli and a Muslim Palestinian on the grounds that it threatens Jewish nationalist identity,[37] and a series of significant revisions to a 2016 edition of an Israeli civics textbook that more strongly reflect the views of the political right.[38] In the broader media market, scholars have argued that the creation of a conflict atmosphere in Israeli mass media has been contributing to the continuation of the Israeli-Palestinian conflict.[39]

Indeed, the ability to strategically increase nationalistic content in the media is discussed by Snyder and Ballentine, who refer to this phenomenon as a market failure in the "marketplace of ideas."[40] Several studies have shown that this can happen in the context of terrorism, when elites take advantage of the "rally around the flag" effect and strategically influence the content of the media to sway the public to support hawkish policies.[41] The United States

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in American newspapers. Assuming that individuals prefer to read newspapers whose political slant is proximate to their political ideology and that media providers are profit-maximizing, they found that local variation in readers' Republican or Democratic preferences was driving ideological slant in newspapers.

[36]Bar-Tal (1998, p. 725)

[37]Kashti (2015)

[38]Skop (2016); Newman (2016)

[39]Podeh (2000); Bar-Tal and Rosen (2009); Adoni and Nossek (2013)

[40]Snyder and Ballentine (1996)

[41] Hetherington and Nelson (2003); Lupia and Menning (2009)

after 9/11 presents a good example of this phenomenon, where the Bush Administration was able to persuade the public to support the 2003 Iraq invasion by manipulating the content of the news.[42]

However, it is unclear how much control elites have over the publishing process of popular, non-educational books. Unlike school curricula, or even news media, which have been shown to be heavily influenced by those with political power,[43] popular book publishing is a more slow-moving and diffuse process that is harder to systematically manipulate. The supplementary appendix describes an empirical exercise evaluating the extent to which political elites in Israel have influence over book publishers' choice of content. The evidence reveals that about 10% of the publishers are subject to possible governmental influnece. This suggests that changes in the right-wing content of books cannot be completely dictated by political elites.

5.3 Demographic changes in Israeli society

A third possible explanation relates to deeper structural changes in Israel's demographics; specifically, waves of immigration from the former Soviet Union and the rapid population growth in Jewish settler communities. Since the 1990s, over a million immigrants from the former Soviet Union immigrated to Israel, a significant proportion compared to the total population.[44] The arrival of Russian immigrants strengthened Israel's political right, as immigrants have been strongly favoring right-wing, hardline policy positions, especially with respect to the Israeli-Palestinian conflict.[45] In the same time period, the Jewish settler community, which is composed of individuals who live in West Bank settlements, also experienced a rapid population growth. In 2015, the annual growth rate of the Jewish settler

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[42] Kaufmann (2004)

[43] Wolfsfeld (2014)

[44] Today, the Russian immigrant community amounts to about 15% of the Israeli population (Central Bureau of Statistics, 2015).

[45] Reeves (2013); Philippov (2010); Sherwood (2013)

population was 4.1%, which was twice the growth rate of the general Israeli population.[46] Jewish settlers tend to support hardline, nationalistic policy positions, and constitute a core group of voters of right-wing parties in Israel.[47]

These demographic shifts in the composition of the Israeli population might have also contributed to the increase in the right-wing content in Israeli mass media. The mechanisms could be related to changes in demand, as a larger share of the population favors right-wing ideological content; or, alternatively, increased political leverage by elites to influence media content. While the process driving these changes is complex and multidimensional, the pattern found in this paper is powerful and robust — in more than 70,000 books published in Israel over the course of 28 years, content related to right-wing nationalism has become more frequent since the end of the Second Intifada.

6 Conclusion

To conclude, this paper makes several contributions to existing literature. First, it provides systematic empirical evidence that right-wing content has been increasingly disseminating in Israeli popular books over the years. These findings support a large body of work on the roots of nationalism, which has long emphasized the role of mass media in cultivating nationalist sentiment. By analyzing content at the phrase level using tens of thousands of books, this study makes an empirical contribution at new levels of granularity and breadth. Second, the study contributes to existing work on the legacies of terrorism, which has so far mainly focused on contemporaneous changes in voting behavior, by showing that terrorism, at least in the Israeli case, has had a much deeper and longer-lasting impact, sparking long-term changes in the content of mass media.

A third contribution of this study relates to its use of automated text analysis methods.

