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national vs supranational identities in Britain**

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# Terrorist violence and the fuzzy frontier: national and supranational identities in Britain

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## Abstract

We explore the effect of terrorism on individuals' perceptions about national identity in the context of Great Britain, where national and supranational identities overlap. We find that exposure to terrorist attacks strengthens identification with Britain, but has no effect on identification with its constituent nations. The estimated effects last for about 45 days, but subside over time as the threat fades away. We also find that exposure to terrorism leads to more positive attitudes towards the EU, providing further support for the emergence of a supranational-unity effect. Overall, our results differ from numerous previous studies on how violence reinforces 'hardline beliefs', exacerbating nativism and 'narrow' forms of solidarity.

*JEL classification:* D70; F50; Z10

*Keywords:* terrorist attacks; proximity; national identities; Great Britain

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# 1 Introduction

National identity is often portrayed as a fixed badge attached to us from birth. But while objective characteristics – such as the ability to speak a language – place constraints on national identities, individuals have a decisive role in shaping and deploying them (Anderson, 1991; McCrone and Bechhofer, 2015). The argument that identities are exogenous to political events has been contested by recent empirical research (Egan, 2020; Gehring, 2022). National identity should be understood as a dynamic ‘claims-making process’ (McCrone and Bechhofer, 2015, 40) rather than a static badge, to some extent situationally flexible and responsive to social and political developments (Jenkins, 2008). In this article, we investigate how unexpected shocks that raise public awareness of domestic security and personal safety, in particular terrorist attacks, shape expressions of national identity in Great Britain. Extant studies suggest that exposure to terrorist incidents amplifies national identifications (Kuehnhanss et al., 2021; Godefroidt, 2023). However, considering that individuals in Great Britain possess multiple identities and can identify with various groups, an important question arises: which identifications are more likely to be affected in the wake of a terrorist attack? We seek to address whether terrorism strengthens supranational unity while potentially weakening other ‘narrower’ national identities, or whether it intensifies all identifications in a similar way.

In doing so, we contribute both substantively and methodologically to the debate on what shapes national identity. Substantively, our study adds to the extant economic literature on the factors advancing or weakening a shared national identity, an essential factor that promotes nation-building (Alesina et al., 2020, 2021; Ronconi and Ramos-Toro, 2022; Carlitz et al., 2022). This is particularly crucial in countries with strong regional cleavages, where the absence of a common identity could lead to social tensions and violent struggles for autonomy, such as in Scotland and Northern Ireland, but also in Catalonia or

in the Basque country. Our study also contributes to the recent literature on how violent types of negative exposure (Dehdari and Gehring, 2022) and shared collective experiences (Depetris-Chauvin et al., 2020) contribute to forging a common national identity. We focus in particular on exposure to terrorism violence. Previous research has examined whether terrorism affects in-group bias, nationalism or support for the incumbent (Shayo and Zussman, 2011; Dinesen and Jæger, 2013; Getmansky and Zeitzoff, 2014; Balcells and Torrats-Espinosa, 2018; Holman et al., 2022; Godefroidt, 2023; Falcó-Gimeno et al., 2023), but the impact of terrorism on the strength of various (and potentially competing) jurisdictional connections has not been explored, with the exception of Kuehnhanss et al. (2021)'s study of the March 2016 bombings in Brussels.<sup>1</sup>

Methodologically, we examine self-reported identity perceptions for all individuals interviewed in the British Election Study (BES) between 2014 and 2019, and employ two outcome variables capturing the strength score for the British identity and the one for the constituent national identity (English, Scottish, or Welsh). We then create measures of exposure to all terrorist attacks that occurred in Great Britain during the BES data-collection period. We thus depart from previous studies that typically concentrate on the impact of a single, highly emblematic attack, which is often selected based on its severity. Instead, we consider the *universe* of terrorist incidents (see also Falcó-Gimeno et al., 2023, for a similar approach) to estimate the consequences of the 'typical, average attack' across the entire spectrum of incidents. This approach is crucial from a policy standpoint, as attacks with a large number of victims are generally uncommon in Western countries. Additionally, compared to previous studies that focus exclusively on geographic exposure to terrorism violence, we also analyse exposure along the time dimension; that is, the temporal prox-

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<sup>1</sup>This study relies on a small number of student respondents surveyed before and after the attack. Moreover, we employ a very different research design that allows us to exploit the occurrence of multiple unexpected events, and to leverage variation in 'treatment' across different dimensions.

imity between the date of the interview and the date of the attacks. The latter allows us to explore the duration of terrorism effects and provide valuable insights into their transient nature.<sup>2</sup> Our identification strategy relies on the assumption that the timing of terrorist incidents is unrelated to the timing of the interviews (Muñoz et al., 2020). We exploit variation within individuals, net of potential temporal and attack-specific unobserved factors, and report an array of different specifications and robustness tests to get as close as possible to a causal interpretation of the terrorism-induced identity effects. Ultimately, our approach aims to ensure both internal validity, which may be compromised by endogeneity issues, and external validity, which may be constrained if we focus solely on a symbolic, prominent attack with a large number of victims.

To foreshadow our results, we find that exposure to terrorist attacks strengthens identification with Britain but has no effect on identification with its constituent nations. The estimated effects last for about 45 days, but diminish as the threat fades away in the mind of exposed individuals. We also find that the effects for the two forms of national identity depend on their perceived compatibility: individuals who view the British and their regional identity as somewhat incompatible exhibit a post-attack trade-off between them, while those who incorporate the same sense of the two identities into their self-concept display a post-attack boost in both of them (though the effects are still larger and more precisely estimated for the British identity). This can also explain why the strengthening of both identities is relatively more visible when we exclude individuals who are especially prone to perceive an identity conflict, like those residing in Scotland. En route, we show that terrorism induces individuals to express more positive attitudes about the European Union (EU), providing further support for the emergence of a supranational-unity effect

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<sup>2</sup>Understanding the duration of effects induced by terrorism can help government agencies, law enforcement, and other relevant organisations develop more effective strategies to mitigate its negative consequences.

in the aftermath of terrorist incidents. Taken together, our results differ from numerous previous studies on how terrorism reinforces ‘hardline beliefs’, exacerbating nativism and ‘narrow’ forms of identity.

Great Britain is a particularly interesting context to study how terrorism shapes national identity for two reasons. First, the region has experienced diverse forms of terrorism over the past decades, offering an ideal opportunity to examine the effects of an ‘average’ terrorist attack. While London has been the primary target, our dataset includes information on 87 terrorist events scattered across the country, with incidents occurring as far north as Dundee and as far south as Newquay. The sample covers a spectrum of attack severity, ranging from emblematic incidents like the 2016 murder of MP Jo Cox and the 2017 Finsbury Park attack and Parsons Green train bombing to numerous less prominent attacks like the pick-axe assault on a man in Bradford in 2015 after his conversion from Islam to Christianity. There is also wide heterogeneity across perpetrators, ranging from far-right extremism to jihadi-inspired terrorism.<sup>3</sup>

Second, Great Britain is characterised by the juxtaposition of the supranational British identity with the constituent national identities: English, Scottish and Welsh. The national identities of a myriad of immigrant communities are added to this mix. As [Cohen \(1994, 35\)](#) notes, the British identity shows a general pattern of fragmentation caused by ‘multiple axes of identification’ which creates a ‘fuzzy frontier’. Among English residents, there exists a dual identity, with “equally English and British” being the most prevalent self-identification. Notably, those who exhibit the strongest English identity often also ex-

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<sup>3</sup>Notably, only 9% of the sampled attacks were driven by Islamic extremism, while 40% of them were perpetrated by far-right groups. The remaining 51% involved other perpetrator types, including various anarchist groups, the New Irish Republican Army, and terrorists with unidentified motives. In terms of lethality, 22% of the sampled attacks resulted in at least one victim and only 14% of them caused harm to two or more people. Consequently, the ‘average attack’ is a non-lethal (non-Islamic) terrorist incident. This makes our approach substantially different from previous studies on salient Islamic attacks and helps addressing the lack of research on non-Islamic terrorism ([Godefroidt, 2023](#)).

press a profound connection to their British identity, with some viewing these identities as distinct yet complementary, while others treating them as interchangeable (Denham and Devine, 2017). Concurrently, a substantial number of British citizens, particularly those residing in Scotland, tend to perceive a certain tension between the British identity and their regional identity, sometimes viewing them as incompatible (Szczepanski, 2023). Given that the supranational identity competes with the constituent national identities, the next section will develop countervailing expectations about which one of these is likely to grow stronger in the aftermath of terrorism.

## 2 Terrorism and National Identity

The goal of terrorism is to arouse general fear and uncertainty among the general public. This fear can spread rapidly beyond the direct victims of an attack and affect the entire population of the targeted country, particularly those living in the proximity of an attack rather than far away (Böhmelt et al., 2020). As a result, terrorist attacks create a sense of shared negative experience and psychological trauma among the population (Butler et al., 2003; Hansen et al., 2017). They also generate strong feelings of solidarity and unity, as individuals come together to support each other. This sense of unity can be a powerful coping strategy that helps individuals address the collective trauma of terrorism violence (Rimé et al., 2010). Terrorism also generates defiance and galvanises citizens to actively defend their way of life, demonstrating strength in the face of adversity and reinforcing national pride. To illustrate, citizens in Paris ‘went on’ with their everyday life as a form of terrorism resistance to counter what would otherwise become debilitating anxieties of an existential dread (Browning, 2018). Similarly, social media users in the UK resumed the World War II slogan of ‘Keep Calm and Carry On’ to respond to the attacks in London. This sense of unity and defiance against terrorism should heighten the salience of national

identity among the general public.

This effect is often accompanied by a ‘rally around the flag’ dynamic wherein the public exhibits heightened level of trust in the nation and its leaders (Dinesen and Jæger, 2013; Getmansky and Zeitzoff, 2014; Balcells and Torrats-Espinosa, 2018; Godefroidt, 2023; Falcó-Gimeno et al., 2023). This is thought to reflect patriotism and the emergence of a stronger collective identity (Skocpol, 2002). As a result, citizens may rally around symbols and narratives that represent national unity, emphasising their shared identity, values and way of life. This dynamic is reinforced by the reactions of media and politicians, who call for cooperation, unity and unconditional support for the government and the symbols of nation, as a sign of responsibility against a common external threat (Falcó-Gimeno et al., 2023). Appeals to national identity are a common rhetorical strategy for politicians in times of emergency (Bogain, 2019; Edwards, 2004; Hutcheson et al., 2004; Jackson, 2005). In the immediate aftermath of terrorism, political leaders and the media emphasise shared values to express unity across ethnic, religious, and political differences, regardless of the terrorists’ identity and motivations (Ezzati, 2021). Bogain (2019, 242) finds evidence for this thesis in François Hollande’s comments following the Paris terrorist attacks of 2015, which emphasised that the French ‘belong to the same whole’.

Psychologically, the public might be particularly receptive to such narratives, given the aforementioned tendency of terrorist attacks to result in positive feelings of cohesion, solidarity, and a sense of belonging to a national community (Vázquez et al., 2014). In the wake of such events, discussions about national identity often arise, as individuals and communities grapple with questions about their core beliefs and how to defend themselves as a nation. Core values, like freedom, democracy, and tolerance, are often invoked as essential for holding together national identity. This introspection can lead to a deeper understanding of national identity and highlight the values that unite a nation (Bogain, 2019). The use of violence is particularly unlikely to resonate well in democracies as it

challenges its core principles, even when some of the terrorists' demands may be considered legitimate (Muñoz and Anduiza, 2019). As such, terrorism may lead to a renewed commitment to these values, as people come together to defend them against those who would seek to destroy them. In turn, this can lead to a more united and determined nation.

The discussion above suggests that exposure to terrorist attacks should heighten a sense of national identity among the public. In the context of Britain, however, the question raised becomes: which identity? Given the multiple national identities at work in the British context, which identities are reinforced by terrorist acts is not unambiguous.

### **Supranational unity and national identities**

Many British citizens have attachments to larger-group identities and do not identify with local or regional communities (Goodhart, 2017). A terrorist attack can serve to remind them of their shared British identity, values and symbols, as they come together to support each other in the aftermath of the attack. This can lead to a renewed commitment to British values, such as tolerance and diversity. Theresa May's speech at Downing Street following the 2017 Manchester Arena bombing illustrates well this point, as she emphasised that 'our values, our country and our way of life will always prevail' (GOV.UK, 2017). Similarly, smaller-scale attacks, such as the 2016 stabbing of Glasgow shopkeeper Asad Shah by Tanveer Ahmed, a Sunni Muslim, prompted politicians, police forces, and religious leaders to initiate the campaign "United Against Extremism" encouraging all communities to come together in response to the incident (News, 2016).

Such calls for national solidarity, which underline the existence of a unified national identity, and the observed 'rally around the flag' dynamics, are likely to result in a strengthened sense of British identity among the public. 'Rally' effects are most frequently attributed to the desire of the public to 'see the world as a secure/predictable place' which leads people to affiliate themselves with national leaders and institutions that 'offer an

actual and/or symbolic sense of security and safety' (Lambert et al., 2011, 244). In the face of threats which make the world appear dangerous and uncertain, the public turns to the leaders and symbols which seem to represent the state's power to provide security and protection (Baum, 2002; Kuehnhanss et al., 2021). In the UK context, 'the state' is primarily located at the level of Britain as a whole; the British national identity is distinct from those of its constituent nations because it involves identification with the state (McCrone and Bechhofer, 2015, 9-11). This suggests that 'rally' effects most strongly promote identification with Britain as a whole. This argument is consistent with the analysis by Kuehnhanss et al. (2021), who show that, following the March 2016 bombings in Brussels, the Belgian national identity grew significantly stronger, while no change was observed at other jurisdictional levels, despite strong perceived ethnic and cultural differences existing between these different regions. Terrorism, they argue, can have a unifying effect if individuals perceive the target to be the entire country rather than any specific part of it, thus making the Belgian identity more prominent and salient.

As a matter of fact, discursive strategies utilised by political elites in the wake of terrorist attacks are indeed directed towards reasserting state authority by 'imposing [the state's] own version of national identity and discarding competing narratives' (Bogain, 2019, 242). Such strategies are intended to quell 'moral panic' which undermines the authority of the state and its social contract with citizens. As in the case of the Hollande government's discursive strategy subsequent to the Paris 2015 terrorist attacks (Bogain, 2019), the comments of UK politicians in the wake of the 2017 Manchester Arena attack stressed the idea of a unified Britain standing against the terrorist threat. The Scottish First Minister, Nicola Sturgeon, stated that the attacks would not 'divide us' and damage our way of life while emphasising the 'affinity' of Scotland with Manchester and stressing the Scottish regional governments' coordination with Westminster in addressing the threat.<sup>4</sup>

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<sup>4</sup>Available [online](#).

The rhetoric of politicians in the wake of terrorist attacks tends to emphasise themes of (supranational) unity and the power of the central state to address terrorism, which likely strengthens identification with Britain, rather than its constituent nations.

However, exposure to terrorism can also lead to stronger regional identities, such as the Scottish or English identity, as people may seek to assert their distinct cultural, linguistic and historical heritage in the face of adversity. There are different criteria for membership in the nation: civic nationalism, for which citizenship determines membership, and ethnic nationalism, for which “membership in the nation is determined by the possession of ascriptive (usually phenotypic) characteristics, most often imagined to be possessed by the nation’s member as a result of their genetic inheritance” (Greenfeld and Eastwood, 2007, p.269). The national identity of Britain’s constituent nations is often shaped by a belief in common ethnic characteristics and shared descent (McCrone and Bechhofer, 2015, 144-150). This is underlined by the consistent tendency in survey respondents to ‘racialise’ constituent national identities by expressing beliefs about common ancestry (McCrone and Bechhofer, 2015, 149). As such, terrorism could bolster support for ethnic and regional identities. Considering that individuals in Britain hold multiple national identities, which are often seen as complementary and compatible (Denham and Devine, 2017; Sczepanski, 2023), this could result in a simultaneous reinforcement of all of them.

### **3 Empirical Design**

We now turn to the empirical examination of the effect of terrorism on national identity. In this section, we describe our data, sampling procedure and key variables, and present our identification strategy.

### 3.1 Data and sampling procedure

We use individual-level data from the British Election Study (BES), an internet panel survey with a stratified random probability sample of eligible voters living in England, Scotland and Wales,<sup>5</sup> coded based on residence at the parliamentary constituency level (632 constituencies in total). The survey follows the same respondents over time in panel study ‘waves’ of data (19 waves from February 2014 to December 2019), and includes filter variables to identify which respondents are interviewed in just one wave, in some waves, or in all of them.<sup>6</sup> This panel dimension of the survey is particularly useful as it enables us to examine within-individual changes in preferences and behaviour, while accounting for the respondents’ socio-demographic attributes and constituency location.

We rely on the following BES question, which is worded in exactly the same way across waves: “Where would you place yourself on these scales: Britishness, Englishness, Scottishness, Welshness?”; with responses ranging from 1 (not at all) to 7 (very strongly). Using these responses, we create two outcome variables for our regression analysis: *Britishness*, capturing the British national identity, and *Nationness*, capturing the respondent’s constituent national identity as inferred from their country of residence (England, Scotland, or Wales). This question is asked quite frequently (in 11 waves),<sup>7</sup> allowing us to construct a large, unbalanced panel with about 187K individual-wave observations on self-reported national identity and a wide set of control variables.

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<sup>5</sup>BES does not cover Northern Ireland.

<sup>6</sup>Respondents who drop out of one wave of the panel are re-invited to take later waves of the survey, and thus the wave-on-wave retention rate for any pair of waves is considerably higher than the overall panel retention rate (BES, 2020).

<sup>7</sup>Specifically, the question is included in waves: 2 (22nd May 2014 to 25th June 2014), 3 (19th September 2014 to 17th October 2014), 4 (4th March 2015 to 30th March 2015), 7 (14th April 2016 to 4th May 2016), 8 (6th May 2016 to 22nd June 2016), 9 (24th June 2016 to 4th July 2016), 10 (24th November 2016 to 12th December 2016), 14 (4th May 2018 to 21st May 2018), 15 (11th March 2019 to 29th March 2019), 16 (24th May 2019 to 18th June 2019) and 17 (1st November 2019 to 12th November 2019).

