

# Terrorist Events and Attitudes toward Immigrants: A Natural Experiment\*

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## Abstract

Using a quasi-experimental research design, this study examines the effect of terrorist events on the perception of immigrants across 65 regions from nine European countries. I first elaborate a theoretical argument that explains the effect of events and points at economic conditions, the immigrant population's size, and personal contact as mediating factors. To evaluate this argument, I use the fact that the terror attack in Bali on October the 12th 2002 occurred during the fieldwork period of the European Social Survey (ESS). The findings from this natural experiment reveal considerable cross-national and regional variation in the effect and its temporal duration. The analysis on the regional level supports the argument about contextual variations in the response to the event, and a second analysis based on the 2004 Madrid bombing confirms my conclusions. Implications of the findings for societal responses to terror attacks, the literature on attitudes towards immigrants, and survey research are discussed.

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# Introduction

On October the 12th, 2002, Indonesia and the world witnessed one of the deadliest terror attacks on civilian life in recent decades. Around 11pm, a terrorist entered the nightclub Paddy's Pub in Kuta on the Indonesian island of Bali and ignited his explosive-laden backpack, triggering a wave of fear and causing guests to pour out on the street. The safety of the open pavement would only last a few seconds, however; a powerful car bomb was soon detonated by another suicide bomber on the crowded street in front of the nightclub.

With a death toll of 202 – many of the casualties European tourists – the terror attack in Bali appeared on the front pages of newspapers around the world. Since the attacks of September 11th, 2001, acts of international terrorism committed by groups purporting to speak in the name of Islam have been important in public discourse, and have precipitated a wave of discriminatory acts against Muslims in Western societies (Allen and Nielsen 2002; Watch 2002). At the same time, research across European countries consistently finds negative sentiments towards immigrants in general, and reveals that immigrants are often “viewed as a threat to economic success, to national identity, and to the social order” (Semyonov et al. 2006, 432; also see Ceobanu and Escandell 2010). Yet, the link between specific events and public attitudes towards immigrants is mostly anecdotal. Current research remains relatively silent on why, how, and under which circumstances an event may affect the perception of an out-group. No thorough empirical investigation has been undertaken to estimate the causal effect of events on attitudes towards immigrants across social contexts. The fact that the terror attack in Bali coincided with the fieldwork period of nine countries in the European Social Survey (ESS) provides an unique opportunity to fill this gap.

To this end, this article begins with an elaboration of a theoretical mechanism that shows why and how events affect attitudes towards an out-group, and elucidates the conditions under which this is likely to occur. In particular, I draw on group-threat and intergroup contact theory to argue that events such as terror attacks negatively affect attitudes towards immigrants. They foster the perception of an out-group as threatening and direct the attention towards potential sources of intergroup conflict such as the relative size of the out-group and economic conditions. The experiences and information from direct contact with members of the out-group, however, mitigate the role of the out-group size, and reduce the effect of the event itself. Accordingly, the response to events should be more pronounced in regions with an increasing unemployment rate, while out-group size and direct contact with immigrants interact in shaping the response

to events. To evaluate this argument, I take advantage of the timing of the European Social Survey (ESS) interviews of 2002 to design a quasi-experiment that allows me to study the impact of a single event on attitudes towards immigrants in 65 regions from nine countries. Specifically, this study uses the fact that the terror attack in Bali coincided with the interview period of the ESS in Belgium, Finland, Netherlands, Norway, Poland, Portugal, Sweden, Switzerland, and Great Britain. Using the event as a source of exogenous variation, those respondents interviewed before the attack are defined as the control group and those interviewed after the attack serve as the treatment group. In this fashion, I aim to estimate the Bali attack’s causal effect on anti-immigrant sentiments across 65 regions from nine countries. The findings from this natural experiment reveal considerable cross-national and regional variation in both the magnitude of the causal effect and its temporal duration. In two or less clearly three out of the nine countries for which the fieldwork period coincided with the terror attack in Bali (Portugal, and Poland, and Finland), the estimated causal effect is highly significant and substantial. Supporting the argument about contextual variations, the analysis on the regional level reveals that the variations in the response to the event are driven by the local unemployment rate, the size of the out-group population, and personal contact with immigrants. A second case study based on the March 2004 terror attack in Madrid and Eurobarometer data replicates important aspects of these findings and thereby reaffirms my conclusions (this second case study is part of Appendix A but the results are discussed throughout the paper).

The present study uses this unique opportunity to contribute to several areas of research: First, in examining the impact of the attacks on the relation between the majority population and immigrants in European countries, the study contributes to the empirical understanding of terrorism’s effects, and specifies the circumstances under which events such as terrorist attacks increase anti-immigrant sentiment (Spilerman and Stecklov 2009). Second, it makes a theoretical contribution to the literature on attitudes towards immigrants and group-threat theory by elaborating a mechanism for short-term and potentially long-term changes in the perception of an out-group. Finally, from a methodological perspective, the exploitation of exogenous events together with the variation in the timing of the interviews in the ESS demonstrates how the temporal embeddedness of events and survey responses can provide researchers with analytic leverage. It also reveals a potential source of bias in survey research.

# The Perception of Immigrants and Terrorist Events: Theory & Research

Public attitudes towards immigrants have been an important and extensively studied area of research. This research consistently finds negative sentiments towards immigrants across Europe, the U.S. and other countries (Ceobanu and Escandell 2010). Contact and group-threat theory as the two most prominent approaches in this literature focus on individual-level factors such as contact with out-group members or contextual-level factors such as out-group size and economic conditions (Ceobanu and Escandell 2010; Quillian 1995, 316ff). In the broader literature, however, events such as riots, attacks, or homicides play an important role and many recognize that they have the potential to shape attitudes towards out-groups. Along these lines, a number of studies explore how race riots in the second half of the 20th century have shaped race relations and public opinion. Bodo et al. (1994), for example, relies on a Los Angeles survey with a fieldwork period that coincides with the verdict in the Rodney King beating and the following 1992 Los Angeles riot to explore changes in public opinion among different racial groups. The most pronounced findings are increased negative attitudes among African-Americans about the future of race equality in the U.S. as well as a shift among Asians towards more negative stereotypes about blacks (for another study on race riots see Bellisfield 1972). Other studies have focus on different events such as military interventions or ad campaigns. Using data on complaints filed in Belgium and a simple time-series design, Jacobs et al (2011) study whether the conflict in Gaza influenced anti-Semitism. Their results show that complaints about anti-Semitism increased during the Israeli military operation Cast Lead but abated several weeks after the operation. A number of small-scale studies based on specific sub-populations (high-school or college students) also examine the effect of terror attacks on attitudes towards immigrants and at least partially confirm such an effect.<sup>1</sup> The most convincing evidence can be found in Hopkins' (2010) recent work. He relies on a panel survey conducted in Fall 2000, October 2001, and March 2002 to show that 9/11 had a profound short-term impact on attitudes towards immigrants,

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<sup>1</sup>Boomgaarden and de Vreese (2007) use a small online survey of college students studying social sciences as quasi-experimental data to investigate the impact of Theo van Gogh's assassination on November 2nd, 2004 in the Netherlands on attitudes towards immigrants. Echebarria-Echabe and Fernández-Guede (2006), and Bar-Tar and Labin (2001) conduct similar, small-scale studies. The former looks at the effect of the March 11th, 2004 terror attack in Madrid on authoritarianism, anti-Semite, and anti-Arab attitudes in Spain. The later considers the effect of a terror attack carried out by Palestinian extremists on stereotypes towards Palestinians, Jordanians, and Arabs among adolescents in Israel. A number of other studies also examine the effect of events using only post-event data and occasionally compare their results with other data sources from prior studies (Traugott et al. 2002; Noelle-Neumann 2002; Hitlan et al. 2007).

which abated by March 2002.

This research shows that events have the potential to shape attitudes towards out-groups. Yet, little is known about why, how and under which circumstances such events matter. In this study, I use a quasi-experimental research design based on large-scale surveys from nine countries and their subregions to extend this line of research and examine the circumstances under which events such as terrorist attacks increase anti-immigrant sentiment. For this purpose, I draw on group-threat and intergroup contact theory to describe a mechanism that shows why and under which conditions events such as terror attacks might affect attitudes towards immigrants (or more generally, an out-group).

## **Group-Threat and Intergroup Contact Theory**

Group threat and intergroup contact theory have been two of the most prominent approaches in the literature on both racial and anti-immigrant attitudes. Group-threat theory postulates that negative attitudes towards an out-group arise when outsiders are perceived as a threat to the privileges of the dominant group (Quillian 1995; for a classical formulation of the theory see Blumer 1958). Blalock (1967) explicates this framework and argues that perceived threats emerge from competition over scarce resources and foster negative attitudes towards the out-group. As outlined by Schlueter and Scheepers (2010), this argument involves two steps: First, actual or as some argue imagined competition between groups over scarce resources provoke a perception of the out-group as a threat to economic, and cultural privileges. Second, the perception of threat, in turn, feeds negative sentiments towards the out-group. Accordingly, the perception of threat mediates the relationship between intergroup conflict over scarce resources and anti out-group attitudes. The argument applies both to economic interests such as jobs in the labor market or access to the housing market as well as to nonmaterial issues such as “fears that immigrants could alter the prevailing way of life or the foundation of national identity” (Ceobanu and Escandell 2010, 318; also see Blumer 1958; Bobo 1999).

The most commonly used indicators of intergroup conflict or sources of perceived threat are the relative size of the subordinate group and the economic situation (Blalock 1967; Quillian 1995; Oliver and Mendelberg 2000; Meuleman et al. 2009, 589). Recent strands of group-threat theory and research from other areas also suggest a dynamic formulation of this theoretical framework. According to recent work by Meuleman et al. (2009), Hopkins (2010) and others, it is not so much the current size of an out-group population or the current economic situation that matter, but rather changes in these

two factors.

Contact theory, in contrast, generally posits that inter-group contact facilitates inter-group relations by improving attitudes towards the out-group and by reducing stereotypes (Pettigrew 1998). Allport's (1954) classical formulation of the theory and many subsequent studies focus on situational factors such as equal status, common goals, and cooperation as conditions for the positive effect of inter-group interactions. More recent empirical work, however, reports a positive effect of direct contact with out-group members even in the absence of these conditions (Pettigrew 1998, 68). Accordingly, the core premise of the theory that direct contact through close friends, coworkers or even everyday encounters mitigates negative sentiments and stereotypes towards an out-group is generally supported by empirical work. This individual-level finding is often used to derive a contextual-level hypothesis that postulates a positive effect of the relative size of the out-group, which seemingly contradict the argument based on group-threat theory. Dixon (2006) and more explicitly Schlueter and Scheepers (2010; also see Savelkoul et al. 2011) reconcile these allegedly contradicting arguments about the relative size of the out-group derived from group threat- and intergroup contact theory. According to their argument, the relative size of the out-group on the one hand fosters the perceived threat of the out-group, and on the other hand increases the chances of intergroup contact. As a result, the relative size of the out-group has both a *direct* negative effect on the perception of the out-group and an *indirect* positive effect through personal contact with members of the out-group.

## The Effect of Events on Attitudes towards Immigrants

While group threat and intergroup contact theory have been the most prominent approaches in the literature on attitudes towards racial minority and immigrant groups, they do not explicate how events might affect attitudes towards these groups. In this paper, I complement the existing theories and argue that events might alter the perception of an out-group in important ways. In particular, I first draw on group-threat theory to argue why and under which conditions events might affect attitudes towards immigrants and then discuss intergroup contact as a factor that mitigates this effect.

