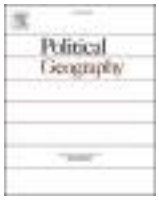
Political Geography 107 (2023) 102976

Contents lists available at ScienceDirect

Political Geography

journal homepage: www.elsevier.com/locate/polgeo



Full Length Article

The effect of micro-level context in polling stations on voting

Pazit Ben-Nun Bloom [a,*], Amit Birenboim [b], Ran R. Hassin [c]

[a] Department of Political Science, The Hebrew University of Jerusalem, Israel
[b] Department of Geography, The Hebrew University of Jerusalem, Israel
[c] Department of Psychology, The Hebrew University of Jerusalem, Israel

ARTICLE INFO

Keywords:
Electoral geography
Virtual reality
Vote choice
Immediate spatial context
National identity
Religious identity
Ideological blocs
Polling stations
Nationalism
Israel
Voting methods

ABSTRACT

Studies of electoral geography have traditionally examined the impact of spatial context on vote choice at the neighborhood or larger geographical level, overlooking potential effects of the immediate physical environment in the polling station. Observations of actual polling stations located in schools in Israel revealed a strong presence of nationalist and religious content in and around voting booths, in the form of naïve décor such as murals and children's drawings (Study 1). In three experimental studies (Studies 2–4), we examine the effect on voters of such seemingly apolitical cues. The experimental studies were conducted in the days prior to Israeli general elections for the 21st and 22nd Knesset. Using a virtual-reality interface based on real-life content in actual polling stations (Study 2, student sample) and simulated environments (Studies 3 and 4, representative samples of Jewish Israeli voters), the three experiments document an effect of naïve nationalist décor on simulated voting, particularly for left-wing less-nationalist voters. In Study 5, based on actual voting in the 22nd Knesset, we capitalize on the random allocation of voters to polling stations in schools and find a correlation between the content displayed around polling places and voting patterns among distinctively left-wing populations. Investigating the influence of the encounter with the immediate environment at a resolution of meters and seconds exposes the potential impact of the (ultra-)micro temporo-spatial scale on decision-making and enriches theoretical discussions on the multiscalarity of contexts in electoral geography analyses.

Fearing undue "subtle psychological pressure" (C-SPAN, 2018), democratic nations universally prohibit electioneering in the vicinity of polling places (Tucker, 2006, p. 977). The issue is so pivotal that the US Supreme Court intervened when Minnesota banned even small "political badges, buttons, or other political insignia" inside polling places (Supreme Court 2017). Yet, the potential of seemingly apolitical materials abundantly found in schools (a common polling venue) to exert systematic "psychological pressure" on voters is currently overlooked by lawmakers, election committees, and courts. This research investigates the impact of such elements like murals and children's drawings on voting.

The notion that voting is affected by the spatial context is central in political science and electoral geography (Johnston, 1974; Agnew, 1996; Ethington & McDaniel, 2007; Fotheringham et al., 2021). Yet, studies have more commonly investigated the social context, focusing largely on interpersonal effects (e.g., how social networks affects voting decisions) at the scale of the neighborhood or larger geographical unit (Johnston et al., 2007; Weaver, 2014).

Sparse literature examines how polling station environments affect voting in general elections. Prior work suggests voting in schools (versus other locations) is associated with increased support for educational policy initiatives (Berger et al., 2008; Pryor, Mendez, and Herrick, 2014), with no other documented effect on vote choice. Yet the existing evidence may underestimate the effect of subtle cues in schools on electoral choice, as it does not account for the specific content visible to voters in different school environments and in different polling stations within the same school, potentially exerting unique per-booth effects.

Drawing on multiple identity theory (Roccas & Brewer, 2002), we elucidate how commonplace naïve decorations within the polling environment can influence the saliency and accessibility of identities for voters, thereby impacting their vote choice. Specifically, we posit that exposure to national symbols may heighten voters' national identity, fostering a sense of unity, potentially leading voters toward the political center. Conversely, religious symbols could activate religious or secular identities, drawing voters away from center parties within their respective bloc and inclining them towards explicitly religious (far-right) or secular (far-left) parties. We identify nationalism as a moderator for both effects, suggesting that low-nationalism voters are more

* Corresponding author.
E-mail address: Pazit.BenNun@mail.huji.ac.il (P. Ben-Nun Bloom).

https://doi.org/10.1016/j.polgeo.2023.102976
Received 24 September 2022; Received in revised form 24 August 2023; Accepted 4 September 2023
Available online 21 September 2023

susceptible to the impact of subtle contextual cues around the polling booth, such as naïve school décor.

In what follows, we first demonstrate the existence of real-life national and religious content in polling stations, by observing the content on display in a sample of schools on a national election day (Study 1). We then present three experiments conducted in the weeks preceding two Israeli general elections, in which we varied the content in simulated environments designed based on our observations (Studies 2–4). Finally, we present a validation study in real-world polling stations (Study 5).

This article makes several contributions. First, we focus on an (ultra-) micro temporo-spatial resolution, investigating the spatial context in the few minutes that precede ballot casting at a resolution of meters and seconds—a context not commonly examined by electoral geographers. Second, unlike most previous studies, we focus on perceptual mechanisms that explain vote choice, and more specifically the effect of the physical–visual (rather than social) context. Third, we employ an atypical experimental approach that helps isolate the distinct effects of the micro-level context on voting, while at the same time maintaining ecological validity (Birenboim et al., 2021) by designing immersive models based on real-life content observed in actual polling stations set up in schools on an election day.

Apart from its theoretical and methodological contributions, the study has significant practical implications for the ongoing debate on voting procedures, which has often focused on the potential for voter or ballot manipulation in remote voting (e.g., Baker, 2020; Querejeta-Azurmendi et al., 2020).[1] The present study highlights the overlooked possibility that idiosyncratic spatial context, such as naïve wall décor, within polling stations may impact individuals' voting decisions during in-person voting.

1. Spatial context and electoral behavior

Spatial context, defined as the "hierarchical (and non-hierarchical) 'funnelling' of stimuli across geographical scales … to produce effects on politics and political behavior" (Agnew, 1996, p. 132), is a central concept in electoral geography. Scholars have proposed that the spatial context influences political attitudes and spatial voting patterns by shaping the flow of information (Books & Prysby, 1991; Burbank, 1995; Cox, 1969; Ethington & McDaniel, 2007; Johnston, 1974). The main channel through which information flows is the *interpersonal* channel. The interpersonal hypothesis suggests that local interactions and social networks may account for geographical voting patterns, based on the notion that "people who talk together vote together" (Baybeck & Huckfeldt, 2002; Cox, 1969; Johnston, 1974; Pattie & Johnston, 2000).

A less frequently examined *perceptual* channel focuses on information acquisition through direct observation and personal experiences. This idea is based on the established notion that stimuli within the immediate informational environment, even when perceived in passing, affect the accessibility in memory of relevant cognitive and identity constructs, thus shaping subsequent decisions (Billig, 1995; Brader, 2020). Studies within the perceptual approach examine how information from the immediate socio-economic context, like class and ethnic segregation, affects political preferences and perceived threats (Burbank, 1995; Enos, 2017; Miller & Grubesic, 2021; Sands, 2017). Limited attention has been given to the effects of perceptual information from the local physical environment – tangible elements like architecture, landscape, art, and cultural symbols (but see Gravelle et al., 2021).

Importantly, spatial context is significantly influenced by concurrent multi-scale processes, spanning from households to the global level (Agnew, 1996; Books & Prysby, 1991). In practice, little research in electoral geography considers units smaller than neighborhoods (but see Bruter & Harrison, 2021 on in-person voting, and Cutts & Fieldhouse, 2009 on household factors in turnout). The preference for the neighborhood scale is perhaps unsurprising, as it encompasses people with similar backgrounds, creating a cohesive spatial context (Johnston et al., 2007) allowing to explore the interpersonal hypothesis. Beyond theoretical reasons, data availability likely drives this focus, as voting data is most accessible at the neighborhood level. Achieving higher resolutions demands researchers to gather novel datasets.

Previous studies that examined micro-scale impacts of the physical environment have commonly explored the impact of the polling venue on voters' decisions (Bruter & Harrison, 2021). Many of these studies have focused on schools, which accommodate a significant number of polling stations in many countries (The Commonwealth, 2020).[2] Such studies have examined whether or how casting one's ballot in a school vs. other public buildings affects how people vote. Indeed, findings suggest that voting in schools (vs. other venues) leads to increased support for educational policy initiatives and funding, and for candidates who support such initiatives (Berger et al., 2008; Pryor et al., 2014). Yet, there are no documented effects of locating polling stations within schools on voting for initiatives unrelated to education or to children generally, or on voting for representatives in general elections.

Still, in comparing schools with other settings, existing studies assume that the physical micro-level context—e.g., artwork hung on walls in classrooms or hallways—is generally similar between schools, conveying similar information and messages. However, we suggest that different schools may expose voters to different spatial contexts, including nationalist, religious, or other content, varying both in type and degree (H_{1a}). If exist, such differences may influence the strength and nature of the mental schemas activated in voters passing through the school en route to the polling station, or even around the voting booth itself. Thus, following prior studies by aggregating across schools when studying the effects of school vs. non-school environments on voting may eliminate the influence of different school environments.

Moreover, in addition to potential between-school variance in the displayed content, polling stations *within* schools may also differ in the extent to which they expose voters to different forms of content, including banal national or religious symbols (H_{1b}). This is particularly true where polling areas are set up in several classrooms or other small spaces within the school (the case in Israel), rather than all voting taking place in one large space. Thus, even voters assigned to vote in the same school (but different rooms) may experience a different visual context in the few moments before voting.

In sum, the current study offers, for the first time, an empirical examination of the (implicit) perceptual impact of subtle psychological signals from seemingly apolitical cues, such as children's drawings, on voters' decisions. In the next section, we explain how naïve signals in schools serving as polling places can activate national and religious identities, and thereby affect voters' decisions.