Data on terrorist attacks are obtained from the Global Terrorism Database (GTD), the largest publicly-available dataset on terrorism covering all terrorist events around the world since 1970. GTD provides information on the timing and location of the attacks, the number of victims, the ideology of the perpetrators, and various other attack characteristics, such as target types and attack methods. We consider the universe of terrorist incidents that occurred in the UK and whose timing coincides with the BES data-collection period (104 attacks from February 2014 to December 2019).

We combine the data from BES and GTD into a single dataset at the individual-wave-attack level. To do so, we assign attack  $s$  to wave  $w$  for individual  $i$ , if the attack took place between the end date of the previous wave  $w - 1$  and the date of individual  $i$ 's interview in wave  $w$ . In other words, for each individual-wave observation in the BES sample, the dataset has one row for every attack that occurred between the two aforementioned dates.<sup>8</sup> To avoid measurement errors and ensure that the respondent was (potentially) exposed to all assigned attacks at the time of the interview, we exclude observations where: (i) the attack occurred on the date of the interview in wave  $w$ ; and, (ii) the respondent is observed in a different constituency in wave  $w$  compared to the last wave they were interviewed (i.e., the respondent is defined as a 'mover' in wave  $w$ ). This sampling procedure results in a final dataset with 1,378,139 observations, containing information on 48,514 individuals, 11 BES waves, and 87 attacks. 36,882 individuals have at least two observations on self-reported national identity (5 observations, on average, across the 11 waves) and are assigned to 8 attacks, on average, per wave.

Table 1 provides summary statistics of the key variables used in our analysis.<sup>9</sup> As can be seen in this table, the average strength score for both *Britishness* and *Nationness* is very

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<sup>8</sup>Section A.2 in *SI Appendix* provides a hypothetical example illustrating the process of constructing the individual-wave-attack level dataset.

<sup>9</sup>See also Table A.5a in *SI Appendix* for an extended version of Table 1 that includes detailed definitions of these variables.

high (5.6 on the 1-7 scale), in line with Britons' long-lasting tradition of holding multiple salient national identities (Sczepanski, 2023). However, when we split the sample by nation, we can observe some notable differences in how the two identities are perceived. While English people have an average score of 5.7 for both Britishness and Englishness, Scottish people exhibit a relatively lower score for the British identity (4.7 compared to 5.6 for Scottishness) and Welsh people exhibit a relatively lower score for their constituent identity (4.7 compared to 5.6 for Britishness). This suggests that citizens in Scotland and Wales are generally more likely to perceive a tension between the two identities, or to view them as incompatible. Figure A.4 in *SI Appendix* shows the evolution of the average strength scores of the two identities across the BES waves used in our analysis. Overall, the mean perception of two identities appears to be stable over time, with no major leaps in their strength before or after a specific wave, and this applies for both Great Britain as a whole and the three nations separately.

### **3.2 Measures of physical and temporal proximity to terrorism**

Following recent empirical studies on exposure to violence (see, e.g., Kibris, 2011; Getmansky and Zeitzoff, 2014; Bove et al., 2022; Falcó-Gimeno et al., 2023), we measure physical and emotional exposure to terrorism using geographic proximity to attacks. To this end, we calculate the distance in kilometers between the centroid point of an individual's constituency of residence and the location point of each one of the 'assigned' attacks. The intuition is that people who reside close to an attack will perceive this attack as more consequential – and thus exhibit stronger post-attack reactions – compared to those who live in a more distant locations (Braithwaite, 2013; Fischhoff et al., 2003). This arguably applies to all terrorist events, regardless of their scale. On the one hand, for attacks with many victims and extensive national media coverage, geographic proximity can amplify personal perceptions of vulnerability, lead to increased mortality salience (fear of death) and in-

duce counterfactual thoughts, i.e., people thinking that they themselves could have been the victims if the circumstances had been a bit different. On the other hand, for smaller-scale terrorist incidents, geographic proximity can amplify exposure via local media coverage and heightened threat perceptions; i.e., people feeling that subsequent (potentially more severe) attacks in neighbouring areas are possible in the near future.

Section A.1 in *SI Appendix* offers background material and summary statistics for the 87 attacks included in our analysis, while Figures A.1a and A.1b in the same section present their geographic and temporal distribution over the sampled period. Despite London being the most targeted area, the terrorist incidents are scattered around the country – with the distance between each constituency and each attack having a mean value of 249 kilometers and a standard deviation of 158 kilometers.

In addition to physical proximity, another key dimension to gauge the intensity of individual exposure to terrorism is temporal proximity. Empirical evidence suggests that the adverse psychological consequences of traumatic events, like natural disasters or terrorist attacks, dissipate over time for the majority of people (Schlenger et al., 2002; Butler et al., 2003; Brandon and Silke, 2007). Similarly, the political and psychological mechanisms underpinning the rally-around-the-flag dynamic suggest a short-lived effect: as time goes by, the memory of each attack will fade away; e.g., within a few weeks (see, e.g., Epifanio et al., 2023). Hence, while terrorist incidents can trigger sizeable changes in self-reported national identity, we expect the effect of physical proximity to be more pronounced for individuals with a ‘fresher memory’ of the attack. To test for this, we interact terrorism exposure (geographic proximity) with a time proximity measure, defined as follows:

$$Time\ prox_{.iws} = 1 - \frac{\log Time\ dist_{.iws}}{\max(\log Time\ dist_{.iws})}$$

where  $Time\ dist_{.iws}$  is the time distance between the date of individual  $i$ 's interview in wave

$w$  and the date of each one of the ‘assigned’ attacks  $s$  (ranging from 1 to 341 days). The measure varies (non-linearly) in the interval  $[0, 1]$ , with higher values indicating more recent attacks. By using the log transformation, we can account for the (expected) stronger effect of time distance at low values than at high values; i.e., attacks occurring 1 day instead of 2 days before the interview having a more pronounced effect on Britishness than attacks occurring 30 days instead of 31 days before the interview.<sup>10</sup> In alternative specifications, however, we relax this assumption and check sensitivity to using binary and categorical measures of time proximity.

### 3.3 Identification strategy

Our identification strategy builds on two recent studies that explore the effect of terrorism on political outcomes using a large number of attacks and an extended period of time. Specifically, we follow the work of [Bove et al. \(2022\)](#), who leverage variation in geographic proximity and the characteristics of attacks, and [Falcó-Gimeno et al. \(2023\)](#), who introduce variation in the timing of attacks as an additional dimension. Furthermore, while the aforementioned two studies employ outcomes at the regional (district or municipality) level, we rely on survey information at the individual-level and a large representative sample of respondents. This addresses potential concerns of small-sample bias and allows us to delve into the micro-foundations underpinning the identity changes.

To examine the terrorism-identity nexus, we exploit variation over time within each individual, net of potential individual time-invariant and other temporal and attack-specific

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<sup>10</sup>This is in line with the ‘recency bias hypothesis’, according to which people tend to give more weight to more recent events than to more distant ones ([Healy and Lenz, 2014](#)).

unobserved factors. More formally, our model specification takes the following form:

$$\begin{aligned}
 Y_{iws} = & \beta_1 Exposure_{iws} + \beta_2 Time\ prox._{iws} + \beta_3 \left( Exposure_{iws} \times Time\ prox._{iws} \right) \\
 & + \beta_4 \mathbf{X}_{iws} + \gamma_i + \delta_s + \theta_w^t + \varepsilon_{iws}
 \end{aligned} \tag{1}$$

where  $Y_{iws}$  denotes self-reported national identity (*Britishness* or *Nationness*) for individual  $i$ , as recorded in wave  $w$ , after attack  $s$  was perpetrated; and is treated either as binary to reflect strong allegiance to national identity (values 6 or 7 on the 1-7 scale) or ‘continuous’ based on the full scale;  $Exposure_{iws}$  captures geographic proximity of individual  $i$ , interviewed in wave  $w$ , to each attack  $s$  (reverse of the log of distance in kilometers, standardized);  $Time\ prox._{iws}$  is the time proximity variable, as defined in the previous section;  $\mathbf{X}_{iws}$  is a vector of individual-level control variables;  $\gamma_i$ ,  $\delta_s$  and  $\theta_w^t$  represent individual, attack, and wave  $\times$  week fixed effects, respectively (where week  $t$  is the week of the year that the data is collected); and,  $\varepsilon_{iws}$  is an error term clustered at the individual level. Based on this specification,  $\beta_3$  is our main quantity of interest. If an identity-strengthening effect exists and is indeed short-lived, then we should be able to observe a stronger terrorism-induced effect on the outcome variable for more recent attacks than for temporally distant attacks ( $\beta_3 > 0$ ).

As noted above, our empirical approach makes it possible to leverage variation in ‘treatment’ across three relevant dimensions: physical proximity, time proximity, and the severity of attacks – with the latter being captured by the number of victims, the identity of the perpetrator, or the extent of media coverage (see Section 4.5). By allowing each individual in wave  $w$  to be treated by all the attacks that occurred between waves  $w$  and  $w - 1$ , we can estimate the average (combined) effect of geographic exposure on the outcome variable, as well as its conditional effect depending on time proximity and attack characteristics. An alternative way to do this is to employ a closest-attack-between-waves strategy; i.e.,

assume that each individual is exposed to only one attack between two waves, the closest one in terms of physical proximity. A limitation of the latter approach is that it introduces some bias from not accounting for the impact of multiple geographically close incidents (with potentially different severity levels), or from not assigning appropriate weight to the time proximity dimension.<sup>11</sup> Nevertheless, our key results are robust to using the closest-attack-between-waves strategy (see Section 4.6), and thus do not depend on the data-structure decision.

It is important to underline that the inclusion of individual fixed effects,  $\gamma_i$ , eliminates any time-invariant heterogeneity across individuals. As such, it controls for the possibility that constituencies that are more exposed to terrorism – and thus, the characteristics and behaviour of individuals who choose to live in those constituencies – are systematically different than the less exposed ones.<sup>12</sup> Furthermore, adding vector  $\mathbf{X}_{iws}$  in Eq. (1) accounts for important individual-specific time-varying factors that can influence people’s self-reported identities over time, such as changes in income, employment status, marital status and household size.<sup>13</sup>

A final relevant concern comes from the potentially endogenous selection of the location and timing of attacks by terrorist groups based on past changes in national identities or specific constituency-level time-variant characteristics. To mitigate this concern, we take two complementary approaches. First, we check for the presence of pre-existing trends in self-reported national identity that vary by the degree of exposure to terrorism. Second,

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<sup>11</sup>It is possible, for example, that an attack that occurred in a neighbouring constituency the day before the interview to have a larger impact on national identity than one that occurred in the constituency of residence two months before the interview.

<sup>12</sup>Note that, since we exclude the respondents who are defined as ‘movers’ in wave  $w$  (see Section 3.1), the individuals in our sample are always tied to the same constituency baseline.

<sup>13</sup>Table A.5b in *SI Appendix* provides the full list of control variables included in vector  $\mathbf{X}_{iws}$ . Note however that some of the control variables are dropped in our estimations since they do not change over time (within individuals).

we test whether our results persist when we control for the constituencies that were directly hit by the attacks, and when we control for the proximity of a constituency to the country’s (or the nation’s) capital city and its interaction with time proximity. We believe that our model specification and these additional exercises account for the most important sources of unobserved heterogeneity, and allow us to get as close as possible to a causal interpretation of the terrorism-induced identity effects.

## 4 Empirical Findings

### 4.1 Terrorism exposure and national identities

Table 2 presents the results of estimating Eq. (1) for the British national identity (*Britishness*, panel A) and the constituent national identities (*Nationness*, panel B). In columns (1)-(3), we report the estimates when the outcome variable is treated as binary, whereas in columns (4)-(6), we report the estimates when it is treated as continuous.<sup>14</sup> The binary measure allows us to test the impact of terrorism on the likelihood of attesting strong national identity, and to draw better insights about the development of a shared *salient* identity in the post-attack period.<sup>15</sup> On the other hand, the continuous measure allows us to evaluate whether there is an ‘across-the-board’ effect; i.e., terrorism causing positional shifts across the entire identity scale. We start from a specification that includes our main variables of interest, together with individual and attack fixed effects. We then add temporal fixed effects and the control variables in a progressive manner.

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<sup>14</sup>Due to the inclusion of an intensive set of fixed effects, we estimate these models by OLS. Nevertheless, the choice of the estimation model is not expected to change our inferences. For instance, as shown by [Timoneda \(2021\)](#), the ML (maximum-likelihood) and LPMFE (linear probability model with fixed effects) produce identical predicted probabilities, both with highly common data and rare events data.

<sup>15</sup>In *SI Appendix* Section B.10, we show robustness to re-coding this binary measure so that it reflects lower cut-off points within the 1-7 identity scale.

The results in panel A indicate the presence of a Britishness-strengthening dynamic for exposed individuals, which, as expected, is more pronounced when the attacks occur close to the interview date. Specifically, we can see that exposure (geographic proximity) exerts a positive and highly significant effect on Britishness at high values of time proximity (as inferred from the sum of the estimates of  $\beta_1$  and  $\beta_3$ ), and that this effect vanishes, or even changes direction, at low values of time proximity (as inferred from the estimate of  $\beta_1$  alone).<sup>16</sup> The estimates (for recent attacks) are not only statistically significant, but economically meaningful too. For instance, when we compare the most exposed individuals with the least exposed ones and evaluate the effects at the maximum value of time proximity, the estimates suggest that a geographically and temporally close attack leads to an increase in the predicted probability to report a strong British identity (as implied by the binary outcome) by 4.1 percentage points. Similarly, it causes an increase in the predicted value of Britishness (as implied by the continuous outcome) by 0.14 units; i.e., an increase that amounts to 27% of the within-individual standard deviation of the variable. Turning next to panel B, we can see that terrorism has no effect on the constituent national identities: the estimate of exposure and its interaction with time proximity fail to reach statistical significance in all specifications. All in all, we interpret the results in Table 2 as evidence that terrorism activates a rally around the state (the provider of security) and leads to the emergence of supranational unity effects, which are better captured by the supranational (British) identity rather than the narrower regional identities.

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<sup>16</sup>It must be stressed that the estimates are not sensitive to the inclusion of individual-specific time-varying controls, suggesting that the impact of unobservables must be very large to invalidate our findings. To quantify this, we follow [Altonji et al. \(2005\)](#) in calculating how strong selection on unobservables would have to be in order to explain the observed relationship between terrorism and Britishness. By comparing the estimates in panel A before and after adding the controls, we find that the impact of unobserved factors would have to be at least 59 times stronger for the binary measure and at least 254 stronger for the continuous measure – as compared to observed factors – in order to explain away the reported effects. Such a strong role of unobserved heterogeneity seems very unlikely.

— Table 2 about here —

To shed light on what explains the different effects for the two identities, we consider some important sources of heterogeneity at the individual level. The first explanation has to do with how inclusive each identity is: while the British identity is associated with multiculturalism and more favourable views about immigrants, the national identity of Britain’s constituent nations is shaped by a belief in common ethnic characteristics and shared descent (McCrone and Bechhofer, 2015). Thus, the non-existent effects for the constituent identities may be driven by a portion of the population that is not ethnically tied to the nation in question and is unwilling to identify with less inclusive forms of identity. To test for this, we run separate regressions for the following groups of individuals: (i) UK-born and non-UK-born; (ii) white-British and non-white-British.<sup>17</sup> The results, displayed in *SI Appendix* Section B.1, rule out this explanation: the effects for UK-born and white-British are very similar to those reported in Table 2, and there is no evidence of nationness-strengthening effects for any of the groups.

A second explanation has to do with how complementary the two identities are perceived to be. Individuals who see no conflict between two identities may exhibit similar identity changes during political events; whereas those who view them as conflicting or incompatible may choose one alternative over the other (see Szczepanski, 2023). To explore this argument, we split the sample of individuals into three groups based on the median values of their identities over the sample period: those with ‘equally strong’ identities (when the difference between median Britishness and median nationness is from -0.5 to +0.5), those with ‘stronger Britishness’ (when the difference is above +0.5), and those

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<sup>17</sup>93.4% and 92.9% of our observations correspond to UK-born and white-British individuals, respectively. 89.7% of our observations correspond to individuals with both characteristics. These figures are very close to those recorded in the 2011 census of Great Britain: 87.2% of the population are born in the UK and 86.7% report their ethnic group as ‘white’.

with ‘stronger nationness’ (when the difference is below -0.5).<sup>18</sup>

Figure 1 shows the results when we run separate regressions for these three groups, and calculate the marginal effects at the maximum value of time proximity (based on the full model specification). When we focus on the binary identity measures, we can see that the terrorism-induced positive change in *Britishness* (*DV*) is mostly driven by individuals with equally strong identities. This is not surprising given that the other two groups are either too close or too far away from the two highest values of *Britishness*. On the other hand, when we consider the continuous identity measures, *Britishness* (*cont.*) and *Nationness* (*cont.*), two interesting patterns emerge in line with the above explanation. First, people who perceive some degree of incompatibility between the two identities – especially those with stronger nationness – exhibit a post-attack trade-off between them: the increase in self-identification with Britain is accompanied by a reduction in the constituent identity. Second, people who tend to incorporate the same sense of British and regional identity into their self-concept experience a post-attack boost in both identities – even though the effects are larger and more precisely estimated for the British identity. The latter confirms, once again, that a supranational form of identity is more likely to be strengthened when people are faced with common country-wide threats and uncertainty.

The results in Figure 1 also suggest that the strengthening of both identities might become more visible when we exclude individuals who live in a particular government office region (GOR), like Scotland.<sup>19</sup> This is because a large portion of Scottish residents have stronger nationness,<sup>20</sup> and, as mentioned above, these individuals are more likely to ex-

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<sup>18</sup>54%, 21% and 25% of our observations correspond to individuals with ‘equally strong’ identities, ‘stronger Britishness’, and ‘stronger nationness’, respectively.

<sup>19</sup>Great Britain is divided in 11 GORs: 9 in England (78% of observations), Scotland (14% of observations) and Wales (8% of observations).