Even distant events such as the terror attack in Bali can foster the perception of immigrants and particularly Muslim communities as threatening. They might draw the attention towards potential sources of intergroup conflict such as the local immigrant population or the alleged economic threats posed by immigrants (Hopkins 2010). This argument is partly supported by research on the psychological consequences of terror,

which shows that terror is not only destructive in the material sense but also evokes fear and anxiety in the population (Spilerman and Stecklov 2009). Considering that groups purporting to speak in the name of Islam carried out the attacks in question, it is plausible that such fears evoked by terrorism are directed towards Muslim communities. It remains unclear, however, whether the same is true for immigrants in general. Psychological research on stereotypes, however, shows that people tend to simplify and generalize their stereotypes (Bodenhausen 1993), which can lead to undifferentiated reactions to events (Bar-Tal and Labin 2001, 276). In addition, some have argued that non-European immigrants are most noticeable and shape the perception of immigrants in general (Semyonov et al. 2008, 22). Accordingly, it seems reasonable that terror attacks by groups speaking in the name of Islam not only foster fears towards Muslim communities but also the overall immigrant population as an out-group. Along these lines, Islamic terrorism precipitated a debate about immigrants and immigration in general. From this perspective, events are a source of perceived out-group threat. They direct the attention towards existing fears related to potential intergroup conflicts such as those that result from a sizable immigrant population or changing economic conditions. Accordingly, the effect of events such as terror attacks should be related to the regional economic conditions such as the unemployment rate and the relative size of the immigrant population as well as changes in these two factors.

The role of the relative size of the out-group population, however, might be offset by personal contact with out-group members. As outlined by Pettigrew (1998, 70), one of the key mechanisms explaining the positive effect of inter-group contact is the simple “learning about the out-group”. According to this argument, direct interactions provide a source of information about the out-group that influences actors’ perceptions and potentially replaces common stereotypes. The lack of such firsthand information, in contrast, renders other information sources (such as common stereotypes or media reports) more important (Sigelman and Welch 1993, 793). Stein et al. (2000), for example, argue that, “in a racially and ethnically homogeneous context, the mass media, school, and family socialization shape Anglo attitudes and opinions about minority groups,” whereas in an ethnically heterogeneous context, “Anglos have more opportunities to form their opinions about minority groups [...] using direct contact” (Stein et al. 2000, 290). Accordingly, firsthand experience – whether through a close friend, or a co-worker – mitigates the role of other information sources, such as media reports about events. In addition, the proportion of immigrants in a particular region provides opportunities for intergroup interactions, which in turn directly affects the perception of the out-group and weakens the extent to which individuals perceive a large out-group as threatening. This argument implies

that the experiences and information from interactions with members of the out-group mitigate the role of out-group size so that out-group size and contact with immigrants interact in shaping the response to the event. It also suggests that direct contact with out-group members can reduce the effect of the event itself.

This theoretical argument describes the mechanism by which events such as terror attacks might affect attitudes towards immigrants (or more generally, an out-group). It also points at the conditions under which such an effect is likely to occur and allows us to formulate concrete expectations about regional variation in the response to the Bali and Madrid attacks. In particular, the argument suggests that events foster the perception of an out-group as threatening and direct the attention towards potential sources of intergroup conflict such as the size of the immigrant population, economic conditions, or changes in these two factors. It also suggests that the experience provided by direct contact with immigrants mitigates the role of the out-group size and reduces the size of the effect itself. In brief, the argument can be summarized in three concrete expectations. First, the response to the event is more pronounced in regions with worsening economic conditions such as an increasing unemployment rate. Second, the effect of the event is larger in regions with a sizable out-group population but only for those who have no direct contact to immigrants. Third, direct contact with immigrants reduces the effect of the event on attitudes towards immigrants itself.

## **The Bali and Madrid Bombings and the Perception of Immigrants**

How does this theoretical argument about the effect of events on the perception of immigrants illuminate the cases at hand? To answer this question, it is important to put the Bali and Madrid bombings into theoretical and historical perspective. Since 9/11, acts of international terrorism carried out by groups acting in the name of Islam have been central to the public discourse on Muslim communities, and on immigration in general. The attacks have fed a narrative around immigrants as hostile to the fundamental values of the Western world. This has precipitated a wave of discriminatory acts against Muslims in Western societies (Allen and Nielsen 2002; Watch 2002). Across the board, these terror attacks have also bolstered legislative initiatives for stricter immigration regulations. However, both the Bali and Madrid bombings raise the question of whether they had similar consequences. Both attacks occurred after 9/11, which shaped the discourse on immigrants in important ways and potentially mitigated the effect of subsequent events. The Bali attack took place in a geographically distant place. After the Madrid bombing, at least some initially blamed the nationalist terrorist group ETA (see Appendix A). De-



spite these facts, it is reasonable to argue that both attacks invoked immigration issues. First, with a death toll of 202 in Bali (many of the casualties European tourists) and 192 in Madrid both attacks ranked among the deadliest on civilian life in recent decades. As such, the events itself were devastating and traumatic, appearing on front pages of newspapers around the world. Second, previous research such as Jacobs et al.’s study about the impact of Israeli military operations in Gaza on anti-Semitism in Belgium (Jacobs et al. 2011) has shown that even distant events can influence group relations. Third, the Bali attack was at least partly targeted at European citizens—directly confronting Europe with the threat of Islamic terrorism. Historically, Europe had mostly faced nationalist terrorism (e.g. IRA and ETA) and terrorism from the extreme right and left. From this perspective, the 2002 Bali bombing constituted a new situation in the European context. At the same time, this historical background fueled the initial controversy about a potential ETA involvement in the Madrid bombing. Given the ubiquitous media coverage of both events and their respective role in the European context, it is reasonable to argue that the Bali and Madrid bombings invoked immigration issues in the public discourse as well as the general public.

## Data and Methods

The following analyses are based on data from nine countries in the first round of the European Social Survey (ESS) in 2002 (Belgium, Finland, Netherlands, Norway, Poland, Portugal, Sweden, Switzerland, and Great Britain). The ESS is a large-scale, cross-national survey project that conducts biennial surveys based on representative samples and face-to-face interviews in over 20 countries (Jowell 2003). During the fieldwork period of nine countries in the 2002 survey a major terror attack occurred: the October the 12th, 2002 suicide bombing in Bali. Since the ESS 2002 includes questions on the perception of immigrants as well as information on European subregions, this coincidence provides a unique opportunity for a natural experiment that examines the impact events may have on the perception of immigrants across different contexts. For the main analyses presented in this paper, I restrict the sample of the nine countries to the 5236 respondents in 65 regions who were interviewed in a certain time interval before and after the event.<sup>2</sup>

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<sup>2</sup>To measure attitudes towards immigrants, I exclude respondents who were not born in the respective countries, and control for the migration background of respondents’ parents. In addition, five regions had to be excluded from the analysis because the European Union revised the regional classification system NUTS (for details see below) used by the ESS. As a consequence, the regional data provided by Eurostat and the different national statistical agencies does not contain information for these changed or terminated regions.

The replication analysis based on the Madrid bombing and the Eurobarometer uses a research design that closely resembles the approach described here and is discussed in Appendix A.

## Estimation Strategy

In the following analysis, I use the terror attack in Bali as an exogenous source of variation, together with the timing of the interviews in the ESS 2002, to define the experiment’s treatment and control groups (for a similar method see Perrin and Smolek 2009; Boomgaarden and de Vreese 2007; Van der Brug 2001). Respondents interviewed in a certain time interval before the Bali event can be designated as the control group (i.e., respondents who were not exposed to the treatment condition), and respondents who were interviewed in a discrete time interval after the event can be designated as the treatment group. Figure 1 illustrates this identification strategy using the ESS 2002 data from Portugal. Formally, the treatment indicator can be defined as:

$$T_{ij} = \begin{cases} 0 & \text{if observation } i \text{ in country } j \text{ received the control} \\ & \text{i.e. was interviewed in the time interval } t_0 \text{ before the event} \\ 1 & \text{if observation } i \text{ in country } j \text{ received the treatment,} \\ & \text{i.e. was interviewed in the time interval } t_1 \text{ after the event} \end{cases} \quad (1)$$

In many ways, this identification strategy resembles a regression discontinuity (RD) design (Imbens and Lemieux 2008). In both cases, an exactly defined cutoff point (the Bali attack) in a continuous covariate  $x$  (timing of the interview) is used to define the treatment and control group. Such a design relies on two core assumptions to guarantee the ignorability of the treatment assignment (ignorability assumption).

First, the timing of the interviews across the fieldwork period or at least small differences around the cutoff point must occur by chance (i.e. the timing of the interview must be exogenous). There are, however, two potential biases that stand to subvert the assumption of complete randomization. (a) The literature on survey research has documented systematic differences in how easy or difficult it is to contact individuals. These well-documented differences create a potential *reachability bias*, since respondents who are easier to contact tend to be interviewed earlier during the survey period—a factor that might induce systematic differences between the control and treatment group. This selectivity, however, is well documented and observable. It can be handled statistically by controlling for the number of times a respondent was contacted before interviewed or alternatively for covariates that influence the reachability of respondents (mainly age,

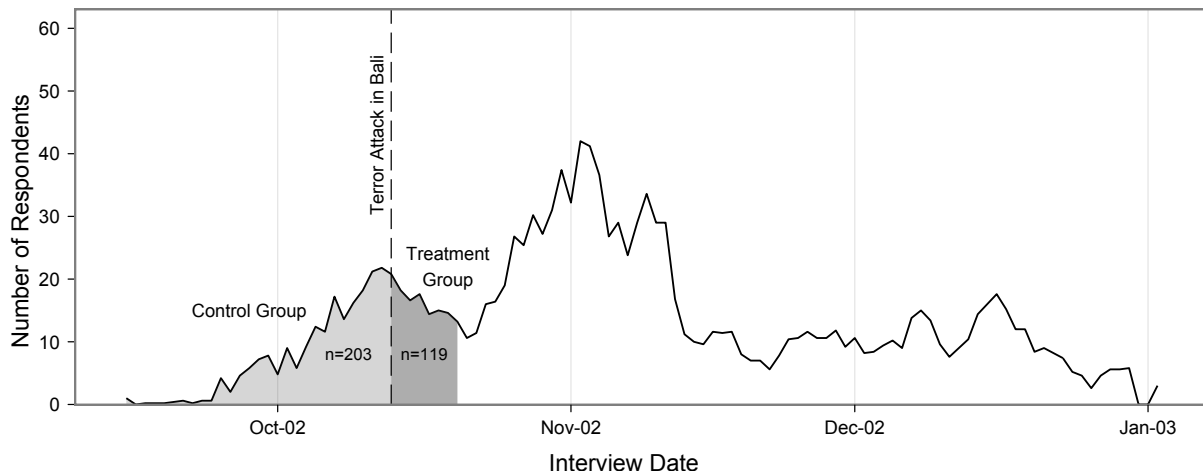


Figure 1: Illustration of Treatment and Control Group for Portugal

*Note: The graph shows the number of observations per day throughout the fieldwork period in terms of a four-day moving average. The control group (shaded in light grey) includes the respondents who were interviewed in the 30 days before the event. The treatment group (shaded in dark grey) includes the respondents who were interviewed in the week after the event.*

and employment status). (b) Large-scale cross-sectional surveys like the ESS usually rely on a multistage sampling procedure. The random selection of regionally confined sampling points during the first stage may induce a *regional sampling bias*, if the fieldwork starts later at certain sampling points for logistical reasons. Although there is no reason to believe that such a bias would be systematically related to the outcome under investigation here, I evaluate this potential bias in the next section.

