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# Can television reduce xenophobia? The case of East Germany

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## Abstract

Can television have a mitigating effect on xenophobia? To explore this question, we investigate a natural experiment in which individuals in some regions of East Germany could not—due to their geographic location—consume West German television until 1989. By analyzing survey data from the periods before and after German reunification, we provide evidence that individuals who received West German television during the GDR period and were thus more frequently exposed to foreign media have developed less xenophobia. We document that West German television programs positively affected individuals' attitudes towards foreigners and led to a higher likelihood of supporting refugees, for example by donating money to refugee aid. In addition to the survey evidence, we show that regions that could receive West German television before reunification were less likely to vote for extreme right-wing parties during the national elections from 1990 to 2017, and experienced fewer criminal offenses against refugees.

## 1 | INTRODUCTION

Since at least the beginning of the European migrant crisis in 2015, the world has seen a sharp surge in xenophobia. One way in which this development has manifested is in the rising number of hate crimes. For example, the number of anti-Muslim hate crimes in the U.S. doubled between 2014 and 2016 (Müller & Schwarz, 2020). Parties with anti-

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migration attitudes are also increasingly finding their way into the parliaments of many European countries. The majority of these political parties use xenophobic rhetoric and support xenophobic attitudes (Jolly & DiGiusto, 2014). It is therefore essential for researchers and policymakers to understand the mechanisms that contribute to the emergence of and the persistence of these attitudes.

This article addresses the question: Can television have a mitigating influence on xenophobia? To explore this possibility, we investigate a natural experiment that occurred in the German Democratic Republic (GDR) during the period of German division. Although West German television (WGTv) reception was generally widespread in the GDR, some regions were located too far away from a WGTv transmitter to enable the reception of these programs. This is the exogenous variation that we exploit in our study. We also make use of the fact that WGTv exposed its audience more frequently to authentic representation of foreigners and foreign countries than East German television (EGTV). We use several data sources to examine the effect of WGTv on various measures of xenophobia. Unlike previous studies, we combine district-level evidence with individual-level evidence using survey data.

First, we study the responses to the survey “Youth and Right-Wing Extremism 1990,” which was conducted by the Central Institute for Youth Research (*Zentralinstitut für Jugendforschung*) before German reunification. This survey contains several attitudinal questions relating to foreigners. Our results indicate that people living in regions with WGTv coverage have more positive attitudes towards foreigners. Subsequently, we analyze survey data from the German Socio-Economic Panel Study (SOEP), in which we make use of a new subsample that was introduced in 2018 and which allows us to use self-reported information on WGTv consumption. To the best of our knowledge, we are the first to study the long-term effects of WGTv on xenophobia. Our results show that WGTv exposure positively affected Germans' attitudes towards refugees. Furthermore, we find a higher likelihood among respondents with previous WGTv exposure to support refugees today, for example through a higher willingness to donate money to refugee aid. Overall, our findings provide evidence that media can have surprisingly broad effects that are generally seen as beneficial for society.

As a further measure of xenophobia, we use the electoral success of right-wing parties in the federal elections from 1990 to 2017, given that several empirical articles have suggested that individuals express their concerns about foreigners and migrants at the ballot box, by voting for right-wing parties (Brunner & Kuhn, 2018). Although right-wing attitudes are not synonymous with negative attitudes towards foreigners, the extreme right-wing political agenda is strongly correlated with negative attitudes towards foreigners (Frindte et al., 2016; Hyll & Schneider, 2018). Analyzing actual voting decisions instead of stated preferences in surveys minimizes the effects of social desirability bias (Brunner & Kuhn, 2018), because not only can individuals cast their vote anonymously, but they are also incentivized to reveal their actual preferences, given that votes have real consequences. We provide evidence that WGTv had a mitigating effect on the electoral success of right-wing parties. Finally, we use data on hate crimes against refugees provided by the Amadeu Antonio Foundation and the non-profit organization PRO ASYL. Our results reveal that exposure to WGTv negatively affected the number of arson attacks against refugee housing and the number of incidents related to anti-refugee demonstrations.

This article contributes to the literature studying the effects of WGTv reception in the GDR. Like Crabtree et al. (2015), Hennighausen (2015), Bursztyń and Cantoni (2016) and others before us, we use the exogenous variation in the geographic features of East Germany that provided citizens with differential access to WGTv as the identification strategy in our empirical analyses. Over the last decade, economists and political scientists have used the historical division of East and West Germany as a natural experiment to explain, for example, policy preferences for state intervention and redistribution (Alesina & Fuchs-Schündeln, 2007), cheating behavior (Ariely et al., 2019), and individuals' attitudes towards social trust, risk, perceived fairness, and cooperativeness (Heineck & Süßmuth, 2013).

More recently, scholars have also exploited the variation in the availability of WGTv within the GDR. In a pioneering article, Kern and Hainmueller (2009) investigate whether WGTv broadcasting undermined the

authoritarian regime of the GDR. Using a survey that was conducted by the Central Institute for Youth Research, they find that WGTV increased the life satisfaction of East Germans, who seemed to perceive television broadcasting mostly as a source of personal entertainment. In line with this finding, Hyll and Schneider (2013) find evidence that WGTV exposure is positively correlated with material aspirations, which were previously shown to be associated with happiness and personal well-being (Easterlin, 2001). Hennighausen (2015) has demonstrated that WGTV exposure affected East Germans' beliefs about what drives success in life. Using data from the German SOEP, she finds a long-lasting effect of WGTV exposure on East Germans' beliefs that effort rather than luck is a crucial determinant of success in life. Crabtree et al. (2015) investigate whether WGTV exposure prompted protest events in 1989, which ultimately led to the collapse of the GDR. Their study finds no evidence that exposure to WGTV had an effect on protest events. Bursztyń and Cantoni (2016) find that WGTV exposure affected the composition of consumption after German reunification, with East Germans who were exposed to WGTV buying more products that were advertised with a higher intensity. Slavtchev and Wyrwich (2017) analyze the influence of WGTV on entrepreneurial decisions of individuals and report that entrepreneurship is higher among residents of East German regions with former WGTV reception. Particularly relevant to our study, Friehe et al. (2020) investigate the effect of WGTV on voting behavior. However, they only focus on the election results of far-right and left-wing parties during a period from 1990 to 1998 and find a negative correlation between television reception and the electoral success of these parties.

The remainder of this article is structured as follows. In the next section, we review the literature on media consumption and attitudes towards foreigners and derive our hypothesis regarding the effect of WGTV exposure on xenophobia. Section 3 briefly outlines the history of the divided Germany, the role of EGTV and WGTV, and the representation of foreigners in their respective broadcasting programs. In Section 4, we outline our identification strategy. Section 5 presents the survey evidence. In Section 6 we consider the effects of WGTV on other manifestations of xenophobic tendencies, in particular the electoral success of right-wing parties and hate crimes against refugees. The final section presents our conclusions.

## 2 | MEDIA CONSUMPTION AND ATTITUDES

Previous academic literature has shown that mass media consumption can affect individuals in a variety of ways. Various studies have demonstrated that media content can influence, for example, voting behavior (DellaVigna et al., 2014; DellaVigna & Kaplan, 2007; Durante et al., 2019; Enikolopov et al., 2011; Gentzkow, 2006), fertility rates (La Ferrara et al., 2012), social capital (Olken, 2009), and domestic violence (Jensen & Oster, 2009).