2. Multiple identities and the effect of immediate context on voting

Social identities play a significant role in political choices, serving as a lens through which an individual perceives the political world (Tajfel & Turner, 1979). While most research on political identity focuses on partisan identity as a single self-categorization, it is widely recognized that voters simultaneously harbor multiple identities (Roccas & Brewer, 2002). According to the Common Ingroup Identity Model (Gaertner & Dovidio, 2000), political decision-making is shaped by the person's most salient identity at a given moment. Further, the salience of different identities is to some extent malleable, sensitive to the informational

[1] This debate intensified during the COVID-19 pandemic, when many countries swiftly implemented remote voting options, often through hastily arranged postal voting schemes (Kaufmann, 2020).

[2] In Israel's April 9, 2019 elections, 71% of voters were designated to vote in schools.

environment (e.g., Klandermans, 2014; Rahat et al., 2016). Activating any given identity in a particular context likely reduces the salience of other identities. Therefore, to the extent that an activated identity is electorally relevant, a voter's most salient identity as they stand poised to cast a ballot may influence how they choose to vote.

We argue that cues in the voting environment can, under certain circumstances, influence which identity is most salient at the moment of casting a ballot—and, therefore, which ballot is cast. Note, of course, that this is true only if the identity activated by the context is not already salient for the voter. Additional cues that activate an already salient identity would be redundant, producing a ceiling effect.

In the Israeli context, four key components of political identities are potentially electorally relevant for all voters: the party, bloc, national, and religious/secular identities. The literature emphasizes the role of party identification as people's most prominent social identity in the political arena (e.g., Bartels, 2000). However, in multiparty systems such as Israel's, voters often tend to identify with a certain political bloc, typically identified as right vs. left wing (see Arian et al., 2005; Rahat et al., 2016 for evidence in Israel). Such a left–right schema helps voters comprehend the complexities of political dynamics, and maintain a stable political relational identity despite shifts in the composition and names of political parties. It also provides voters with essential information regarding likely patterns of coalition building and parties' policy positions (Fortunato et al., 2016).

The third important political identity is national identity—one's sense of belonging to a community of people based on shared history, culture, geography, language, institutions, or some combination of these, transcending partisan or bloc boundaries (Huddy & Khatib, 2007). National identity has been shown to potentially override partisan identities in various contexts, including the United States and Israel (Butz et al., 2007; Hassin et al., 2007).

Finally, in the Israeli context, voters typically have a fourth identity based on religion. There is tension between Israel's Jewish and democratic nature (Ben-Nun-Bloom, Zemach & ArianA, 2011). This tension manifests in different identities, with some perceiving Israel first and foremost as "Jewish", calling for a greater role for the Jewish religion in the Israeli public sphere (religious identity), and others viewing Israel as "democratic", calling for a less religiously activist state (secularist identity) (Arian et al., 2005; Shamir & Arian, 1999).

As discussed above, overt partisan content is forbidden in the vicinity of polling places. However, we are concerned here with the potential electoral consequences of activating national and religious identities around polling stations. Indeed, in our observations of polling places, we encountered abundant national cues (e.g., state emblems or memorials for school graduates who died in Israel's wars) and religious cues (e.g., symbols of Jewish holidays and biblical quotations). We describe the results of our observations below. First, however, we describe in more detail the potential influence of national and religious symbols in the micro-level context on voting in Israel. Specifically, (a) we propose opposing directions for the effects of national and religious content; and (b) we identify identification with nationalism (IWIN) as a moderator for both effects.

3. Potential effects of national and religious micro context on voting in Israel

3.1. National micro context

How might national symbolism in the environment translate into electoral behavior in the Israeli context? National symbols activate a national identity (e.g., Becker et al., 2017), which as a superordinate identity shared by both political camps has the power of dampening the impact of political rivalries. Levendusky (2018) showed that priming an American national identity increased the salience of participants' American identity while reducing that of their partisan identity. The result was that perceptions of the out-party changed from a disliked partisan outgroup to a liked national ingroup, thus lessening affective polarization. Reducing polarization, in turn, should increase willingness to cooperate with members of the opposing party (Wojcieszak & Warner, 2020). Thus, decreased polarization has the potential to shift votes closer to the middle ground within political blocs (i.e., within the political ingroup)—for instance, prompting people to vote for parties or candidates who are willing to cooperate with the political outgroup, to adopt policies closer to those of the other side, or to join a grand coalition.

Similarly, Hassin et al. (2007) suggest that one of the main goals of Zionism, the Israeli-Jewish national movement, is to bring the nation together. They thus expected exposure to the main national symbol—the Israeli flag—to bring about a sense of unity. Experimentally examining the effect of direct subliminal exposure to the Israeli flag on political preferences, they showed that such subliminal exposure creates a unifying effect, manifested by rightward shifts in the views of dovish voters, and leftward shifts in hawkish voters.

Accordingly, we expect an incidental apolitical mix of national symbols in a "noisy" school context during a real-world voting experience to unify voters. Such a unifying effect would likely mean choosing a party located more toward the political center but still within one's bloc (i.e., ingroup), rather than switching political camps. This expectation aligns with the well-documented pattern in Israel whereby identification with the two main blocs—right or left—remains stable even when voters change their party preferences (Rahat et al., 2016).

Still, individual-level nationalism is an important moderator of the effect of context on electoral behavior. The literature suggests that the associations attached to cultural symbols vary by a person's level of nationalism. For instance, across eleven countries, individuals who expressed stronger nationalism attached more positive emotions to their national flag (Becker et al., 2017). Further, nationalism moderated the effect of exposure to the national flag on outgroup hostility, such that it reduced hostility for nationalist Americans but did not affect individuals low in nationalism (Butz et al., 2007).

The most prominent cue to induce national identity on election day is the election ritual itself—a festive and highly emotional event celebrating the country's democratic regime (Bollen et al., 2011; Waismel-Manor et al., 2011). Across countries, standing in a polling station was found to be associated with pride, excitement, and happiness, and with a sense of belonging to the community and closeness to fellow citizens (Bruter & Harrison, 2021)—feelings and associations related to national identity. Given the increased sensitivity of nationalists to national cues (Becker et al., 2017), we propose that, for voters characterized by strong identification with Israeli nationalism, national identity is already activated merely by arriving at the polling station. Thus, for these voters, we propose that national symbols or imagery around the voting booth will not make their national identity more salient. In other words, we propose that the effect of election day on national identity for individuals with high IWIN will dwarf the effect of national cues within the micro-level spatial context in the polling place.

In contrast, voters with lower IWIN are more likely to be affected by the immediate context of the polling environment. While low-IWIN individuals may not be galvanized by the overt symbolism associated with election day, they may still be susceptible to the effects of subtle contextual cues, including naïve school décor around the polling booth. This is because subtle cues operating outside people's awareness are often inaccessible to introspection, and therefore not subject to deliberation (Fazio, 2001; Gregg et al., 2006).

Thus, while a low-IWIN voter may have a low-salience national identity until reaching the polling place, exposure to naïve décor right before voting may still activate their national identity, potentially affecting their last-minute voting decisions. We thus expect, for voters with lower IWIN, exposure to a national environment to produce a unifying effect, manifested by choosing a party located more toward the political center (H_2).

3.2. Religious micro context

The current literature on religious symbols in electoral contexts focuses largely on the U.S. two-party system and formal cues in churches, which, like schools, are often used as polling places. Results of such studies have been mixed. A correlational study with a sample in South Carolina found that people voting in a church were more likely to favor banning same-sex marriage and to support a conservative candidate (Rutchick, 2010). In contrast, others found voting in churches in Maryland and Minnesota to be positively associated with support for same-sex marriage, suggesting that voters may have been "put off by those religious images" (Pryor et al., 2014, p. 4). This suggests that the effect of religious cues will depend on one's attitudes in matters of religion and state.

Accordingly, we expect that religious symbolism in the voting environment can make religion and state issues more salient, activating a religion-related (religious or secularist) identity. In Israel, a secularist identity is predominantly left-center-leaning, as the center-left prioritizes secular attitudes towards religion and state, viewing Israel primarily as a democracy. Conversely, a Jewish-religious identity is predominantly right-wing, emphasizing the role of Judaism in the Israeli public sphere.

We argue that activation of a religion-related (religious or secularist) identity, in the Israeli context, may push voters away from the two main parties in their respective blocs, which maintain more inclusive positions on issues of religion and state, and toward parties that are more tailored to their specific religious or secular identity.[3] Specifically, we propose that when a secularist (primarily left-leaning) identity is activated, voters will move toward more overtly secular parties (which tend to be on the far left). Conversely, when a religious-Jewish identity is activated, typically among right-leaning voters, they can be expected to shift toward more overtly religious parties on the far right. Thus, a religious context in the voting booth is expected to yield a more polarized pattern.

However, as with the effect of the micro-level spatial context generally, we argue that this effect of the environment is likely to be moderated by individual-level variables. In particular, we believe that Israeli Jews are more likely to be influenced by religious-cultural symbols to the degree that their national schema is less accessible (Higgins, 1996)—that is, in people with weaker IWIN. Expressions of Jewish culture and history are inherent within Zionism, the Israeli national ideology, as part of its narrative of social cohesion and a shared past. Jewish symbols such as the Star of David or menorah, biblical names and stories, and Jewish holidays[4] serve in Israel as markers of cultural expression rather than as signs of religious devotion per se. For people with high IWIN, the national identity activated by election day is thus intertwined with such cultural Jewish symbolism, rendering additional cultural-religious symbols in the micro context redundant. For people with low IWIN, however, where the national identity may not be activated by election day, we propose that a religious environment in the voting booth may subtly activate their religion-related identity. Thus, exposure to subtle religious symbolism outside their awareness is expected to alter voters' existing partisan identity by summoning either a religious identity (supporting Israel as a "Jewish" state), more likely among rightists, or a secularist identity (supporting Israel as a "democratic" state), more likely in leftists. This, in turn, may translate into an increased tendency to vote for overtly religious or secularist (anti-religion) parties, respectively.