Second, the identification strategy relies on the assumption that there are no other time-varying variables that are causally prior to the event and systematically related to the outcome conditional on the event (*temporal stability assumption*). This assumption is essential and implies no trend in the average outcome in the absence of the treatment. It is a consequence of the fact that not the treatment itself is randomized but instead the covariate  $x$  (timing of interview). The small differences in time and the absence of other notable events to my knowledge support the plausibility of the assumption. The plausibility can also be assessed by comparing the treatment and control groups with regard to other measures that should not be affected by the treatment. In addition, my analysis includes a simulation of fictitious events that partly evaluates whether time-varying variables that trend over longer time periods or regular temporal patterns produce results that are similar to the ones observed for the Bali terror attack. Yet, the pre-post design makes it impossible to avoid remaining bias introduced by any variable that trends over the same time period and no randomization can solve this problem.

Given these assumptions, the average causal effect of the event can be estimated with regression models and a dichotomous predictor for the treatment status:

$$y_{ijs} = \alpha_{js} + T_{ijs}\theta_{js} + \mathbf{X}_{ijs}\beta_j + \epsilon_{ijs}$$

Here,  $i$ ,  $j$ , and  $s$  are the indices for respondents, countries, and regions respectively. The coefficient  $\theta_{js}$  (for the treatment indicator  $T_{ijs}$ ) is the crucial statistic, and represents the difference in means between control and treatment group conditional on the covariates in  $\mathbf{X}$ . Under the assumptions discussed above, this difference in means can be interpreted causally as the average causal effect of the treatment on the outcome. In the first step of the analysis, I omit the regional level from this regression model and run a set of country-specific regressions that show the effect of the event separately for each country. In the second step, I use the pooled sample across all nine countries and multilevel models with a random intercept  $\alpha_{js}$  and a random slope for the treatment effect  $\theta_{js}$  on both the country and the regional level.<sup>3</sup> To evaluate my main argument about variations in the response to the event across contexts, I extend these multilevel models with a set of two- and three-way interaction terms  $\delta(T_{ijs} \times x_{js})$ .

Across all models,  $\mathbf{X}$  represents a matrix of control variables on the individual and regional level and  $\beta$  a vector of corresponding coefficients, which are of secondary interest and cannot be interpreted causally. Matching procedures are a further technique to condition on the set of observable covariates in  $\mathbf{X}$ . While the practical benefits of matching remain in dispute (Shadish et al. 2008), matching offers potential advantages that might increase the balance between the treatment and control group. For this reason, I supplement the results obtained from the regressions with estimates based on the matched sample. Further details about the matching procedure are presented in Appendix B.

## Plausibility of Ignorability Assumption and Imbalance between Control and Treatment Group

The estimation of the causal effect as described in the last section depends directly on the plausibility of the ignorability assumption, and the balance between the control and treatment groups. In order to evaluate this assumption, Figure 2 presents the imbalance

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<sup>3</sup>The multilevel models not only adjust the standard error for clustering on the regional and country level but also address the potential problem of the small sample size in some of the regions. The so-called empirical Bayes estimates are a weighted average of the estimates from a certain region and the overall estimate for the larger population (which is the prior information from a Bayesian perspective) in which the weighing depends on the available information for the respective region. Because of this, multilevel models provide the best estimates for all regions and are suited perfectly for applications in which the number of cases is small for some regions (for a discussion of this see Gelman and Hill 2007).

between the treatment and control group in terms of the standardized difference in means (x-axis) and the variance ratio (y-axis) in the raw data and the matched sample for 22 covariates in Portugal (the imbalance for the other countries are presented in Appendix B).<sup>4</sup> The figure includes a number of “pre-treatment” variables as well as the propensity-score as the predicted probability of receiving the treatment from a logit model.<sup>5</sup> As indicated by a grey rectangle in the figure, Rubin (2001) suggests that the absolute standardized differences in means should not be greater than 0.25 and the variance ratio should be between 0.5 and 2. Generally, balance should be reduced without limit (Imai et al. 2008, 498). For most variables, the balance is within these limits even for the raw data. Some, however, fall outside this threshold, which suggests a small but present imbalance between the two groups. To improve covariance balance, the final analysis conditions on a number of control variables, using both standard regression techniques and matching procedures. The graph on the right side of Figure 2 shows that the imbalance between the groups is considerably reduced in the matched sample. The full table in Appendix B, however, also reveals that imbalance slightly increases for some covariates. This usually occurs when the balance in the raw data is already very high (Stuart 2010, 12).

In addition to providing information about the overall balance, the differences in means can be used to evaluate the two assumptions discussed above. The pattern observed in Finland bears out our expectations about the *reachability bias* (Appendix B). The treatment group is on average slightly younger, and the proportion of people who are retired and who work from home is lower. Portugal, by contrast, does not conform with this expectation (indicated in the figure). In the remaining countries, the treatment group is generally slightly younger, but the pattern varies in the case of working status. Such variation between the countries, in terms of the characteristics potentially affected by the reachability bias and the near lack of notable differences, suggest that even these differences are likely to result from a random process. This result indicates that the potential selection bias due to reachability exerts only a *minor* influence on the assignment of control and treatment conditions.

I also evaluate the potential *regional selection bias* created by the multistage sampling procedure. Figure 2 includes some measures that are regionally clustered, such as education, time lived in area, a measure of religion, the number of household mem-

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<sup>4</sup>Note that a comparison of means and variances does not necessarily imply that the groups are balanced, since balance requires that the multivariate distribution for all covariates is the same for the treatment and control groups.

<sup>5</sup>The covariates are age, age square, female, education (years), education (categorical), working status (categorical), number of household members, voted during last election, Christian, urban area, time lived in area, and a number of interaction terms.

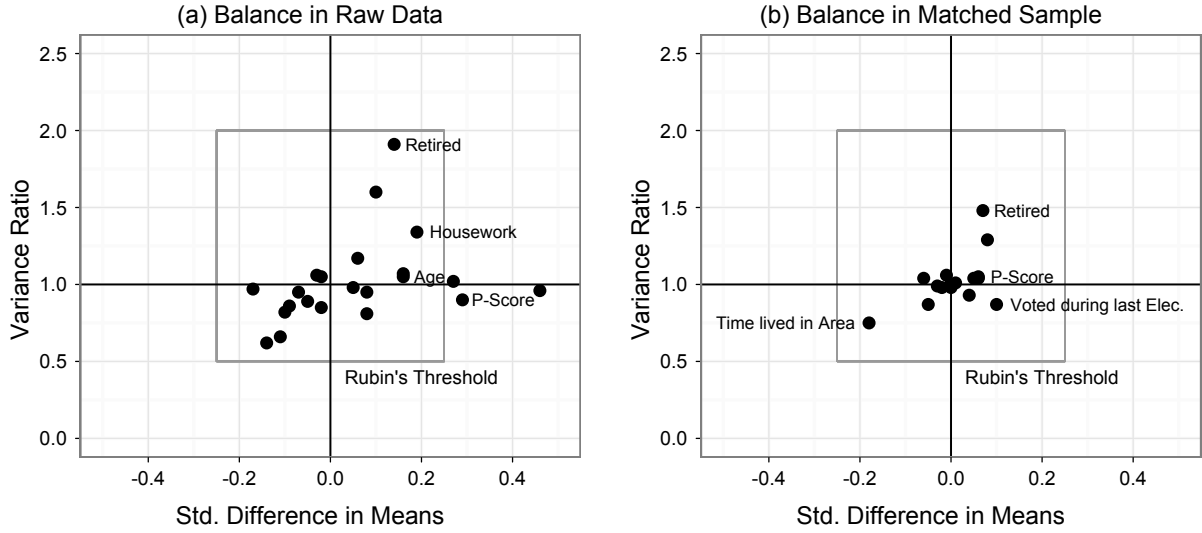


Figure 2: Imbalance between Treatment and Control Group for Portugal

*Note: The figure shows the imbalance in terms of the standardized difference in means and the variance ratio between the treatment and control group in the raw data and the matched sample for 22 covariates in Portugal. The graph for the raw data highlights variables that are relevant for potential selection processes and the one for the matched sample covariates that are less well balanced. The imbalance measures for the other countries are presented in Appendix B.*

bers, and the urban location. Since a regional selection bias should be reflected in these measures, the absence of any significant differences—along with the generally small imbalance—indicates that the regional bias created through the time difference between the two groups is ignorable.

Overall, three conclusions can be drawn from these findings: First, the results indicate that the two potential selection biases (reachability bias and regional sampling bias) exert only a minor influence on the assignment of the treatment condition. Second, the generally small imbalance and insignificant differences between the treatment and control group in the raw data in terms of “pre-treatment” variables support the plausibility of the time-invariance assumption. Third, conditioning on observable variables (illustrated with the matched sample) further increases the balance for most variables but not all. Using both regression and matching techniques helps to increase the confidence in the results by showing the robustness of the findings to different model specification.

## NUTS Regions, Variables, and Missing Data

The respondents of the ESS are both nested in countries and regions. The subregions are defined by the Nomenclature of Statistical Territorial Units (NUTS) classification, which

is a hierarchical geocode standard that divides the territory of the EU as well as some non-EU countries into three levels of subregions (NUTS 1, 2 and 3). The regions are based on socio-economic, cultural and historical characteristics to represent relative homogenous areas. The classification system distinguishes between 97 major socio-economic regions with a population of 3 to 7 million (NUTS 1), 271 basic regions with a population of 0.8 to 3 million (NUTS 2), and 1303 small regions with a population of 0.15 to 0.8 million (NUTS 3). The regional level provided by the ESS depends on the respective country so that the following analyses are based on NUTS 1 regions for Belgium and Great Britain and NUTS 2 for the remaining countries.<sup>6</sup>

The ESS 2002 module on immigration provides a range of indicators on attitudes towards immigrants. The dependent variable used in the following analysis is constructed from six of these items each of which is measured on an eleven-point scale ranging from 0 to 10. The same items have previously been used in research on attitudes towards immigrants (Semyonov et al. 2008), so that the measure relates directly to the literature. The questions focus on the impact foreigners have on different aspects of society, and the extent to which they are perceived as a threat. The perception of impact and threat is an important aspect of the public discourse on immigration issues and directly related to group-threat theory and the overall theoretical argument. In particular, the questions refer to the impact foreigners or more precisely “*people who come to live here from other countries*” have on the job situation, the welfare system, the economy, cultural life, general living conditions, and crime. Table 1 includes the exact wording of each question, as well as some summary statistics for the pooled sample of the nine countries in the analysis.

I use exploratory maximum likelihood factor analysis to construct the dependent variable from the six items. Previous research (Semyonov et al. 2008, 11) and my own results suggest that the six items belong to the same factor.<sup>7</sup> This factor can be understood as an index of how the local population perceives immigrants’ impact on their society. The final analysis presented below is based on the factor score from this exploratory maximum likelihood factor analysis. Factor loadings and uniqueness are shown in the right columns of Table 1. Higher values of this variable can be interpreted as an increase in anti-immigrant attitudes and the factor score variable was standardized by the standard deviation of the control group.<sup>8</sup>







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<sup>6</sup>The regional level provided by the ESS ranges from NUTS 1 for Belgium and Great Britain to NUTS 3 for Netherlands. Some of the covariates, however, are not available for NUTS 3 regions so that the data for Netherlands are aggregated to the NUTS 2 level.

<sup>7</sup>Only one of the factors has an eigenvalue above 1 (Kaiser criterion) and all the variables have factor loadings above 0.5 (with most above 0.6).