<sup>20</sup>The percentage of observations that corresponds to stronger nationness in Scotland is 51%, while the corresponding percentage in England and Wales is 21%.

hibit an identity trade-off in the aftermath of attacks. To check for this, we re-estimate our baseline model for 11 different sub-samples, each time removing all individuals who reside in the same GOR. The results are presented in *SI Appendix* Section B.2. In all cases, the terrorism effect for Britishness remains positive and statistically significant at the 5% level or higher, whereas the terrorism effect for nationness fails to reach statistical significance. At the same time, we can observe that, when we remove Scotland, the estimate for the constituent identities turns from negative to positive and is about half in magnitude compared to that for the British identity (though not precisely estimated), which provides further support to the “compatible identities” argument discussed above.

— Figure 1 about here —

## 4.2 The dynamics of the Britishness effect

To explore the dynamics of the Britishness effect more thoroughly, we calculate the marginal effects of exposure to terrorism and plot them over the respective values of the time proximity variable. As shown in Figure 2, the relationship between exposure and Britishness is positive and highly significant when *Time prox.* takes a value above 0.30; i.e., when the attacks occur within 45 days before the interview.

— Figure 2 about here —

We next consider an alternative version of Eq. (1) that employs a binary time proximity measure. This allows us to mitigate the risk of misspecification error affecting our inferences, but also to assess more explicitly whether the main drivers of the positive interaction effects are indeed the *recent* terrorist incidents to which individuals are exposed. We let the variable take value 1 for attacks that occur 1-45 days before the interview, and 0 for those that occur 46 days or more before the interview – in line with the point in Figure

2 where the stronger allegiance to British identity emerges. Table 3 presents the results of interacting *Exposure* with this binary measure, *Time prox. (45-days)*, while Figure 3 plots the corresponding marginal effects. Our conclusions remain unchanged: recent attacks cause a positive shift in Britishness, while those that occur at a more distant point in time do not exert the same influence. When we compare the most exposed individuals with the least exposed ones, the estimates suggest that a geographically close attack that occurs within 45 days before the interview leads to an increase in the predicted probability to report a strong British identity by 1.7 percentage points. Similarly, it causes an increase in the predicted value of Britishness by 0.07 units; i.e., an increase that amounts to 13% of the within-individual standard deviation of the variable.

Overall, the findings in this section appear to partially contradict the expectations set by a number of previous studies, proposing that the disruption caused by terrorist attacks should rapidly diminish and fully subside as individuals habituate and return to ‘homeostasis’ or baseline values over time (Maguen et al., 2008). In fact, our results suggest that the repercussions of terrorism extend far beyond the immediate aftermath of an attack. At the same time, the post-attack reactions do not seem to endure long enough to cause a more permanent shift in behaviours and values, as there is a gradual return to baseline conditions after approximately two months.

— Table 3 and Figure 3 about here —

### 4.3 Testing for pre-existing trends

As elaborated in Section 3.3, our model specification includes a wide set of fixed effects and time-varying controls to account for various sources of heterogeneity. Yet, one might be concerned that our results are influenced by pre-existing trends; i.e., that heterogeneous trends in omitted time-varying variables are more prevalent in exposed individuals and

that these omitted variables cause changes in self-reported Britishness that we falsely attribute to the timing of attacks. To address this possibility, we restrict the sample to include wave-on-wave observations only (when the national identity question is answered by individual  $i$  in both waves  $w$  and  $w - 1$ ) and perform a placebo exercise where we replace  $Y_{iws}$  in Eq.(1) with its ‘lagged value’. Since all the assigned attacks for individual  $i$  occur between the end date of wave  $w - 1$  and the interview date in wave  $w$ , a statistically significant estimate of the exposure measure (or its interaction with time proximity) in these placebo regressions would cast doubt on a causal interpretation of the observed terrorism-Britishness relationship.

Columns (1) and (4) of Table 4 show the results when we estimate the same model as before using the wave-on-wave observations, whereas columns (2) and (5) test the sensitivity of these results to augmenting the model with the lagged variable. Despite the substantial decrease in sample size, our key finding remains unchanged: the estimate of the interaction term is positive and highly statistically significant, suggesting that exposure to recent terrorist attacks heightens the supranational British identity. On the other hand, when we run the placebo regressions, none of the estimates are statistically significant (see columns (3) and (6)), confirming that our results are not affected by pre-existing trends in individuals most exposed to recent attacks. Furthermore, the absence of such trends addresses concerns that past changes in Britishness play a role in the selection of the timing and localities to attack.<sup>21</sup>

— Table 4 about here —

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<sup>21</sup>Running the placebo regressions with the binary time proximity measure returns again statistically insignificant estimates.

#### 4.4 Fostering supranational unity: attitudes towards the EU

Our analysis so far demonstrates that exposure to terrorism tends to intensify wider forms of national identification over narrow forms. In a similar vein, the sense of belonging to the European community might be strengthened by terrorist acts. As [Baker-Beall \(2014, p.221\)](#) put it, “what distinguishes the EU discourse on terrorism is that it goes beyond [a] focus on terrorism as crime to include a condemnatory moral narrative, which is central to a European sense of self, constituted in opposition to the terrorist *other*”. [Nowak \(2019\)](#) considers that the deployment of symbols which represent the unity of EU members in the wake of terrorist attacks, such as the ‘Je suis Paris’ postings observed across Europe subsequent to the attacks of November 2015, is an expression of ideas of European unity. Moreover, recent studies have detected a ‘rally around the EU flag’ effect. In parallel with the way in which external threats are theorised to trigger unity around symbols and representatives of the nation, [Berlinschi et al. \(2022\)](#) and [Gehring \(2022\)](#) show that Russia’s invasion of Ukraine bolstered attachment to the EU. This reflects not only the public’s threat perception, but also their response to an attack on ‘what they perceive as the European community’s shared values’ ([Berlinschi et al., 2022, p.7](#)). Because in-group affiliations extend beyond family ties and national borders ([Jenkins, 2008](#)), rallies can occur beyond the boundaries of the nation-state, as citizens ‘perceive the EU as a broader symbol of unity in the wake of attacks’ ([Larsen et al., 2020, p.186](#)).

Following these arguments, we now turn to investigate whether the pro-EU sentiment grows stronger in the aftermath of terrorist attacks. We rely again on BES data and consider individual-level responses to the following question: “Some people feel that Britain should do all it can to unite fully with the EU. Other people feel that Britain should do all it can to protect its independence from the EU. Where would you place yourself on a 0-10 scale?” (with higher values indicating support for a stronger UK-EU relationship). Panel A in [Table 5](#) reports the results when use *Pro-EU sentiment* as the outcome variable and

estimate the same regression set-up as in Table 2. Like before, we present the estimates for both a binary specification capturing high values (i.e., values 8, 9 or 10 on the 1-10 scale) and the ‘continuous’ specification based on the full scale. The evidence obtained suggests that exposure to recent terrorist attacks does not only intensify the British national identity, but it also leads to a more positive stance towards the EU.<sup>22</sup>

To shed light on the mechanisms behind this result, we also examine whether and how exposure to attacks affects citizens’ perceptions of terrorism risk outside the EU. To do so, we run the same analysis using responses to the BES question: “Do you think the risk of terrorism would be higher, lower or about the same if the UK leaves the European Union?”. Panel B in Table 5 reports the estimates for a binary and the ‘continuous’ version of the variable *Risk perceptions*.<sup>23</sup> We find that, after a (recent) terrorist incident, there is a positive shift in terrorism risk perceptions under the Brexit scenario (see panel B of Table 5). Overall, our results in this section indicate that citizens believe that a more effective response to terrorism is at a higher (supranational) level, and thus – once they experience a terrorist event – they place themselves higher on the UK-EU relationship strength scale.<sup>24</sup>

— Table 5 about here —

## 4.5 Heterogeneity by attack characteristics

While the influence of terrorism on specific public attitudes, like immigration sentiments, may vary considerably with respect to the nature of the attacks – such as whether they are

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<sup>22</sup>In *SI Appendix* Section B.3, we show that these effects are not restricted to the pre-referendum period. In the same section, we provide background material on the implications of Brexit for the UK-EU security relationship.

<sup>23</sup>The binary measure takes value 1 for responses “higher” and “much higher” and 0 for responses “about the same”, “lower” and “much lower”. The continuous measure takes a value 1 to 5, with higher values capturing heightened risk perceptions.

<sup>24</sup>It is worth noting that the post-attack effects for the two EU-related outcomes last for about 45-60 days, which is broadly consistent with the patterns observed in Figure 2 for Britishness.

jihadi-inspired or far-right extremism – the impact on national identity is anticipated to align in a consistent direction, albeit with varying degrees of intensity. This is because all terrorist attacks tend to evoke fear and a shared sense of solidarity among the affected population. As we delve into the various attack categories, we anticipate observing distinct magnitudes of the estimated positive effect of terrorism on the British identity.

Terrorist events with multiple deaths or injuries can amplify the shock value and the sense of fear and insecurity among the population. Similarly, attacks perpetrated by Islamist extremists – which tend to be more indiscriminate and are often cast as a product of organised terrorist cells (Powell, 2011; Jakobsson and Blom, 2014) – can lead to stronger post-attack reactions. To test for heterogeneity with respect to these characteristics, we estimate an extended version of Eq. (1) that includes a triple interaction between exposure, time proximity, and one of the following measures: (i) a binary indicator capturing attacks with two or more victims; (ii) a variable capturing the type/identity of perpetrator, as identified by GTD. The upper part of Figure 4.a shows the marginal effects when we distinguish between attacks with two or more victims and those with less than two victims. The lower part of Figure 4.a separates by perpetrator type, making a distinction between Islamic attacks, far-right attacks, and other attacks.<sup>25</sup> The evidence obtained suggests that terrorism has a more pronounced positive effect on the British identity when the attacks involve more victims and when they are associated with Islamic extremism – even though the corresponding differences can only be observed in the continuous Britishness measure and are not statistically robust.

Another important conditioning factor is the extent to which an event is covered by media outlets. Heavy media coverage can make the context surrounding an attack known

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<sup>25</sup>The ‘other’ category covers a range of other perpetrator types, including various anarchist groups, the ‘Individuals Tending Toward Savagery’ (ITS) group, the New Irish Republican Army (IRA), and terrorists with unknown motives.

to a much broader audience (Schneider et al., 2015), and trigger stronger reactions and emotional arousal (Lerner et al., 2003). At the same time, it can serve as a useful proxy for the event's severity. In addition to the number of victims and the motivation of the attacker, the amount of media reporting can be influenced by other idiosyncratic characteristics, such as the attack target and method, and thus it can be seen as a reflection of multiple interdependent factors that can spur more fear and insecurity. To explore this, we extract data on newspaper reporting from NexisUni,<sup>26</sup> and construct a binary indicator for high media coverage based on whether the attack in question received more than 100 NexisUni hits (relevant newspaper articles).<sup>27</sup> Figure 4.b shows the marginal effects from a triple interaction term, distinguishing between the attacks that were heavily covered by media and those that received less attention. Comparing the estimates at the maximum value of time proximity, we can see that the effect for high-media attacks is twice as large as that for low-media attacks, and this holds for both definitions of the Britishness measure.<sup>28</sup>

It is important to underline that, due to high correlations between the various conditioning factors,<sup>29</sup> it is not possible to disentangle their effects or prioritise among them. Nevertheless, the analysis in this section clearly indicates that our findings are somewhat

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<sup>26</sup>NexisUni is an online service that searches through the text of thousands of news publications. We limit the search results to national newspapers from UK-based sources published in the month following each attack, and which include the terms 'terrorism', 'terror' or 'terrorist', the location and other keywords related to the attack.

<sup>27</sup>We choose to rely on a binary indicator for media coverage because it is less sensitive to outliers than a continuous measure and can reduce the noise from not considering information from other media outlets, such as television, radio and social media platforms (Bove et al., 2022).

<sup>28</sup>In *SI Appendix* Section A.3, we analyse the emotional content of newspaper articles for four high-media attacks in our sample. We find that fear and trust are the dominant emotions conveyed in these articles. This is consistent with the main channels underpinning our results; i.e., the Britishness-strengthening effect following terrorist attacks operates through fear and sense of threat, as well as calls for national unity and societal trust by politicians and media.

<sup>29</sup>The correlation coefficients between the variables capturing high-victim attacks, Islamic attacks, and high-media attacks are between 41% and 45%.

stronger for attacks that are deemed more threatening than others. Interestingly, these attacks also seem to drive the reversed (negative) effect observed in the right panel of Figure 2 at low values of time proximity. We interpret this as evidence that, once the supranational-unity effect fades away, people respond to more consequential attacks by shifting away from national symbols. This is consistent with the theoretical framework of Falcó-Gimeno et al. (2023), according to which attacks that generate a widespread sense of threat can activate an accountability effect in the long run, whereby citizens hold the government responsible for the failure to protect the country from terrorism. Our findings suggest that this anti-government reaction to important attacks (in the long run) could also undermine allegiance to national symbols, such as the British flag.

— Figures 4.a and 4.b about here —

## 4.6 Robustness tests and further insights

The key finding that emerges from our analysis is that exposure to terrorism induces a positive short-lived effect on Britishness. In this section, we probe the robustness of this finding.

We start by presenting the estimates and the corresponding marginal effects when we employ the closest-attack-between-waves strategy; i.e., when we assume that each individual is exposed to only one attack between two waves, the closest one in terms of physical proximity (Table 6 and Figure 5). Although this strategy introduces some bias in the estimates (see Section 3.3), our inferences do not change. Once again, we find strong evidence of a terrorism-induced Britishness effect, and that the relationship is positive and highly significant when *Time prox.* takes a value above 0.30 (when the attacks occur within 45 days before the interview). This guards against the concern that our results are influenced by the decision to assign multiple attacks to each individual-wave.

We continue with an extensive set of auxiliary analyses, which are all reported in detail in *SI Appendix*. In Section B.4, we augment Eq. (1) with a variable capturing the attacked constituency and its interaction with time proximity. The results obtained validate our measure of exposure based on geographic distance, and address self-selectivity concerns arising from unobserved (time-varying) factors affecting both the likelihood of a constituency to experience attacks at a certain point in time and the change in identity perceptions of its residents. In Section B.5, we control for the proximity between an individual’s constituency and London, together with its interaction with time proximity. The main variables of interest remain largely unaffected by this exercise, indicating that living near London does not distort the impact of geographic proximity to attacks on the British identity. Similar results are also obtained when we use proximity to the nation’s capital city.

In Sections B.6 and B.7, we check sensitivity to controlling for residual temporal heterogeneity by adding day fixed effects or time distance fixed effects; and to using alternative clustering of standard errors at the following levels: (i) constituency; (ii) attack; (iii) individual and attack; (iv) constituency and attack. In all cases, the results are very similar to those reported in Table 2, and do not change our inferences.

In Sections B.8, B.9 and B.10, we experiment with three modified versions of the baseline model. First, we rely on an alternative measure of terrorism exposure that splits the geographic distance into ten equal-frequency groups (deciles). Second, we employ a categorical measure of time proximity that divides the post-attack period into three distinct time intervals – the short run, the medium run, and the long run – in line with the framework used in [Epifanio et al. \(2023\)](#). Third, we consider alternative specifications of the binary outcome variable, capturing lower cut-off points within the 1-7 Britishness scale; i.e., values 5 or more and values 4 or more. The results of these tests lead to the same conclusions and confirm that the main driver of the positive interaction between exposure

and time proximity are the attacks that occur close to the interview date.

In Section B.11, we test for heterogeneity in the reported effects with respect to socio-demographic (individual) characteristics. Specifically, we estimate models with a triple interaction between exposure, time proximity, and a variable that splits individuals into groups based on gender, age or education. The triple interaction term is always statistically insignificant, suggesting that stronger allegiance to British identity following recent terrorist attacks is not a unique phenomenon observed in individuals with specific attributes.

Finally, in Section B.12, we explore the terrorism exposure effect on citizens' beliefs about terrorism being the most important issue facing the country. The results indicate that individuals are significantly more likely to report terrorism as the top national problem after they are exposed to recent attacks. At the same time, no similar effect is found for crime, suggesting that the terrorist incidents in our sample were correctly perceived by the large majority of the audience as acts as terrorism rather than violent crime.

— Table 6 and Figure 5 about here —

## 5 Conclusions

National identity is a psychosocial mechanism that helps us to function as members of society and shapes our political preferences, attitudes, and behaviour. Identity correlates particularly with political choices, and an emphasis on national and supranational forms of identity reflects different perceptions of the world (see, e.g., [Denham, 2019](#)). Not surprisingly, the dynamics of national identity in Britain are at the heart of recent political developments. The electoral successes of Sinn Féin in Northern Ireland and the Scottish National Party – including increasing calls for Scottish independence – and growing appeal of Welsh nationalism render matters of identity, nationality, and patriotism key to understanding the contemporary state of British politics.

Existing research and anecdotal accounts show that terrorist attacks can lead to strong feelings of solidarity and unity, as individuals come together to support each other. This effect is often accompanied by ‘rally’ dynamics which cause increased identification with symbols and representatives of supranational polities, and the discursive strategies of political elites which are directed towards re-establishing state authority and supranational unity. In line with these dynamics, our results demonstrate that higher exposure to terrorism is associated with increased salience of a supranational identity: terrorism strengthens identification with Britain, but has no effect on identification with its constituent nations. Our results also indicate that the Britishness-strengthening effect does not rapidly dissipate and may persist for up to 45 days following an attack.

The impact of terrorism can exhibit significant heterogeneity across different attitudes and perceptions, as well as across individual characteristics, attack characteristics and the location of whoever receives the terrorist news. While the primary objective of this article is to examine the average (unconditional) effect of terrorism on different forms of national identification, we do explore some sources of heterogeneity to gain further insights. Yet, we leave a more in-depth analysis of heterogeneity for future research, utilising a distinct estimation strategy that allows to disentangle the various mediating factors.

Our findings can inform ongoing debates over the formation of group identities and the attitudinal and behavioural consequences of terrorism. Stronger group identities have notable impacts on social preferences and actions aimed at maximising social welfare ([Chen and Li, 2009](#)). Exposure to a crisis, and the development of a stronger shared identity, can increase altruism, reciprocity, and social trust (see, e.g., [Aksoy et al., 2021](#)), all important determinants of prosperity and a well-functioning society. Our findings also indicate that national identities are more fluid than is often assumed, and can be shaped by unexpected exogenous shocks. Recent studies have shown that, despite their tragic nature, large-scale Islamic attacks in Europe and the United States increase trust towards politi-

cal institutions and support for collective identity representations. We provide evidence that stronger (supra)national identifications are also likely to emerge from the “average non-lethal, non-Islamic attack”. Given the extended duration of terrorism effects (as documented in our study), it is also important to consider some of the societal ramifications. These may include the potential influence of terrorism on the outcomes of democratic processes, like elections and referendums, particularly when these events occur within two months after an attack.