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[46]Central Bureau of Statistics (2016)
[47]Schnell and Hope (2012)

A growing number of studies in various social science disciplines use automated methods to analyze the content of large-scale textual sources.[48] But there is currently very little political science research employing automated text analysis in Hebrew. This paper introduces an original algorithm to morphologically stem Hebrew words, which has not been previously utilized on Hebrew text in the political science literature. As such, it contributes to existing work on automated text analysis by providing tools to pre-process Hebrew language texts. This enables examining the way in which terrorism influences the content of a large number of Israeli books, evidence that is impossible to observe without such methods.

Future research could apply this paper's method to other countries that experienced terrorism and/or a rise in right-wing nationalism in recent years. Google N-gram currently contains data on hundreds of thousands of books in English, French, German, Italian, Russian, Spanish, and Chinese. Further studies could also examine whether the pattern found in this paper holds in other types of media outlets, such as newspapers, blogs, and social media. Terrorist violence has been shown to have a substantial impact on targeted populations, and further research is needed to better understand its consequences.

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[48] For example, see Grimmer and Stewart (2013); Hopkins and King (2010); King, Pan and Roberts (2013); Nielsen (2012); Jensen et al. (2012).

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7 Appendix

Figure 8: Measuring political content in popular books

**"Core" phrases from
party platforms**

**"Associated" phrases
from Wikipdia**

Stemming and gener-
ating two-word phrases

Stemming and gener-
ating two-word phrases

Weighting phrases: higher
weight to phrases appearing
more frequently in platforms

Weighting phrases: higher weight to
phrases co-occuring more frequently
with more ideological "core" phrases

**Vocabulary of right-
left political ideology**

Combining "core" and "associated"
phrases with varying weights

**Google 2-gram
(Two-word phrases)**

Measure yearly frequency

Identifying vocabulary phrases
in the Google 2-gram dataset,
and measuring yearly frequency
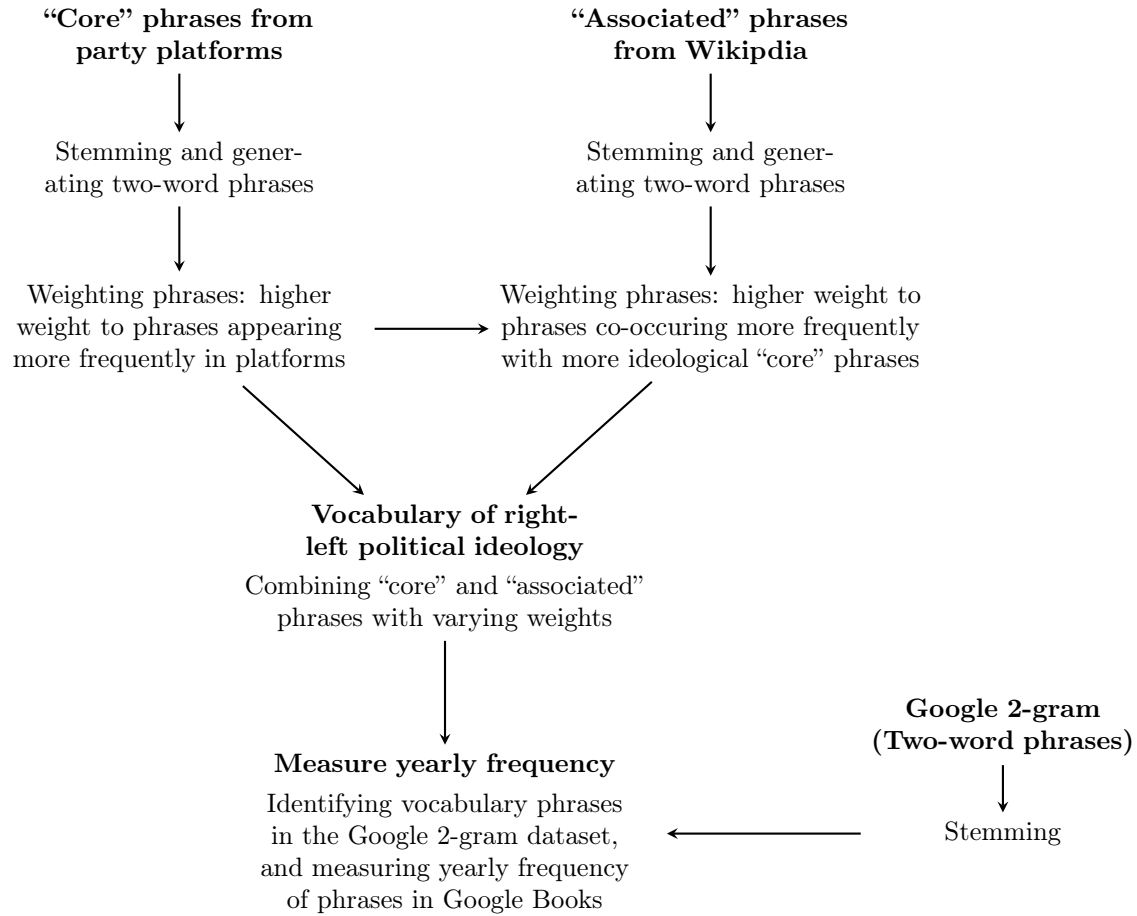of phrases in Google Books