<sup>8</sup>An additional issue concerns the measurement equivalence of the factor across countries—something

Table 1: Description of Dependent Variables and Factor Analysis

Variable	Mean	Std. Dev.	Scale	Distribution	Factor Analysis	
					Factor Loadings	Uniq.
“Would you say that people who come to live here generally take jobs away from workers in [country], or generally help to create new jobs?”	5.20	2.01	0-10		0.61	0.63
“Most people who come to live here work and pay taxes. They also use health and welfare services. On balance, do you think people who come here take out more than they put in or put in more than they take out?”	5.73	2.13	0-10		0.60	0.64
“Would you say it is generally bad or good for [country]’s economy that people come to live here from other countries?”	5.07	2.16	0-10		0.77	0.40
“And [...] would you say that [country]’s cultural life is generally undermined or enriched by people coming to live here from other countries?”	3.97	2.22	0-10		0.69	0.52
“Is [country] made a worse or a better place to live by people coming to live here from other countries?”	5.21	2.05	0-10		0.76	0.42
“Are [country]’s crime problems made worse or better by people coming to live here from other countries?”	6.93	1.93	0-10		0.52	0.73

N= 4,315; Note: Mean, standard deviation, and distribution refer to the pooled sample for the control and the treatment group across all nine countries.



The crucial independent variable – the treatment indicator  $T_{ij}$  – has been specified generally in equation (1). The control group includes all respondents who were interviewed 30 days before the event. The treatment group includes the respondents who were interviewed in the week after the event so that the interval ranges from October 14-20, 2002 (for an illustration see Figure 1).<sup>9</sup> This time interval should be as small as possible, while still containing a sufficient number of cases.<sup>10</sup> In the case of the 2002 ESS, seven days turned out to be a fruitful compromise between these two criteria. Similar results were obtained with other intervals (available from the author). In a later step of the analysis the interval for the treatment group was gradually shifted, in order to examine the decline of the treatment effect over time.

In addition to the treatment indicator, the second step of the analysis includes a number of important covariates that are part of interaction terms to evaluate the argument about variations in the response to the event. First, my argument suggests that the response to the event should be more pronounced in regions with a high or increasing unemployment rate. The corresponding variables are collected from Eurostat and defined as the regional unemployment rate in 2002 and the change in the rate between 2001 and 2002 (the results reported in this paper are based on the change in the unemployment rate but the findings for the two variables are essentially the same). Second, I have argued that the effect is larger in regions with a high proportion of immigrants for respondents who have no direct contact with immigrants. To evaluate this argument, I measure the relative size of the immigrant population in terms of the proportion of the population that is non-national. This measure is based on the 2001 Census and administrative data provided by the Belgium statistical agency *Statbel*.<sup>11</sup> There is no reliable and comparable

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that is important for analyzing how psychological constructs change across countries. Using a similar but not identical latent variable to measure attitudes towards immigrants in the ESS, Meuleman et al. (2009, 357ff) have shown that there is indeed metric invariance. Such invariance is a prerequisite for the meaningful interpretation of cross-national variations in the effect of the event (Vandenberg and Lance 2000).

<sup>9</sup>Respondents who were interviewed on the day of the event are not included in the analysis because it is unclear whether they were already informed about the event.

<sup>10</sup>The time interval should be as small as possible because a smaller time interval reduces the potential for bias. Similar to a regression discontinuity design (Green et al. 2009), including observations that are more distant from the event increases the likelihood that the potential sources of bias (*reachability bias* and *regional sampling bias*) exert a greater influence on the assignment of the treatment condition. A larger time interval also increases the likelihood that there are other time-varying variables that are causally prior to the event, and systematically related to the outcome conditional on the event (*temporal stability assumption*). A smaller time interval around the cut-off point, however, decreases the number of cases and therefore the precision of the estimates. To address this trade-off, I have selected a time-interval that balances these two criteria, and examined whether the results are sensitive to the size of the time interval.

<sup>11</sup>A drawback of this measure is the fact that it defines immigrants as non-nationals. In contrast to immigrants, non-nationals do not include naturalized immigrants, which might be problematic consider-

regional measure for earlier periods so that it is only possible to examine the argument for the size of the immigrant population in 2001 and not for changes over time. Third, I expect that direct contact with immigrants mediates the relation between the relative size of the out-group population and the response to the event, and reduces the effect of the event itself. Direct contact with immigrants is measured using two variables in the ESS survey that ask respondents whether they have any “friends” or “colleagues at work” “who have come to live in [country] from another country?”. Based on these two variables, I have created a dummy variable that is coded as zero for respondents who have neither friends nor coworkers with an immigration background and as one for those that have either friends or coworkers.

Finally, the models include a number of control variables on the individual and regional level, which improve the balance between the control and treatment groups. They are selected based on previous research, the potential selection biases discussed above, and the question whether they are clearly pre-treatment. An additional interaction term is included between two of the most important covariates because the inclusion of this term increases the balance between the treatment and control group. The variables are age, sex, education, working status, urban/rural location, the number of household members, an indicator noting whether a respondent’s parents were born in the country in question, and an interaction term between education and location on the individual level. A separate sensitivity analysis also adds the number of times a respondent was contacted before interviewed to the country level regressions (the variable is not part of the main analysis because it is only available for eight out of the nine countries). The multilevel models also add a number of regional control variables. These variables include population size, population density, the unemployment rate in 2001, and the proportion of residents with no more than primary education in 2001. All variables are described in Table A3.

The data includes 12.2% of cases with missing values on any of the variables used in the analysis. These missing values are mainly on the dependent variable (11.3%) so that multiple imputation would add little information to the regression (e.g. Little 1992). Accordingly, the main analysis presented in this paper is based on case-wise deletion but essentially the same results were obtained based on multiple imputation.<sup>12</sup> A potential

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ing differences between countries in terms of naturalization policies. To my knowledge, this is the only available, high quality regional data across all nine countries that can be used as a proxy for the relative size of the immigrant population. The measure is closely related to other variables that are available for a subset of the countries such as the proportion of the population that was born in a different country (correlation: 0.92). In addition, my regional analysis includes a country-level fixed effect model, which controls for all country level factors such as differences in immigration policies.

<sup>12</sup>The imputation was performed separately for each country using both the multivariate normal

problem, however, is that the event changes the response behavior insofar as certain respondents are less willing to answer questions about immigration after the event. To explore this possibility, I use country-specific logistic regressions to model 'missing on dependent variable' as a function of the treatment indicator, the control variables, and interaction terms between the treatment indicator and each of the control variables. The results show that the response behavior is not influenced by the event. From the 135 relevant regression coefficients (treatment indicator plus interactions for each country) only 2% have a p-value below 0.05 and 0% below 0.01. In addition, the direction of effects does not reveal any systematic pattern. This finding indicates that the response behavior was not influenced by the event and therefore most likely does not affect my analysis.

## Results

### The Causal Effect of the Terror Attack in Bali: Cross-National Variations and Temporal Duration

I begin my analysis with a set of country-specific regressions that show the effect of the event on attitudes towards immigrants for each of the nine countries. The point estimates and 95% confidence intervals of the standardized treatment effect ( $\theta_j$ ) for the terror attack in Bali on October the 12th 2002 are presented in Figure 3a and Table A1. The results show that the treatment effect is significant in Portugal, Poland, and Finland. The size of the effects is substantial. For all three countries, it is larger than the difference between male and female respondents and comparable to the effect of 7.3 years of education in Portugal, 5.1 in Poland, and 3.2 years in Finland.<sup>13</sup> These effects are impressive especially considering that education has been a major determinant for attitudes towards immigrants in the literature (Ceobanu and Escandell 2010, 319). In the other six countries, the effect is smaller and statistically insignificant with a negative point estimate for three out of the nine countries.<sup>14</sup> Similar results were obtained by using

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model (reported here) and the chained equations approach (Gelman and Hill 2007, Ch. 25). Additional questions about immigrants and some other important measures (such as health and religiosity) were included as auxiliary variables to improve the imputation model. The results for the two approaches are nearly identical.

<sup>13</sup>The effect of one additional year of education was estimated as -0.06 standard deviations in a simple binary regression using the pooled sample across all nine countries without any additional covariates.

<sup>14</sup>Given the multiple comparisons between the control and treatment groups and the fact that the point estimates are not consistently positive, it is important to consider the possibility that chance alone produces the appearance of a significant effect in three out of nine countries. To address this problem, I have calculated the adjusted test statistics based on the Bonferroni correction, which corresponds to a

the matched sample (see Table A1). In particular, the estimated effects for Portugal, Poland, and Finland, based on the matched sample, are substantial and statistically significant: 0.46, 0.31, and 0.16 standard deviations respectively (or 7.9, 5.5, and 2.8 years of education). The p-values are slightly higher, especially for Poland, but are below the 0.05 threshold in all three cases. Adding the number of times a respondent was contacted before interviewed as an additional control variable to the regressions for eight of the nine countries leads to almost identical results.

The same analysis for the Madrid bombing based on Eurobarometer data presented in Appendix A similarly shows substantial cross-national variations in the response to the event with a clear effect only in a subset of the countries. Importantly, the size of the effect in Spain indicates that national events can be far more influential compared to distant terror attacks such as the Bali bombing. In particular, the effect in Spain corresponds to 25 years of education (the original scale is not comparable). The proportion of the Spanish population who considers immigration as one of the most important issues facing their country jumped by 12.9% from 8.3 to 21.2% immediately after the attack (average predicted difference).

## Fictitious Event Simulation

At this juncture, it is important to consider the possibility that temporal variation in the sample or other time-varying factors apart from the event such as regular temporal patterns produce a similar result. To address this question I use a simulation-based approach to calculate the probability of observing a similar result for fictitious events. This simulation of random events allows me to partly evaluate the two core assumptions of the estimation strategy discussed above (the assumption of exogenous interview timing and temporal stability). If either of these two assumptions were violated, we would expect to observe similar results for randomly picked – i.e. fictitious – events.<sup>15</sup>

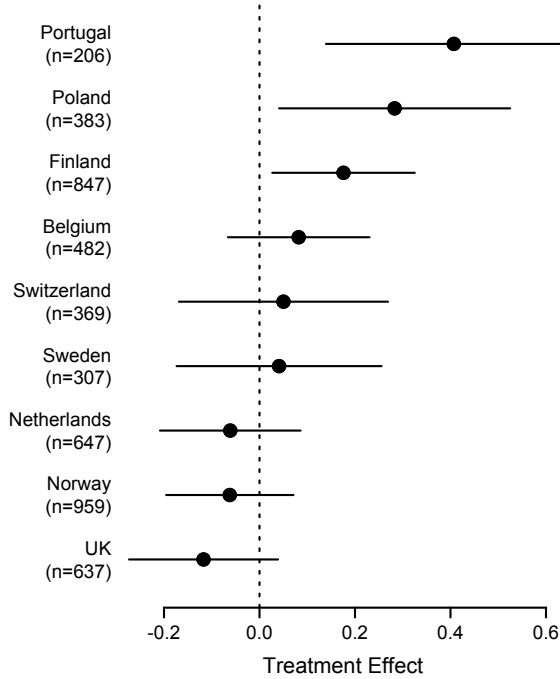
To conduct this simulation, I randomly select days from the ESS fieldwork period, significance level of  $\alpha/9$  (nine for the number of comparisons) and is generally considered a conservative adjustment. After this adjustment, the treatment effects for Portugal and Poland remain marginally significant at  $p < .1$ . The effect for Finland, however, is not significant after the Bonferroni correction is taken into account. These findings indicate that the observed effects for Portugal and Poland are unlikely to occur by chance even after taking the multiple comparisons into account, while the effect for Finland might well be the results of chance alone. The second step of the analysis based on regional data and the pooled sample of all nine countries circumvents the problem of multiple comparisons and therefore further extends the tests performed here.