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Table 1: Summary statistics of key variables

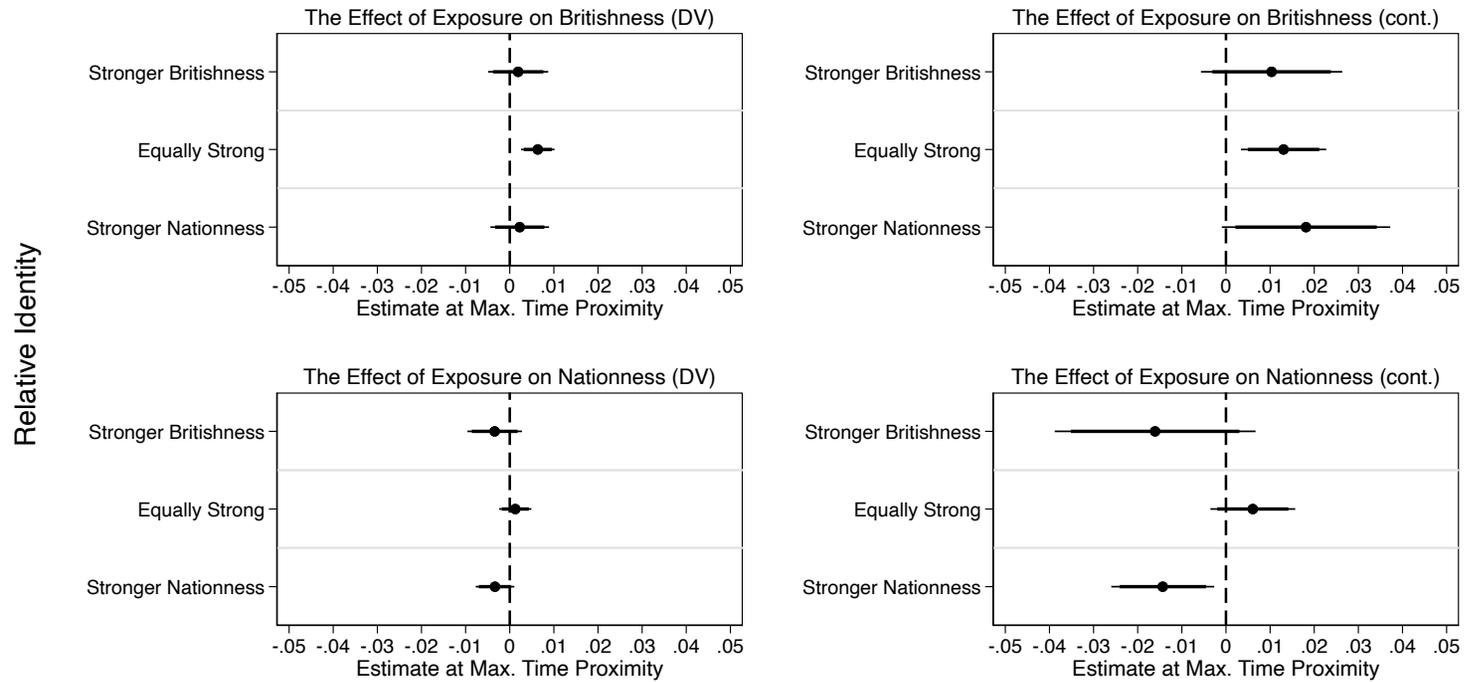
	Mean	Std. Dev.	Min.	Max.	Obs.
<i>Dependent variables</i>					
Britishness (DV)	0.613	0.487	0	1	1,378,139
Britishness (cont.)	5.582	1.619	1	7	1,378,139
Nationness (DV)	0.655	0.475	0	1	1,375,083
Nationness (cont.)	5.628	1.802	1	7	1,375,083
Pro-EU sentiment (DV)	0.194	0.396	0	1	1,182,152
Pro-EU sentiment (cont.)	3.785	3.513	0	10	1,182,152
Risk perceptions (DV)	0.205	0.404	0	1	1,035,742
Risk perceptions (cont.)	3.077	0.774	1	5	1,035,742
<i>Key independent variables</i>					
Time prox.	0.244	0.208	0	1	1,378,139
Temporal distance (days)	132.824	96.850	1	341	1,378,139
Exposure	-0.036	0.986	-2.059	7.095	1,378,139
Geographic distance (kms)	249.123	158.419	0.386	1104.372	1,378,139

Table 2: Terrorism exposure and identity: Main results

Panel A	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.003** (0.001)	-0.003*** (0.001)	-0.003** (0.001)
Time prox.	0.009** (0.004)	0.002 (0.007)	0.003 (0.007)	0.010 (0.010)	0.012 (0.019)	0.015 (0.019)
Exposure × Time prox.	0.004** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.016*** (0.005)	0.018*** (0.005)	0.018*** (0.005)
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139
Panel B	Nationness (DV)			Nationness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Time prox.	0.005 (0.003)	0.004 (0.006)	0.005 (0.006)	0.002 (0.009)	0.027 (0.017)	0.029* (0.017)
Exposure × Time prox.	-0.001 (0.002)	-0.000 (0.002)	-0.000 (0.002)	-0.004 (0.005)	-0.003 (0.005)	-0.003 (0.005)
R-squared	0.795	0.795	0.795	0.883	0.883	0.883
No. of individuals	48,455	48,455	48,455	48,455	48,455	48,455
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,375,076	1,375,076	1,375,076	1,375,076	1,375,076	1,375,076
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓

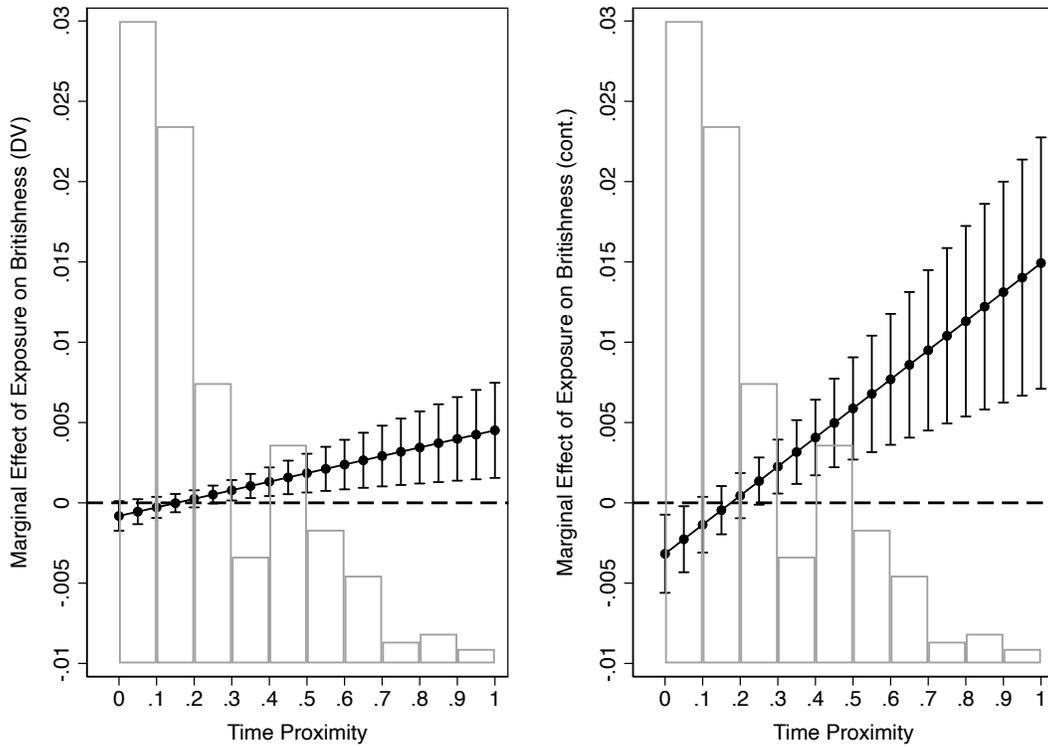
Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Figure 1: Relative identity



Notes: *Equally Strong* captures individuals whose difference between median Britishness and median nationness is from -0.5 to +0.5; *Stronger Britishness* captures individuals whose difference between median Britishness and median nationness is above +0.5; *Stronger Nationness* captures individuals whose difference between median Britishness and median nationness is below -0.5. Fat (thin) lines denote statistical significance at the 90% (95%) level.

Figure 2: Marginal effects of exposure on Britishness



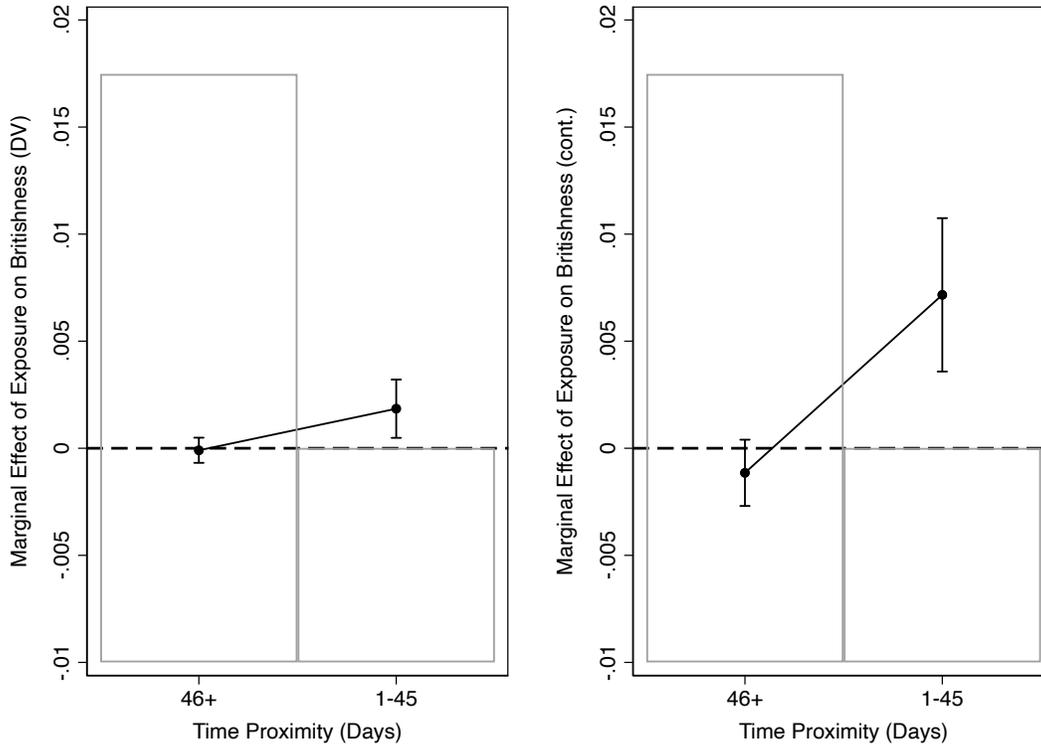
Notes: This graph shows the marginal effects of *Exposure* at different values of *Time prox.*, with higher values capturing more recent attacks. The marginal effects are based on estimates from the regression models in columns (3) and (6) of Table 2. Vertical lines signify 95% confidence intervals. The underlying bar charts are histograms of the time proximity variable, showing the relative frequency of observations within each bin.

Table 3: Terrorism exposure and Britishness: Binary time proximity

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Time prox. (45-days)	0.005* (0.002)	0.001 (0.003)	0.001 (0.003)	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)
Exposure × Time prox. (45-days)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.007*** (0.002)	0.008*** (0.002)	0.008*** (0.002)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Figure 3: Marginal effects of exposure on Britishness:  
Binary time proximity



Notes: This graph shows the marginal effects of *Exposure* at values 0 and 1 of *Time prox. (45-days)*, with value 1 capturing attacks that occur 1-45 days before the interview. The marginal effects are based on estimates from the regression models in columns (3) and (6) of Table 3. Vertical lines signify 95% confidence intervals. The underlying bar charts are histograms of the time proximity variable, showing the relative frequency of observations within each bin.

Table 4: Terrorism exposure and Britishness: Placebo results

	Britishness (DV)			Britishness (cont.)		
	$w$		$w - 1$	$w$		$w - 1$
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.002)	-0.000 (0.002)	0.001 (0.002)
Time prox.	-0.006 (0.008)	-0.006 (0.008)	-0.010 (0.009)	-0.017 (0.022)	-0.017 (0.022)	-0.020 (0.023)
Exposure $\times$ Time prox.	0.004** (0.002)	0.004** (0.002)	0.001 (0.002)	0.010** (0.005)	0.010** (0.005)	-0.004 (0.005)
Britishness (DV) $_{w-1}$		-0.004 (0.007)				
Britishness (cont.) $_{w-1}$					0.029*** (0.008)	
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave $\times$ Week FEs	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
R-squared	0.779	0.779	0.772	0.865	0.865	0.854
No. of individuals	34,111	34,111	34,111	34,111	34,111	34,111
No. of waves	8	8	8	8	8	8
No. of attacks	49	49	49	49	49	49
No. of observations	611,060	611,060	611,060	611,060	611,060	611,060

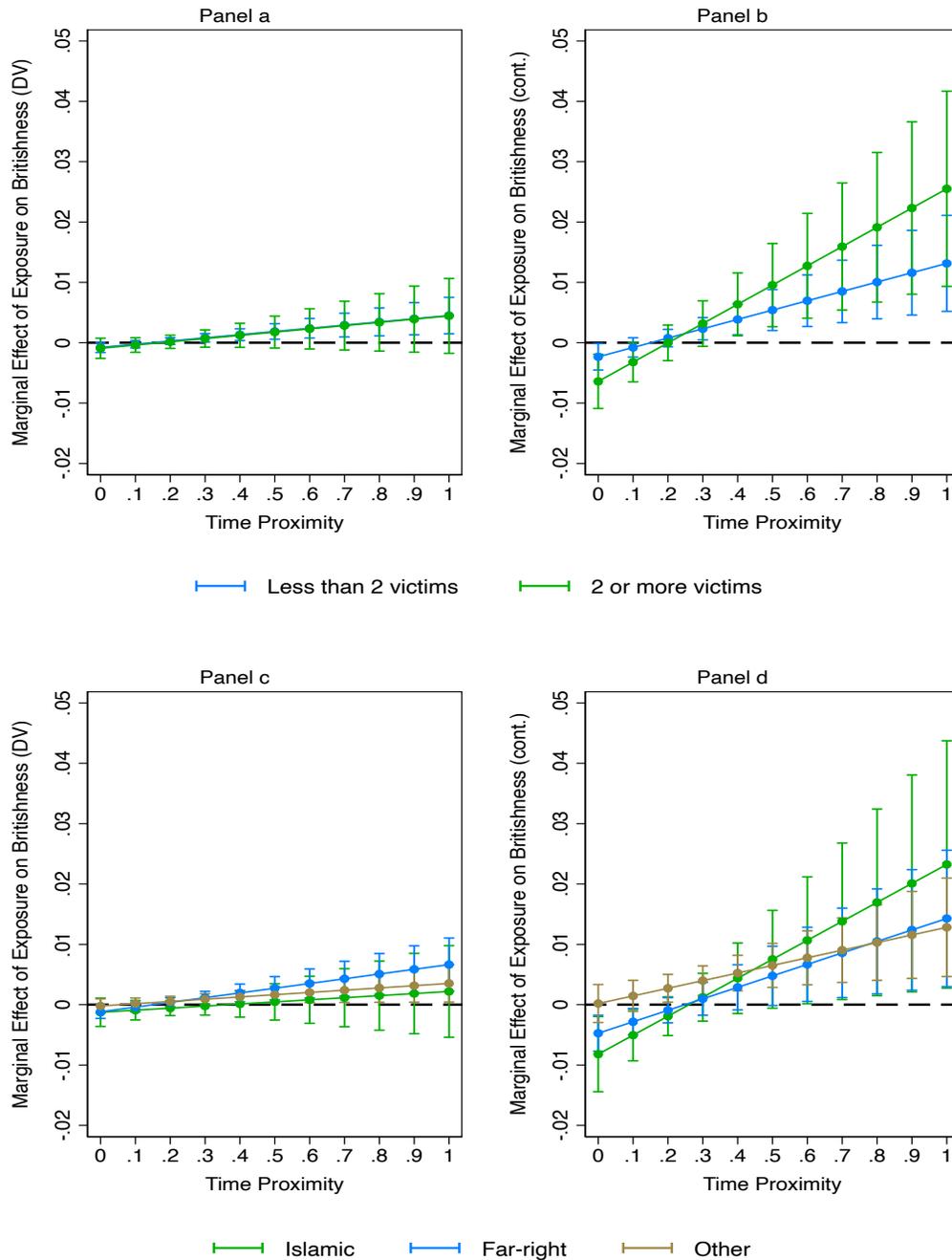
Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table 5: Terrorism exposure and EU attitudes

Panel A	Pro-EU sentiment (DV)			Pro-EU sentiment (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001*	-0.001*	-0.001*	-0.002	-0.002	-0.002
	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)
Time prox.	-0.013***	0.002	0.001	-0.030	0.020	0.017
	(0.003)	(0.006)	(0.006)	(0.021)	(0.039)	(0.039)
Exposure × Time prox.	0.005***	0.005***	0.004***	0.024***	0.024***	0.023**
	(0.002)	(0.002)	(0.002)	(0.009)	(0.009)	(0.009)
R-squared	0.763	0.763	0.763	0.891	0.891	0.891
No. of individuals	42,797	42,797	42,797	42,797	42,797	42,797
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,181,792	1,181,792	1,181,792	1,181,792	1,181,792	1,181,792
Panel B	Risk perceptions (DV)			Risk perceptions (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001**	-0.001**	-0.001**	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Time prox.	-0.004	0.009	0.010	-0.007	0.033*	0.033*
	(0.006)	(0.009)	(0.009)	(0.012)	(0.017)	(0.017)
Exposure × Time prox.	0.006***	0.006***	0.006***	0.007*	0.007*	0.007*
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
R-squared	0.693	0.694	0.694	0.707	0.707	0.707
No. of individuals	37,688	37,688	37,688	37,688	37,688	37,688
No. of waves	7	7	7	7	7	7
No. of attacks	72	72	72	72	72	72
No. of observations	1,034,616	1,034,616	1,034,616	1,034,616	1,034,616	1,034,616
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓

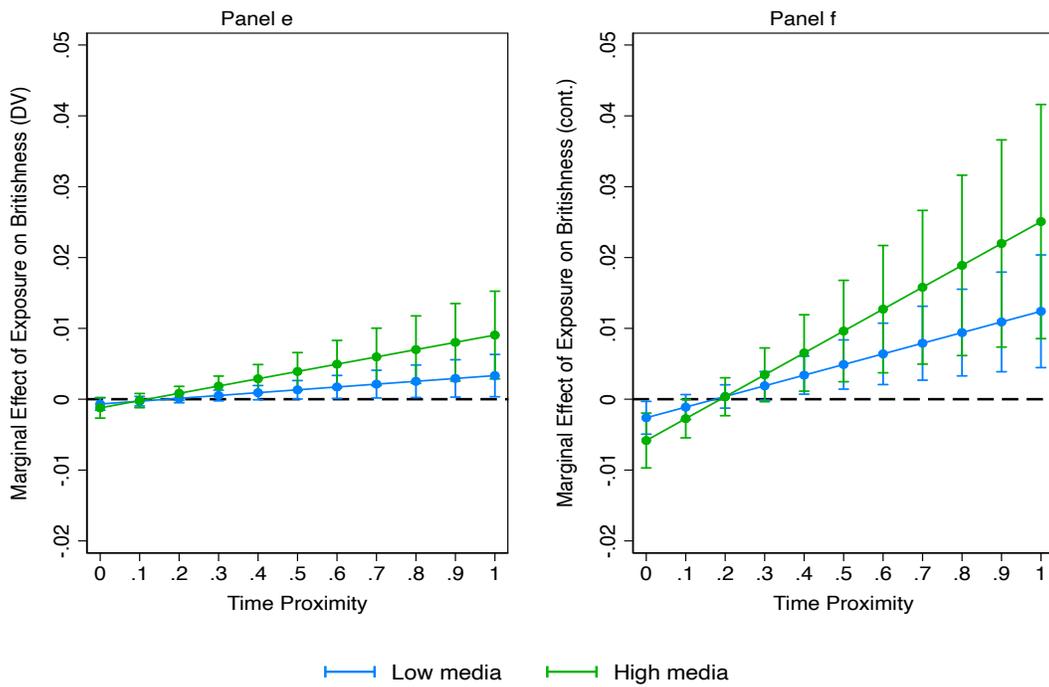
Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Figure 4.a: Marginal effects of exposure on Britishness:  
Heterogeneity by attack characteristics



Notes: '2 or more victims' refers to attacks with two or more killed or wounded people (12 attacks; 14%); 'Less than 2 victims' refers to attacks with less than two killed or wounded people (75 attacks; 86%). 'Islamic' refers to attacks that were perpetrated by Islamist extremists (8 attacks; 9%); 'Far-right' refers to attacks that were perpetrated by far-right extremists (35 attacks; 40%); 'Other' refers to attacks that were perpetrated by other types of perpetrators (44 attacks; 51%). Vertical lines signify 95% confidence intervals. See also notes for Figure 2.

Figure 4.b: Marginal effects of exposure on Britishness:  
Heterogeneity by attack characteristics (continued)



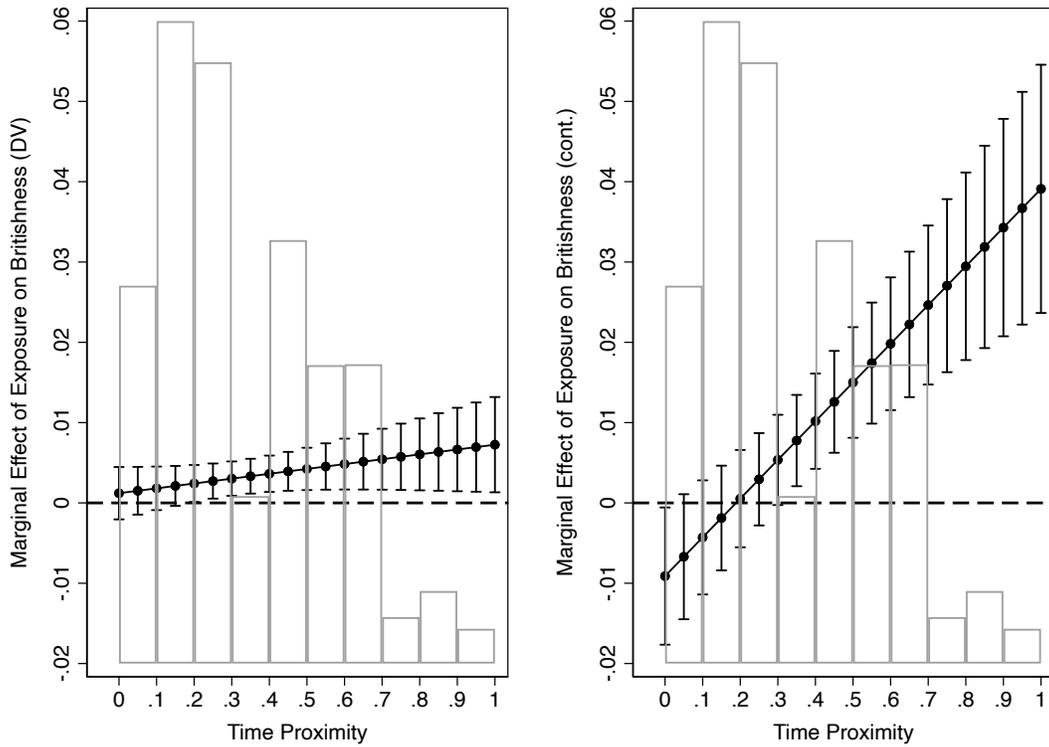
Notes: 'High media' refers to attacks that received more than 100 NexisUni hits (9 attacks; 10%); 'Low media' refers to attacks that received less than 100 NexisUni hits (78 attacks; 90%). Vertical lines signify 95% confidence intervals. See also notes for Figure 2.

Table 6: Terrorism exposure and Britishness:  
Closest-attack-between-waves strategy

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.007* (0.004)	-0.010** (0.004)	-0.009** (0.004)
Time prox.	-0.012 (0.009)	0.008 (0.027)	0.010 (0.027)	-0.068*** (0.022)	0.009 (0.071)	0.013 (0.070)
Exposure × Time prox.	0.005 (0.004)	0.006 (0.004)	0.006 (0.004)	0.042*** (0.010)	0.048*** (0.011)	0.048*** (0.011)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.667	0.667	0.667	0.793	0.793	0.794
No. of individuals	35,754	35,754	35,754	35,754	35,754	35,754
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	171,039	171,039	171,039	171,039	171,039	171,039

*Notes:* The closest-attack-between-waves strategy assumes that each individual is exposed to only one attack between two waves, the closest one in terms of physical proximity. Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Figure 5: Marginal effects of exposure on Britishness:  
Closest-attack-between-waves strategy



*Notes:* The closest-attack-between-waves strategy assumes that each individual is exposed to only one attack between two waves, the closest one in terms of physical proximity. Vertical lines signify 95% confidence intervals. The underlying bar charts are histograms of the time proximity variable, showing the relative frequency of observations within each bin. See also notes for Figure 2.

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# Terrorist violence and the fuzzy frontier: national and supranational identities in Britain

## Supplementary Information (SI) Appendix For Online Publication

### Contents

<b>A</b>	<b>Background and Descriptives</b>	<b>2</b>
A.1	Background material on the sampled attacks . . . . .	2
A.2	Data construction illustration . . . . .	8
A.3	Newspaper content analysis . . . . .	9
A.4	Evolution of Britishness and nationness . . . . .	13
A.5	Summary statistics . . . . .	14
<b>B</b>	<b>Robustness Tests and Further Insights</b>	<b>17</b>
B.1	Comparing native and non-native populations . . . . .	17
B.2	Excluding regions . . . . .	19
B.3	Terrorism effects on EU attitudes after the Brexit referendum . . . . .	22
B.4	Controlling for attacked constituency . . . . .	25
B.5	Controlling for proximity to capital cities . . . . .	26
B.6	Including additional temporal fixed effects . . . . .	29
B.7	Alternative error clustering . . . . .	31
B.8	Alternative geographic proximity measure . . . . .	33
B.9	Categorical measure of time proximity . . . . .	34
B.10	Alternative definitions of the binary outcome . . . . .	36
B.11	Heterogeneity by individual characteristics . . . . .	37
B.12	Terrorism vs crime as the most important problem . . . . .	38
<b>C</b>	<b>Bibliography</b>	<b>39</b>

# A Background and Descriptives

## A.1 Background material on the sampled attacks

Figure A.1a maps the 87 terrorist events used in our analysis. Not surprisingly, London is the most targeted area. Yet, terrorist activity is scattered around the country, with incidents occurring as far north as Dundee and as far south as Newquay. Specifically, the distribution of the sampled attacks across the 11 government office regions is as follows: 2 in the East Midlands, 7 in the East of England, 16 in London, 2 in the North East, 14 in the North West, 9 in Scotland, 15 in the South East, 10 in the South West, 1 in Wales, 4 in the West Midlands, and 7 in Yorkshire and The Humber. Figure A.1b shows the temporal distribution of the attacks from February 2014 to December 2019; i.e., the period used in our analysis. Throughout this period the number of attacks is quite stable, but the most intense year of terrorist activity is 2017 with a total of 20 incidents.

Great Britain has experienced attacks by various perpetrator groups and with different severity levels, targets and methods. The wide heterogeneity in the characteristics of the sampled attacks is summarised in Table A.1a. A commonly used measure of the severity of an incident is the number of victims; i.e., the number of people killed or wounded. 22% of the sampled attacks resulted in at least 1 victim, and 14% of them in at least two victims. A broader measure of the importance of the event is the extent of media coverage; which is captured in our analysis by the number of NexisUni hits (relevant newspaper articles). 10% of the sampled attacks were featured in more than 100 articles, and these are treated as high-media attacks. With regards to the perpetrator(s), 9% of the attacks were motivated by some form of Islamic extremism (e.g., ISIL or jihadi-inspired) and 40% by the far-right (e.g., right-wing extremists, anti-Muslim extremists, or neo-Nazi groups). The remaining 51% were carried out by ‘other’ perpetrator types, including various anarchist groups, the ‘Individuals Tending Toward Savagery’ (ITS) group, the New Irish Republican Army (IRA), and terrorists with unknown motives. We can also observe that the perpetrators have attacked an array of different targets. The most frequently targeted are religious figures/institutions (41%), private citizens and property (21%), and businesses (13%). Other notable targets include the military, police, the government and journalists. There are various methods through which each attack was executed, including armed assault, bombing/explosions, and facility/infrastructure attacks.

In light of the diverse nature of terrorist activity, we now offer descriptive details about some of the sampled attacks. Additional examples are provided in Section A.3.

- On the 5th December 2015, a man armed with a bread knife attacked three people at Leytonstone Underground station in East London. One of the three victims was seriously injured, and the other two sustained minor stab wounds. During the attack, the suspect was reported to have declared, "This is for Syria, my Muslim brothers" and "All your blood will be spilled". Videos of the incident were widely shared on social media.
- In Milton Keynes on the 8th March 2014, an anti-Muslim extremist committed arson by setting fire to a local Mosque. The perpetrator was jailed after admitting arson with intent to endanger life and a racially and religiously-aggravated public order offence. No-one was injured during the attack.
- On the 31st December 2018, New Years Eve, three people were stabbed in a knife attack at Manchester Victoria station. The attacker repeatedly stabbed one victim in the back, shoulders and head with a fillet knife, while shouting Islamist slogans. He became radicalised online, accessing extremist materials including how to "aid jihad".
- On the 24th March 2016, Tanveer Ahmed (a Sunni Muslim) drove from Bradford to Glasgow to murder Asad Shah who claimed to be a prophet. Shah was stabbed repeatedly and the attacker voluntarily gave himself in to the police. The First Minister of Scotland, Nicola Sturgeon, attended a vigil for Shah and vowed to "root out all forms of extremism".
- On the 20th July 2016, two "Middle Eastern" men attempted to abduct an RAF serviceman at knifepoint outside his military barracks in Norfolk. The serviceman fought back and knocked the attacker to the floor, at which point the second man allegedly got out of the car wielding a three-inch blade. Instant comparisons in the media were made to the murder of soldier Lee Rigby in 2013.
- In Bradford on the 17th November 2015, a family man was beaten with a bat and pick-axe and left hospitalised following his conversion from Islam to Christianity. The victim claimed he and his family had been "subjected to terrorism" over the years and were driven out of their previous house by hardline Muslim residents.

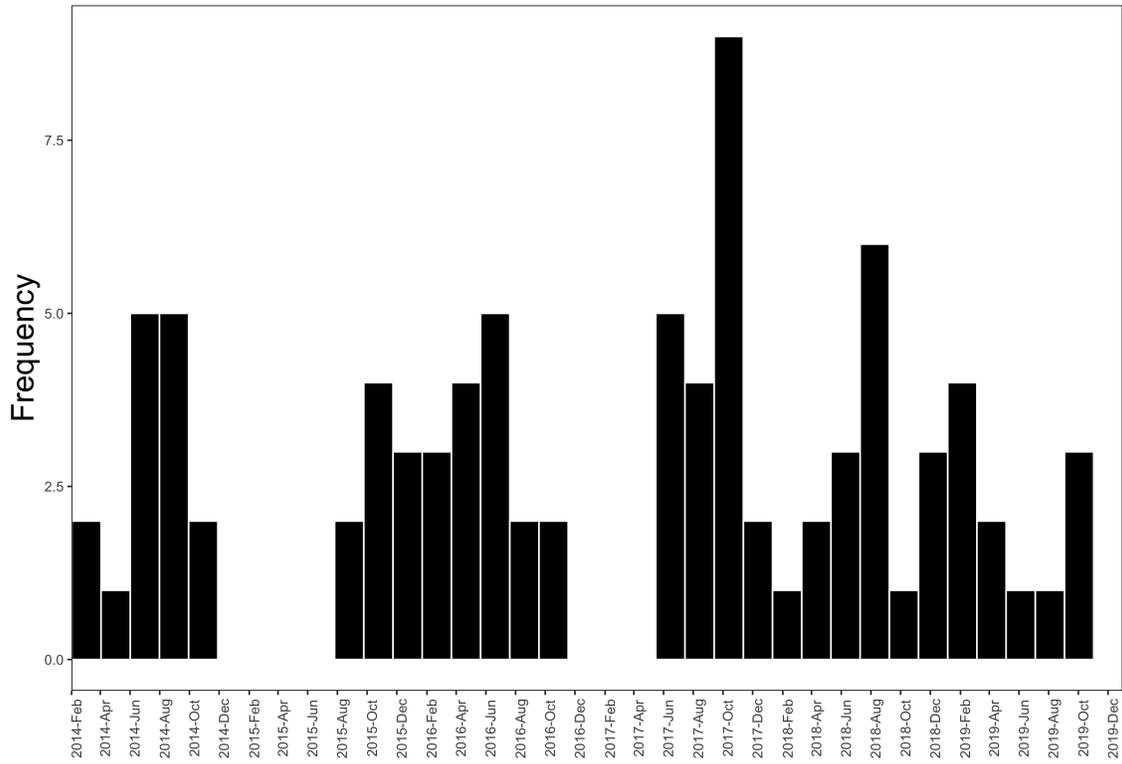
- In Rochdale on the 18th February 2016, two young men used a hammer to murder a 71-year-old former Imam. The 21-year-old attacker was found guilty for the Islamic State-inspired murder, whilst the other had fled to Istanbul. Counter-terrorism detectives are hunting for the 24-year-old, but believe he may have crossed the border into Syria to join ISIS.
- In Prestwich, a Jewish area in the outskirts on Manchester, a Kosher restaurant was firebombed when two men approached and threw a milk carton filled with petrol and a lit rag at the premises. The incident, which occurred on the 16th May 2016, was treated by police as an anti-Semitic attack. No-one was injured from the fire.
- On the 26th August 2017, a man drove at a police van outside Buckingham Palace in London. He then got out of the car with a 4ft sword and shouted "Allahu Akbar". He was subdued by police and three officers were injured during the event.
- On the 16th June 2016, Jo Cox, a Member of Parliament for the Labour Party in the constituency of Batley and Spen, was murdered whilst on her way to meet constituents at the constituent surgery. Cox was shot and stabbed by a far-right extremist with links to neo-facist and neo-Nazi groups. One other was injured in the attack. The perpetrator was sentenced to life imprisonment and will never be eligible for parole.
- In Surrey on the 16th March 2019, a 50-year-old far-right extremist stabbed a teenager with a knife whilst wielding a baseball bat and shouting racist comments. The attack prompted responses from the Prime Minister and Home Secretary condemning far-right extremism and praising the response from emergency services.

Figure A.1a: Terrorist attacks across space



*Notes:* The figure shows the geographic distribution of the terrorist attacks used in our analysis.

Figure A.1b: Terrorist attacks over time



Notes: The figure shows the temporal distribution of the terrorist attacks used in our analysis over the period February 2014 to December 2019.