We thus expect, for voters with lower IWIN, exposure to a religious environment to produce a polarizing effect, manifested by moving away from the political center and toward the political ends, that is, moving left-wing voters further to the left and right-wingers further to the right (H_3).

4. The current research

The current research comprises an observational study (Study 1), three experimental studies (Studies 2–4), and one field study (Study 5). The first two experimental studies (Studies 2–3) were conducted just prior to the national elections for Israel's 21st Knesset (Parliament) held on April 9, 2019, and the third (Study 4) was conducted just before the subsequent elections for the 22nd Knesset held on September 17, 2019. The observational/field study was conducted during the first of those two national elections, on April 9, 2019. It was designed both to document the micro-level environment in polling stations located within schools through an extensive content analysis (Study 1), and to relate those observational findings to actual voting patterns in a real-world election (Study 5).

In order to ground the observational and experimental studies, we performed an initial content analysis of the décor in polling stations located in schools during local elections held on October 30, 2018, and during the run-off for those local elections, on November 13, 2018. We visited two schools during the first election and 14 more schools during the run-off, for a total of 16 schools in four municipalities. During these visits, we photographed national and religious content on display in the schools generally, and in the areas around the polling stations specifically. These observations (not reported here) were the basis for the virtual environments designed for Studies 2–4, and for the coding scheme used in the more extensive observational and field studies (Studies 1 and 5).

Hypotheses, design, and analysis plan were preregistered for the experimental studies (see Supplementary Materials for full preregistrations). In experiments 1 and 2 (Studies 2–3), which were conducted simultaneously during the Israeli general elections for the 21st Knesset, we preregistered the hypothesis that identity variables (ideology, IWIN, and religiosity) would moderate the effect of the treatments. Based on the results from these two studies, we preregistered a single hypothesis for Study 4, as follows: "We expect a three-way interaction of each of the experimental conditions with self-reported identity variables, particularly with ideology and nationalism" (H_2–H_3).

5. Study 1 results: environment heterogeneity in Israeli polling places

The few extant investigations of the effect of school (vs. non-school) environments on voting do not account for the micro-level content presented in different school environments that potentially exerts unique per-school effects and biases in-person voting. To the extent that different schools, and different polling stations within a single school, present cues of varying types and strengths, pooling together school environments may underestimate the influence of a specific micro-level environment. We thus start by examining the extent to which schools (H_{1a}) and polling stations within schools (H_{1b}) differ in the type and degree of banal national and religious cues displayed to voters.

To assess real-life between- and within-schools heterogeneity, we conducted an observational study including an in-depth content analysis of the physical environment and décor in polling stations located in schools during the national elections held on Tuesday, April 9, 2019. Towards this end, we visited 142 polling stations in 31 schools in 12 cities in Israel.[5] For each polling place, using a pre-prepared scoring form, research assistants coded the strength of (1) national and (2) religious content in and around each polling station (i.e., entranceways

[3] In Israel's multiparty system, voters use closed-ballot single votes aligned with parties. Some parties push for a closer religion-state connection, while others pursue more secular agendas to lessen religious authority control.

[4] The cultural-Jewish type that we observed in schools and employed in the experimental design, as detailed below.

[5] See supplementary materials on representativeness.

and corridors, waiting areas, and, where possible, the rooms in which voting booths and ballot boxes were situated). Ratings ranged from 1 to 5, with 5 indicating very strong content, and are depicted in Fig. 1.[6] We also gauged the overall extent of decoration, regardless of specific content.

Confirming $H1_a$, our analysis of the data revealed that merely 17% of polling stations lacked decoration entirely, 32% had no national content and 46% had no religious content (23% had neither). National content was more prevalent than religious content ($p < .05$), although both were well represented in polling stations. As depicted in Fig. 1, we found clear national content (categories 3–5) in 44% of polling stations and religious content in 30% of stations, with 27% of national content and 15% of religious content scoring 4 or 5, indicating strong or very strong cues. Panels B(1–3) and C(1–3) in Fig. 2 show examples of national and religious content, respectively.

Crucially, in addition to vast between-school variance in the displayed content, different polling stations *within* schools (i.e., in different classrooms in the building) also differed in the extent to which they exposed voters to banal national symbols (H_{1b}). Within-school heterogeneity was particularly notable regarding national content. In 32% of schools, certain polling stations featured "strong" or "very strong" national content (categories 4–5), while other stations lacked such content (categories 1–2) (15% for religious content). Further, only 23% of schools had uniform level of national content across all polling stations (55% for religious content). These schools were often smaller, housing fewer polling stations (national: 3.0 stations on average versus 5.1 stations for the rest of the schools, $p < .05$; religious: 3.8 versus 5.5, $p < .05$), and displaying weaker or no cues (national: strength of national cues in these schools averaged 2.0 compared to 2.6 on the 1–5 scale, $p < .05$; religious: 1.6 versus 2.5, $p < .05$). Panel A and B in Fig. 2, show ideologically-neutral and national content (respectively) photographed around two separate polling stations in the same school.

To corroborate the observational study's findings on the heterogeneity of national and religious content in polling locations (H_{1a}), we conducted a poll during the two weeks following the September 2019 election to the 22nd Knesset. We surveyed 1134 Jewish Israeli voters using an online platform. Respondents were asked if they noticed symbols "in the school building or the classroom where you voted," and to list them from a provided set.

Half the respondents (50.4%) reported noticing national symbols in the polling place (primarily the Israeli flag and pictures of leaders such as the president, chief of staff, or prime minister). Another 19.1% reported noticing religious symbols (e.g., verses from the Bible and symbols of religious holidays). These findings support our observations, pointing both to an abundance of national and religious décor in schools hosting polling stations in Israeli elections, and also to substantial variation between polling stations.

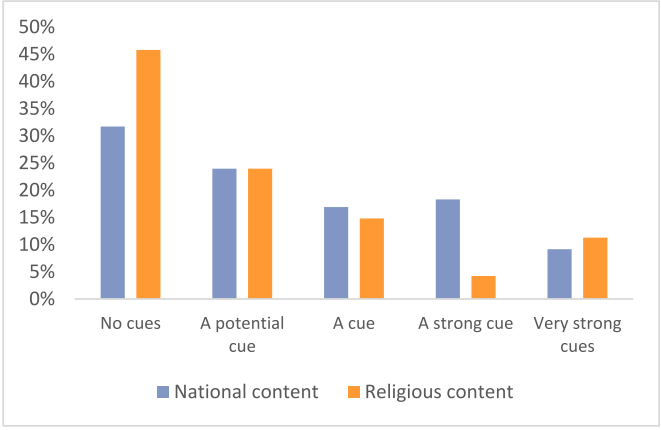


Fig. 1. Strength of national and religious content in a sample of 142 polling stations on election day, 4/9/2019.

6. Studies 2–4: experiments simulating voting behavior in a virtual environment

6.1. Methods

6.1.1. Design of the virtual environment

Ideally, to conduct an ecological examination of how the spatial context in schools affects voting patterns, maximizing internal and external validity, one would randomly allocate voters on election day to several identical versions of a school that differ in a few predefined physical elements such as wall décor which change the immediate context. As such a controlled investigation is impossible in the real world, we created a three-dimensional virtual reality model of a typical elementary school polling station. Using a Unity development platform, we designed three versions of the 3D virtual reality polling station—nationalist, religious, and control. Drawing upon our documentation of real-life, banal décor during the local elections (see examples in Fig. 2 and Supplementary Figure FS1), the three versions were achieved by varying only five elements: the school name and logo shown on a sign at the entrance; a sculpture visible in the schoolyard; a mural in the entrance hall; student art near the polling station; and wall decorations inside the polling station (Fig. 3 and Supplementary Video S1). We used this design in our three experiments (Studies 2–4), which were executed just prior to the elections for the 21st and 22nd Israeli parliaments, in April and September 2019.

Study 2 ($N = 154$) was conducted just prior to the national elections in April 2019, and used immersive head-mounted display technology that provided participants with a vivid, interactive, all-encompassing and realistic voting experience. Study 3 (conducted simultaneously with Study 2; $N = 446$) and Study 4 (conducted prior to the September 2019 elections; $N = 1058$) presented representative samples of Jewish Israelis with a sequence of pictures derived from the immersive models of Study 2.

6.1.2. Participants and procedure

Study 2. The first experiment was initiated two weeks preceding the Israeli general elections for the 21st Knesset, and continued until the day before the elections (i.e., until April 8, 2019). We recruited a convenience sample of Hebrew University and Tel Aviv University students. Ethical approval was obtained from the institutional review boards of both universities. Participants were randomly assigned to engage with one of the three immersive environments representing a polling station located in an elementary school (national, religious, or control content). Participants were told that they were assigned to vote in polling station no. 217, and that they were to follow the signs posted in the polling place to reach their polling station, wait by the door, present their ID card, and cast a ballot. Ballots were designed to reflect the upcoming real national election, and participants were asked to vote as they would in the upcoming election.

After providing consent, each participant was trained in the lab to use the VR interface and hardware, which included a HTC Vive head-mounted display headset and a hand controller. Participants then "entered" the VR environment and cast their ballots. After removing the VR headset, participants were asked to fill out a questionnaire in a different room within the lab. The questionnaire contained demographic questions, diversionary items, and the main moderators: identification with Israeli nationalism (IWIN); political ideology; and religiosity. The questionnaire also included an open-ended manipulation awareness

[6] As mentioned, these observations formed the basis for the real-world analysis of actual voting patterns in Study 5. Here, we report only our observational methodology and results.