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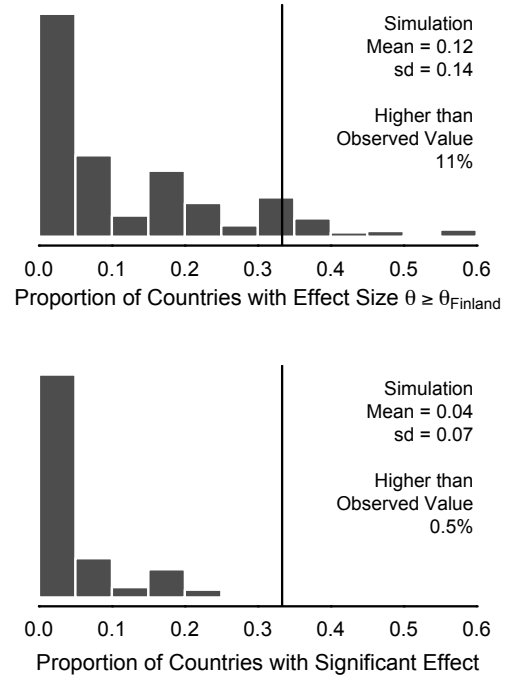
<sup>15</sup>Note that this is only true for time-varying variables that trend over longer time periods or regular temporal patterns such as differences between weekdays and weekends. It might still be the case that a time-varying variable trends over the same time period as the Bali terror attack but not during other periods of the ESS fieldwork.

Figure 3: Estimated Treatment Effect for the Terror Attack in Bali

(a) Estimated Treatment Effect



(b) Fictitious Event Simulation



excluding the days around the actual terror attack. I then use respondents who were interviewed 30 days before these fictitious events as the control group, and respondents who were interviewed in the week afterwards as the treatment group.<sup>16</sup> Since the number of countries in the simulation varies, the two statistics used for the simulation are based on the proportions of countries that (a) have a standardized effect size at least as big as in Finland, and (b) demonstrate a significant treatment effect. Figure 3b presents the distribution of these proportions from the simulations (i.e. the simulated sampling distribution) for the effect size (top) and the significant effects (bottom), as well as the observed proportion of 3/9 (vertical lines). The figures show that the mean from the simulations is much smaller than the observed proportion, and that the probability of obtaining at least the same proportion as observed (i.e. the p-value) is 0.1 for effect size and 0.01 for significant effects. Although the sample size is relatively small for some of the countries under analysis, these estimates are conservative, since they do not take into account the much larger effect sizes and smaller p-values for Portugal and Poland.

<sup>16</sup>I completed 1000 simulations, using all countries for which there were at least 20 respondents in both the control and treatment groups. The distributions presented in Figure 2b are based on simulations including at least 3 countries. This reduced the number of simulations to slightly below 400.

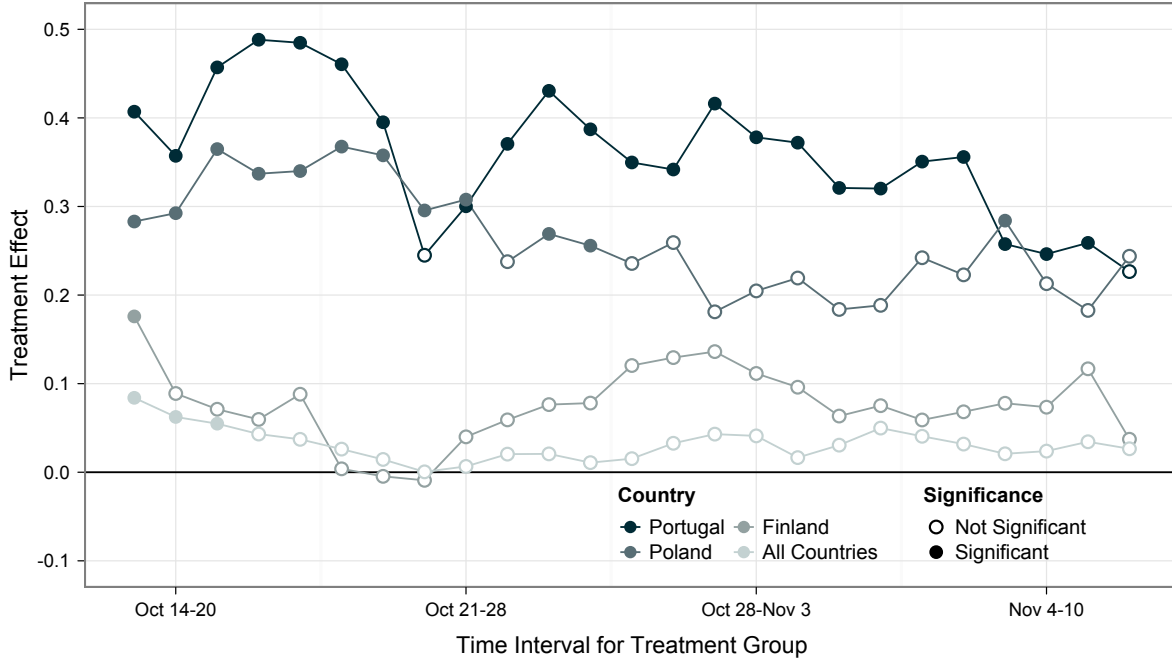


Figure 4: Decay of Treatment Effect (Terror Attack in Bali) over Time

*Note: The figure shows the decay of the treatment effect for Portugal, Poland, Finland and the pooled sample of all nine countries over time. The estimates are based on a series of regression models with incrementally changed and overlapping time intervals for the treatment group.*

In sum, the results of the fictitious event simulation show that the effects observed for the three countries are highly unlikely to occur for randomly picked events. This finding indicates that temporal variations in the sample based on differences in the timing of interviews or other time-varying factors apart from the event such as regular temporal patterns are unlikely to produce the observed result for the terror attack in Bali.

### Decay of the Effect over Time

The next segment of the analysis looks at the temporal duration of the effect. I use a moving window approach to examine the decay of the increased salience over time. More specifically, I estimate a series of regression models by 'moving' the time interval for the treatment group as shown in Figure 1 away from the event. Accordingly, the control group remains the same, while the time interval for the treatment group changes by one day. The result is a series of estimates for the causal effect from the incrementally changed and overlapping time intervals for the treatment group, which permits us to see the temporal duration of the effect.

Figure 4 presents 25 estimates obtained by this method in chronological order for Portugal, Poland, and Finland. The overall estimates from the pooled sample (all nine

countries) with an additional term for country fixed effects are included for comparison. The graph clearly shows that the effect of the event was substantially larger in Portugal and Poland than in Finland. The graph also shows that this larger effect in Portugal and Poland declined after some time, but still remained at a relatively high and for Portugal statistically significant level until the end of the period covered in the graph several weeks after the event occurred. Finland, by contrast, shows an immediate drop after the first week, and the effect remains at this low level until the end of the period covered in the graph; a finding that might further question a short-term effect in Finland. Note that these differences in the treatment effects' decline should be interpreted with caution, since the difference in the estimated effects are not significant for some of the estimates and the sample size fluctuates substantially particularly for Portugal.<sup>17</sup> Still, the results are suggestive: in Portugal and Poland, the Bali attack appears to have had a profound short-term effect on attitudes towards immigrants that slightly abates over time but is still observable several weeks after the event.

## **Regional Variations in the Causal Effect of the Terror Attack in Bali**

The findings on the country level show substantial cross-national variations in the size of the causal effect but the small number of cases limits the opportunities to examine the variations of the response to the event across contexts. To circumvent this problem and evaluate my argument about contextual variations in the response to the event, I now examine the variations of the treatment effect across 65 subregions in the nine European countries. The theoretical argument presented in this paper suggests that, first, the response to the event should be more pronounced in regions with an increasing unemployment rate. Second, the effect of the event should be larger in regions with a sizable out-group population for those that have no direct contact with immigrants. Third, direct contact with immigrants should reduce the effect of the event on attitudes towards immigrants itself. To evaluate these hypotheses, I run a set of multilevel models with a random intercept and a random slope on the country and regional level based on the pooled sample with all nine countries and a set of interaction terms between the treatment effect and the three relevant covariates (the models also include additional control variables on the regional level).

Table 2 presents the results from these multilevel regressions. Model I first shows

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<sup>17</sup>This fluctuation in sample size is also reflected in the stronger variation in the treatment effect over time for Portugal. The reason for this variation is that the number of cases varies from day to day so that moving the time interval by one day might result in relative large differences in sample size.

Table 2: Treatment Effect of the Terror Attack in Bali across NUTS Regions

	Model I		Model II		Model III		Model IV		Model V	
	Coef	(se)	Coef	(se)	Coef	(se)	Coef	(se)	Coef	(se)
<i>T</i> - Treatment Effect of Bali Attack	0.02	(0.06)	0.05	(0.05)	0.06	(0.06)	0.00	(0.39)	0.03	(0.11)
<i>Interaction Terms</i>										
<i>T</i> x Increase in Unemployment Rate			0.11**	(0.04)	0.11**	(0.04)	0.10*	(0.05)	0.09	(0.06)
<i>T</i> x Contact with Immi.			-0.08	(0.08)	-0.06	(0.08)	-0.05	(0.08)	-0.04	(0.08)
<i>T</i> x Proportion of Immigrants			0.07	(0.05)	0.14*	(0.06)	0.14*	(0.07)	0.24**	(0.09)
<i>T</i> x Proportion of Immigrants x Contact with Immigrants					-0.17*	(0.09)	-0.18*	(0.09)	-0.17*	(0.09)
<i>Individual Level Covariates</i>										
<i>Regional Level Covariates</i>	✓		✓		✓		✓		✓	
<i>Country Level Covariates</i>	✓		✓		✓		✓		✓	
<i>Country Level Fixed-Effects<sup>a</sup></i>							✓		✓	
<i>Random Effects (Regions)</i>										
SD for Intercept	0.14		0.15		0.15		0.15		0.13	
SD for Treatment Effect	0.09		0.06		0.06		0.07		0.07	
<i>Random Effects (Countries)</i>										
SD for Intercept	0.29		0.27		0.28		0.23			
SD for Treatment Effect	0.13		0.12		0.13		0.17			

$N=4,315$ ;  $N$  (regions)=65; \*  $p < 0.05$ , \*\*  $p < 0.01$

Note: All continuous variables are standardized with a mean of zero and a standard deviation of one. Lower level interaction terms are omitted from the table. A detailed description of all control variables is part of Table A3.

<sup>a</sup> The country level fixed effects include a set of interaction terms for country-specific treatment effects.



that the effect of the Bali terror attack across all nine countries is small and insignificant. Model II and III add a number of interaction terms to evaluate the argument about the conditions under which the effect of the terror attack is more pronounced. The findings relate to the three hypothesis formulated above. First, the results from Model II indicate that the effect of the event is stronger in regions that have experienced a recent increase in the unemployment rate. This common measure in the literature on group-threat theory shows a strong and statistically significant relation to the size of the treatment effect (the same pattern emerges with a measure for the level of and not change in the unemployment rate). In regions with an average increase in the unemployment rate, the treatment effect is relatively small and still statistically insignificant (note that the size and significance of the main effect for the treatment indicator depends on the scaling of the other variables). In places where the unemployment rate has increase at a higher rate, however, the response to the event is more pronounced. This finding is in line with the theoretical argument that events such as the terror attack in Bali might direct the attention towards potential sources of intergroup conflict. Figure 5 illustrates this relation and shows the empirical Bayes estimates from both the fixed and random effects part in Model II for the size of the treatment effect in the 65 regions across the nine countries (the size of the points refers to the population in the respective region). The regions from the two countries with a large effect of the event (Portugal and Poland) are also those with an high increase in the unemployment rate from 2001 to 2002. Particularly interesting are the four regions from these countries with a modest increase in the unemployment rate of about 0.5 percent (solid black dots at around 0.5 on the x-axis and 0.1 on the y-axis). In line with the overall pattern, these four regions show no or a very modest response to the event. The four Finish regions, however, are some of the outliers with a low increase in unemployment but a treatment effect as large as 0.2 standard deviations.