We contribute to the literature examining the relationship between mass media consumption and attitudes towards foreigners and immigrants. In an early article, Gentzkow and Shapiro (2004) find evidence that attitudes towards the U.S. in Muslim countries are correlated with television consumption. A recent study by Benesch et al. (2019) focuses on the impact of news coverage of migration issues on immigration worries in Germany, finding that a higher number of media reports dealing with migration issues leads to stronger concerns about immigration. Analyzing articles published in three German daily newspapers for the period 1993 to 2005, Boomgaarden and Vliegenthart (2009) find that the amount of immigration coverage in the news is marginally positively associated with anti-immigration attitudes. One possible reason for a positive relationship between news coverage and anti-immigration attitudes is that immigration is often framed in the context of social problems, such as crime or unemployment (Meltzer et al., 2017). Boomgaarden and Vliegenthart (2009) point out that both the tone of reporting and the visibility of immigrant actors play a crucial role in eliciting anti-immigration attitudes. First, they show that exposure to positive media messages about immigrants leads to more positive attitudes towards immigrants. Second, they document a negative relationship between the frequency with which actors with a migration background appear in the news and anti-immigration attitudes. By using survey panel data and content data of Dutch newspapers,

Wojcieszak and Azrout (2016) also find that exposure to Muslim and Polish immigrants in news articles is sufficient to improve attitudes toward immigrants.<sup>1</sup>

Overall, these studies provide mixed evidence on the relationship between media exposure and attitudes toward foreigners. However, they suggest that the tone of the media content and the context in which a topic is presented matter for the direction of the effect. The present study goes beyond this focus on news reports dealing with immigration issues and instead considers the larger scope of television programming, including entertainment television, in which foreigners are often not associated with immigration or social problems that can be related to immigration. Given that a substantial part of WGTV programming came from foreign productions, the representation of foreigners in these programs is rather positive or at least non-threatening. Consequently, exposure to WGTV might have reduced xenophobia among East Germans because, even in the absence of explicitly negative coverage, a lack of exposure to foreigners in any context is frequently seen as a precipitant of xenophobia.<sup>2</sup>

### 3 | INSTITUTIONAL BACKGROUND

#### 3.1 | A brief history of the divided Germany

In 1945 after World War II, the former German Reich was occupied by Allied forces who divided the country into four occupation zones led by France, Great Britain, the Soviet Union, and the U.S. The Soviet occupation zone was located in East Germany. The city of Berlin was also divided between all four occupation powers and the Western zones of Berlin became an island within the Soviet occupation zone. A larger part of the Soviet occupation zone became Polish territory and some became territory of the Soviet Union. In 1949, the remainder of the Soviet occupation zone formed the German Democratic Republic (East Germany), while the parts of Germany occupied by France, Great Britain, and the U.S. formed the Federal Republic of Germany (West Germany; see Figure A.1 in the appendix).

With the political and economic support from the U.S. and the other Western countries, West Germany quickly developed into a market economy and free democracy. East Germany became a communist state with one-party rule and strict censorship of all media, and was under the supervision of the Soviet Union. In 1953, an uprising occurred in East Germany, which the Soviet Union suppressed with military force. Because more and more people fled the GDR, its border controls increasingly tightened, leading to the creation of a “restricted zone” (*Sperrzone*) along the entire border between the GDR and West Germany. Moreover, the Berlin Wall separated East and West Berlin from 1961 to 1989. After the onset of political reforms in the Soviet Union in the late 1980s, demonstrations for political freedom began in many Eastern European countries, including the GDR. They succeeded at the end of 1989, which led to the fall of the Berlin Wall on November 9, 1989; democratic elections in East Germany on March 18, 1990; and ultimately to the reunification of Germany on October 3, 1990.

#### 3.2 | The role of WGTV in East Germany

For citizens of the GDR, gathering independent information about the world outside of East Germany was challenging. Traveling to the West was practically impossible except in very special cases and even traveling to other socialist countries was restricted. Towards the end of the GDR, only one country accepted visitors without visas: the former

<sup>1</sup>These results are consistent with recent expansions of the intergroup contact hypothesis by Allport (1954), which suggest that indirect contact with out-group members reduces racial as well as ethnic prejudice (Pettigrew et al., 2011; Pettigrew & Tropp, 2006). Several studies using laboratory experiments conclude that indirect contacts, for example via television, can also mitigate negative attitudes towards members of other groups (Dovidio et al., 2011; Ioannou et al., 2018; Joyce & Harwood, 2014; Lienemann & Stopp, 2013; Ortiz & Harwood, 2007; Schiappa et al., 2005).

<sup>2</sup>Several recent studies find evidence for a mitigating influence of intergroup contacts on xenophobic attitudes (see e.g. Schindler and Westcott (2021) and Steinmayr (2016)). Hangartner et al. (2019) and Dinas et al. (2019) find a contrary result by analyzing the impacts of a massive increase in refugee arrivals on xenophobia in Greece.

Czechoslovakia. Furthermore, the government of the GDR imposed tight control over all media. Books and newspapers from the West were not allowed to enter the country, a policy that was strictly enforced through detailed border controls such that the impact of these media on the flow of information was indeed insubstantial (Kuschel, 2016, p. 144 and p. 266). Because the Internet did not exist yet for the general public, the only means of obtaining information from the West was through radio and television—both crossing the border easily via airwaves. In particular, WGTv was considered to be the only “window to the West” by many East Germans (see Hömberg, 2002, p. 12) and simply more informative and attractive than the programming on EGTv (Wolff, 2002, p. 123). It has even been argued that WGTv was one of the main causes for “preserving the cultural unity of the German nation during the 45 years of separation” (Wolle, 1998).

While initially the government of the GDR tried to enforce a ban on watching WGTv, this turned out to be too difficult in the long run. In the 1970s, the majority of East Germans were already following West German programs and in 1987, 85 % of the population were using West German radio or television regularly (Förster, 1995). In the 1970s and 1980s, the only impediment to watching WGTv was physics, that is, the limited reach of television signals. Close to the border, watching WGTv programs was relatively easy, but as the distance to aerial masts increased, it became more and more difficult or even impossible. Since the programs were also broadcast from West Berlin, most regions of the GDR had good or at least reasonable WGTv reception. There were, however, differences in quality and two regions of the GDR—the northeastern and southeastern regions—were not able to receive WGTv signals at all. Due to their relative lack of outside information, these regions were made fun of by East Germans; for example, the southeastern region, which included the third largest East German city, Dresden, was nicknamed “the valley of the clueless” (*Tal der Ahnungslosen*; see Figure 1).