Fig. 2. Examples of neutral (A), strong national (B) and strong religious (C) content displayed in and around three real-world polling stations on election day, in two schools. Panels A and B photos are from separate polling stations within the same school. Panel A: The entrance path (A1) and waiting areas (A2, A3) for the polling station, showing naïve, neutral décor. Panel B, national content: a display memorializing school graduates who fell in Israel's wars or terrorist attacks (B1); posters representing key events in Israel's history (B2); and a display featuring Zionist founder Theodor Herzl and past Israeli prime ministers (B3). Panel C, religious content: posters representing rabbis and Jewish sages (C1); religious texts and paraphernalia (C2); and a well-known quotation by Rabbi Abraham Isaac Kook, one of the fathers of religious Zionism (C3).

question designed to assess respondents' awareness of the research question (the link between the environmental context and their vote). After completing the questionnaire, participants were debriefed, thanked, and released.

Muslim (n = 5) and Christian participants (n = 3) were removed from the sample. Forty-one of the remaining participants (20.9%) were removed due to manipulation awareness. One participant submitted a blank ballot and was removed from the sample. This left a final sample of 154 (nationalist condition- 30%, religious condition- 36%, control condition- 34%).

As is often the case with student samples, the sample is young (mean age 25.3) and largely secular (72.1% secular). In terms of ideology, 44.2% identified as left-wing (1–3 on a 7-point scale), 16.2% as center, and 39.6% as right-wing (5–7). See Supplementary Table TS4 for descriptive statistics.

Study 3. The second experiment was conducted in the week preceding the general elections for the 21st Knesset (in parallel to Study 1), and took the form of an online panel study, allowing for a more representative sample. In Study 2, participants advanced past a series of seven still images taken from the three-dimensional immersive school environment used in Study 1 (see Supplementary Video S2). The experiment was similar in design to Study 1, other than the display (still images) and interaction method (using a computer mouse instead of a hand controller). Access to the study was permitted via a computer screen only (not a cellphone).

Participants were Jewish Israelis (age 18+) recruited by iPanel. The sample comprised a representative sample of the Israeli Jewish population, with the following distribution of religiosity: 30% secular, 30% traditional, 30% religious, and 10% Ultra-Orthodox. Individuals who had participated in any pre-election poll during that day were not allowed to participate. Seventeen participants (3.7%) were removed from the initial sample of 463 due to manipulation awareness, for a final sample of 446.

Study 4. The findings from Study 3 replicated the patterns emerging using the VR interface and the behavioral outcome measure in Study 2 (albeit with a 40% smaller effect size; see under Results, below). Hence, we applied the static task of Study 3 to Study 4. Study 4 was conducted in the 10 days preceding the Israeli general elections for the 22nd Knesset (6–16.9.2019).

The sampling strategy was identical to that of Study 3. The

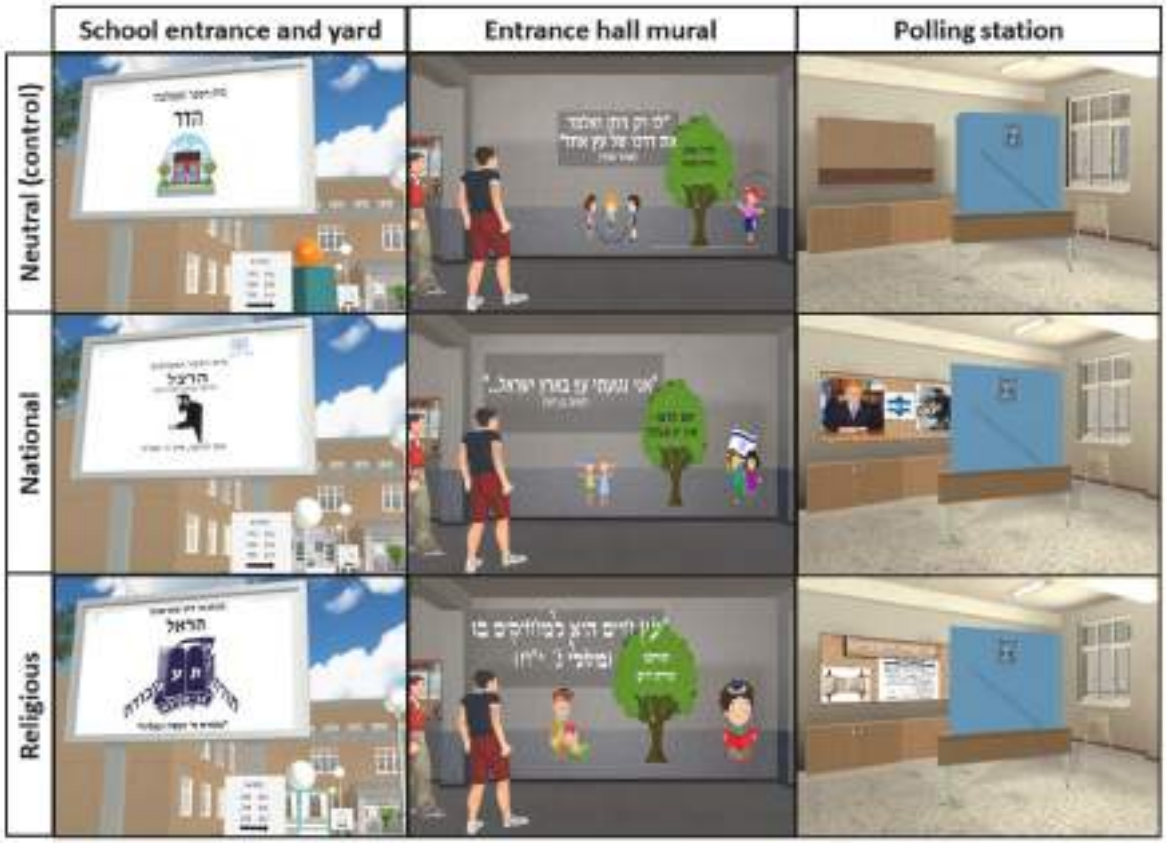


Fig. 3. Selected elements in our virtual reality model of a polling station located in a typical Israeli elementary school, with neutral (control), nationalist, and religious designs.

experiment was not made available to iPanel users who had participated in Study 2. The full sample for the national, religious, and control conditions included 1093 participants. Thirty-five participants (3.31%) were removed due to manipulation awareness (N = 1058; ~350 per condition).[7]

Robustness checks of the results with no exclusions are provided below. Tests of sample representativeness and the rationale for the sample sizes are presented in the supplementary texts under "Representativeness" and "Preregistration, quality control, and determining sample size", respectively.

6.1.3. Measures and analysis

The dependent variable in Studies 2–4 was a vote choice index based on the ballots cast in the experiments, ranking all political parties in Israel's multiparty system on a scale ranging from 1 (left-wing) to 7 (right-wing), based on issue positions as reflected in the current party platform. Ballots for all parties running in the elections were available in each simulated booth. All parties that received at least one vote were included in the index. Blank ballots were coded as missing values. See Supplementary Tables TS1-TS2 for a full list of parties, including coding and frequencies. Validation of the voting index is provided below, under Robustness Checks, and in Table TS3.

Following a diversion battery of items relating to democratic norms, three self-reported identity variables were measured in Studies 2–4: (a) the Identification with Israeli Nationalism scale (3 items, measured on a 9-point scale where 9 = strongly nationalist, as in Hassin et al., 2007); (b) political ideology (1 item, measured on a 7-point scale where 1 = left, 7 = right); and (c) religiosity (1 item; 1 = secular, 2 = traditional, 3 = religious, 4 = Ultra-Orthodox). Control variables included gender and age. Descriptive statistics of the study variables are presented in Table TS4.

We found identification with Israeli nationalism and ideology to be related yet theoretically distinct concepts (r_{pooled} = 0.27). In other words, supporters of the political left are distributed across the various categories of IWIN, though they are more concentrated at low levels of IWIN, and right-wingers more concentrated at high levels of IWIN, but are also represented in other categories (see Fig. FS2).

6.2. Results

For each of the three studies and for the data pooling the three, the vote index was submitted to linear regression with the following predictors: the two experimental conditions - nationalist and religious environment, control as baseline (model 1; a dummy variable indicating the study was added in the pooled model); the two-way interaction with ideology of each of the two experimental conditions (models 2–3); the three-way interaction with ideology and IWIN of each of the two experimental conditions (model 4 for H_2 and model 5 for H_3). Given the consistency of the findings, we report the results for the three studies together. Table 1 below presents the regression models for the pooled model (see TS5-TS8 for full regression tables for studies 2–4).

First, national and religious context had no significant main effect on voting, in any of the models ($p < .1$ for all studies, see model 1 in Table 1 for the pooled sample and Tables TS6-TS8 for Studies 2–4). Second, there was no significant two-way interaction between the national context and ideology (Model 2), but there is some indication for a two-way interaction with ideology for the religious context in the pooled sample and in Study 4 (p_{pooled} = .047, see Model 3; p_{study2} = 0.455; p_{study3} = 0.386; p_{study4} = 0.085). In the pooled sample and in Study 4,

[7] For power analysis, see Supplementary Materials.

Table 1
The effect of national and religious context, ideology, and IWIN on voting, pooled model Studies 2-4.

	(1)	(2)	(3)	(4)	(5)
National Context	−.069 (.077)	.214 (.174)	.057 (.059)	2.382 (.555) ***	.056 (.059)
Religion Context	.029 (.077)	.092 (.059)	−.239 (.176)	.090 (.058)	−1.554 (.545)***
Study 2	1.023 (.120) ***	.338 (.093) ***	.340 (.093) ***	.333 (.093) ***	.325 (.093)***
Study 3	1.002 (.111) ***	.272 (.087) ***	.273 (.087) ***	.271 (.086) ***	.260 (.087)***
Ideology		.555 (.019) ***	.523 (.019) ***	.809 (.064) ***	.545 (.067)***
National Context * Ideology		−.030 (.032)		−.433 (.112) ***	
Religion Context * Ideology			.064 (.032)**		.302 (.108)***
IWIN				.195 (.046) ***	.006 (.047)
National Context * IWIN				−.323 (.079) ***	
IWIN * Ideology				−.037 (.009) ***	−.003 (.009)
National Context * IWIN * Ideology				.059 (.015) ***	
Religion Context * IWIN					.202 (.078)***
Religion Context * IWIN * Ideology					−.036 (.015)**
Constant	4.004 (.112) ***	1.742 (.121) ***	1.907 (.121) ***	.432 (.331)	1.864 (.342)***
N	1658	1658	1658	1658	1658
R^2	.050	.451	.452	.458	.456

Table entries are unstandardized regression coefficients, standard errors in brackets; p < .10*, 0.05**, 0.01***.

the slope of exposure to the religious context is not significantly different from control for supporters of the political left, center, and tending right (categories 1–5; see Fig. FS3). Still, a polarizing trend emerged for right-wing identifiers (categories 6–7 on the 7-point scale), whereby exposure to religious symbolism (vs. control) pushed their vote further to the right (simple effect for category 6: p = .025; 7: p = .012).