Table A.1a: Summary statistics, attack characteristics

	Mean	Std. Dev.	Min.	Max.	Obs.
No. people killed/wounded	1.34	7.51	0	69	87
1 or more victims (DV)	0.22	0.42	0	1	87
2 or more victims (DV)	0.14	0.35	0	1	87
No. of newspaper articles	72.11	398.14	0	3474	87
High media (DV)	0.10	0.31	0	1	87
<i>Perpetrator (DVs)</i>					
Islamic	0.09	0.29	0	1	87
Far-right	0.40	0.49	0	1	87
Other	0.51	0.50	0	1	87
<i>Target (DVs)</i>					
Airports & aircraft	0.02	0.15	0	1	87
Business	0.13	0.33	0	1	87
Education institution	0.01	0.11	0	1	87
Government (diplomatic)	0.01	0.11	0	1	87
Government (general)	0.07	0.25	0	1	87
Journalists & media	0.01	0.11	0	1	87
Military	0.03	0.18	0	1	87
Police	0.05	0.21	0	1	87
Private citizens & property	0.21	0.41	0	1	87
Religious figures/institutions	0.41	0.50	0	1	87
Transportation	0.05	0.21	0	1	87
<i>Method (DVs)</i>					
Armed assault	0.11	0.32	0	1	87
Assassination	0.01	0.11	0	1	87
Bombing/explosion	0.11	0.32	0	1	87
Facility/infrastructure attack	0.60	0.49	0	1	87
Hostage taking (kidnapping)	0.02	0.15	0	1	87
Unarmed assault	0.14	0.35	0	1	87

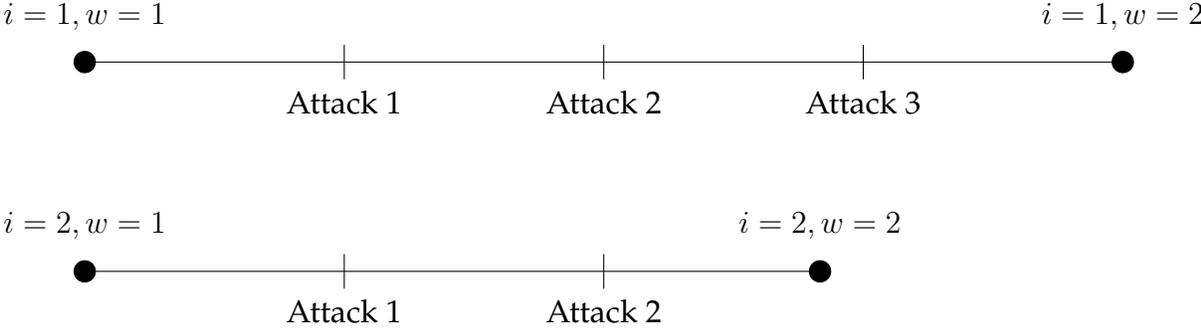
Notes: DV indicates a dummy variable.

## A.2 Data construction illustration

Below is a hypothetical example illustrating the process of creating the individual-wave-attack level dataset. As explained in the paper, we amalgamate an individual-wave panel with terrorist incidents using the interview dates from the British Election Study and the timing of attacks. The timelines presented below depict two hypothetical individuals and the corresponding attacks.

In the upper timeline, individual ( $i$ ) 1 completes the survey wave ( $w$ ) 1 and is potentially exposed to three attacks ( $s$ ) before completing survey wave 2. Therefore, individual 1 in wave 2 will be assigned to all three attacks, resulting in three rows in our dataset  $\{i, w, s = 1, 2, 1; 1, 2, 2; 1, 2, 3\}$ . In the lower timeline, individual 2 undergoes wave 2 earlier than individual 1. Due to the shorter time frame, individual 2 is exposed to only two attacks. Consequently, individual 2 in wave 2 will be assigned to two attacks, leading to two rows in our dataset  $\{i, w, s = 2, 2, 1; 2, 2, 2\}$ .

Figure A.2: An example of the data construction timelines



### A.3 Newspaper content analysis

We obtain newspaper articles for four high-media attacks that vary by perpetrator type and victim status using NexisUni. The first is the Parsons Green train bombing that took place on the 15th September 2017. 69 people were injured by a botched, crude “bucket bomb” with a timer. The bomb was planted by a 18-year-old jihadist-inspired terrorist who was arrested trying to leave the country the following day. The second is the Finsbury Park attack that took place on the 19th June 2017. A 48-year-old man, drove a van into a crowd of Muslims near the Finsbury Park Mosque, in north London, causing one death and injuring ten. He was motivated by his anger over the Islamic attacks in London and Manchester, and a child grooming scandal in Rochdale involving men of Asian origin. The third is the Westminster car attack that occurred on the 14th August 2018. The attacker, with unknown motives, drove along Westminster Bridge and eventually crashed into the perimeter fence of Westminster Palace where he stabbed and killed an unarmed police officer. He was then shot at the scene. The fourth and final attack was perpetrated by the New Irish Republican Army (IRA). Several explosive packages were sent to transport hubs on the 5th March 2019. Buildings were evacuated though the devices failed to detonate and thus no-one was injured.

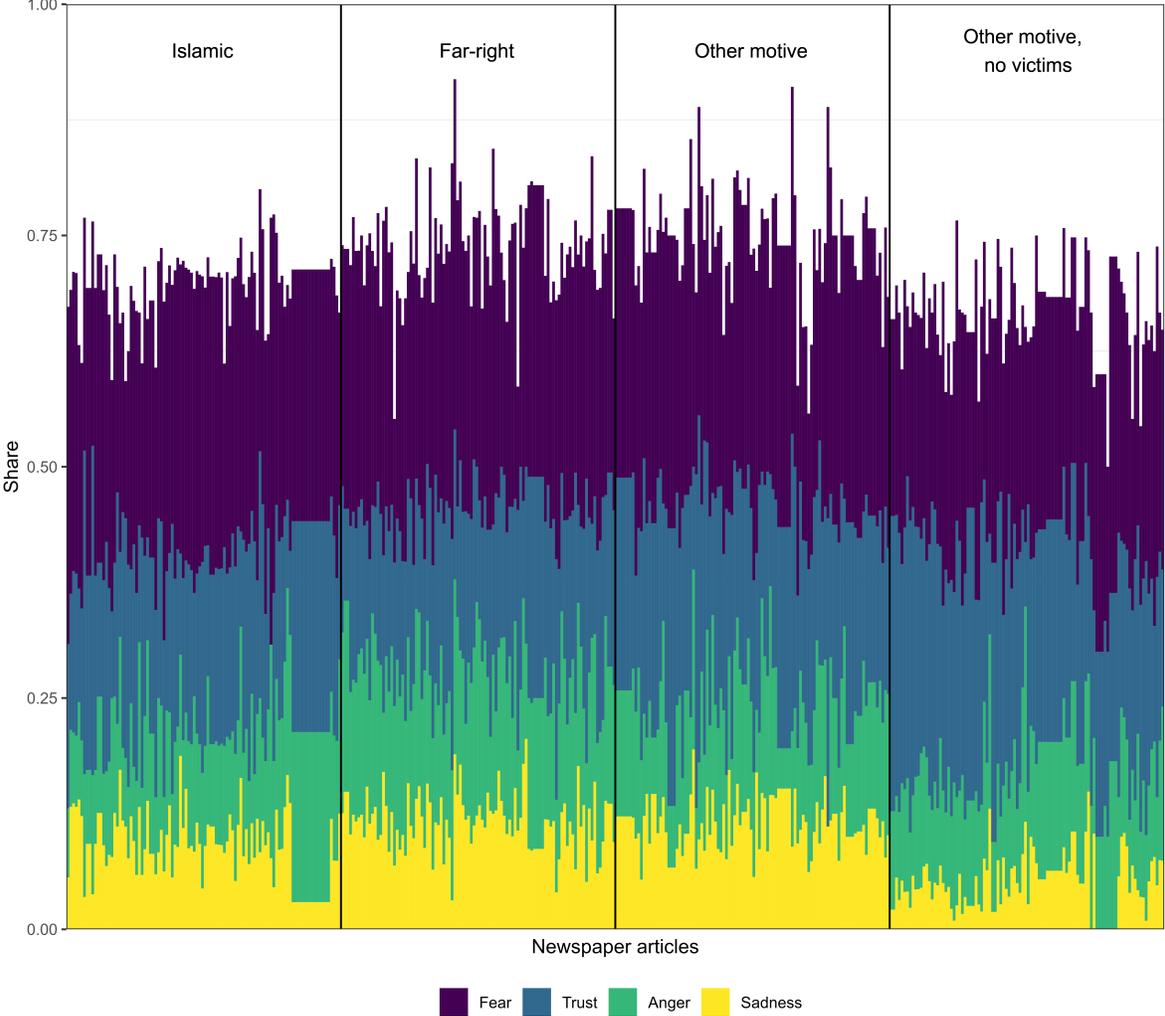
We search for articles using the terms ‘terrorism’, ‘terror’ or ‘terrorist’, the location and other key words related to the attack. We limit our search to the first 100 articles from British newspapers covering each attack. We apply Natural Language Processing (NLP) techniques to analyse the collected unstructured text, aiming to unveil patterns in the way these incidents are reported to the public. We begin by removing all punctuation, numbers, URLs and English-language stop-words. We then implement word stemming, a process that reduces words to their root. This condenses various word variations into a common base form. Finally, all words that do not feature more than 10 times across all articles and in less than 10 articles are removed. We generate word clouds for each incident’s corpus by plotting the top 100 words in each corpus. This visualisation, displayed in Figure A.3a, provides a condensed representation of the most frequently occurring words in the articles for each attack. We can observe commonalities, such as “attack”, “polic”, “terror”, which are used heavily in the ‘Islamic’, ‘far-right’ and ‘other motive’ panels. There is also information about the location of the attacks: “parson.green”, “tube.station” and “train” for the ‘Islamic’ panel; “finsburi.park” and “westminster.parliament” for the proceeding two panels. The language used is also common across these three panels, with words such

as “kill”, “incid” and “injur” being repeatedly used. The outlier in this style of reporting is the final panel, ‘other motive, no victims’, where the language differs owing to the lack of victims. Terms such as “suspici”, “motiv” and “investig” are more frequent.

While the word clouds provide valuable insights about the reporting style projected onto readers, we can conduct analysis to specifically examine the variations in disposition across the corpora. To assess the emotional content of the text within the articles, we use the NRC Emotion Lexicon (Mohammad and Turney, 2010, 2013), a dictionary-based method developed through crowd-sourced manual annotations. This lexicon comprises 14,182 words and 25,000 senses, and each one of these words/senses is linked to eight emotions: anger, fear, sadness, disgust, anticipation, trust, surprise, and joy. The emotions are assigned a value from 0 to 1, capturing the share of words/senses in an article that are linked to a given emotion. Figure A.3b presents the distribution of the largest sentiment shares across the gathered articles. Two findings stand out. First, newspapers use a common language for reporting terrorist incidents: the sentiment shares are very similar across the four events, despite having different characteristics. It is worth noting, though, that the sadness component is slightly less prominent for the incident with no victims. Second, fear and trust appear to be the dominant emotions conveyed in news reports about terrorism, which is consistent with the main channels underpinning our results; i.e., the Britishness-strengthening effect following terrorist attacks operates through fear and sense of threat, as well as calls for national unity and societal trust by politicians and media.



Figure A.3b: Emotions conveyed in news reports about terrorism

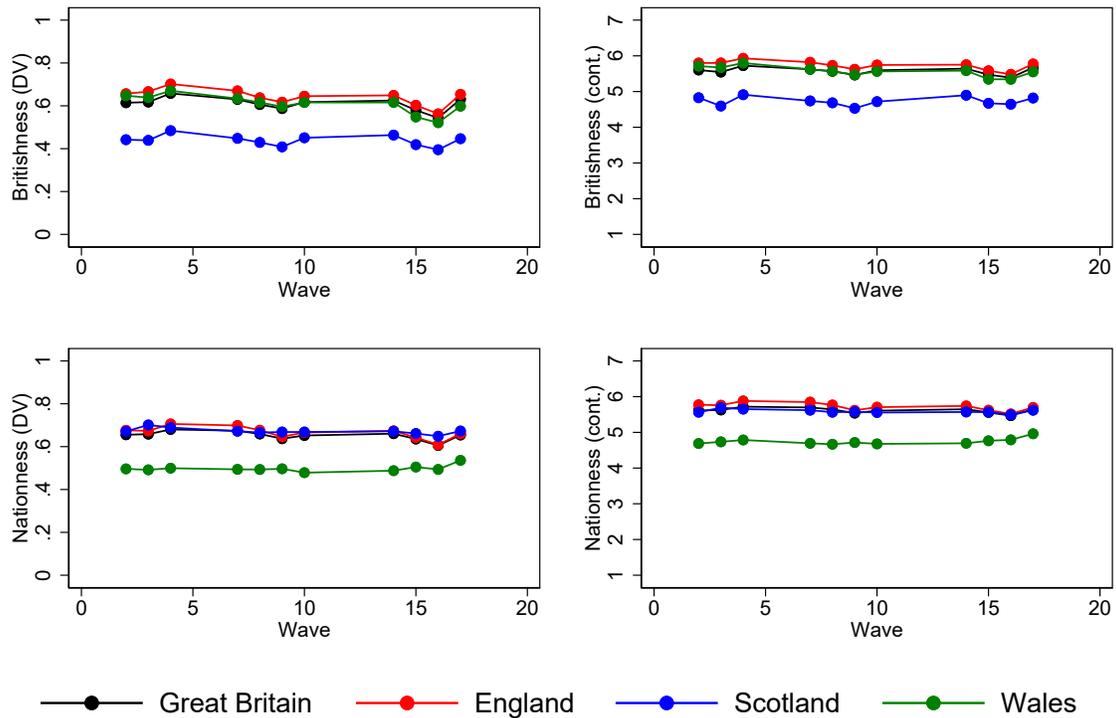


Notes: Each stacked column represents the largest sentiment shares in newspaper articles for each of the four attacks. The articles are arranged in chronological order from left to right. See also notes for Figure A.3a.

## A.4 Evolution of Britishness and nationness

In Figure A.4, we present the evolution of the average strength scores of the two identities (Britishness and nationness) across the BES waves used in our analysis. The upper left panel shows the *Britishness (DV)* variable, upper right shows *Britishness (cont.)*, bottom left shows *Nationness (DV)* and bottom right shows *Nationness (cont.)*. The mean perception of two identities appears to be stable over time, with no major leaps in their strength before or after a specific wave, and this applies for both Great Britain as a whole and the three nations separately.

Figure A.4: Britishness and nationness



Notes: Each panel illustrates the evolution of the variable indicated on the y-axis across the BES waves used in our analysis.

## A.5 Summary statistics

Table A.5a provides summary statistics and detailed definitions for the dependent and key independent variables used in our analysis. Table A.5b provides summary statistics and detailed definitions of the individual-specific control variables included in vector  $\mathbf{X}_{iws}$ .<sup>1</sup>

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<sup>1</sup>It is worth noting that the mean of the individual-specific control variables in our dataset (as reported in Table A.5b) is very close to the figures recorded in the 2011 census of Great Britain; e.g., white people (87%), female population (51%), unemployed (12%), and household average size (2 people).

Table A.5a: Summary statistics and definitions, key variables

	Mean	Std. Dev.	Min.	Max.	Obs.	Definition
<i>Dependent variables</i>						
Britishness (DV)	0.613	0.487	0	1	1,378,139	=1 if the respondent gives one of the top 2 values (6 or 7) to the question "Where would you place yourself on the following scale? Britishness (1-7 scale)."; 0 otherwise.
Britishness (cont.)	5.582	1.619	1	7	1,378,139	The respondent's answer to question: "Where would you place yourself on the following scale? Britishness (1-7 scale)." Value 7 indicates "Very strongly" and value 1 indicates "Not at all".
Nationness (DV)	0.655	0.475	0	1	1,375,083	=1 if the respondent gives one of the top 2 values (6 or 7) to the question "Where would you place yourself on the following scales? Englishness/Welshness/Scottishness (1-7 scales)."; 0 otherwise.
Nationness (cont.)	5.628	1.802	1	7	1,375,083	The respondent's answer to question: "Where would you place yourself on the following scales? Englishness/Welshness/Scottishness (1-7 scales)." The phrasing of the question corresponds to the country in which the respondent resides. Value 7 indicates "Very strongly" and 1 indicates "Not at all".
Pro-EU sentiment (DV)	0.194	0.396	0	1	1,182,152	=1 if the respondent gives one of the top 3 values (8, 9 or 10) to the question "Some people feel that Britain should do all it can to unite fully with the European Union. Other people feel that Britain should do all it can to protect its independence from the European Union. Where would you place yourself on this scale? EU identity (0-10 scale)" (re-coded as outlined below); 0 otherwise.
Pro-EU sentiment (cont.)	3.785	3.513	0	10	1,182,152	The respondent's answer to the question "Some people feel that Britain should do all it can to unite fully with the European Union. Other people feel that Britain should do all it can to protect its independence from the European Union. Where would you place yourself on this scale? EU identity (0-10 scale)". Re-coded so that 10 is "Unite fully with the European Union" and 0 is "Protect our independence".
Risk perceptions (DV)	0.205	0.404	0	1	1,035,742	=1 if the respondent answers either "much higher" or "higher" to the question "Do you think the risk of terrorism would be higher, lower or about the same if the UK leaves the European Union?"; 0 if the respondent answers "about the same", "lower" or "much lower".
Risk perceptions (cont.)	3.077	0.774	1	5	1,035,742	The respondent's answer to the question "Do you think the risk of terrorism would be higher, lower or about the same if the UK leaves the European Union?" Value 5 indicates "much higher" and value 1 indicates "much lower".
<i>Key independent variables</i>						
Time prox.	0.244	0.208	0	1	1,378,139	A measure of the time proximity between the date of the respondent's interview and the date of each one of the 'assigned' attacks. It varies (non-linearly) in the interval [0, 1], with higher values indicating more recent attacks.
Temporal distance (days)	132.824	96.850	1	341	1,378,139	The number of days between the date of the respondent's interview and the date of each one of the 'assigned' attacks.
Exposure	-0.036	0.986	-2.059	7.095	1,378,139	Reverse of the log of distance (in kilometers) between the centroid point of the respondent's constituency of residence and the location point of each one of the 'assigned' attacks (standardized).
Geographic distance (kms)	249.123	158.419	0.386	1104.372	1,378,139	The distance (in kilometers) between the centroid point of the respondent's constituency of residence and the location point of each one of the 'assigned' attacks.