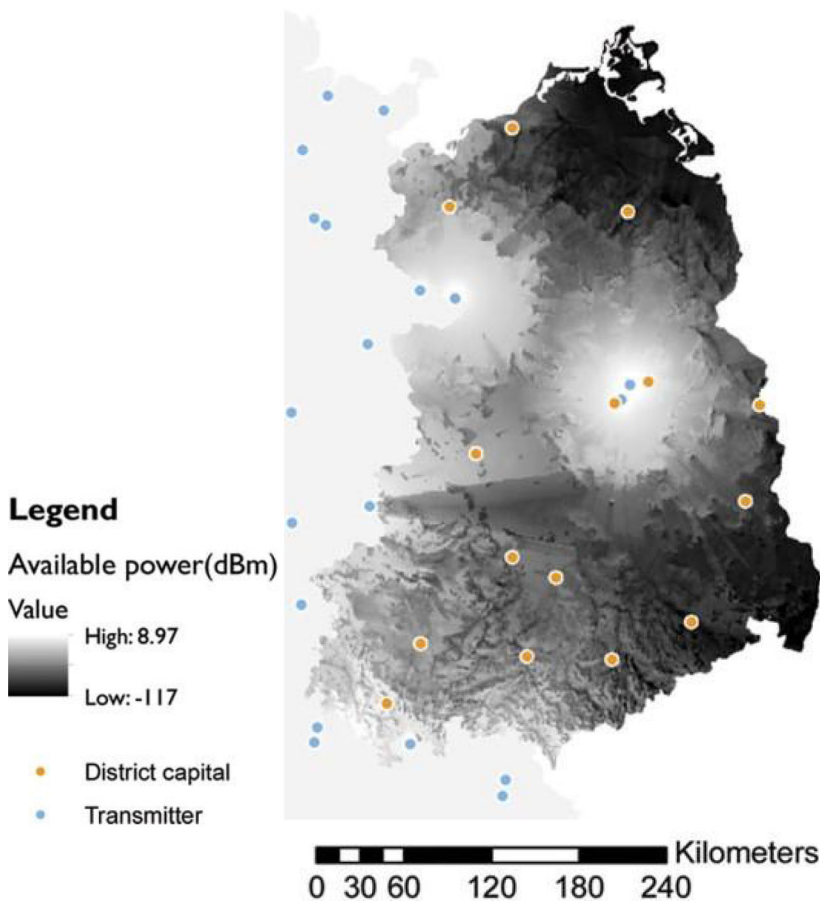
### 3.3 | Representation of foreigners on EGTv and WGTv

The difference between East and West German television was not limited to politics and ideology. While in West Germany, the audience was expecting to see the world on their television screens—with reports from other countries, travelogues, and foreign movies and documentaries—EGTv broadcasters featured much less foreign content, but more domestic programs (Stiehler, 1999). The types of foreign programs differed as well. Travelogues were fewer in East Germany—understandable given that travel was restricted—and political reporting from other countries tended to contain more political propaganda than unbiased information (Kuschel, 2016; Oehmig, 2017).

In sum, WGTv frequently exposed its audience to foreign countries and generally to foreigners not only from Europe and America, but from all around the world. The size of this discrepancy can be inferred by comparing the programming of the two main public television stations in the West (ARD and ZDF)<sup>3</sup> with the two East German television stations (DDR1 and DDR2). To quantify this difference, we analyzed the television programming of one arbitrary week in each of the years 1980, 1985, and 1988. While the two main public television stations in West Germany broadcast 36 programs with foreign content out of 141 (25.53 %) in the respective week in 1980, we only found 20 out of 138 (14.49 %) on the two main East German stations. Only five out of these 20 productions originated in non-Eastern Bloc countries.<sup>4</sup> For 1985, we find an even more pronounced difference, with a share of foreign programming of 32.19 % in West Germany and 17.98 % in East Germany. In 1988, we find an almost equal portion in West (19.74 %) and East Germany (20.15 %). The share of productions from non-Eastern Bloc countries, however, was again much lower (7.46 %). The difference between West and East German television became even greater with the introduction of private television in West Germany, which contained a higher proportion of foreign content and by the late 1980s already had substantial viewership (Müller, 1990).

<sup>3</sup>Prior to the advent of private television in West Germany in 1984, these were the only two stations nationwide. They were still the most frequently watched stations throughout the 1980s.

<sup>4</sup>We excluded news from the analysis because its foreign content could not be determined retrospectively. Table A.1 of the appendix provides an overview of the analysis of the television programming.



**FIGURE 1** Reception of WGTV in the GDR

*Note:* This figure shows the WGTV coverage in East Germany in 1989. Each blue dot represents a WGTV transmitter. In bright areas, there was a higher signal strength and thus better TV reception. In contrast, there was little to no reception in dark areas. The orange dots represent East Berlin and the 14 district capitals. This map is reproduced and slightly modified from Crabtree et al. (2015). [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

The content of the broadcasts differed markedly. While foreign content on EGTv could include a Soviet propaganda movie or a report about the visit of a GDR politician in a “friendly socialist country,” in the West this part of the programming was much more diverse.<sup>5</sup> For instance, on Sunday, August 16, 1981, the programming of ZDF included content about the U.S., Italy, Africa, Russia and Slovakia, starting at noon with the “Sunday Concert” from New Orleans, followed by a report about “Our neighbors, the Italians,” and later in the evening even including a documentary about movies and cinemas in sub-Saharan Africa. In all, nine programs had foreign content. On the same day, both EGTv stations together had only three (Hörzu, 1981). As can be seen from this example, representation of foreign countries and foreign people on WGTV was comparatively extensive and diverse.

The differences in exposure to WGTV in the GDR, depending on geographic location, provides us with an ideal setup for studying the long-term effects of exposure to foreigners on television on attitudes towards foreigners in general.

<sup>5</sup>It should be noted that EGTv producers began buying Western television productions with increasing regularity in the late 1980s (Kuschel, 2016, p. 290).



### 3.4 | Xenophobia in East and West Germany

As in most countries, there exists a certain number of people with xenophobic tendencies in Germany. While before reunification this problem was frequently discussed publicly in West Germany and a lot of political and educational efforts were made to reduce xenophobia, the problem was officially non-existent in East Germany. The communist state was considered by definition to be “anti-fascist.” Practically, however, xenophobia was a built-in feature in the GDR: “the German Democratic Republic was a [...] system where foreignness didn't have space” (Klier, 1994). In fact, very few foreigners were allowed to live in the GDR—typically only temporarily and with heavily restricted rights. Exchange students from African countries, for example, were only allowed to eat out in one designated restaurant in their city of residence; and female workers from Vietnam and Mozambique who became pregnant during their stay in the GDR were forced to have an abortion and were generally not permitted to marry Germans (Klier, 1994). Due to these manifold restrictions, the small number of foreigners in the GDR—around 1 % of the population in 1989—was much less integrated and therefore much less visible than in West Germany. This situation also gave rise to xenophobia in East Germany. Consequently, hostility and violence against foreigners took place (Klier, 1994), but was often kept secret and was thus not well-known among the general population.

In West Germany, the situation for foreigners differed significantly. West Germany experienced a large influx of foreigners, particularly in the 1960s and 1970s. Interactions with the occupying foreign armies were also closer, especially in the first years after World War II. Later on, West Germany saw a larger number of foreign tourists and exchange students.<sup>6</sup> This meant that contact with foreigners was a familiar experience for West Germans. Even though contact was at first often restricted to culinary adventures into Yugoslavian, Italian, Greek, Turkish or Chinese restaurants, over the long term, most West Germans had personal contact with foreigners, and larger cities in particular became characteristically international. According to data by the Federal Statistical Office of Germany, in 1989, 8 % of the West German population were foreigners, not counting immigrants with German citizenship. Indeed, surveys show that the number of contacts between West Germans and foreigners was much larger than the number of contacts between East Germans and foreigners even four years after reunification (see Figure A.2 in the appendix and Schmidt and Weick (1998)).

Although relationships with and the overall situation for foreigners was somewhat better in West Germany, some degree of xenophobia existed in the West as well, with political parties profiting from it. The success of right-wing parties was nevertheless limited to regional elections and was only moderate. In nationwide elections, they never won more than 4.3 % of the votes, which corresponds to the election outcome of the National Party of Germany (*Nationaldemokratische Partei Deutschlands*, NPD) in the federal election of 1969 (The Federal Returning Officer, 2022). With reunification, the situation changed dramatically, particularly in East Germany. The economic breakdown during the transition into a market economy led to a sudden rise in unemployment rates, up to 20 % on average. At the same time, more foreigners ended up in East Germany, especially because refugees and asylum seekers were distributed among the eastern regions of the country as well. High unemployment and immigration led to violence against foreigners and moderate success among right-wing parties.<sup>7</sup> Although the situation improved considerably in the mid-1990s, it again deteriorated starting in 2015 with a sharp rise in the number of refugees.