6.2.1. *The impact of nationalist environments on voting patterns*

We now move to test H_2. Supporting the preregistered expectation, a three-way interaction among the nationalist environment, ideology, and nationalism emerged in all three experiments (p = .044, .025, and 0.017 for Studies 2, 3, and 4, respectively; in the pooled sample, p = .000, see Model 4). Fig. 4 presents the marginal effects of the nationalist environment on vote choice by ideology (on the x-axis) and IWIN (in the profiles: categories 1- lowest, 3, 5- midpoint, 7, and 9- highest) in each of the three experiments and the pooled model. A positive (above zero) coefficient signifies a more right-wing vote in the nationalist condition as compared with the control, while a negative (below zero) coefficient signifies a relatively more left-wing vote.

Under low and medium levels of IWIN, exposure to the nationalist environment increased the similarity between left- and right-wing voters. The pooled data shows that low/medium-IWIN liberals (IWIN 1–6 and ideology 1–4, 10.2% of the sample) were particularly affected, shifting toward the political center (indicated in positive entries in Fig. 3), while low-IWIN conservatives also shifted towards the center to some extent (indicated in negative coefficients). The simple effects were typically at the 0.05 or 0.1 level for low/medium-IWIN liberals (and centrists, in Study 3), who shifted to the right, but were usually insignificant for conservatives (except for Study 1, for conservative mid-level IWIN). The effect size was larger for the behavioral measure in the more vivid virtual reality platform (Study 1), small in the survey-experiment conducted at the same time in a representative sample (Study 2), and smallest prior to the subsequent elections that took place five months later (Study 3; d = 0.34, 0.21, 0.14, respectively, p < .05).

6.2.2. *The impact of religious environments on voting patterns*

As with the nationalist environment, exposure to the religious environment had an effect only at low and medium levels of IWIN, manifested in a three-way interaction with ideology and IWIN. Yet, as per H_3, the effect of religious environment in the experiments was polarizing rather than uniting. Fig. 5 depicts the effect of religious environment, ideology, and IWIN on vote choice in Studies 2–4.

All studies show a basic trend by which exposure to the religious environment increased the voting gap under low-medium levels of IWIN, pushing left-wing voters further to the left and right-wingers further to the right, and the three-way interaction in the pooled data was significant ($p_{pooled\_Model5} = 0.015$). Yet, the individual study results were inconsistent in statistical significance.

In Study 2, the three-way interaction was statistically significant (p = .045), and the simple effects of the religious context were significant at the 0.1 level for both left- and right-wing voters of low nationalism. In Study 3, the three-way interaction was not significant at the 0.05 level (p = .072), and simple effects show that only conservatives moved further to the right. Study 4 exhibited a similar trend, albeit the three-way interaction was insignificant (p = .172). Instead, ideology moderated the effect of the religious context (p = .082), such that the simple effects of the polarizing effect were statistically significant for conservatives but not for liberals (see Figure FS3). Further, results exhibited weaker effects than did the nationalist environment ($d_{study2} = 0.33$, $d_{study3} = 0.17$, $d_{study4} = 0.06$).

Follow-up analysis suggests that, as expected, a religious context led voters to abandon larger, catchall parties (more flexible on religious issues, appealing to a broad spectrum of views) in favor of smaller parties with more explicit agendas on matters of religion and state. This finding was consistent in Studies 3 and 4 (main effect of religious environment on decreased vote for a large party: $p_{study3} = 0.010$, $p_{study4} = 0.028$) but not in the student sample in Study 2. This may be due to the bias in the student sample that prefeed smaller parties to a greater extent than the overall population in all conditions, such that the large parties received only 39.6% of the votes compared to 52.6% in the national elections.

We also examined the potential role of level of religiosity as moderating the effect of the religious environment. We studied this both with and without interactions with ideology and IWIN (for more details, see the Supplementary Materials). There was very small variance in religiosity in Study 2 (a student sample wherein only 22 of the participants were religious and 1 was Ultra-Orthodox). However, Studies 3 and 4 could be sampled by strata of religiosity, which allowed us to examine its moderating role. The findings show that religiosity, together with ideology, moderated the effect of the religious environment only in Study 4 (a three-way interaction of the religious environment, religiosity, and ideology, p = .015). The polarizing effect of the religious environment seen with IWIN in Study 2, where right-wingers shifted further to the right and left-wingers further to the left, occurred in Study 4 specifically among secular participants. Within this group, the religious environment had statistically significant simple effects for both

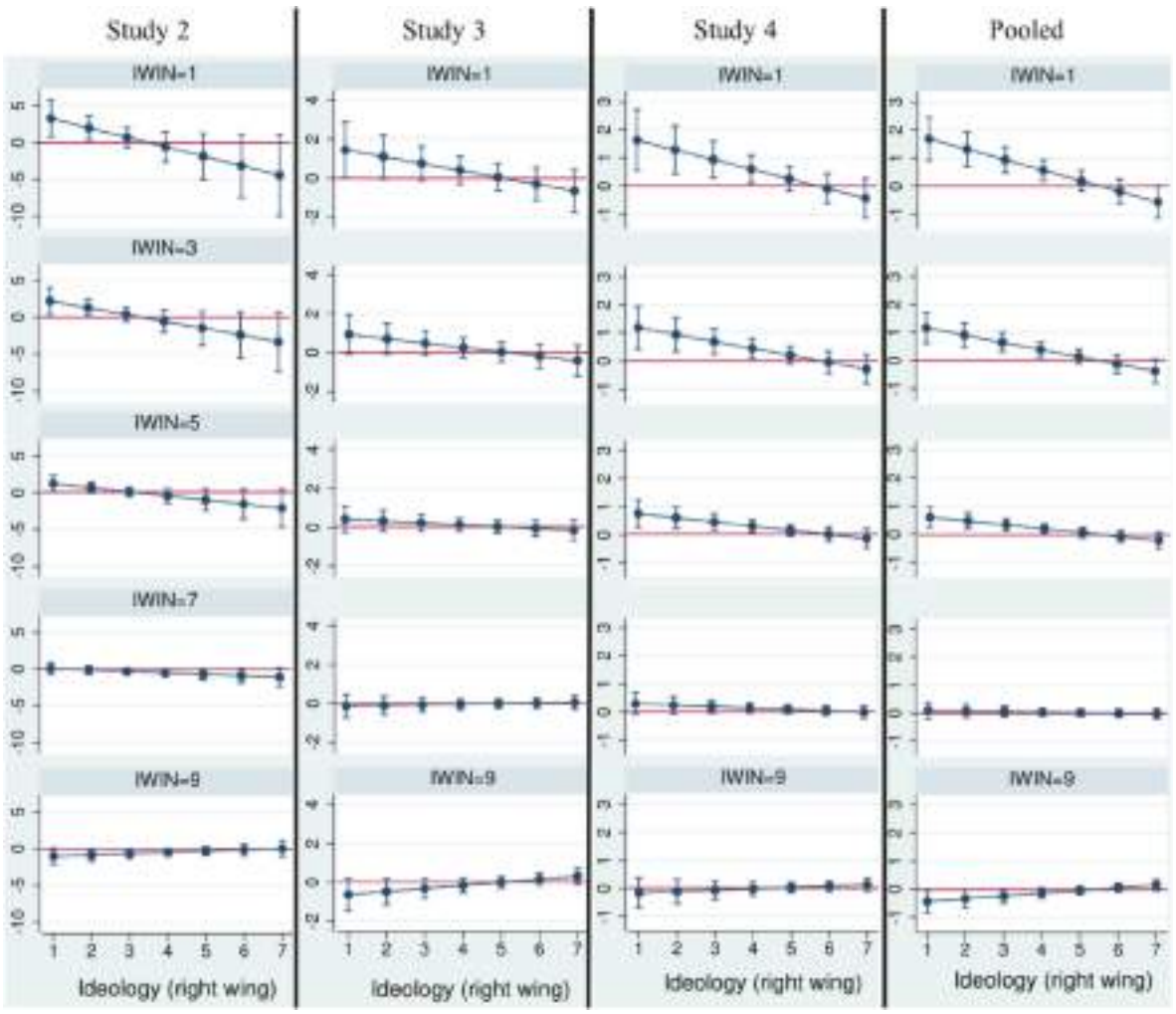


Fig. 4. Displayed are marginal effects of a nationalist environment (vs. control) on vote choice by ideology (in the x-axis: 1 = left, 7 = right) and IWIN (in the profiles: 1-lowest, 3, 5-midpoint, 7, and 9-highest, on the 9-point IWIN scale). These effects are shown across Studies 2 (first column), 3 (second column), 4 (third column), and the pooled sample (fourth column), with 95% confidence intervals. The horizontal red line at 0 signifies no difference between the nationalist environment and control. Also see FS4. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

dovish participants (who moved further to the left when exposed to a religious environment) and hawkish participants (who moved further to the right under such conditions).

6.2.3. Robustness Checks

Validation of the voting index. We validated the voting index by using expert judges' coding as well as the respondents' evaluations of the two largest parties (see Table TS3). Our findings suggest that the three-way interaction under the nationalism condition is overall robust, whereas the three-way interaction under the religion condition is sensitive to model specification.