Table A.5b: Summary statistics and definitions, control variables

	Mean	Std. Dev.	Min.	Max.	Obs.	Definition
Female	0.51	0.50	0	1	1,378,139	=1 if the respondent is female; 0 if male.
Age	54.76	14.57	16	101	1,378,139	The age of respondent.
Age sqr.	3211.46	1529.85	256	10201	1,378,139	The age of the respondent squared.
Employed	0.52	0.50	0	1	1,378,139	=1 if the respondent is employed; 0 otherwise.
Student/other	0.03	0.18	0	1	1,378,139	=1 if the respondent is a student or has a non-descript labour market status; 0 otherwise.
Retired	0.34	0.47	0	1	1,378,139	=1 if the respondent is retired; 0 otherwise.
Unemployed/Not working	0.10	0.30	0	1	1,378,139	=1 if the respondent is unemployed or currently not working; 0 otherwise.
Educ.: Below GCSE	0.18	0.38	0	1	1,378,139	=1 if the respondent's highest level of education is below GCSE levels; 0 otherwise.
Educ.: GCSE/A-level/Diploma	0.40	0.49	0	1	1,378,139	=1 if the respondent's highest level of education is at GCSE, A-level or Diploma; 0 otherwise.
Educ.: Bachelor or higher	0.42	0.49	0	1	1,378,139	=1 if the respondent's highest level of education is a bachelor's degree or higher; 0 otherwise.
Single	0.17	0.38	0	1	1,378,139	=1 if the respondent is single; 0 otherwise.
In a relationship	0.70	0.46	0	1	1,378,139	=1 if the respondent is in any type of relationship; 0 otherwise.
Separated/Divorced/Widowed	0.13	0.34	0	1	1,378,139	=1 if the respondent is either separated, divorced or widowed; 0 otherwise.
White British	0.93	0.26	0	1	1,378,139	=1 if the respondent's ethnicity is White British; 0 otherwise.
Household size	2.31	1.14	1	8	1,378,139	The number of individuals living within the respondent's household.
Gross household income	6.82	3.51	1	15	1,378,139	Categories of gross household income that range from "under £5,000 per year" to "£150,000 and over".

## **B Robustness Tests and Further Insights**

### **B.1 Comparing native and non-native populations**

In our main analysis, we present evidence that exposure to terrorism intensifies wider forms of national identification over narrow forms, with the latter being captured by the constituent national identities. On the basis that the constituent identities are generally considered to be less inclusive than the British identity – and they often contain distinct racial and ethnic components – one could argue that our results may be driven by a portion of the population that is not ethnically tied to the nation in question and is unwilling to identify with less inclusive forms of identity. To test for this, we run separate regressions for the following groups of individuals: (i) UK-born and non-UK-born; (ii) white-British and non-white-British. The results, displayed in Table B.1, fail to support the above argument: the effects for UK-born and white-British are very similar to those reported in Table 1 (i.e., for the full sample of individuals), and there is no evidence of nationness-strengthening effects for any of the groups (see columns (3)-(4) and (7)-(8) in the two panels of Table B.1).

Table B.1: Terrorism exposure and national identities: Native vs non-native populations

Panel A	White-British				UK-born			
	Britishness		Nationness		Britishness		Nationness	
	(DV)	(cont.)	(DV)	(cont.)	(DV)	(cont.)	(DV)	(cont.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure	-0.001*	-0.003***	-0.000	-0.000	-0.001	-0.003**	-0.000	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Time prox.	0.005	0.018	0.007	0.035**	0.005	0.021	0.007	0.034*
	(0.007)	(0.019)	(0.006)	(0.017)	(0.007)	(0.019)	(0.006)	(0.018)
Exposure × Time prox.	0.005***	0.019***	-0.001	-0.007	0.005**	0.016***	-0.001	-0.005
	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)
R-squared	0.725	0.819	0.786	0.876	0.726	0.823	0.788	0.877
No. of individuals	44,562	44,562	44,519	44,519	43,755	43,755	43,709	43,709
No. of waves	11	11	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87	87	87
No. of observations	1,279,926	1,279,926	1,277,712	1,277,712	1,288,182	1,288,182	1,285,975	1,285,975
<b>Panel B</b>	Non-white-British				Non-UK-born			
	Britishness		Nationness		Britishness		Nationness	
	(DV)	(cont.)	(DV)	(cont.)	(DV)	(cont.)	(DV)	(cont.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure	0.002	0.004	0.002	0.005	-0.001	-0.005	0.000	0.001
	(0.001)	(0.004)	(0.001)	(0.005)	(0.002)	(0.005)	(0.001)	(0.005)
Time prox.	-0.033	-0.061	-0.012	-0.013	-0.023	-0.052	-0.012	-0.019
	(0.023)	(0.073)	(0.020)	(0.071)	(0.022)	(0.068)	(0.019)	(0.067)
Exposure × Time prox.	-0.004	-0.017	-0.005	-0.007	0.004	0.026	-0.002	-0.007
	(0.006)	(0.018)	(0.005)	(0.019)	(0.006)	(0.019)	(0.006)	(0.021)
R-squared	0.777	0.889	0.801	0.888	0.803	0.894	0.827	0.904
No. of individuals	4,688	4,688	4,670	4,670	4,759	4,759	4,746	4,746
No. of waves	11	11	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87	87	87
No. of observations	98,178	98,178	97,329	97,329	89,957	89,957	89,101	89,101
Individual FEs	✓	✓	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓	✓	✓
Wave × Week FEs	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

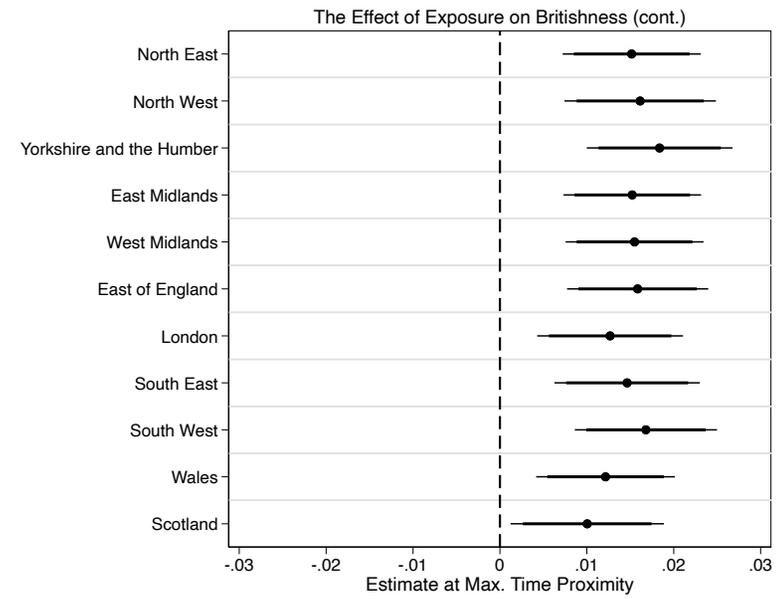
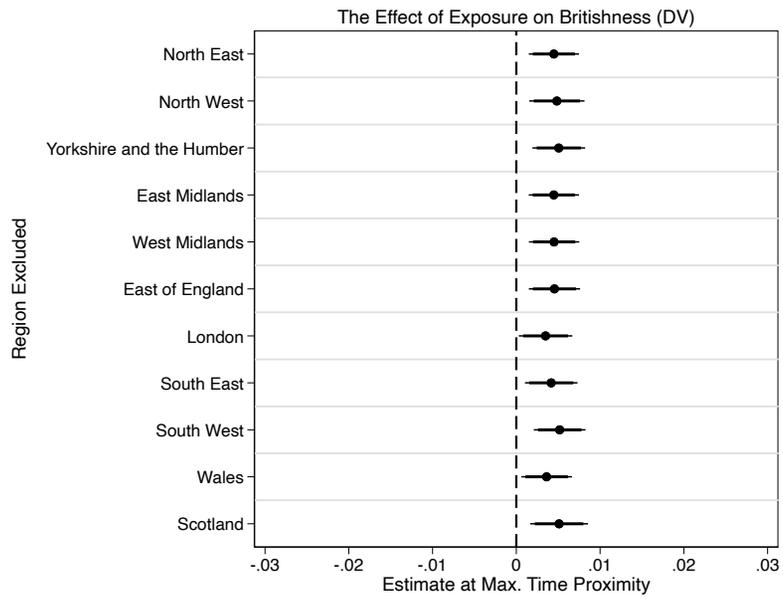
## B.2 Excluding regions

In Figures B.2a and B.2b, we check whether the terrorism-induced effects for the two identities (Britishness and nationness) can be attributed to individuals who live in a particular government office region (GOR). To do so, we re-estimate our baseline model for 11 different sub-samples, each time removing all individuals who reside in the same GOR, and calculate the marginal effects at the maximum value of time proximity.<sup>2</sup> Regardless of which region is excluded each time, the terrorism effect for Britishness is positive and highly statistically significant (at 5% level or higher), whereas the terrorism effect for nationness fails to reach statistical significance. It is worth noting that, when we remove Scotland, the estimate for the constituent national identities turns from negative to positive (across both definitions of the outcome variable) and is about half in magnitude compared to that for the British identity. This can be explained by the fact that a large portion of Scottish residents have ‘stronger nationness’, and – as discussed in Section 4.1 – these individuals are more likely to exhibit an identity trade-off in the aftermath of attacks.

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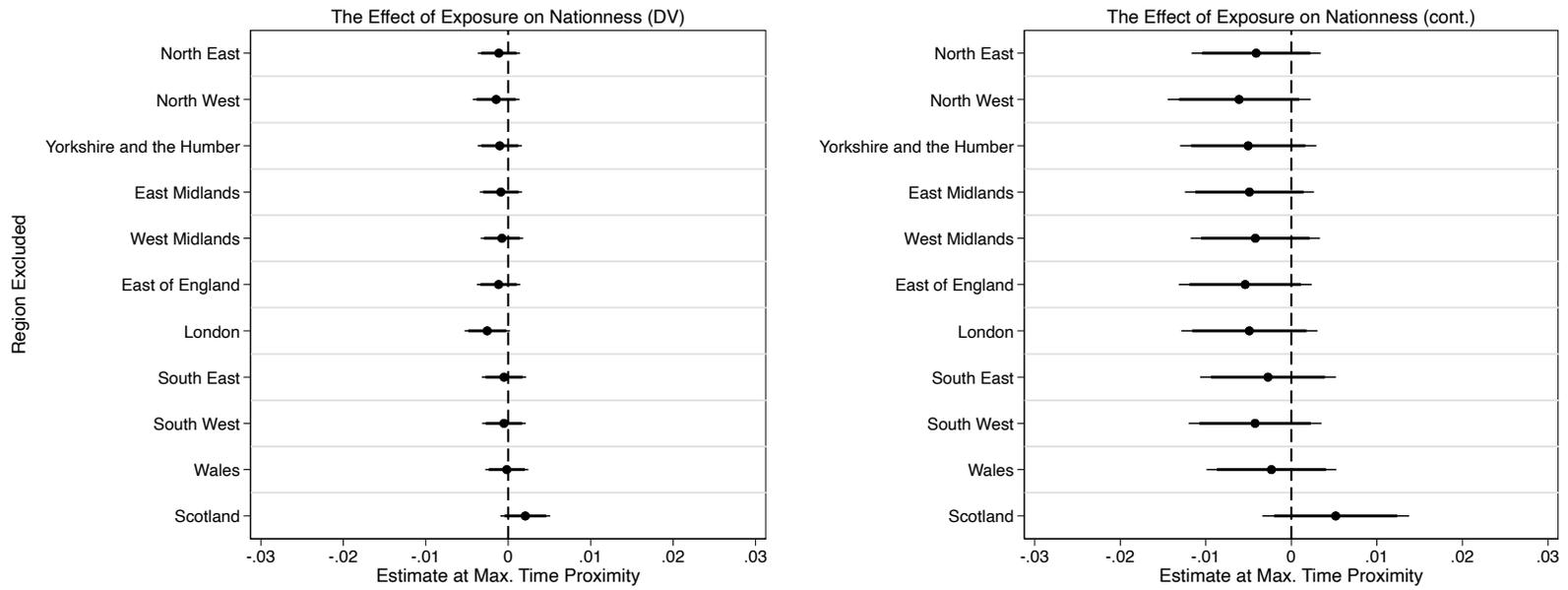
<sup>2</sup>We do not run the regressions separately for each GOR for two main reasons. First, our analysis employs a continuous treatment variable at the country level, with the least exposed constituencies being located at more than 1,000 kilometers from an attack (see also Falcó-Gimeno et al., 2023). Hence, focusing on small geographic areas within the country reduces the variation used for identification. Second, the sampled attacks are not uniformly distributed within the country and thus the distribution of ‘treated’ (more exposed) and ‘control’ (less exposed) individuals is very different across the 11 GORs, leading to comparability problems. It is also not possible to split the sample between the three constituent nations and exploit variation in exposure to nation-specific attacks, as only 10 of the sampled attacks occurred outside England (1 attack in Wales during 1 BES wave, and 9 attacks in Scotland during 4 BES waves) which limits the within-individual variation in exposure for residents in the two nations.

Figure B.2a: Excluding regions: Britishness



Notes: Fat (thin) lines denote statistical significance at the 90% (95%) level.

Figure B.2b: Excluding regions: Nationness



Notes: Fat (thin) lines denote statistical significance at the 90% (95%) level.

### B.3 Terrorism effects on EU attitudes after the Brexit referendum

In our main analysis, we present evidence that exposure to terrorism leads to more positive positions about the EU. Specifically, we find that, in the wake of terrorist attacks, individuals are more likely to place themselves higher on the UK-EU relationship strength scale, and to perceive higher risks of terrorism if the UK leaves the EU. A natural question that arises here is whether these effects are only a phenomenon of the pre-Brexit-referendum period; i.e., before the country voted to leave the EU. To test for this, we estimate models with a triple interaction between exposure, time proximity, and a binary indicator capturing the survey waves that were fielded after the referendum date (23 June 2016).<sup>3</sup>

The corresponding results are presented in Table B.3. In most cases, the triple interaction term enters the specification with the opposite sign (compared to that for *Exposure*  $\times$  *Time prox.*), but it is either smaller in magnitude or fails to reach statistical significance. This suggests that, while the effects have become relatively weaker in the post-referendum period, they have not disappeared completely. It is worth noting that the differences between the pre- and post-referendum periods are much smaller when we use the continuous version of the outcome variables. We interpret this as evidence that, after the referendum, terrorism resulted in smaller changes in the likelihood to report very strong pro-EU stances, but it still caused significant positional shifts within the entire scale of the pro-EU variables.

#### Related implications

Collectively, these findings demonstrate that terrorism does not only intensify the British national identity, but it also leads to a more positive stance towards the EU. Prior to the referendum, terrorist attacks exposed national security vulnerabilities, prompting a heightened awareness of the security risks associated with leaving the EU (Bove et al., 2022). This, in turn, led citizens to become more receptive to EU-wide solutions. Notably, proponents of the “Remain” camp argued that staying in the EU would offer greater security, highlighting the EU’s effective tools in combating common threats such as terrorism or global warming (Atikcan et al., 2020). A primary concern revolved around the potential loss of access for Britain to EU databases on border crossings and police stops, which had become crucial tools in tracking terrorists. The importance of these databases escalated

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<sup>3</sup>The *Pro-EU sentiment* question was asked in all survey waves (5 waves before the referendum and 6 waves after the referendum), while the *Risk perceptions* question was asked in 7 survey waves (3 waves before the referendum and 4 waves after the referendum).

significantly following the series of terrorist attacks in 2015.<sup>4</sup> Fighting terrorism was one of the less familiar but highly prominent arguments, particularly for those living near targeted areas (Bove et al., 2022).

Following the referendum, regardless of their initial position on Europe, terrorism may have induced individuals to recognise a link between public security and the key role played by the EU as a security provider. It is worth mentioning that even after the referendum, a large portion of Britons continued to identify with the EU.<sup>5</sup>

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<sup>4</sup>Access to well-established data and process systems – such as the Schengen Information System or European Arrest Warrants and the European Criminal Records Information System (ECRIS) – were deemed at risk, which would damage existing cooperation with law enforcement and intelligence partners, prompting the UK’s National Audit Office to warn that “organized criminals and others are likely to be quick to exploit any perceived weaknesses or gaps in the enforcement regime” (Doffman, 2018). David Cameron went to the extent of asserting that EU membership contributed to Britain’s safety. He suggested that Brexit could potentially escalate the risk of conflict and even went as far as to claim that the so-called Islamic State would welcome the UK’s departure from the EU (The Economist, 2016).

<sup>5</sup>For example, according to the Autumn 2019 Eurobarometer survey (which was conducted prior to Britain’s formal exit from the bloc in January of 2020), 53% of respondents in Britain “[felt that they are] citizens of the EU”. Available online: <https://europa.eu/eurobarometer/surveys/detail/2255>

Table B.3: Terrorism exposure and EU attitudes:  
Comparing the pre- and post-referendum periods

Panel A	Pro-EU sentiment (DV)			Pro-EU sentiment (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.004 (0.005)	-0.003 (0.005)	-0.003 (0.005)
Time prox.	-0.001 (0.006)	0.002 (0.008)	0.001 (0.008)	-0.009 (0.040)	0.005 (0.054)	-0.003 (0.054)
Exposure × Time prox.	0.010*** (0.002)	0.010*** (0.003)	0.009*** (0.002)	0.042** (0.017)	0.040** (0.016)	0.039** (0.016)
Exposure × Post-referendum	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.002 (0.007)	0.001 (0.007)	0.000 (0.007)
Time prox. × Post-referendum	-0.011 (0.007)	-0.001 (0.012)	0.001 (0.012)	0.044 (0.046)	0.039 (0.074)	0.051 (0.074)
Exposure × Time prox. × Post-referendum	-0.007** (0.003)	-0.007** (0.003)	-0.007** (0.003)	-0.025 (0.019)	-0.023 (0.019)	-0.023 (0.019)
R-squared	0.763	0.763	0.763	0.891	0.891	0.891
No. of individuals	42,797	42,797	42,797	42,797	42,797	42,797
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,181,792	1,181,792	1,181,792	1,181,792	1,181,792	1,181,792
Panel B	Risk perceptions (DV)			Risk perceptions (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Time prox.	-0.010 (0.011)	0.017 (0.014)	0.018 (0.014)	-0.012 (0.022)	0.036 (0.027)	0.036 (0.027)
Exposure × Time prox.	0.011*** (0.004)	0.010** (0.004)	0.010** (0.004)	0.005 (0.008)	0.006 (0.008)	0.006 (0.008)
Exposure × Post-referendum	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
Time prox. × Post-referendum	0.013 (0.013)	-0.015 (0.018)	-0.016 (0.018)	0.008 (0.025)	-0.005 (0.034)	-0.007 (0.034)
Exposure × Time prox. × Post-referendum	-0.006 (0.005)	-0.006 (0.005)	-0.006 (0.005)	0.001 (0.009)	0.001 (0.009)	0.001 (0.009)
R-squared	0.693	0.694	0.694	0.707	0.707	0.707
No. of individuals	37,688	37,688	37,688	37,688	37,688	37,688
No. of waves	7	7	7	7	7	7
No. of attacks	72	72	72	72	72	72
No. of observations	1,034,616	1,034,616	1,034,616	1,034,616	1,034,616	1,034,616
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.4 Controlling for attacked constituency

In this section, we check whether the Britishness-strengthening effect is driven by individuals who live in the attacked constituency. To do so, we augment Eq. (1) with an interaction between *Time prox.* and a binary indicator capturing whether attack  $s$  took place within the boundaries of individual  $i$ 's constituency of residence in wave  $w$ . Table B.4 reports the results of estimating this model based on the same regression set-up as in Table 1. Overall, our inferences do not change: once again, we find that geographic proximity induces a positive short-lived effect on Britishness. This suggests that the observed dynamics are not restricted to people who are more 'directly' influenced by terrorist incidents, and supports the view that terrorism produces spillover effects on people who live in neighbouring areas. This exercise also mitigates self-selectivity concerns; that is, unobserved time-varying factors affecting both the likelihood of a constituency to experience attacks at a certain point in time and the change in identity perceptions of its residents.