<sup>6</sup>In 1989, there were 92,000 foreign students studying in West Germany according to the Federal Statistics Bureau of Germany, but only 13,000 in East Germany (Deutsches Historisches Museum Berlin, 2016). In relation to the population size in 1989, we obtain a share of foreign students of 0.15% for West Germany and 0.03% for East Germany. Numbers of foreign visitors to East Germany are difficult to obtain. The Statistics Bureau of the GDR only recorded the numbers for the most popular tourist region, on the Baltic Sea (*Bezirk Rostock*). In 1987, there were fewer than 200,000 foreign visitors in this region. The number for the whole of GDR can therefore be estimated as less than 2 million, and many of them would have been West Germans, which counted as foreigners at that time, thus leaving an even smaller number as non-German visitors. In the same year in West Germany, the number was 14 million according to the Federal Statistics Bureau of Germany. The share is, for both students and visitors, much larger in West Germany.

<sup>7</sup>Hyll and Schneider (2018) find that, in the time since reunification, people in East Germany concerned about their own economic status compared with better-off peers are more likely to exhibit negative attitudes towards foreigners.



## 4 | IDENTIFICATION STRATEGY

In 1989, the GDR was divided into 14 districts and 217 counties.<sup>8</sup> We make use of the fact that the population of some of those counties could previously receive WGTv, and consider all the counties that were able to receive these programs to be part of the treatment region. Consequently, our control region consists of all counties without access to WGTv. In order to investigate the impact of watching WGTv on voting behavior, three assumptions have to be fulfilled.

First, the inhabitants in the treatment and control region would need to be comparable, varying only in terms of their access to WGTv. This assumption seems to be reasonable, because the GDR was a totalitarian socialist system that focused especially on the equalization of regional differences. These efforts commenced with early childhood education through a centralized education system (Hyll & Schneider, 2013). Bursztyn and Cantoni (2016) analyzed whether the inhabitants of the districts of Dresden, Neubrandenburg, and Rostock, which constitute large parts of our control region, were comparable to the other districts in the GDR in terms of demographic and economic conditions. They do not find any significant differences between these regions with respect to population density, retail sales, savings per capita, or the share of workers employed in industry or agriculture. Their results are in line with the findings of Kern and Hainmueller (2009), who show that the district of Dresden was comparable to the other districts in the GDR. We extend the approach of Bursztyn and Cantoni (2016) and focus especially on the percentage of foreigners, the share of foreign visitors, and demographic data. The data was obtained from several issues of the GDR Statistical Yearbook. Table A.2 in the appendix shows that these regions do not differ significantly from each other for the first recorded year in 1955 and the last year in 1989.

Additionally, if there had been any differences in voting behavior before the treatment, this would invalidate our analysis. We therefore analyze the results of the Reichstag elections in 1928, 1930, and 1933 for the constituencies that later became part of the GDR area. Table A.3 in the appendix shows the vote shares for the largest parties. The Dresden-Bautzen constituency coincides geographically with the later GDR district of Dresden, which for the most part had no WGTv reception (Hyll & Schneider, 2013; Kern & Hainmueller, 2009). Parts of the Pomeranian constituency also had no reception. However, only a very small part of this constituency later became part of the GDR, and the significantly larger part was placed under Polish administration. Parts of the constituency of Frankfurt (Oder) later became part of Poland. Overall, we find no systematic differences in the voting behavior of the individual constituencies, with Hennighausen (2015) and Friehe et al. (2020) coming to the same conclusion.

The data of the Reichstag elections unfortunately only allows an analysis at a rather high level of regional aggregation. This is why we also consider the state elections in 1946 during Soviet occupation. These election results are available at the county level. We focus on the state elections of the two states in which our control regions are located, namely Mecklenburg-West Pomerania and Saxony. We compare for both states whether the vote shares for the three major parties “Socialist Unity Party of Germany” (*Sozialistische Einheitspartei Deutschlands*, SED), “Christian Democratic Union of Germany” (*Christlich-Demokratische Union Deutschlands*, CDU), and “Liberal Democratic Party of Germany” (*Liberal-Demokratische Partei Deutschlands*, LDP) differ between the treatment and the control regions. Table A.4 in the appendix shows the results of this comparison. We find no significant differences in the vote shares. These findings are in line with Kern and Hainmueller (2009), who report that the vote shares of these three parties in the district of Dresden were similar to those of the other districts. It is important to note, however, that the 1946 elections were influenced by the aftermath of World War II and were not entirely independent. The Soviet Military Administration in Germany sought to influence the election in favor of the SED (Creuzberger, 1999).

The second important aspect for our analysis is that the individuals that had access to WGTv due to their geographical location were not only able to receive WGTv but actually watched it. Given that approximately 98 % of the households in East Germany had a television set by 1989 (Müller, 2000), citizens from the GDR could in principle

<sup>8</sup>East Berlin was not an official district, but fulfilled the function of a district after an administrative reform in 1961. Today, the former area of the GDR in reunified Germany consists of 75 counties and 61 electoral districts.

easily consume WGTV if the signal was strong enough. In addition, the black and white television reception was made considerably easier after the change of the GDR television to the West European system in the 1960s. Most of the modern color television sets produced in the GDR were equipped with a Phase Alternating Line (PAL) color encoding system, which was also used in WGTV sets (Wick, 2016). Against this backdrop, we can rule out that technical differences hindered access to WGTV programs; indeed, we highlight in Section 3.2 the important role of WGTV in the everyday life of East Germans. In the empirical analysis, we also use recent data on actual WGTV consumption in the GDR (see Section 5.2).

Third, we have to consider internal migration between the treatment and the control regions. In the time before reunification, residential and labor mobility was extremely restricted due to East Germany's centrally planned economy. Mobility across regions was further limited because the GDR faced a large shortage of housing since its foundation in 1949 (Bursztyn & Cantoni, 2016; Hyll & Schneider, 2013; Kern & Hainmueller, 2009). Therefore, selective spatial sorting during the GDR period presents no significant issue for our identification strategy. Selective migration after reunification would present issues in our research design; however, Bursztyn and Cantoni (2016) show that the migration rates to West Germany were similar for the treatment and control region. Furthermore, they provide evidence that the migration rates between the treatment and the control regions were relatively low in the years after reunification. These migration rates also do not show any asymmetric pattern.

## 5 | SURVEY EVIDENCE

### 5.1 | GDR survey

For the first part of our empirical analysis, we use the survey “Youth and Right-Wing Extremism 1990,” which was conducted before German reunification. A total of 1,624 people between the ages of 12 and 26 took part in this survey. The survey included the three GDR districts Chemnitz, Dresden, and Leipzig. In line with previous studies, we take advantage of the fact that the WGTV signal in the Dresden district was too weak to allow reception of WGTV programs (Friehe et al., 2020; Hennighausen, 2015; Hyll & Schneider, 2013; Kern & Hainmueller, 2009). Therefore, respondents living in the Dresden district represent our control group, while participants from the other two districts in which reception was possible represent our treatment group. In addition to the participants' socioeconomic information, the survey also includes several attitudinal questions about foreigners. Among other things, participants were asked about their willingness to (i) have a drink with a foreigner in a pub, (ii) invite a foreigner to their home, or (iii) marry a foreigner. They were able to answer on a scale from “not at all” (1) to “completely” (5).