Cross-validation and meta-analysis, Studies 2, 3, and 4. We used cross-validation to measure the performance of the predictive models on new test data sets (30–70%, 5000 repetitions for k = 10). Overall, both experimental conditions show stable assessments of the bootstrapped interaction coefficient, with no over-specification. A comparison between the models shows that the full-interaction model better fits the data (see supplementary Texts, Cross-validation).

Lingering effects. In this robustness check we re-contacted participants in Study 4 during the two weeks following the election and asked them which party they had actually voted for (N = 835).[8] We then examined whether the effect of exposure to the experimental conditions of the experiment had lingered. There was no lingering main or moderated effect of exposure to the nationalist content. This might be due to over half of the respondents reporting that they encountered nationalist content in their real-world polling station on election day, which suggests that many respondents assigned to the control condition experienced a nationalist environment when casting their ballots. However, exposure to the religious condition in the experiment was associated with a decrease in voting for large parties (Kahol-Lavan and Likud) (p = .026). These findings are similar to the results of Studies 3 and 4.

Exclusion criteria. When examining the data with no exclusions due to manipulation awareness, the three-way interaction with ideology and

[8] The full sample for the national, religious, and control conditions was 889 with 18.66% attrition. Twenty-nine of the 35 participants who were removed due to manipulation awareness in Study 3 were re-sampled and removed. Of the remaining 860 participants, 22 stated that they did not vote, and 3 cast a blank ballot in our experiment, resulting in n = 835.

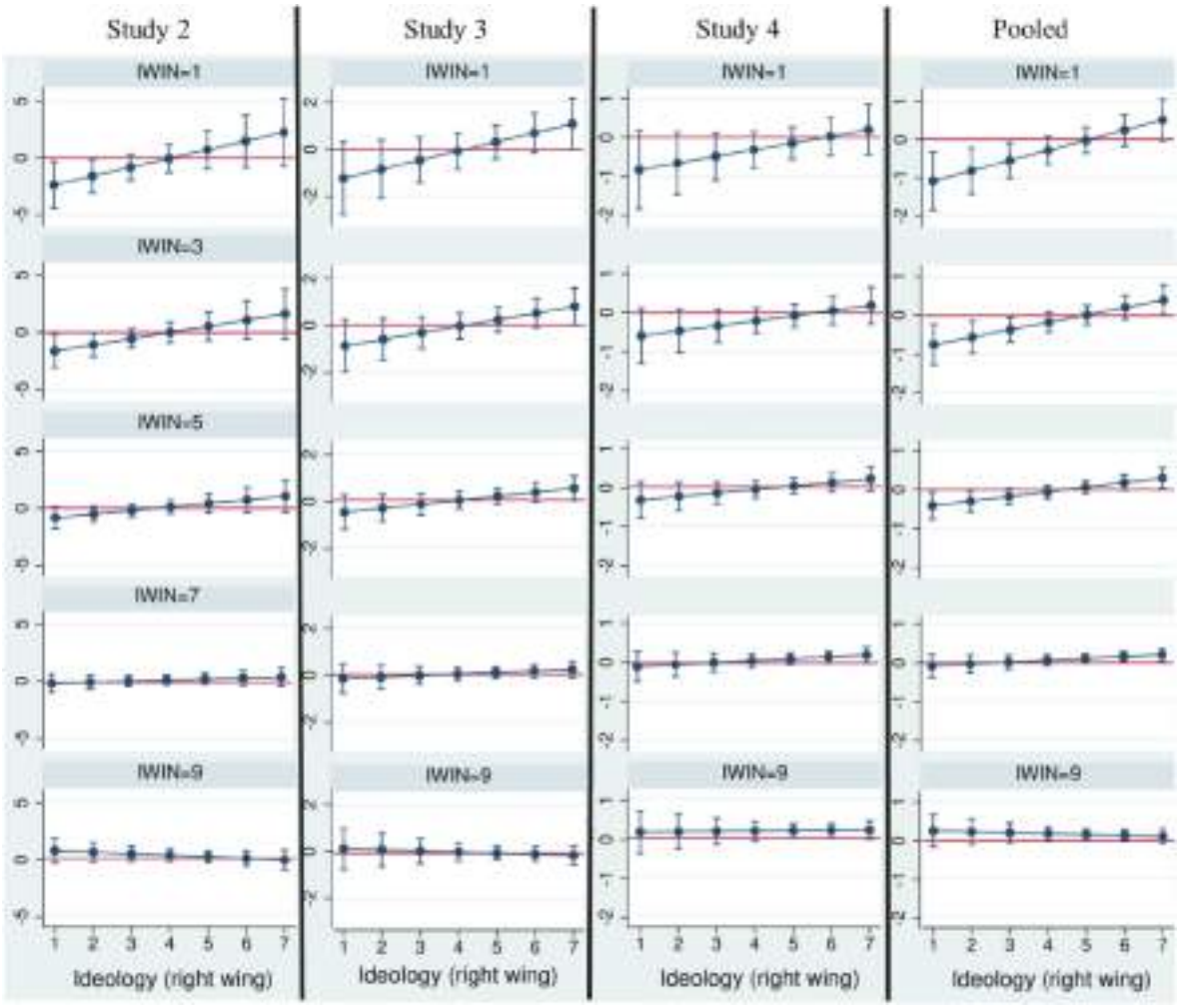


Fig. 5. The marginal effect of a religious environment on vote choice by ideology and IWIN in Studies 2–4 and in the pooled sample. The full range of ideology is presented along the x-axis, and the five profiles in each panel present the coefficients of the religious environment (vs. control) by level of ideology for the 1-lowest, 3, 5-midpoint, 7, and 9-highest levels of the 9-point IWIN scale, with 95% confidence intervals. Also see FS5.

nationalism replicates for the nationalist environment ($p = .065$, .028, 0.048 for Studies 2–4, respectively; $p_{pooled} = .000$) and demonstrates a similar pattern albeit with larger p values for the religious environment ($p = .078$, .119, 0.308; $p_{pooled} = .013$).

Ideology as a moderator. Since ideology is specified to allow tracking the direction of change in the treatment vs. the control, its moderation effect is expected to replicate even when reduced in sensitivity. Results held when we re-specified the models with a newly coded ideology variable (1–3 = left, 4 = center, 5–7 = right, see TS9). Further, we found no evidence that the treatment affected the ideology measure (see TS10).

IWIN and unity. We suggested that an activated national identity leads to increased unity and move toward the center, and that the national identity of high-IWINs is already activated and this is unaffected by the national context. If this is true, then high-IWINs are expected to be more prone to vote for the larger, more "central", parties. Indeed, IWIN is associated with vote for the two large parties, Likud and Kahol-Lavan ($p < .05$ in all studies).

7. Study 5: observational real-world validation

To gain real-world insights into the impact of the immediate context on voting, we conducted a field study at polling stations in schools on election day. This study was designed, first, to document the content on display in and around polling stations (the content analysis reported in Study 1), and second, to assess the relationship between such content and actual voting patterns (Study 5). The method and findings of our content documentation were reported above, in the section "Study 1 Results". Here we report the hypothesis, methods and findings for the analysis of voting patterns.

Based on the experimental individual-level findings, we expected observed national and religious spatial context to affect the aggregated voting patterns of low-IWIN left-wing voters at the aggregated polling station level. Importantly, the allocation of voters to polling stations within a school is quasi-random, as it is based on the alphabetical order of voter surnames. Since different polling stations *within* schools differed in the extent of exposure to national and religious cues, we can assume that voters were as-if-randomly assigned to view different levels of national and religious content in different polling stations within a school.

Based on actual ballots cast, polling stations were divided into overtly left-wing polling stations and center/right stations (see below). Given the correlation between IWIN and ideology, we assume that voters casting ballots in polling stations defined, based on voting patterns, as highly left-wing are also more likely characterized by low IWIN, and hence should be more susceptible to the measured environmental influences.

7.1. Methods

Sample. On Tuesday, April 9, 2019, national election day for Israel's

21st Knesset, research assistants visited 142 polling stations embedded in 31 schools in 12 cities around the country. The published election results later revealed that, overall, 57,052 valid votes were cast in these 142 stations, covering all 40 parties running in the election.

Exposure to national and religious content. For each polling station, research assistants coded the strength of (1) national content, (2) religious content (1–5, 5 represents a very strong content), and (3) the overall extent of the spatial context in or around the polling station. The coders also collected meta-data needed to identify the site (official number of the polling station; name of the school and city), as well as the strength of democratic content in each polling station, as a control.

Outcome variable. Once the final election results were published, we linked the micro-level context in the polling stations to the number of votes cast for each party in each polling station provided on the website of the Israeli Central Elections Committee, using each station's official number. We then employed the same 7-point voting index developed for Studies 2–3 to code each polling station based on the ideology of the parties which received votes in that station, from 1 at the far left to 7 at the far right.

Moderator. We generated a binary variable to capture the ideology expressed at each polling station, such that a mean of 1–4 inclusive in the voting index was coded as 1 (a left-wing polling station; 19 polling stations embedded in seven schools, 13.4%), and a mean of 4–7 was coded as 0 (a non-left-wing polling station; n = 123 polling stations embedded in 28 schools, 86.6%). In our large representative study, 13% of participants are low/medium IWIN liberal/centrists, with an average vote scale score of 3.91. We thus consider this variable a proxy for this group.

See supplementary materials for evidence on sample representativeness.

7.2. Results

Table 2 presents a multilevel regression (polling stations embedded in schools) examining the effect of the various types of environment on voting (1–7, where 7 is right-wing), when holding the overall degree of decoration in the environment constant (column 1); adding as a control the binary variable indicating the polling station's ideology (column 2); and specifying an interaction between the type of environment (column 3: national context; column 4: religious context) and the polling station's ideology.