The same pattern emerges in my analysis of the 2004 terror attack in Madrid. As shown in Figure A1b, the effect of the Madrid bombing on the extend to which respondents consider immigration an important issue for their country is larger in regions with an increasing unemployment rate. This replication based on a second case reaffirms my results from the Bali analysis and further supports the argument that the response to terror attacks is shaped by the local unemployment rate as a potential source of intergroup conflict.

Second, the interaction between the treatment effect and contact with immigrants in Model II shows that the treatment effect is larger for those without immigrant friends or coworkers. The interaction effect, however, is only marginally significant. Accordingly, the evidence for my argument that direct contact with immigrants reduces the response

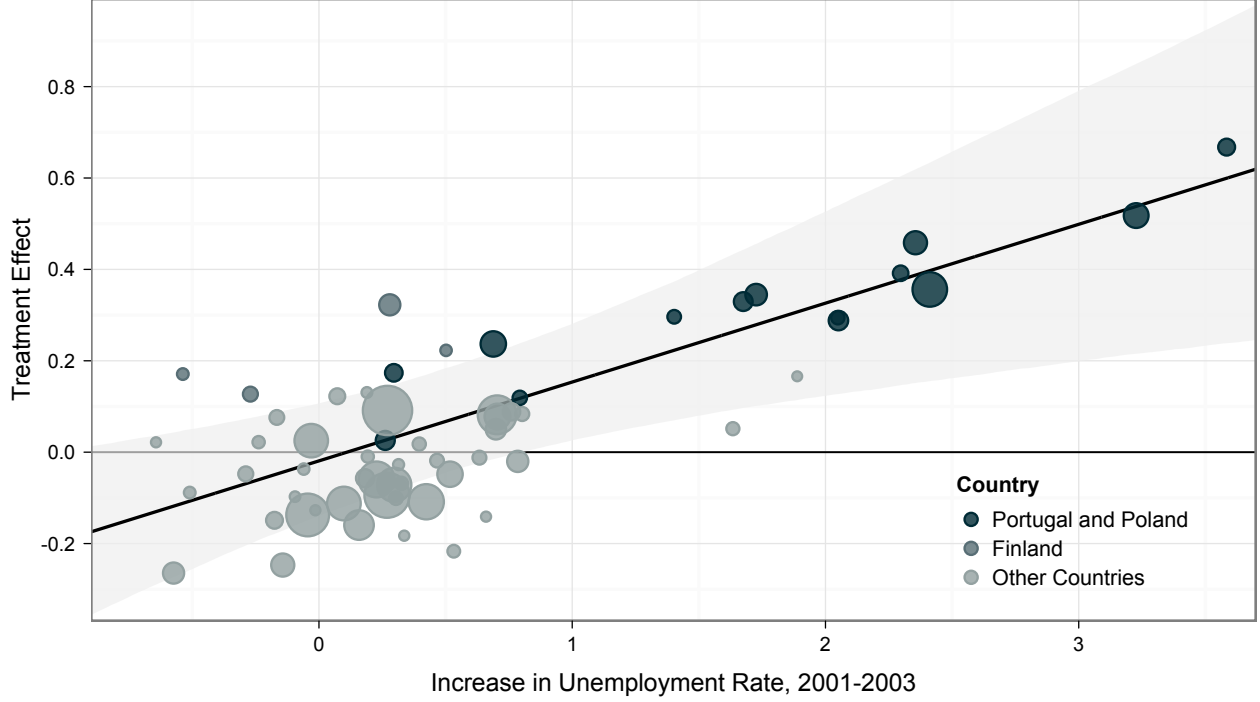


Figure 5: Changing Unemployment Rate and the Response to the Terror Attack in Bali

*Note: The figure shows the relation between changes in the unemployment rate and the response to the event across 65 European regions. The size of the dots refers to the size of the population in the respective region. The graph indicates that the response to the event was more pronounced in regions with an increasing unemployment rate.*

to event itself is not conclusive.

Third, Modell II shows that the point estimate for the interaction between the treatment effect and the proportion of immigrants is small and statistically insignificant. Only adding the three-way interaction term between the treatment effect, the regional proportion of immigrants, and contact with immigrants in Model III reveals how the size of the immigrant population and contact to the out-group interact in shaping the response to the event. As expected and illustrated in Figure 6, the proportion of immigrants in the local context only increases the response to the event for those that do not have direct contact with immigrants. For those that either have friends or coworkers with an immigration background, however, the size of the treatment effect does not depend on the size of the immigrant population in the local environment.

Overall, the results support the argument presented above. They indicate that the response to the event is more pronounced in regions with an increasing unemployment rate and show that the size of the out-group only plays a role for respondents that do not have direct contact with immigrants. Such direct contact with out-group members

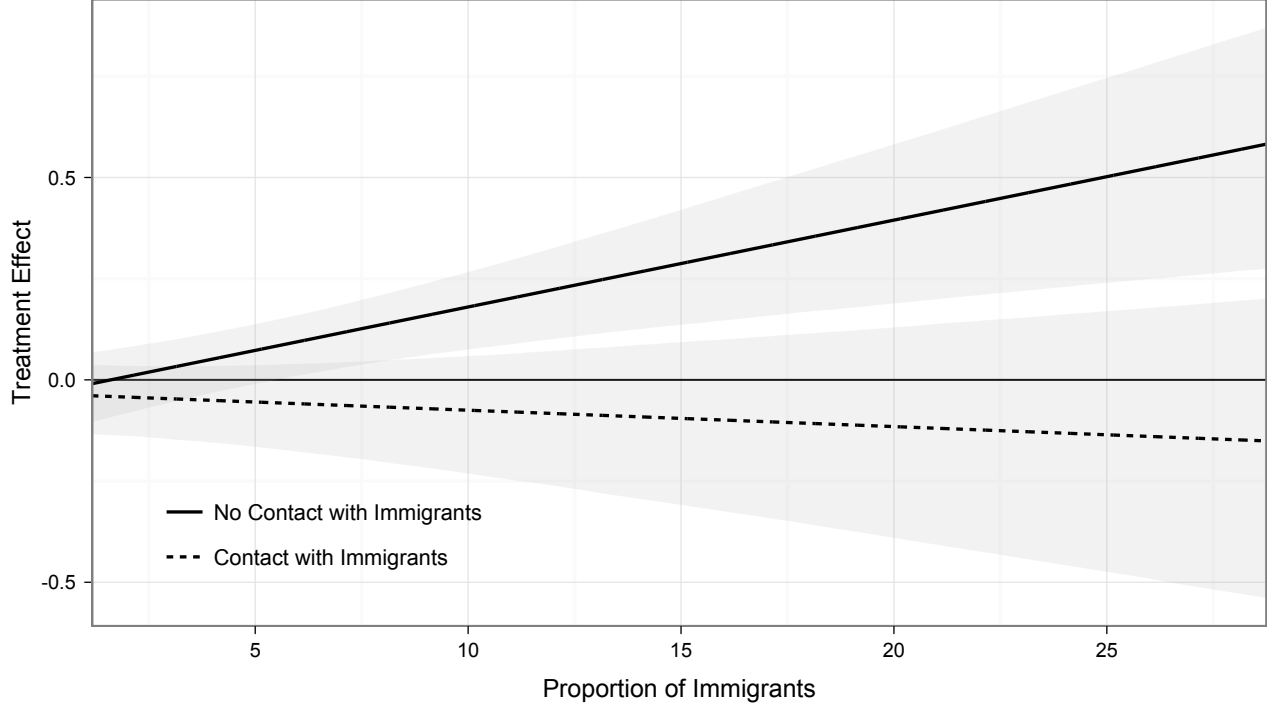


Figure 6: Size of Immigrant Population, Contact with Immigrants and the Response to the Terror Attack in Bali

*Note: The figure shows the relation between the relative size of the immigrant population, and the response to the event for those that have friends or coworkers with an immigration background and for those that have no direct contact with immigrants.*

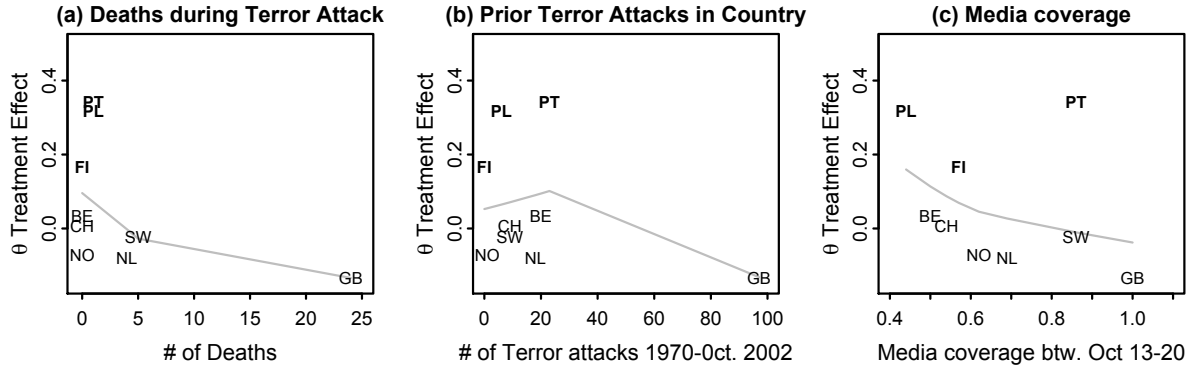
not only mitigates the role of the relative out-group size but there is also partial evidence that direct contact reduces the effect of the event itself. As most clearly shown in Figure 5, these findings also offer an explanation of the cross-national variations in the response to the event documented in the last section.

### Alternative Explanations and Robustness Checks

The findings presented in the last section offer a convincing explanation of the cross-national and contextual variations in the treatment effect. It might nonetheless be the case that certain country level factors explain the cross-national variations in the response to the event and not the contextual argument evaluated in the last section.

First and most obviously, variation in the national significance of the event could explain the differences in the effect of the attack on attitudes toward immigrants. The number of fatalities experienced by citizens of a particular country may be conceived as an index of the “importance” of the event to that country. Second, countries such as Great Britain have had significant (and recent) experience with domestic terror attacks.

Figure 7: Cross-National Variations of the Treatment Effect (Terror attack in Bali)



BE Belgium, FI Finland, NL Netherlands, NO Norway, PL Poland, PT Portugal, SE Sweden, CH Switzerland, GB Great Britain

Hence, Britons may have experienced the distant terror attack in Bali as less immediate, compared to residents of countries that have no prior experience with domestic terrorism. This expectation is consistent with the argument put forward by other researchers, to make sense of the relatively mild psychological response to the London bombings of July 2005 (Rubin et al. 2005) and the Madrid bombing in March 2004 (Lopez-Rousseau 2005). In both cases, the authors suggested that experience with terrorism – IRA violence for Great Britain, and the ETA attacks for Spain – played a role in mitigating citizens’ reactions to the attack. Third, differences in the amount of media coverage of the event might play an important role in shaping the response to the event. The amount of reporting on the attacks might be seen as a reflection of the event’s national importance and also as a source of variation in its own right.

To evaluate these competing accounts, I extend the multilevel models with country level data on the number of casualties, the number of prior terror attacks in the respective country<sup>18</sup>, and the extent of media coverage.<sup>19</sup> The extended regression model (Model IV in Table 2) indicates that the results reported in the last section are not sensitive to these additional country-level factors and the bivariate scatterplots shown in Figure 7 suggest that neither of the three measures is clearly related to the size of the effect in the

<sup>18</sup>The data on the number of terror attacks was collected from the GTD Global Terrorism Database and refers to the national terror attack with at least one casualty between 1970 and October 2002 ([www.start.umd.edu/gtd](http://www.start.umd.edu/gtd) accessed on June the 2nd 2009). I have experimented with different time periods, and without the restriction to attacks with at least one casualty. The results are essentially the same.