Panel A of Table 1 reports the results of ordered probit models controlling for individual characteristics of the respondents such as sex, age, relationship status, and religious affiliation. We also add a dummy variable that indicates whether the respondent lives in a city. Most importantly, we also include a dummy variable that equals one if the respondent resides in the Chemnitz or Leipzig district and thus had access to WGTV.

In contrast, if a respondent lives in the Dresden district where WGTV was not accessible, the variable takes the value of zero.<sup>9</sup> The results show that participants from regions with WGTV reception have a higher willingness to (i) have a drink together with a foreigner in a pub, (ii) invite a foreigner to their home, or (iii) marry a foreigner. Our results hold even if we control for direct contact with foreigners in the individuals' professional or private lives. We come to the same conclusion if we apply nonparametric Wilcoxon rank-sum tests instead of ordered probit models.

In addition to questions capturing attitudes toward foreigners, the survey also includes information on nationalist, antisemitic, and authoritarian attitudes. Respondents were presented with the following statements and prompted to indicate to what extent they agreed with these statements: (iv) I am proud to be German, (v) Germans

<sup>9</sup>We further support this assumption by analyzing SOEP data on self-reported WGTV consumption during the GDR period. We show in Table B.1 in the appendix that survey participants who lived in the Dresden district reported that they consumed significantly less WGTV than East German respondents living elsewhere.

**TABLE 1** WGTV and attitudes towards foreigners before reunification

Survey questions	Coefficient of TV-dummy
<b>Panel A:</b>	
To what extent would you be willing to engage in the following behaviors?	
(i) Willingness to have a drink with a foreigner in a pub	0.137**
(ii) Willingness to invite a foreigner to my home	0.163**
(iii) Willingness to marry a foreigner	0.120*
<b>Panel B:</b>	
To what extent do the following statements agree with your personal opinion?	
(iv) I am proud to be German	0.088
(v) Germans have always been the greatest	−0.040
(vi) I feel contempt for Hitler	0.022
(vii) Germany should again have a strong <i>Führer</i>	−0.079
(viii) Understanding about antisemitism	0.126

Note: Each row represents a separate ordered probit model. Controls: sex, age, age<sup>2</sup>, age<sup>3</sup>, relationship status, and religious affiliation, dummy for living in a city. In Panel A (B), positive coefficients of the TV-dummy indicate a higher willingness (agreement). Standard errors clustered at individual level.

Significance levels: \*p < 0.1, \*\*p < 0.05, and \*\*\*p < 0.01.

have always been the greatest, (vi) I feel contempt for Hitler, and (vii) Germany should again have a strong *Führer*. Furthermore, the participants were asked to what extent they have an understanding of recent antisemitic actions in Germany (viii). The results in Panel B of Table 1 indicate that the effect of WGTV on xenophobia is not driven by authoritarian, nationalist, or antisemitic attitudes.

## 5.2 | SOEP data

In this subsection, we use data from the SOEP, which is an annual representative panel study for German households (Goebel et al., 2019). Besides the annual personal questionnaire, additional surveys are occasionally carried out. In 2018, 2,315 people received a questionnaire with the title “Living in the former GDR.” This questionnaire is aimed exclusively at people who lived on the territory of the GDR before reunification and were born in 1972 or earlier. The questionnaire includes questions about living conditions in the GDR period and personal attitudes towards the government at that time. Among other things, the participants are asked how regularly they have watched certain television broadcasts. One of these broadcasts is *Tagesschau*, a West German news program broadcast daily by one of the two public WGTV channels. The respondents could answer this question on the following scale: “never,” “rarely,” “often,” “almost always.”<sup>10</sup> We can link this information to the annual questionnaires via the individual person ID.

In the questionnaires from 2016 and 2018, the respondents were asked several questions about their attitudes towards refugees. These questions cover opinions related to economic, cultural, and social consequences of the immigration of refugees. Respondents were also asked whether they consider an influx of refugees in the short-term and in the long-term more as an opportunity or more as a risk. The exact wording of the questions can be found in Table B.2 in the appendix. The respondents had to answer these questions on a Likert-type scale ranging from 1 (negative opinion) to 11 (positive opinion). In line with the results from the previous section, we expect people who watched WGTV to consider refugees as an enrichment rather than a threat to German society. Therefore, we predict that these people select a higher value on the scale. To test this, we estimate the following random-effects model:

<sup>10</sup>In addition to *Tagesschau*, there is another Western television show included (*Wetten, dass?*). This show, however, is only broadcast six to seven times a year and is therefore less suitable for measuring regular television consumption. The remaining broadcasts could only be seen on EGTV.

$$Y_{it} = \beta_0 + \beta_1 TV_i + \beta_2 X_{it} + \mu_t + Z_i + \epsilon_{it}, \quad (1)$$

where  $Y_{it}$  represents the answer score of individual  $i$  in year  $t$ .  $TV_i$  is an ordinal variable and takes the value of one if individual  $i$  had never watched *Tagesschau* before reunification. The variable equals two if respondent  $i$  had rarely seen it, three if he or she had seen it often, and four if he or she almost always saw it.  $X_{it}$  denotes a vector of covariates and  $\mu_t$  indicates year dummies.  $Z_i$  represents the individual-specific random effect, while  $\epsilon_{it}$  indicates the error term. The vector of covariates includes gender, age, marital status, employment status, education level, log household income, and dummy variables for children in the household, religious affiliation, migration background, and whether the respective individual is currently living in West Germany. We report summary statistics in Table B.3 of the appendix.

Table 2 reports the regression results. Model 1 shows that the respondents who report having watched *Tagesschau* while living in the GDR are more optimistic about the effects of refugees on the German economy. A one standard deviation increase in the frequency with which a person watched *Tagesschau* is associated with a 0.119 unit increase in the respondent's assessment of seeing the influx of refugees as beneficial for the German economy. As Model 2 shows, respondents who watched *Tagesschau* more frequently also tend to consider refugees to be an enrichment rather than a hindrance to German culture. An increase in the TV variable by one standard deviation leads to a 0.081 unit increase in the respondent's assessment of perceiving refugees as an enrichment to German culture. In addition, we also find a positive and significant television effect in Model 3. As Model 5 shows, respondents who watched *Tagesschau* also perceive refugees as an opportunity rather than a risk, at least in the long term. The effect size of the TV variable in Models 3 and 5 is comparable to that in the first two models. In Model 4, however, we could not find a significant impact of television exposure. Almost all models show that women and people with children in the household have a more positive perception of refugees on average. The same is true for individuals with a religious affiliation and for better-educated individuals. Moreover, we find a positive impact of household income on the perception of refugees.