We find that per-station national and religious cues, when holding constant school-level decoration (Model 1) and the ideology (Model 2), had no effect on actual voting overall. However, we expected the cues to affect left-wing low-nationalism voters in particular, specified in Models 3–4.

Table 2
The effect of national and religious content in a polling station on voting, Study 5.

	(1)	(2)	(3)	(4)
National content	.001 (.021)	.006 (.020)	−.006 (.022)	−.004 (.021)
Religious content	.002 (.021)	.004 (.022)	−.007 (.023)	−.012 (.025)
Decoration (overall)	−.008 (.019)	−.013 (.017)	−.016 (.016)	−.015 (.016)
Ideology- left-wing station		−.511*** (.159)	−.767*** (.226)	−.769*** (.236)
National*ideology			.092** (.040)	
Religious*ideology				.127** (.062)
Constant	4.502*** (.088)	4.576*** (.094)	4.642*** (.104)	4.642*** (.107)
Var(constant)	.093 (.025)	.043 (.011)	.042 (.011)	.043 (.011)
Var(residual)	.053 (.026)	.049 (.019)	.048 (.018)	.047 (.018)
AIC	62.5	37.3	35.9	34.6
N	138/30	138/30	138/30	138/30

Table entries are coefficients and robust standard errors from a mixed-effects regression (polling stations embedded in schools); p < .10*, 0.05**, 0.01***.

First, replicating our previous findings, the interaction between the polling station's ideology and the presence of the nationalist environment was statistically significant ($p_{inter\text{-}model3} = 0.020$). The simple effect calculated from Model 3 indicated that the national content in the polling station was associated with voting toward the center among strongly left-wing populations ($p_{simple} = 0.028$), corroborating the experimental results. The simple effect was insignificant for polling stations where the population did not lean left.

Next, the interaction between the polling station's ideology and the presence of the religious environment was significant as well ($p_{inter\text{-}model4} = 0.039$). However, unlike the results of Studies 1–3, religious content was associated with a shift to the center, similar to the national content ($p_{simple} = 0.053$). This likely occurred because real-world religious cues were less distinct than national cues and more cultural-Zionist in nature, particularly in left-wing schools. Indeed, we found that the correlation between the presence of national cues and the presence of religious cues in the left-wing polling stations was 0.75, compared to 0.28 in the other polling locations. This suggests that religious cues in the real-world left-leaning polling stations were intertwined with the national cues, producing an overall unifying effect.

7.2.1. Robustness checks

Results were robust to omitting overall decoration from the models (interaction with national condition: p = .020, with religious condition, p = .080).

Including the strength of the democratic content in each polling station as control did not affect the results, and democratic cues had no main or moderated effect on voting patterns.

Substituting the moderator with a binary measure based on results from the previous or the following elections (for the 20th or 22nd Knesset) replicated the pattern of the effect, although with higher p-values (see Supplementary Texts, "Substituting the ideology moderator").

8. Discussion and conclusions

Based on our observations of polling places situated within schools in Israel on election day, citizens assigned to vote in these venues are potentially exposed to nationalist, religious, and other types of cues. The literature suggests that such seemingly innocent décor in polling places may affect voters' choices in the critical last moments before the ballot is cast. Relying on theories of multiple identities, we argue that national symbols in the immediate spatial context can activate a national identity, shifting voters—particularly left-wing low-nationalism voters—toward the political center within their respective ideological blocs. Indeed, through visual experimental techniques and a field study in a recent national election, we show evidence that at least low-nationalism leftists are influenced by these subtle nationalist cues, and in the expected direction. While we only examined polling sites and voting patterns in Israel, many other nations employ schools as polling stations, and it is reasonable to expect that national identities may be activated by naïve nationalist cues in those settings, with potential effects for voting (see supplementary materials under "Generalizability").

We also proposed that religious symbolism in the polling station could trigger distinct religious or secular identities, pulling voters away from centrist parties in their respective blocs and towards overtly religious (far-right) or secular (far-left) parties. While we present evidence supporting this polarized voting pattern on both sides of the political spectrum due to religious symbolism, its effect could hinge on the perception of specific religious cues. For instance, religious symbols interpreted as Zionist might emulate the impact of a nationalist environment.

Importantly, the present results do not contradict previous findings on higher-scale effects, but rather add a valuable layer to our understanding of how the spatial context may impact voting decisions. Whereas multiscalar accounts of the geography of voting typically focus on the spatial clustering and distribution of votes at the household, neighborhood, city, society, region, or pan-national layers (e.g., Agnew, 1996; Enos, 2017; Johnston et al., 2007; Painter, 2008), this study highlights the potential role of the (ultra-)micro temporo-spatial scale.

It should be noted that while the pattern of effects is robust, their size is small. The unifying effect size for the nationalist environment was medium in the VR experiment (Study 2), and weak in Studies 3 and 4 ($d = 0.34, 0.21, 0.14$, $p < .05$; see Supplementary Text 2 for effect sizes). The polarizing effect of the religious context was less robust and somewhat weaker. These effect sizes are consistent with previous findings that contextual effects on voting are typically modest at best (King, 1996). Still, even the smallest effect may help determine elections in close campaigns, as seen in various races over the past decade in the U. S., and recent elections in Israel.

When examining the potential overall influence of subtle cues in Israel, it seems that the most prevalent effect is that of a nationalist environment pushing left-center wing voters to the right, within their bloc. This happens for four main reasons: (1) Our findings indicate that nationalist environments are prevalent in polling locations, estimated to appear in 44–50% of mainstream Jewish-Israeli schools. (2) The effects of nationalist environments do not seem symmetrical, but are more noticeable among left-wing voters with low nationalism; and (3) this pattern is consistent across different models. Finally, (4) we find that religious cues, particularly in locations where voters tend to be left-wing, are often cultural in nature and intertwined with national cues, and thus function as a national environment.[9] While the transition primarily occurs within the left-centrist bloc, we regard such a shift as potentially consequential. Left-wing parties and ideologies experience reduced representation, reflected in coalition dynamics and policy choices. Occasionally, small left-wing parties that are left behind may fail to meet the electoral threshold, leading to detrimental wasted votes and a notable weakening of the bloc.

From a broader theoretical perspective, the effects found here should be viewed as multi-scale contextual effects operating within a certain space, rather than merely evidence of cognitive bias or idiosyncratic stimuli (Burbank, 1995). Following seminal works in electoral geography (e.g., Ethington & McDaniel, 2007; Lefebvre, 1991), we see the micro-level context as reflecting unevenness in the spatial distribution of ideologies, identities, resources, and information, governed by mechanisms at the urban, regional, national, and other geographical levels (Agnew, 1996). These could take the form of bottom-up struggles between social groups in the urban environment, or a top-down effort in which a hegemonic group influences the design of the environment.

In this regard, school environments are the product of agents of identity at several scales. Our findings imply that control over the design of the physical environment within schools, which reflects the teaching content, formal curricula, and informal socialization efforts, may sometimes translate into an advantage for one party or group of parties at the polling booth. In Israel, there has been a shift towards the ideological right and increased religious involvement in the state, referred to as religionization. This shift is reflected in the education system, where national and religious content is arguably more prominently displayed in schools than they were in the past. Our findings raise the question of whether such symbols should be present in environments where important political decisions are made.

The findings may have practical and regulatory implications. While overt political displays near polling places are rightfully forbidden to protect the integrity of elections, the potential impact of subtle influences within polling stations has been overlooked by regulators and researchers. These effects can be more significant in certain situations. Firstly, when voters have to wait in long queues, they are more likely to notice even subtle cues, consciously or subconsciously. Secondly, voters who are uncertain about their vote or whether they want to vote at all are most vulnerable to last-minute cues that could change their decision. Lastly, the influence is more likely in multiparty systems where voters have various valid options for last-minute changes. Future studies can explore how factors such as election competitiveness, voter certainty, and institutional design affect these micro-level spatial context effects.

The findings also have implications for the broader discussion on voting procedures. Whereas the present discussion of voting procedures compares remote and new methods to classic in-person methods, focusing on the effects of the immediate environment requires a comparison of voting methods along a different vector: whether or not voting takes place in a designated formal context. Voting in self-service electronic kiosks and depositing postal envelopes in a formal ballot box, both considered to be "remote," share with traditional in-person voting susceptibility to systematic environmental bias. To be sure, voters are surrounded by a set of cues wherever they choose to vote, including in the privacy of their home; but those cues are prechosen by the voter to convey their own inner world, or otherwise cancel out across voters. In contrast, designated formal polling places are expected to be free of systematic manipulation that may affect voters' choice. We suggest four criteria for determining whether a particular micro-level context potentially induces systematic bias: (a) a systematic message that (b) bears real potential to influence voting is (c) presented to a sizable audience who (d) have not chosen to be exposed to it and cannot defend against it. Thus, for instance, while a t-shirt or button worn by a voter is acknowledged by the courts as a potential hazard (Tucker, 2006, p. 977; Supreme Court 2017), it does not make for a systematic environmental bias, while naïve national décor does.

Luckily, the systematic effect of the environment in defined polling stations has simple and inexpensive regulatory solutions: directives can be updated to require the covering or removal of national and religious content. Where some national artifacts (such as the national flag on the polling booth) are important to convey to voters that the election is being conducted under the law, their presence can be standardized. Further, as low-nationalism left-leaning voters are most susceptible to the impact of national content, left-wing parties can alert their base to potential biases.

We conclude with a cautionary note: whether our findings are limited to Israeli voters is an open question, subject to future studies. Regardless, the unobtrusive solution we propose renders implementation simple and harmless. Furthermore, notwithstanding its potential sensitivity to a specific culture, our demonstration of the potential impact of the micro-level space and its conditioning by personal-level predispositions underscores the theoretical importance of this level of geographical analysis. This opens avenue for future research to examine how the design of other spaces where decision-making processes occur—such as courtrooms, parliamentary chambers, and certain academic settings—may affect the resulting choices.