<sup>19</sup>The measure is based on the average proportion of days from October 14-20 on which the Bali terror attack was covered in newspapers for each country. Appendix C contains a detailed discussion of the selection of newspapers, the coding procedure, and a list of the newspapers. The results presented here are only based on one of the variables derived from the actual coding of the newspapers, all of which lead to similar results.

respective country. This finding, of course, indicates nothing about the content of media coverage – an issue I take up in the conclusion.

As a final robustness check, I replace the random effects on the country level with country fixed-effects together with interaction terms for country-specific treatment effects. These models are conservative considering the relative small number of regions for each country but they are also a powerful way to rule out any alternative explanation on the country-level such as the ones discussed above but also the strength of national right-wing parties, the content of national media coverage, immigration policies and many others. The results are presented in Model V and confirm the findings reported above. The only considerable difference is that the two-way interaction term between the treatment effect and the change in the unemployment rate is only marginally significant in Model V even though the size of the effect remains essentially the same compared to Model III. The increase in the standard error is not surprising considering that the robustness check is conservative, while the fact that the size of the estimate remains essentially the same even after controlling for country fixed-effects reaffirms my findings.

## Conclusion

Since the attacks of September 11th, 2001, acts of international terrorism committed by groups purporting to speak in the name of Islam have been a major theme in public discourse. At the same time, cross-national research consistently finds negative sentiments towards the immigrant population. Yet, the link between specific events and the perception of immigrants is mostly anecdotal. The fact that the Bali terror attack occurred during the field work period of nine countries in the ESS afforded a unique opportunity to study this link and examine the impact events have on the perceptions of immigrants across different countries and their subregions. The findings of this natural experiment show considerable variations in both the magnitude of the effect and its temporal duration. In two and to a lesser extend three out of the nine countries – Portugal, Poland, and Finland – the estimated causal effect is highly significant and substantial, ranging from the equivalent effect of 7.3 (Portugal) to 3.2 (Finland) years of education. In Finland, however, the effect disappears after the first week. The Madrid analysis in Appendix A reveals similar cross-national variations in the response to the event. It also indicates that national events such as the Madrid bombing in Spain itself have a more profound effect on anti-immigrant sentiments compared to distant events such as the terror attack in Bali. Providing leverage to explain these cross-national variations, the Bali analysis on the regional level shows that the effect of the event is larger in regions with an increasing

unemployment rate and that the relative size of the out-group and direct contact with immigrants interact in shaping the response to the event. These regional factors appear to explain the country level findings insofar as the Bali effect in Portugal and Poland seems to be driven by the change in the unemployment rate in many of the regions of those countries. The regional Madrid analysis reveals a similar pattern and confirms the finding that the response to events such as terror attacks is shaped by changes in the regional unemployment rate (data limitations make it impossible to replicate the other findings). Alternative, country-level explanations such as the number of victims, prior experience with terror attacks and the extent of media coverage were considered, but found empirically lacking.

The implications of these findings fall into three broad categories. First, the study makes an empirical contribution to research on societal responses to terrorist attacks. While concerns about post 9/11 islamophobia have received attention in public debates, empirical research on the responses to terrorist events has focused on psychological effects and changes in safety behavior (for an overview see Spilerman and Stecklov 2009). The present study shows that terrorist attacks can have a profound short-term effect on citizens' perception of immigrants in some cases and under certain conditions. It elaborates the mechanisms that explain contextual variations in the response to such events and highlights the circumstances under which events such as terrorist attacks increase anti-immigrant sentiment. To generalize about the conditions under which such a mechanism appears to function, it is important to consider some characteristics of the attack in Bali as well as the specific survey questions used as a dependent variable. First, the event took place in a location that was geographically distant from the countries in the study. Second, the attack in Bali occurred roughly a year after the September 11 attacks in the United States. 9/11 probably had a profound impact on respondents' perceptions of immigrants and may in turn have mitigated the effect of the event in Bali. Third, the actual wording of the survey questions focuses on all immigrants and ignores that the immigrant populations in Europe are diverse in terms of ethnic origin and religion. These characteristics of the Bali attack strengthen rather than weaken our results. The fact that a distant event, shortly after 9/11, had any effect on attitudes towards immigrants in general may be considered a conservative test of the effect of events on attitudes towards immigrants. The findings from the Madrid case confirm this argument insofar as the effect in Spain is much larger. Fourth, while devastating and horrific, the Bali attacks were significantly less salient compared to 9/11, considering not only the human and economic damage, but also the public discourse that followed the event. The attacks were not historically unique events; on the contrary, there are many parallel events on a

similar scale such as the attacks in London (July 2005), Mumbai (November 2008) and most recently in Moscow (March 2010). While it is notoriously difficult to predict the impact of events like this on attitudes towards immigrants, purely on theoretic grounds, the mechanism elaborated in this paper offers a useful starting point for understanding the conditions under which an event has an effect. The second case study based on the Madrid bombings reaffirms the conclusions from the Bali case. In particular, the argument suggests that for the extension to other cases, potential sources of group-threat such as the economic conditions and the size of the out-group population in the local environment as well as intergroup interactions play a crucial role.

Second, this study makes a theoretical contribution to group-threat and intergroup contact theory as well as the literature on attitudes towards immigrants. It elaborates a mechanism for short-term (and potentially long-term) changes in the perception of an out-group. In particular, I have argued that events such as terror attacks negatively affect attitudes towards immigrants by fostering the perception of an out-group as threatening and by directing the attention towards potential sources of intergroup conflict. The experiences and information from direct contact with members of the out-group, however, might mitigate the role of the out-group size, and reduce the effect of the event itself. This mechanism extends group-threat and contact theory in important ways. It shows that intergroup conflict as well as the contact between groups not only shape attitudes towards immigrants independent of the particular time and period but also amplify or mitigate the response to particular events, which adds a temporal component to the classical formulation of the two theories. In brief, the findings presented in this paper contribute to our understanding of intergroup relations, and in turn may have implications for the study of discrimination and other more enduring relationships between groups.

Finally, the exploitation of exogenous events together with the variation in the timing of the ESS survey demonstrates how the temporal embeddedness of both events and surveys responses can be used to gain analytic leverage. At the same time, temporal embeddedness constitutes a potential source of bias in survey research. While regional variations have traditionally figured prominently in the design of surveys, and have become a mainstream topic in sociological research, temporal variations have received little attention, and are seldom addressed as a potential source of bias. In cross-national research, for example, temporal bias might play an important role when cross-national variations are the artifact of national events that occur during the survey period. While it is important to remain alert to the potential bias posed by the temporal embeddedness of survey interviews, the implicit contention of this study has been that temporality should be thought of as part of the opinion formation process, and therefore as an analytic

area yet to explore (for a perspective on opinion formation that supports this claim see Zaller 1992). From a practical perspective, the ESS is exemplary in regard to this program: it supplements its large-scale cross-national survey with an event catalog. Though rudimentary compared to the event catalogs used in research on collective action (Earl et al. 2004), this feature allows researchers to gain key analytical leverage based on the temporality of events and the timing of interviews.

The findings from the study are also limited in several regards. First, the empirical analysis is limited to two specific historical cases, and only one allowed me to fully explore the theoretical argument. Given this limitation, future studies should be undertaken to establish the extent to which the conclusions from this study hold in other cases. Second, the study falls short in exploring the role of media content in mediating the effect of events. Studies such as Boomgaarden and Vliegenthart (2009) or Ladd and Lenz (2009) illustrate that the actual content of media reports can have an influence on public opinion. For the substantive case at hand, the representation of the event in the media might mediate the response to the event. Such a content analysis was beyond the scope of this study and stands as a promising topic for future research. It should also be noted that a connection between media content and the response to the event would not be at odds with the explanation proposed in this paper. On the contrary, an analysis of media content would provide a way of further exploring the argument that events direct the attention towards potential sources of intergroup conflict. Finally, this study is limited to the cognitive dimension and does not explore how the effect of events on attitudes may propagate to actual behavioral outcomes (such as discriminatory practices or collective violence). The findings suggest, however, that research on intergroup relations and categorical inequality should take temporal variations seriously and consider the ways in which events can induce profound short-term and potentially also long-term changes in the perception of an out-group.



## Appendix A Madrid Bombings and Attitudes towards Immigrants

The analysis presented in this paper is based on a unique opportunity for a natural experiment. They make use of the fact that the terror attack in Bali coincided with the fieldwork period of a large-scale, cross-national survey that includes questions on immigrants and immigration. A major concern about the findings, however, is the focus on a single case, the Bali terror attack in 2002. In this appendix, I present partial evidence from an additional case that reaffirms some of the major findings from my analysis. Using Eurobarometer data, I examine the effect of the 2004 Madrid bombing on attitudes towards immigrants across different European countries and their subregions. The analysis is limited in several regards but closely resembles the ESS case and replicates some of the most important aspect of my findings. At the same time, the limitations also show that my main analysis of the ESS data stands out as a unique opportunity, which provides a more nuanced picture of the conditions under which events affect attitudes towards immigrants.

Around 7:40 am on March 11th, 2004, ten explosions shattered four rush hour trains in Madrid, Spain, killing 192 and injuring over 1,800 commuters. The Madrid bombing is widely considered as the most devastating terror attack in Europe, and the first major attack committed by groups purporting to speak in the name of Islam. To estimate the effect of the 2004 Madrid bombing on attitudes towards immigrants, I use the Eurobarometer 61.0 from 2004 (European Commission 2004). The Eurobarometer is a series of cross-sectional surveys conducted in EU countries with the goal to track public opinion on issues that are relevant for the European Union. The fieldwork period of the Spring 2004 survey coincided with the Madrid terror attack. As such, the Madrid bombings offer a rare opportunity to replicate my findings from the Bali case using a similar, cross-national survey from multiple European countries.

Compared to my analysis based on the ESS and the terror attack in Bali, this second case is limited in several regards. First, the Spanish government and many others initially focused on nationalist terrorism and speculated about an ETA involvement. Along these lines, the public discourse at first evolved around both nationalist terrorism (ETA) as well as possible connections to Islamic terror groups. Only several days after the event, the attack was attributed to an al-Qaeda-inspired terrorist cell. This controversy in the days following the event might have shifted the focus away from immigration issues and towards long standing national problems. Second, the Eurobarometer 61.0 was not focused on attitudes about immigrants and immigration. The survey only includes a single

question to evaluate the effect of the Madrid bombing on attitudes towards immigrants. This restriction to a single indicator decreases the quality of the outcome measure compared to the ESS analysis and reduces the possibilities to examine the conditions under which events are influential. In particular, the lack of a measure for contact with immigrants makes it impossible to examine the argument about the role of out-group size and contact with immigrants. Accordingly, my analysis of the Eurobarometer data focuses on the unemployment rate as one of the most important aspects of my argument. A third limitation of the Eurobarometer data is that the number of respondents interviewed after the event is relatively small in some of the countries. As a consequence, the confidence intervals for some of the estimated effects are large and the results are less stable compared to the ESS analysis. Overall, these limitations highlight the unique opportunity provided by the the ESS. Nonetheless, the additional case allows me to reaffirm some of the most important aspects of my argument, and as such alleviates the concerns arising from the focus on a single case.

To estimate the causal effect of the terror attack in Madrid on attitudes towards immigrants across 13 countries and their subregions, I use the same research design with regression models that resemble my ESS analysis.<sup>20</sup> The outcome variable is based on a single question that measures attitudes towards immigration. This question asks respondents about the most important issues facing their country today with the instruction to select no more than two from a list of fifteen issues.<sup>21</sup> The following analysis is based on a binary indicator constructed from this question coded as one if the respondent selected “immigration” from this list.