In addition to the questions above, the participants were also asked whether or not they had supported refugees by donating money or working with them directly, for example by providing support in language learning within the last year or if they planned to do so in the future.<sup>11</sup> We would again assume that individuals who watched WGTV programs are more likely to support refugees. We estimate the following random-effects probit model:

$$Y_{it} = \beta_0 + \beta_1 TV_i + \beta_2 X_{it} + \mu_t + Z_i + \epsilon_{it}, \quad (2)$$

The only difference from regression equation (1) is that  $Y_{it}$  represents a dummy variable, which equals one if individual  $i$  states in  $t$  that he or she has donated money in the past year and zero otherwise. The same logic applies to the other outcome variables. Table 3 reports the regression results. Our findings in Models 1 and 2 indicate that watching WGTV more regularly is associated with a higher probability of supporting refugees by donating money. For example, a response that was one standard deviation higher when asked whether someone had watched *Tagesschau* increased the willingness to donate to refugees during the last year by 1.5 percentage points. The effect for future donations was even stronger. A one standard deviation increase in the TV variable increased the willingness to donate to refugees in the future by 2.1 percentage points. We obtain similar results with regard to the intention to work directly with refugees in the future. A one standard deviation increase in the TV variable leads to a 1.2 percentage point higher likelihood that respondents have the intention to support refugees directly. Only in Model 3 do we not find a significant effect. Women, individuals with children in their households, and respondents with a religious affiliation are on average more likely to support refugees. Furthermore, we find a positive relationship between the probability of supporting refugees and household income. These results are very similar to those of Table 2.<sup>12</sup>

Overall, our results show that people who have watched WGTV more regularly have more positive attitudes towards refugees, which aligns with our presumption that WGTV exposure reduced xenophobia. An alternative

<sup>11</sup>Participants were also asked whether they had actively participated in demonstrations related to refugees. In the original German version of the question, however, it is not possible to differentiate whether it is a question of demonstrations or initiatives in support of or against refugees.

<sup>12</sup>Our results from Table 2 and 3 remain qualitatively unchanged if we use a dummy variable instead of the ordinal television variable.

**TABLE 2** WGTV and attitudes towards refugees after reunification

Dependent variables:	(1)	(2)	(3)	(4)	(5)
Respondent's agreement the following statements:	Refugees are good for the German economy	Refugees enrich cultural life in Germany	Refugees make Germany a better place	An influx of refugees means more opportunities in the short-term	An influx of with refugees means more opportunities in the long-term
TV (ordinal)	0.113 <sup>**</sup> (0.046)	0.081 <sup>+</sup> (0.049)	0.074 <sup>+</sup> (0.044)	0.054 (0.039)	0.092 <sup>+</sup> (0.049)
Female	0.090 (0.100)	0.445 <sup>***</sup> (0.104)	0.222 <sup>**</sup> (0.094)	0.247 <sup>***</sup> (0.083)	0.266 <sup>**</sup> (0.108)
Age	-0.285 (0.336)	0.005 (0.329)	-0.310 (0.299)	-0.088 (0.268)	-0.348 (0.331)
Age <sup>2</sup>	0.005 (0.005)	0.001 (0.005)	0.005 (0.005)	0.002 (0.004)	0.006 (0.005)
Age <sup>3</sup>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Marital status					
Single	0.029 (0.184)	0.417 <sup>**</sup> (0.201)	0.171 (0.177)	0.162 (0.152)	0.315 (0.201)
Divorced	0.144 (0.156)	0.285 <sup>+</sup> (0.160)	0.262 <sup>+</sup> (0.141)	0.148 (0.128)	0.204 (0.164)
Widowed	0.053 (0.149)	-0.065 (0.152)	-0.096 (0.140)	0.036 (0.121)	0.022 (0.163)
Children in household	0.239 (0.192)	0.435 <sup>**</sup> (0.190)	0.365 <sup>**</sup> (0.171)	0.329 <sup>**</sup> (0.156)	0.400 <sup>**</sup> (0.194)
Religious affiliation	0.303 <sup>***</sup> (0.107)	0.150 (0.111)	0.339 <sup>***</sup> (0.102)	0.244 <sup>***</sup> (0.091)	0.348 <sup>***</sup> (0.116)
Employment status					
Part-time	0.143 (0.152)	0.231 (0.159)	-0.006 (0.141)	-0.095 (0.129)	0.041 (0.159)
Not employed	-0.117 (0.142)	0.080 (0.137)	0.135 (0.132)	-0.214 <sup>+</sup> (0.121)	-0.175 (0.142)
Education					
Medium	0.354 <sup>***</sup> (0.132)	0.249 <sup>+</sup> (0.135)	0.322 <sup>***</sup> (0.123)	0.232 <sup>**</sup> (0.110)	0.266 <sup>+</sup> (0.139)
High	1.405 <sup>***</sup> (0.136)	1.336 <sup>***</sup> (0.143)	1.165 <sup>***</sup> (0.130)	0.800 <sup>***</sup> (0.116)	1.388 <sup>***</sup> (0.147)
Household income (log.)	0.447 <sup>***</sup> (0.110)	0.489 <sup>***</sup> (0.112)	0.465 <sup>***</sup> (0.100)	0.243 <sup>***</sup> (0.090)	0.475 <sup>***</sup> (0.114)
Migration background	-0.560 (0.409)	-0.674 <sup>+</sup> (0.408)	-0.699 <sup>**</sup> (0.356)	-0.113 (0.391)	-0.447 (0.437)
Living in West Germany	0.309 <sup>+</sup> (0.175)	0.258 (0.175)	0.284 <sup>+</sup> (0.156)	0.147 (0.147)	0.375 <sup>**</sup> (0.188)
Year dummies	✓	✓	✓	✓	✓
Between R <sup>2</sup>	0.11	0.10	0.09	0.06	0.10
Observations	4,064	4,072	4,066	4,077	4,064

Note: Random effects models. Omitted variables: Married, full-time, and low education. Positive coefficients indicate a higher agreement. The different number of observations results from the fact that some people did not give an answer to all five questions. If we exclude people who did not answer all five questions, our results are almost unchanged. Standard errors in parentheses, clustered at individual level.

Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ .

explanation for our results could also be that WGTV made individuals more tolerant in general, not just more tolerant of foreigners. To explore this alternative, we examine whether WGTV exposure affected tolerance in other domains. To test this conjecture, we use attitudinal questions from the SOEP questionnaire in 2018, which capture attitudes regarding homosexuality and transsexuality. Because neither of these topics played a role in either EGTV or WGTV

before reunification, we do not expect to find an effect for the TV variable. The respondents had to indicate the extent to which they agree with the following three statements on a Likert scale from 1 “disagree completely” to 7 “agree completely”: (i) I think it is good that marriages between two women or two men are legally recognized, (ii) A same-sex couple can raise a child just as well as a man and woman, and (iii) It would be good for society if transgender people were recognized as normal. As Table B.6 in the appendix shows, we do not find a significant effect of the treatment variable for any of the three statements.

Finally, Table B.7 in the appendix shows that respondents with WGTv exposure are not more concerned in general. For this purpose, we first use the information whether a respondent considers himself or herself to be a person who frequently worries. Following that, we analyze other questions that deal with concerns independent of foreigners.<sup>13</sup> We do not find any significant influence of WGTv. However, WGTv seems to have a significant effect on perceptions of traditional gender roles. Our results show, for example, that WGTv exposure positively impacts the likelihood that the man has the final say in important financial decisions within a partnership or marriage. This finding seems reasonable, as WGTv included more conservative images of families and women than EGTv.<sup>14</sup>

## 6 | ADMINISTRATIVE DATA SET

### 6.1 | Data

In this section, we use county-level data and focus on two different measures for xenophobic attitudes: the electoral success of right-wing parties in federal elections and hate crimes against refugees. County-level data for the national elections of the German Federal Parliament (*Bundestag*) were retrieved from the Federal Returning Officer (*Bundeswahlleiter*) for the elections from 1990 to 2017.<sup>15</sup> As there were various right-wing parties running for the elections, we consolidated the votes for the AfD, DVU, NPD, and REP under the label “Right Parties.”<sup>16</sup> The data on hate crimes targeting refugees was provided by the Amadeu Antonio Foundation and the non-profit organization PRO ASYL.<sup>17</sup> Between January 2015 and the end of December 2018, they jointly documented 5,222 incidents for East Germany (including Berlin) and categorized them into the following four groups: arson (120), bodily injuries (1,305), other assaults such as property damage to refugee accommodations and intimidation (3,510), and incidents related to anti-refugee demonstrations (287). In addition, they classified 287 further incidents as suspected cases. Table C.14 of the appendix reports examples for each type of anti-refugee activity. All incidents are geo-coded with exact longitude and latitude, which we use to assign them to the respective county. Although the geo-code was missing in 23 cases, we managed to allocate the incidents to the respective county by hand via the statement of the location. The data set also contains a description and the source for each entry such as police reports or inquiries by political parties.