Stemming

Table 2: Frequency of phrases by bloc after the peak of terrorism in the Second Intifada

	Before: 1999-2001 After: 2003-2005 [-6,-1], [1,6]		Before: 1996-1998 After: 2006-2008 [-6,-4],[4,6]		Before: 1996-2001 After: 2003-2008 [-3,-1], [1,3]	
	Estimate	SE	Estimate	SE	Estimate	SE
After peak of terrorism	-2.71***	(0.1)	-3.12***	(0.12)	0.34***	(0.13)
Right	-0.08	(0.06)	-0.21***	(0.07)	0.04	(0.09)
Left	0.02	(0.08)	-0.15	(0.09)	0.19	(0.12)
Center	-0.44***	(0.07)	-0.49***	(0.09)	-0.42***	(0.11)
After peak of terrorism × Right	0.19**	(0.08)	0.46***	(0.11)	-0.08	(0.12)
After peak of terrorism × Left	0.00	(0.1)	0.34***	(0.13)	-0.34**	(0.15)
After peak of terrorism × Center	0.83***	(0.1)	0.96***	(0.13)	0.75***	(0.14)
Constant	9.79***	(0.08)	9.89***	(0.09)	10.02***	(0.1)
Number of observations:	17,634,768		9,539,936		8,094,832	
R^2	0.49		0.48		0.59	
Phrase fixed effects:	✓		✓		✓	
Year fixed effects:	✓		✓		✓	

Note: The table reports changes in the frequency of phrases linked to the ideology of political blocs in Israel after the peak of terrorism in the Second Intifada (2002). The association between the peak of terrorist attacks and frequency of right-wing, left-wing, and center phrases is captured by the interaction terms. All coefficients are multiplied by 10,000,000 for easier interpretation. As analysis is conducted on the phrase level, the magnitudes of the original coefficients are very small.
* $p<0.10$,** $p<0.05$,*** $p<0.01$.

Table 3: Frequency of phrases by bloc and the number of casualties from terrorist violence

	Cumulative number of casualties (2nd Intifada)		5-year moving average of casualties		5-year lag of casualties	
	Estimate	SE	Estimate	SE	Estimate	SE
Number of casualties	-0.004***	(0.000)	0.000	(0.001)	-0.003***	(0.000)
Right	-1.162***	(0.142)	-0.126**	(0.056)	-0.223***	(0.045)
Left	0.289*	(0.175)	0.047	(0.069)	-0.207***	(0.057)
Center	-2.264***	(0.17)	-0.365***	(0.066)	-0.444***	(0.054)
Number of casualties × Right	0.002***	(0.000)	0.002***	(0.001)	0.003***	(0.000)
Number of casualties × Left	0.000	(0.000)	0.000	(0.001)	0.003***	(0.001)
Number of casualties × Center	0.003***	(0.000)	0.005***	(0.001)	0.006***	(0.001)
Constant	10.871***	(0.143)	7.247***	(0.056)	7.392***	(0.044)
Number of observations	13,197,718		24,660,921		24,660,921	
R^2	0.53		0.54		0.54	
Phrase fixed effects:	✓		✓		✓	
Year fixed effects:	✓		✓		✓	

Note: The table reports the relationship between the various specifications of the number of casualties from terrorism in the Second Intifada and the frequency of phrases reflecting the ideology of political blocs in Israel. The association between the number of casualties and frequency of right-wing, left-wing, and center phrases is captured by the interaction terms. All coefficients are multiplied by 10,000,000 for easier interpretation. As analysis is conducted on the phrase level, the magnitudes of the original coefficients are very small.
* $p<0.10$,** $p<0.05$,*** $p<0.01$.