Figure A1 shows the main findings from my analysis. First, the left figure shows the size of the causal effect together with 95% confidence intervals for each country in terms of log-odds based on a set of country-specific logistic regressions.<sup>22</sup> With an effect of about 3.2 odds ratios or 25 years of education, the estimated effect of the 2004 Madrid bombings on attitudes towards immigrants is extremely large in Spain itself. The average predicted

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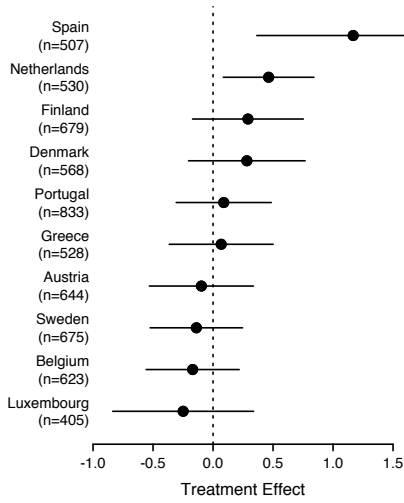
<sup>20</sup>Note that the analysis also differs from the ESS in important ways that are mainly related to differences between the two datasets. The Eurobarometer analysis, for example, does not include measures for the number of household members, contact with immigrants, and parents place of birth.

<sup>21</sup>The exact wording of the question is “*What do you think are the two most important issues facing [our country] at the moment?*” and the list includes crime, public transport, economic situation, prices/inflation, taxation, unemployment, terrorism, defense/foreign affairs, housing, immigration, healthcare system, educational system pensions, environmental protection and others.

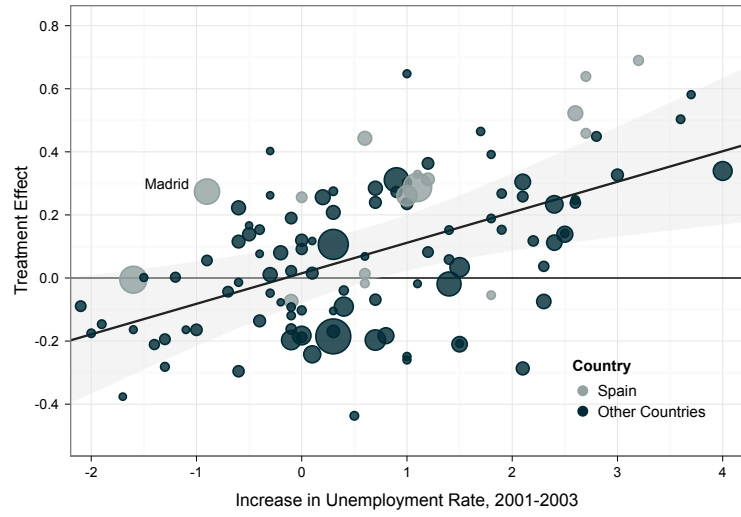
<sup>22</sup>The country-specific analysis excludes Great Britain, Ireland, and Italy with a particularly small sample size in the treatment group. The estimates for these countries have a large confidence interval and are extremely sensitive to the model specification. These three countries, however, are part of the multilevel models used for the regional analysis, which mitigates the problem of small sample sizes in some countries and regions.

Figure A1: Estimated Treatment Effect for the Terror Attack in Madrid, March 2004

(a) Effect of Madrid Bombing



(b) Changing Unemployment Rate and Effect of Madrid Bombing



*Note: The two graphs show the effect of the 2004 Madrid bombings in log odds on the extent to which respondents consider immigration one of the most important issues facing their country today. The country specific estimates (with 95% confidence interval) in the left figure reveal substantial variation in the size of the effect across countries with a large effect in Spain itself. The right graph shows the relation between changes in the regional unemployment rate and the response to the event in 129 European regions and indicates that the response to the event was larger in regions with an increasing unemployment rate.*

difference indicates that the proportion of the population that considers immigration as one of the most important issues facing their country increased by 12.9% from 8.3 to 21.2% immediately after the attack (the 95% confidence interval for the increase ranges from 3.9 to 25.9%). While this finding is consistent across different model specifications, the estimates for the other countries are less stable. In general, the effect tends to be relatively large in the Netherlands, Finland, and Denmark but not consistently significant. For the remaining countries, the findings generally indicate small and statistically insignificant differences between the treatment and control groups, indicating that the terror attack in Madrid had no short-term effect on respondents' perception of immigrants. These small and specification-sensitive effects might be explained by the initial focus on nationalist terrorism. Similar to my analysis of the ESS data, these findings indicate considerable cross-national and (as shown later) regional variation in the response to the event. They also reveal that the effect of national events can be much larger compared to distant terror attacks such as the Bali bombing. This finding confirms my argument that the terror attack in Bali is a conservative test of events' effect on attitudes towards out-groups.

Second, Figure A1b shows the relation between the response to the event and the

regional increase in the unemployment rate from a logistic multilevel model with 129 regions. The graph indicates that the effect of the terror attack is larger in regions with an increasing unemployment rate. This finding reaffirms my results from the Bali case and supports my theoretical argument about the conditions under which events such as terror attacks are influential. The graph also highlights Madrid, and other Spanish regions as outliers with a larger response to the event than predicted from the model alone.<sup>23</sup>

Overall, the findings from the Madrid case reaffirm my main results in important ways. They show considerable variations in the effect of events on attitudes towards immigrants across countries and subregions. Extending the previous findings, the Madrid case reveals that the response to national events can be much larger compared to distant terror attacks, and also reaffirms the role of the regional unemployment rate for the response to the event. This partial replication of my main findings addresses concerns related to the focus on a single case.

## Appendix B Details about Matching Procedure

Although the practical benefits of matching remain in dispute (Shadish et al. 2008), I supplement the results obtained from the regressions with estimates based on matched samples. In particular, I use a matching procedure called Genetic Matching (GenMatch), which automatically finds matches with optimal balance (Diamond and Sekhon 2008; Sekhon 2010). In contrast to the more widely used technique of propensity score matching, GenMatch circumvents the problem of finding the best propensity score model by using a genetic search algorithm to determine the weight given to each covariate in the multivariate matching process, thereby optimizing balance. The actual variables used for the matching are the ones described in Table A3 together with some additional interaction terms. These variables were selected in order to maximize balance and outperformed alternative specification in this regard. The estimates from the matched sample are based on the same regression model as the one described above. Table A1 presents the regression results based on the matched sample together with regression estimates from the raw data. The results are based on multiple imputation so that they also allow a comparison between the estimates based on case-wise deletion (Figure 3a) and the imputed dataset. Table A2 complements Figure 2 and presents the standardized differences in means for

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<sup>23</sup>Note that in all of the Spanish regions only a small number of interviews were conducted after the event so that the regional estimates are pulled towards the overall mean, which explains the difference in effect size between the country-specific and regional estimates.

Table A1: Estimated Treatment Effect

	n	Regression Estimates		Matching Estimates	
		Coef.	(se)	Coef.	(se)
Portugal	299	0.29**	(0.11)	0.46**	(0.12)
Poland	495	0.27*	(0.11)	0.31**	(0.11)
Finland	911	0.16*	(0.08)	0.16*	(0.08)
Belgium	603	0.08	(0.07)	0.03	(0.08)
Switzerland	364	0.03	(0.10)	-0.07	(0.11)
Sweden	405	-0.02	(0.11)	-0.11	(0.12)
Netherlands	999	-0.05	(0.07)	-0.06	(0.07)
Norway	727	-0.09	(0.07)	-0.09	(0.08)
UK	698	-0.12	(0.08)	-0.11	(0.08)

Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$

*Note: Control variables for the regression estimates are described in Table A3. Both estimates are based on the imputed dataset.*

Table A2: Imbalance between Treatment and Control Group

(available from author)

all nine countries.

## Appendix C Description of Independent Variables and Measure of Media Coverage

Table A3 contains a description of the independent variables used throughout the paper. The measure of media coverage is based on newspaper reporting in the weeks following the event. The selection of newspapers in order to measure the media coverage of the event was based on circulation and diversity but also constrained by availability. For each country, the print version of at least one newspaper was examined and whenever possible the full-text online version of additional newspapers with a simplified coding schema. Multiple newspapers were selected in order to avoid potential biases. This was not possible in Belgium, Finland, and Norway. Below is a list the newspapers used for each country together with the circulation. The actual coding covered the period October 13-31 2002 and assigned one of four categories to each day the newspaper was published during this period: The Bali terror attack was covered (1) on the front page with picture, (2) on the front page without picture, (3) on the following pages, and (4) not at all. For the coding of the full-text online version, this schema was reduced to (1) covered in the

issue, and (0) not covered because the page numbers from the printed edition was not always available. For both codings, only articles that explicitly focused on the terror attack were counted.

### **List of newspapers**

Belgium – De Morgen (73,784)

Finland – Helsingin Sanomat (412,421)

Netherlands – Trouw (107,000; tabloid), De Volkskrant (282,000), NRC-Handelsblad (240,000)

Norway – Dagbladet (186,136; tabloid)

Poland – Dziennik Baltycki (154,000), Gazeta wyborcza (417,000), Zycie Warszawy

Portugal – Público, Diário Económico\*

Sweden – Dagbladet, Dagens nyheter (344,000), Svenska Dagbladet (195,200)\*

Switzerland – Neue Züricher Zeitung (134,526), Aargauer Zeitung (200,000; regional)\*, Berner Zeitung (165,700; regional)\*, Basler Zeitung (194,358; regional)\*

United Kingdom – Daily express (668,273; tabloid), Daily telegraph (686,679), The Sun 3,005,308; tabloid) \*

\* Simplified coding based on full-text online version of printed newspaper

Table A3: Description of Independent Variables

Independent Variables	Description
<i>Individual Level</i>	
Contact with Immigrants	0 – No friends or coworkers with immigration background 1 – Either friends or coworkers with immigration background
Age	Categorical age variable: 1 – under 35; 2 – 35-59; 3 – over 60
Sex	0 – Male; 1 – Female
Education	Categorical variable based on the CASMIN classification: 1 – No or Primary Education; 2 – Lower Secondary Education; 3 – Upper Secondary Education; 4 – Post Secondary/First stage of Tertiary Education; 5 – Second stage of Tertiary Education
Household Members	Number of Household Members (categorical) 1 – 1 person household; 2 – 2 person household; 3 – 3 or more person household
Working Status	Categorical variable based on the major activity during the last seven days: 1 – Employee or Self-Employed; 2 – In education or military service; 3 – Unemployed; 4 – Retired, permanently sick or disabled; 5 – Housework
Location	Self-reported location: 0 – rural; 1 – urban
Parents Place of Birth	0 – both born in [country]; 1 – at least one not born in [country]
Interaction Term	Interactions between education and location
<i>Regional Level (NUTS 1 and NUTS 2 Level)</i>	
Population Size, 2002	Regional Size of Population, 2002 (Source: Eurostat)
Population Density, 2002	Regional Population Density, 2002 (Source: Eurostat)
Unemployment Rate, 2001	Regional Unemployment Rate for Population above 15, 2001 (Source: Eurostat and national statistical agencies for Switzerland and Norway)
Change in Unemployment Rate, 2001-2002	Change in Regional Unemployment Rate, 2002-2001 (Source: Eurostat and national statistical agencies for Switzerland and Norway)
Proportion of Immigrants	Proportion of Population that is Non-Nationals, 2001 (Source: census data from Eurostat and national statistical agencies for Belgium)
Educational Composition	Proportion of Population that has no more than Primary Education, 2001 (Source: census data from Eurostat and national statistical agencies for Belgium)

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