The data for the over-the-air WGTv signal strength was retrieved from Crabtree et al. (2015). They use a Longley-Rice electromagnetic signal propagation model, terrain data, and data on the location and technical characteristics of WGTv transmitters to model signal strength. They collected the information on all broadcast transmitters operating in West Germany at the beginning of 1989 from Northern German Broadcasting (*Norddeutscher Rundfunk*). They discretize the continuous measure of WGTv signal strength and generate four different categories: -86.5 dBm, -85 dBm, -82.5 dBm, and -80 dBm. Following Crabtree et al. (2015), we use a dummy variable for the reception of

<sup>13</sup>We focus on concerns towards the following issues: the economy in general, own economic situation, health, maintaining peace, crime in Germany, and global terrorism. Table B.7 in the appendix reports the results.

<sup>14</sup>The results are available from the authors on request.

<sup>15</sup>Federal elections take place every four years. After the acting Chancellor Gerhard Schröder lost a motion of no confidence in 2005, an early federal election took place.

<sup>16</sup>The AfD has positioned itself using platforms that are hostile towards refugees and immigration, but there could also be voters who may have chosen the AfD, for example, because of their critical attitude towards the European Union. In order to show that our results are not dependent on the AfD vote share, Table C.6 in the appendix documents that our results are unaffected by the exclusion of the AfD votes.

<sup>17</sup>The data set is freely available at <https://www.mut-gegen-rechte-gewalt.de/service/chronik-vorfaelle><https://www.mut-gegen-rechte-gewalt.de/service/chronik-vorfaelle>.

**TABLE 3** The effect of WGTV on refugee-related activities

Dependent variables:	(1)	(2)	(3)	(4)
Probability that the respondent	donated to help refugees in the past year	intends to donate to help refugees in the next year	supported refugees directly in the past year (e.g., language support)	intends to support refugees directly in the next year (e.g., (language support)
TV (ordinal)	0.014 <sup>**</sup> (0.006)	0.020 <sup>***</sup> (0.007)	0.001 (0.003)	0.011 <sup>***</sup> (0.004)
Female	0.067 <sup>***</sup> (0.014)	0.063 <sup>***</sup> (0.015)	0.010 <sup>*</sup> (0.006)	0.010 (0.009)
Age	−0.031 (0.052)	0.002 (0.053)	0.010 (0.028)	−0.020 (0.046)
Age <sup>2</sup>	0.001 (0.001)	0.000 (0.001)	0.000 (0.000)	0.000 (0.001)
Age <sup>3</sup>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Marital status				
Single	−0.009 (0.027)	−0.011 (0.028)	−0.002 (0.011)	0.009 (0.017)
Divorced	0.022 (0.023)	0.032 (0.023)	0.009 (0.009)	0.023 <sup>*</sup> (0.014)
Widowed	−0.008 (0.021)	0.010 (0.024)	0.014 (0.012)	0.020 (0.016)
Children in household	0.059 <sup>**</sup> (0.025)	0.062 <sup>**</sup> (0.027)	0.020 <sup>*</sup> (0.011)	0.006 (0.016)
Religious affiliation	0.050 <sup>***</sup> (0.015)	0.067 <sup>***</sup> (0.016)	0.015 <sup>***</sup> (0.006)	0.013 (0.009)
Employment status				
Part-time	0.033 (0.022)	0.008 (0.024)	0.008 (0.011)	0.018 (0.015)
Not employed	0.023 (0.021)	0.004 (0.023)	−0.008 (0.010)	−0.001 (0.013)
Education				
Medium	0.044 <sup>***</sup> (0.016)	0.037 <sup>**</sup> (0.017)	−0.005 (0.007)	−0.002 (0.009)
High	0.163 <sup>***</sup> (0.019)	0.188 <sup>***</sup> (0.021)	0.037 <sup>***</sup> (0.009)	0.070 <sup>***</sup> (0.013)
Household income (log.)	0.112 <sup>***</sup> (0.016)	0.104 <sup>***</sup> (0.017)	0.019 <sup>***</sup> (0.007)	0.031 <sup>***</sup> (0.010)
Migration background	0.041 (0.061)	−0.011 (0.076)	0.024 (0.023)	0.003 (0.036)
Living in West Germany	0.026 (0.024)	0.039 (0.024)	0.003 (0.009)	0.004 (0.013)
Year dummies	✓	✓	✓	✓
Log. pseudolikelihood	−1524.57	−1671.64	−458.92	−743.91
Observations	4,072	4,002	4,055	3,991

Note: Random effects probit models. All models report probit average marginal effects. Omitted variables: Married, full-time, and low education. The different number of observations results from the fact that some people did not give an answer to all four questions. If we exclude people who did not answer all four questions, our results are almost unchanged. Standard errors in parentheses, clustered at individual level.

Significance levels: \*p < 0.1, \*\*p < 0.05, and \*\*\*p < 0.01.

WGTV at the county level. The dummy variable equals one if the signal strength is above −86.5 dBm, which made WGTV receivable. In Table C.5 of the appendix, we show that our results do not change if we use one of the other signal strengths. Figure A.3 in the appendix shows the treatment and control region.

In addition to our variable of interest, we consider a range of control variables. First, we include the logarithmized population density, because people living in cities might be *per se* more open-minded. The data was retrieved from the electoral management body and the regional statistical offices (*Statistische Landesämter*). Furthermore, we include a dummy variable that equals one if the respective county is an urban county (*kreisfreie Stadt*) and zero otherwise. We also control for the share of women, since several studies suggest that males are more prone to xenophobic attitudes (e.g. Watts, 1996). We also adjust for the average age and the total net migration in a county. In addition, we consider the percentage of school-leavers with a university entrance certificate and the percentage



of school-leavers without graduation. The information about the percentage of women, the average age, the total net migration, and the information about school-leavers in a county were retrieved from the Federal Institute for Research on Building, Urban Affairs and Spatial Development (2020). Empirical evidence has shown that certain cultural traits are persistent over long periods of time (Mocan & Raschke, 2016; Voigtländer & Voth, 2012, 2015). To account for the historical voting heritage of the counties, we consider the votes for the National Socialist Freedom Movement (*Nationalsozialistische Freiheitspartei*, NSFB) in the German federal election (*Reichstagswahl*) on May 4, 1924, in the respective county.<sup>18</sup> The data was retrieved from [www.wahlen-in-deutschland.de](http://www.wahlen-in-deutschland.de) and was available for the historical electoral districts, which we subsequently matched to the current counties.