Table B.4: Terrorism exposure and Britishness: Controlling for attacked constituency

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.000)	-0.001* (0.000)	-0.001 (0.000)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)
Time prox.	0.009** (0.004)	0.002 (0.007)	0.003 (0.007)	0.010 (0.010)	0.012 (0.019)	0.015 (0.019)
Exposure $\times$ Time prox.	0.005** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.016*** (0.005)	0.018*** (0.005)	0.018*** (0.005)
Attacked cons.	-0.005 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.001 (0.025)	0.001 (0.025)	0.000 (0.025)
Attacked cons. $\times$ Time prox.	-0.005 (0.035)	-0.009 (0.035)	-0.008 (0.035)	0.012 (0.079)	0.004 (0.079)	0.005 (0.079)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave $\times$ Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.5 Controlling for proximity to capital cities

While the sampled terrorist attacks are scattered around the country, London is the city with the most incidents (16 attacks; 18%). As such, one could argue that living near London may correlate with unobserved (time-varying) factors that affect the extent to which people change their self-reported Britishness, and this, in turn, may confound the relationship between exposure and nation-state identity. To test for this, we consider an extended version of the baseline model that controls for the centroid-to-centroid proximity in kilometers between individual  $i$ 's constituency and London (reverse of the log of distance, standardized), together with its interaction with time proximity. As shown in Table B.5a, the estimates of the main variables of interest are little affected by this exercise, and do not change the inferences drawn from earlier findings.<sup>6</sup> Similar results are also obtained when we replace proximity to London with proximity to the constituent nation's capital city (i.e., London, Edinburgh, and Cardiff) – see Table B.5b.

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<sup>6</sup>As noted in Section 3.1, we exclude observations where a respondent is observed in a different constituency in wave  $w$  compared to the last wave they were interviewed. Nevertheless, a small number of individuals may still be observed in two different constituencies, with at least two observations in each constituency. This can explain why the estimate of *London prox.* is not absorbed by the individual fixed effects.

Table B.5a: Terrorism exposure and Britishness: Controlling for proximity to London

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.000)	-0.001** (0.000)	-0.001** (0.000)	-0.002 (0.001)	-0.002* (0.001)	-0.002* (0.001)
Time prox.	0.009** (0.004)	0.002 (0.007)	0.003 (0.007)	0.010 (0.010)	0.013 (0.019)	0.015 (0.019)
Exposure × Time prox.	0.004** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.011** (0.005)	0.013*** (0.005)	0.014*** (0.005)
London prox.	0.001 (0.010)	0.001 (0.010)	0.002 (0.010)	0.034 (0.026)	0.035 (0.026)	0.035 (0.026)
London prox. × Time prox.	0.001 (0.002)	0.000 (0.002)	-0.000 (0.002)	0.016*** (0.006)	0.015** (0.006)	0.013** (0.006)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table B.5b: Terrorism exposure and Britishness:  
Controlling for proximity to the constituent nation's capital city

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.003** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Time prox.	0.009** (0.004)	0.002 (0.007)	0.003 (0.007)	0.009 (0.010)	0.012 (0.019)	0.015 (0.019)
Exposure × Time prox.	0.005** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.016*** (0.005)	0.018*** (0.005)	0.018*** (0.005)
Capital city prox.	-0.008 (0.009)	-0.008 (0.009)	-0.008 (0.009)	0.017 (0.025)	0.018 (0.025)	0.017 (0.025)
Capital city prox. × Time prox.	-0.000 (0.002)	-0.000 (0.002)	-0.001 (0.002)	0.003 (0.006)	0.003 (0.006)	0.002 (0.006)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.6 Including additional temporal fixed effects

In this section, we check sensitivity to introducing additional time fixed effects. First, we replace the wave  $\times$  week fixed effects ( $\theta_w^t$ ) in Eq. (1) with day fixed effects to account for residual heterogeneity arising from the date that an individual is interviewed. Second, we augment the baseline model with time distance fixed effects to control for unobserved factors correlated with the temporal distance between an attack and the interview date. Tables B.6a and B.6b present the corresponding results. The estimates of exposure and its interaction with time proximity are remarkably similar to those reported in Table 1.

Table B.6a: Terrorism exposure and Britishness: Using day fixed effects

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001 (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.003** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Time prox.	0.009** (0.004)	-0.002 (0.002)	-0.002 (0.002)	0.010 (0.010)	-0.004 (0.006)	-0.004 (0.006)
Exposure $\times$ Time prox.	0.004** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.016*** (0.005)	0.018*** (0.005)	0.018*** (0.005)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Day FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table B.6b: Terrorism exposure and Britishness: Including time distance fixed effects

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001*	-0.001*	-0.001*	-0.003**	-0.003***	-0.003**
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Exposure × Time prox.	0.005***	0.005***	0.005***	0.017***	0.018***	0.018***
	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.005)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
Time distance FEs	✓	✓	✓	✓	✓	✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.7 Alternative error clustering

Throughout our main analysis, we have clustered the standard errors at the individual level. In this section, we check robustness to using alternative types of standard errors. Specifically, we consider clustering at one of the following levels: (i) constituency; (ii) attack; (iii) individual and attack (two-way clustering); (iv) constituency and attack (two-way clustering). As can be seen in columns (2)-(5) of Table B.7, our results are little affected by the clustering method used: even though the standard errors are relatively larger when a two-way clustering is used, the estimates of *Exposure*  $\times$  *Time prox.* remain highly statistically significant throughout (at the 5% level or higher).

Table B.7: Terrorism exposure and EU attitudes: Alternative error clustering

Panel A	Britishness (DV)				
	(1)	(2)	(3)	(4)	(5)
Exposure	-0.001*	-0.001	-0.001**	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Time prox.	0.003	0.003	0.003	0.003	0.003
	(0.007)	(0.007)	(0.006)	(0.005)	(0.004)
Exposure × Time prox.	0.005***	0.005***	0.005***	0.005***	0.005**
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
R-squared	0.734	0.734	0.734	0.734	0.734
Smallest no. of clusters	48,514	632	87	87	87
No. of waves	11	11	11	11	11
No. of attacks	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139
Panel B	Britishness (cont.)				
	(1)	(2)	(3)	(4)	(5)
Exposure	-0.003**	-0.003**	-0.003	-0.003	-0.003
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Time prox.	0.015	0.015	0.015	0.015	0.015
	(0.019)	(0.019)	(0.013)	(0.010)	(0.011)
Exposure × Time prox.	0.018***	0.018***	0.018**	0.018**	0.018**
	(0.005)	(0.005)	(0.008)	(0.009)	(0.009)
R-squared	0.834	0.834	0.834	0.834	0.834
Smallest no. of clusters	48,514	632	87	87	87
No. of waves	11	11	11	11	11
No. of attacks	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139
Individual FEs	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓
Wave × Week FEs	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓
Clustering level	Individual	Const.	Attack	Individual & attack	Const. & attack

Notes: Standard errors are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.8 Alternative geographic proximity measure

In this section, we rely on an alternative measure of geographic proximity to account for exposure to terrorism. Rather than using the reverse of the logarithm of distance (between each attack and an individual's constituency of residence), we divide the distance into ten equal-frequency groups (deciles), where individuals in group 10 are the most proximate to the attack and those in group 1 are the furthest away. Even though the estimates are somewhat different in magnitude (as expected), the positive and highly significant effect of geographic proximity at high values of time proximity is unaltered.

Table B.8: Terrorism exposure and Britishness: Alternative geographic proximity measure

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure (dec.)	-0.000 (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.001* (0.000)	-0.001** (0.000)	-0.001** (0.000)
Time prox.	0.001 (0.005)	-0.008 (0.008)	-0.007 (0.008)	-0.022 (0.014)	-0.024 (0.021)	-0.021 (0.021)
Exposure (dec.) × Time prox.	0.001** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.005*** (0.002)	0.006*** (0.002)	0.006*** (0.002)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.733	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

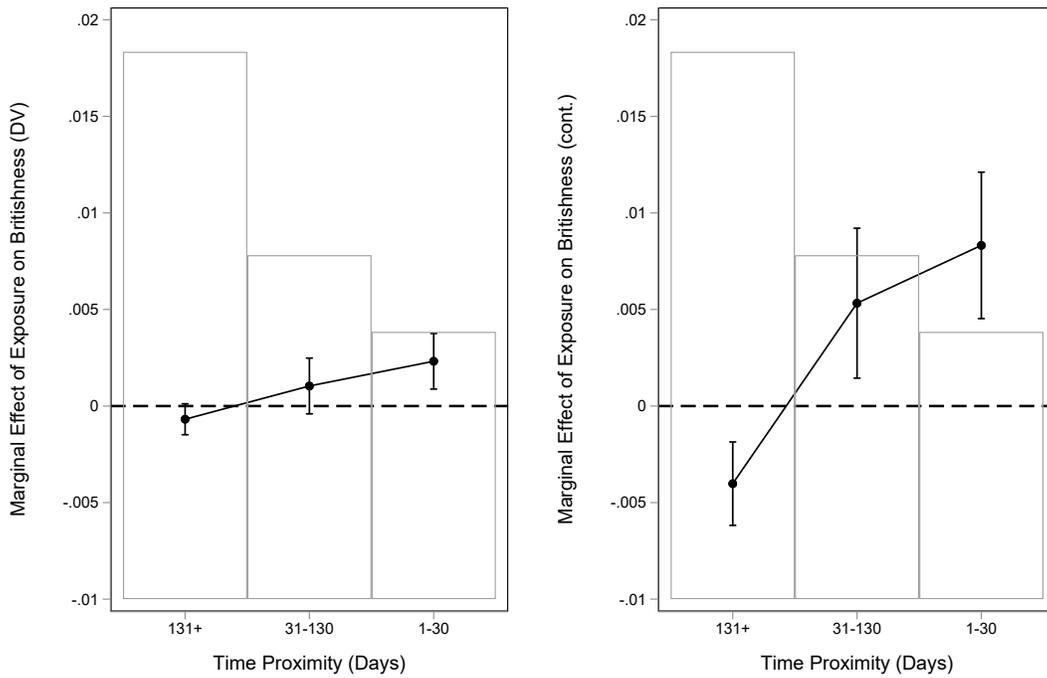
Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.9 Categorical measure of time proximity

In our main analysis, we provide evidence that a Britishness-strengthening effect emerges when an individual was recently exposed to terrorism. In doing so, we employ a continuous and a binary measure of time proximity that assign a higher weight to recent incidents. In this section, we experiment with a third (categorical) measure that divides the post-attack period into three distinct time intervals. Specifically, following Epifanio et al. (2023), we compare the exposure effects between respondents interviewed within one month (30 days) after the attacks, *the short run*; those interviewed in the next 100 days, *the medium run*; and finally those interviewed after the first 130 days, *the long run*. Splitting the sample into groups based on the moderator is also broadly in line with the recommendations of Hainmueller et al. (2019) for testing susceptibility of the results to misspecification bias.

Figure B.9 plots the marginal effects across the three time frames. We can observe a large positive change in self-reported Britishness in the short run, which becomes less pronounced in the next 100 days (the medium run). This is then followed by a further noticeable decline in the long run, with the effects either fading away (for *Britishness (DV)*) or turning negative (for *Britishness (cont.)*). All in all, the observed dynamics confirm that the main driver of the positive interaction between exposure and time proximity (as reported in Table 1) are the attacks that occur close to the interview date.

Figure B.9: Marginal effect of exposure on Britishness:  
Categorical time proximity



Notes: This graph shows the marginal effects of *Exposure* across three time frames: short run (1-30 days after attacks), medium run (31-130 days after attacks), and long run (131 days or more after attacks). Vertical lines signify 95% confidence intervals. The underlying bar charts are histograms of the time proximity variable, showing the relative frequency of observations within each bin.

## B.10 Alternative definitions of the binary outcome

The binary outcome variable *Britishness* (*DV*) captures self-placement at the top 2 values of the 1-7 Britishness scale. In Table B.10, we check sensitivity to re-coding this variable so that it reflects lower cut-off points within this scale; that is, values 5 or more (*Britishness* (*DV*) [ $>4$ ]) or values 4 or more (*Britishness* (*DV*) [ $>3$ ]). The estimates suggest that exposure to terrorism significantly increases the likelihood to report a stronger British identity, regardless of how this ‘stronger identity’ is defined. Overall, the results point to a terrorism-induced effect that is ‘across the board’ and are consistent with the findings for the continuous outcome variable.

Table B.10: Terrorism exposure and Britishness: Alternative Britishness (*DV*) definitions

	Britishness ( <i>DV</i> ) [ $>4$ ]			Britishness ( <i>DV</i> ) [ $>3$ ]		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Time prox.	0.003 (0.003)	0.001 (0.006)	0.001 (0.006)	-0.003 (0.002)	0.001 (0.004)	0.001 (0.004)
Exposure $\times$ Time prox.	0.003* (0.002)	0.003* (0.002)	0.003* (0.002)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave $\times$ Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.734	0.735	0.735	0.750	0.750	0.750
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.11 Heterogeneity by individual characteristics

In Table B.11, we test for heterogeneity with respect to three individual characteristics: gender, age, and education. To do so, we estimate models with a triple interaction between exposure, time proximity, and different binary indicators that split individuals into the following groups: (i) female vs male respondents; (ii) younger vs older respondents (aged 18-44 vs aged 45+); and, (iii) low-education vs high-education respondents (belonging to the lowest education group vs the other two groups). In all three cases, the triple interaction term enters the specification with a negative sign – suggesting that the effects are weaker for female, younger and low-education people – but fails to reach statistical significance. We interpret this as evidence that the (short-lived) Britishness dynamic following terrorist attacks is not a unique phenomenon of individuals with specific characteristics.

Table B.11: Terrorism exposure and Britishness: Individual heterogeneity

	Britishness (DV)			Britishness (cont.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	-0.001*	-0.001**	-0.001**	-0.005***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Time prox.	0.004	0.001	0.002	0.018	0.008	0.014
	(0.007)	(0.007)	(0.007)	(0.019)	(0.019)	(0.019)
Exposure × Time prox.	0.007***	0.006***	0.007***	0.025***	0.019***	0.020***
	(0.003)	(0.002)	(0.002)	(0.007)	(0.006)	(0.005)
Exposure × Time prox. × Female	-0.003			-0.013		
	(0.003)			(0.009)		
Exposure × Time prox. × Younger		-0.002			-0.003	
		(0.004)			(0.010)	
Exposure × Time prox. × Low educ.			-0.007			-0.013
			(0.004)			(0.012)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave × Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.734	0.734	0.734	0.834	0.834	0.834
No. of individuals	48,514	48,514	48,514	48,514	48,514	48,514
No. of waves	11	11	11	11	11	11
No. of attacks	87	87	87	87	87	87
No. of observations	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139	1,378,139

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

## B.12 Terrorism vs crime as the most important problem

In Table B.12, we explore the exposure effect on citizens' beliefs about the most important issue facing the country. We construct a binary indicator that takes value 1 if an individual believes that terrorism is the most important national problem (in wave  $w$ ), and run the same regression-set up as before. Despite the substantial decrease in the sample size (and the fact that we only exploit information for 40 attacks), we find evidence that individuals are more likely to report terrorism as the top national problem after they are exposed to recent attacks (columns (1)-(3)). On the other hand, no effect is found for crime being the most important problem (columns (4)-(6)). This exercise confirms the salience of the attacks for the British public, and that these incidents were correctly perceived by the large audience as acts as terrorism rather than violent crime.

Table B.12: Terrorism exposure and terrorism vs crime importance

Most important issue:	Terrorism			Crime		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure	0.001*** (0.000)	0.001* (0.000)	0.001* (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Time prox.	0.002 (0.003)	0.008 (0.005)	0.007 (0.005)	0.000 (0.001)	-0.001 (0.002)	-0.001 (0.002)
Exposure $\times$ Time prox.	0.001 (0.001)	0.002* (0.001)	0.002* (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Individual FEs	✓	✓	✓	✓	✓	✓
Attack FEs	✓	✓	✓	✓	✓	✓
Wave $\times$ Week FEs		✓	✓		✓	✓
Controls			✓			✓
R-squared	0.555	0.559	0.560	0.607	0.607	0.607
No. of individuals	32,034	32,034	32,034	32,034	32,034	32,034
No. of waves	7	7	7	7	7	7
No. of attacks	40	40	40	40	40	40
No. of observations	592,404	592,404	592,404	592,404	592,404	592,404

Notes: Standard errors are clustered at the individual level and are reported in parentheses; \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

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