Funding statement

The first author gratefully acknowledges the generous funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement #804031 *ReligSpace*).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

[9] See supplementary materials under "overall effect".

Data availability

Data will be made available on request.

Acknowledgements

This project received partial funding through a generous grant awarded to the first author by the European Research Council (ERC) under the Horizon 2020 program (grant #804031 ReligSpace). We appreciate the valuable feedback provided on earlier paper drafts by Peter Dinesen, David Enoch, Danny Hayes, Lindsey Hendren, Melissa Sands, the journal's editor, reviewers, and participants at MPSA (2022) and the 3rd Behavioural Political Economy Workshop at LSE (2023). We also extend our thanks to Gal Chen, Yoel Graumann, Rasha Kardosh, Allon Vishkin, and Rebecca Warren for their advice. Parts of this project were written while the first author was an academic visitor at Nuffield College, Oxford, and at CRASSH and Clare Hall College, Cambridge, and she is thankful for their hospitality.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.polgeo.2023.102976.

References

Agnew, J. (1996). Mapping politics: How context counts in electoral geography. *Political Geography, 15*(2), 129–146.
Arian, A., Barnea, S., Ben-Nun, P., Ventura, R., & Shamir, M. (2005). *Auditing Israeli democracy—2005: A decade after the assassination of prime minister Yitzhak Rabin*. Jerusalem: The Guttman Center at the Israel Democracy Institute.
Baker, M. (2020). The facts about mail-in voting and voter fraud. *New York*. https://www.nytimes.com/article/mail-in-vote-fraud-ballot.html. (Accessed 5 February 2021).
Bartels, L. M. (2000). Partisanship and voting behavior, 1952-1996. *American Journal of Political Science*, 35–50.
Baybeck, B., & Huckfeldt, R. (2002). Urban contexts, spatially dispersed networks, and the diffusion of political information. *Political Geography, 21*(2), 195–220.
Becker, J. C., Butz, D. A., Sibley, C. G., Barlow, F. K., Bitacola, L. M., Christ, O., Khan, S. S., Leong, C. H., Pehrson, S., Srinivasan, N., & Sulz, A. (2017). What do national flags stand for? An exploration of associations across 11 countries. *Journal of Cross-Cultural Psychology, 48*(3), 335–352.
Ben-Nun-Bloom, P., Zemach, M., Arian, A., & A. (2011). The religious experience as affecting ambivalence. *Democratization, 18*(1), 25–51.
Berger, J., Meredith, M., & Wheeler, S. C. (2008). Contextual priming: Where people vote affects how they vote. *Proceedings of the National Academy of Sciences of the United States of America, 105*(26), 8846–8849.
Billig, M. (1995). *Banal nationalism*. London: SAGE Publications Ltd.
Birenboim, A., Ben-Nun Bloom, P., Levit, H., & Omer, I. (2021). The study of walking, walkability and wellbeing in immersive virtual environments. *International Journal of Environmental Research and Public Health, 18*(2), 364.
Bollen, J., Mao, H., & Pepe, A. (2011). Modeling public mood and emotion: Twitter sentiment and socio-economic phenomena. In *Proceedings of the international AAAI conference on web and social media*.
Books, J. W., & Prysby, C. L. (1991). *Political behavior and the local context*. New York: Praeger Publishers.
Brader, T. (2020). Campaigning for hearts and minds. In *Campaigning for hearts and minds*. University of Chicago Press.
Bruter, M., & Harrison, S. (2021). *Inside the mind of a voter: A new approach to electoral psychology*. Princeton University Press.
Burbank, M. J. (1995). The psychological basis of contextual effects. *Political Geography, 14*(6–7), 621–635.
Butz, D. A., Plant, E. A., & Doerr, C. E. (2007). Liberty and justice for all? Implications of exposure to the US flag for intergroup relations. *Personality and Social Psychology Bulletin, 33*(3), 396–408.
C-SPAN. (2018). *Minnesota voters alliance v. Mansky oral argument. C-SPAN.org* https://www.c-span.org/video/?439391-1/minnesota-voters-alliance-v-mansky-oral-argument. (Accessed 7 February 2021) (last accessed.
Cox, K. R. (1969). The voting decision in a spatial context. *Progress in Geography, 1*, 81–117.
Cutts, D., & Fieldhouse, E. (2009). What small spatial scales are relevant as electoral contexts for individual voters? The importance of the household on turnout at the 2001 general election. *American Journal of Political Science, 53*, 726–739.
Enos, R. D. (2017). *The space between us: Social geography and politics*. London: Cambridge University Press.
Ethington, P. J., & McDaniel, J. A. (2007). Political places and institutional spaces: The intersection of political science and political geography. *Annual Review of Political Science, 10*, 127–142.
Fazio, R. H. (2001). On the automatic activation of associated evaluations: An overview. *Cognition & Emotion, 15*(2), 115–141.
Fortunato, D., Stevenson, R. T., & Vonnahme, G. (2016). Context and political knowledge: Explaining cross-national variation in partisan Left-Right knowledge. *The Journal of Politics, 78*(4), 1211–1228.
Fotheringham, A. S., Li, Z., & Wolf, L. J. (2021). Scale, context, and heterogeneity: A spatial analytical perspective on the 2016 U.S. presidential election. *Annals of the Association of American Geographers, 111*(6), 1602–1621.
Gaertner, S., & Dovidio, J. (2000). *Reducing intergroup bias: The common ingroup identity model*. Philadelphia: Psychology Press.
Gravelle, T. B., Medeiros, M., & Nai, A. (2021). In the Shadow of the Tower: Spatial proximity to mosques, visible diversity, and support for the radical right. *Political Geography, 91*, Article 102499.
Gregg, A. P., Seibt, B., & R Banaji, M. (2006). Easier done than undone: Asymmetry in the malleability of implicit preferences. *Journal of Personality and Social Psychology, 90*(1).
Hassin, R. R., Ferguson, M. J., Shidlovski, D., & Gross, T. (2007). Subliminal exposure to national flags affects political thought and behavior. *Proceedings of the National Academy of Sciences of the United States of America, 104*(50), 19757–19761.
Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability and salience. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York: The Guilford Press.
Huddy, L., & Khatib, N. (2007). American patriotism, national identity, and political involvement. *American Journal of Political Science, 51*(1), 63–77.
Johnston, R. J. (1974). Local effects in voting at a local election. *Annals of the Association of American Geographers, 64*(3), 418–429.
Johnston, R., Jones, K., Propper, C., & Burgess, S. (2007). Region, local context, and voting at the 1997 general election in England. *American Journal of Political Science, 51*(3), 640–654.
Kaufmann, B. K. (2020). *Why voting by mail is rarely easy*. https://www.swissinfo.ch/eng/why-voting-by-mail-is-rarely-easy/46016512. (Accessed 4 February 2021) (last accessed.
King, G. (1996). Why context should not count. *Political Geography, 15*(2), 159–164.
Klandermans, B. (2014). Identity politics and politicized identities: Identity processes and the dynamics of protest. *Political Psychology, 35*(1), 1–21.
Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell Publishers.
Levendusky, M. S. (2018). Americans, not partisans: Can priming American national identity reduce affective polarization? *The Journal of Politics, 80*(1), 59–70.
Miller, J. A., & Grubesic, T. H. (2021). A spatial exploration of the Halo effect in the 2016 U.S. presidential election. *Annals of the Association of American Geographers, 111*(4), 1094–1109.
Pattie, C., & Johnston, R. (2000). 'People who talk together vote together': An exploration of contextual effects in Great Britain. *Annals of the Association of American Geographers, 90*(1), 41–66.
Pryor, B., Mendez, J. M., & Herrick, R. (2014). Let's be fair: Do polling locations prime votes? *Journal of Political Sciences & Public Affairs, 2*(3), 1–5.
Querejeta-Azurmendi, I., Arroyo Guardeño, D., Hernández-Ardieta, J. L., & Hernández Encinas, L. (2020). NetVote: A strict-coercion resistance re-voting based internet voting scheme with linear filtering. *Mathematics, 8*(9), 1618.
Rahat, G., Hazan, R. Y., & Ben-Nun Bloom, P. (2016). Stable blocs and multiple identities: The 2015 elections in Israel. *Representation, 52*(1), 99–117.
Roccas, S., & Brewer, M. B. (2002). Social identity complexity. *Personality and Social Psychology Review, 6*(2), 88–106.
Rutchick, A. M. (2010). Deus ex machina: The influence of polling place on voting behavior. *Political Psychology, 31*(2), 209–225.
Sands, M. L. (2017). Exposure to inequality affects support for redistribution. *Proceedings of the National Academy of Sciences, 114*, 663–668.
Shamir, M., & Arian, A. (1999). Collective identity and electoral competition in Israel. *American Political Science Review, 93*(2), 265–277.
Supreme Court of the United States. (2017). *Minnesota voters alliance et al. v. Mansky et al.*
Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. *Organizational Identity: A Reader, 56*(65), 9780203505984-16.
The Commonwealth. (2020). *Managing elections in the context of COVID-19: Perspectives from the Commonwealth*. https://thecommonwealth.org/sites/default/files/inline/Electionsand C19 Perspectives from CW FN.pdf. (Accessed 20 February 2021).
Tucker, K. J. (2006). *'You can't wear that to vote': The constitutionality of state laws prohibiting the wearing of political message buttons*. Bepress Legal Series Working Paper.
Waismel-Manor, I., Ifergane, G., & Cohen, H. (2011). When endocrinology and democracy collide: Emotions, cortisol and voting at national elections. *European Neuropsychopharmacology, 21*(11), 789–795.
Weaver, R. (2014). Contextual influences on political behavior in cities: Toward urban electoral geography. *Geography Compass, 8*(12), 874–891.
Wojcieszak, M., & Warner, B. R. (2020). Can interparty contact reduce affective polarization? A systematic test of different forms of intergroup contact. *Political Communication, 37*(6), 789–811.