Regions highly populated with largely unskilled individuals suffering from unemployment and low income are associated with anti-immigration sentiment (Facchini & Mayda, 2009; Mayda, 2006; Scheve & Slaughter, 2001).<sup>19</sup> Previous research has also shown that a higher GDP per capita improves attitudes towards immigrants (Brenner & Fertig, 2006) and that welfare concerns are a more significant driver of attitudes towards foreigners than labor market concerns (Dustmann & Preston, 2007). Therefore, we also consider GDP per capita, the average disposable income, and the unemployment rate of the respective counties and the percentage of unemployed foreigners for each election year. The unemployment rate for foreigners was not available for the years 1990 and 1994. Once again, the data stems from the regional statistical offices. According to intergroup contact theory, regular encounters with foreigners should lead to a reduction in xenophobia. Mocan and Raschke (2016), for example, find evidence that increased encounters with foreigners reduce racist feelings. Therefore, we also consider the percentage of foreigners living in the county. For the year 1989, the data is available at the district level (*DDR Bezirke*) and comes from the last Statistical Yearbook of the former GDR. For the respective election years, it was collected from regional statistical offices. To account for potential contacts with foreigners visiting the relevant county during the year of the election, we also consider foreign visitors for the respective election year. The data was again retrieved from regional statistical offices. Table C.1 of the appendix includes a definition of all variables and Table C.2 presents descriptive statistics.

It is also important to test whether the covariates in the regions with and without former WGTV reception are comparable. If potential differences between regions increase over time, differences should be most pronounced in 2017. Therefore, we report the covariate balance for 2017 in Table C.3 of the appendix. While the counties in the treatment and control region are generally rather similar, we find significant differences in the share of women and the economic conditions. While we find a clearer difference in the unemployment rate, the income difference is rather negligible from an economic perspective. The monthly income in the treated counties is 60 euros higher compared to the counties in the control regions, which corresponds to 3.9 % of the average monthly income. Similar results are also documented in the study by Friehe et al. (2020).

## 6.2 | Election results of right-wing parties

To test whether the exposure to WGTV leads to a lower percentage of votes for right-wing parties, we estimate the following random-effects model<sup>20</sup>:

$$RV_{jt} = \beta_0 + \beta_1 TV_j + \beta_2 X_{jt} + \mu_t + Z_j + \epsilon_{jt}, \quad (3)$$

<sup>18</sup>The NSFB was a right-wing extremist party in the Weimar Republic that emerged from a collaboration between the German Völkisch Freedom Party (DVFP) and the NSDAP. After the ban on the NSDAP expired in 1925, the NSFB was reabsorbed by the NSDAP. Our results in Sections 6 and 6.3 do not change if we use the voting shares from 1924 or a later election as a control variable. However, the election results in the 1930s in particular may have been influenced by the Great Depression.

<sup>19</sup>A recent article by Hainmueller et al. (2015) contradicts these findings and finds no evidence that fears about unemployment and wage reductions drive anti-immigration attitudes. David et al. (2018) find that contradictory results may be explained by different scales.

<sup>20</sup>Arguably, the random effects estimator is the only estimator that allows us to identify non-time varying factors such as television reception.

where  $RV_{jt}$  represents the voting outcome for right-wing parties in county  $j$  in the federal election of year  $t$ .  $TV_j$  takes the value of one if county  $j$  had access to WGTV prior to reunification. As a consequence,  $\beta_1$  is our coefficient of interest. While  $X_{jt}$  denotes a vector of covariates for county  $j$  at time  $t$ , we indicate year dummies by  $\mu_t$ .  $Z_j$  represents the county-specific random effect—that is, the difference between the average voting outcome in county  $j$  and the average voting outcome in East Germany—while  $\epsilon_{jt}$  indicates the error term.

Table 4 reports the results for the election years from 1994 to 2017.<sup>21</sup> In Model 1 we include only the TV-dummy. In Model 2 we also consider demographic characteristics of the respective counties, and in Model 3 we add further controls to account for different economic conditions. In the preferred specification Model 4 we include the voting outcome of the NSFB in 1924. In all models, we find that the exposure to WGTV during the GDR period had a negative and significant effect on election outcomes for right-wing parties, which is in line with the survey results. Our results in Model 4 show that right-wing parties' share of the vote in counties with access to WGTV programs is on average 1.32 percentage points lower during the GDR period. In addition, the regressions show positive effects for population density and GDP per capita on the voting outcome for right-wing parties, but negative effects for the share of women in a county. Furthermore, we find that the percentage of foreigners living in the respective region had a significant and negative effect on election outcomes, which is also consistent with intergroup contact theory. A one standard deviation increase in the share of foreigners leads to a decline in the election outcome for right-wing parties by 0.68 percentage points. Similarly, a one standard deviation increase in foreign visitors reduced the election result for right-wing parties by 0.41 percentage points. In contrast to these findings, the proportion of foreigners living in the GDR in 1989 had a positive and significant impact on the election results of the right-wing parties; a one standard deviation increase in foreigners in 1989 is associated with a 0.69 percentage point increase in right-wing votes. These findings indicate that not every form of direct contact with foreigners will reduce xenophobia. One reason for the negative perception of foreigners among the population who lived in the GDR in 1989 might be the way in which foreigners were officially treated in the GDR. As stated in Section 3.4, contact with foreigners was often restricted in the GDR and lacked the chance for personal and positive experiences. The integration of contract workers was not intended by the GDR government due to the temporary nature of the work. Moreover, there are documented cases of regular conflicts between guest workers and locals in some regions (Rother, 2012).<sup>22</sup> After reunification, many new foreigners who arrived in East Germany were refugees, living in large refugee accommodations. Again, contacts were rare, this time due to language and cultural barriers (Schmidt & Weick, 1998). Moreover, their arrival increased concerns about the already fraught job market (Stone, 1990).

In a next step, we consider the average relevant lifetime that the counties' inhabitants spent in the former GDR as another control variable, because differences in exposure time could exist between treatment and control counties. Relevant years include only those spent in the former GDR after the 14th birthday, as we assume the influence on children to be small. Inhabitants that were 15 years old at the time of the fall of the Berlin Wall would enter the calculation of the variable GDRT with a value of one year. To enable comparison between the individual counties, we subtract the overall average number of relevant years in a given year from the average of each county. Model 5 of Table 4 includes an interaction term between television reception and the average relevant lifetime of counties' inhabitants spent in the former GDR.

Finally, we conduct several robustness checks, which we report and discuss in Appendix C. For example, we show that our results remain unchanged if we vary the relevant threshold of signal strength that defines our TV-dummy. The same is true if we divide counties into treatment and control regions based on historical maps. To ensure that our treatment effect is not driven by spurious correlation resulting from distance to the border, we account for the border distance to West Germany and the eastern neighboring states, respectively. Again our results regarding the election outcomes for right-wing parties remain unaffected. We show that the TV effect occurs in both

<sup>21</sup>In the appendix, we show the results including the election in 1990. However, once we include the election in 1990, we can only use a reduced set of controls.

<sup>22</sup>For example, the GDR government ended a 10-year international agreement with Algeria due to repeated violent conflicts between Algerian guest workers and GDR citizens (Bundeszentrale für politische Bildung, 2012).

**TABLE 4** The effect of WGTV on right-wing votes (1994–2017)

Dependent variable:	Election outcome of right-wing parties in federal elections				
	(1)	(2)	(3)	(4)	(5)
TV-dummy	−1.007** (0.393)	−1.082*** (0.297)	−1.338*** (0.243)	−1.322*** (0.242)	−1.677*** (0.250)
Population density (log.)		0.877*** (0.144)	0.839*** (0.138)	0.840*** (0.138)	0.857*** (0.130)
Women (%)		−1.561*** (0.167)	−1.529*** (0.171)	−1.531*** (0.171)	−1.435*** (0.166)
Average age		0.326*** (0.114)	0.276*** (0.094)	0.274*** (0.095)	−0.188 (0.186)
Total net migration		0.011 (0.007)	0.011 (0.009)	0.011 (0.009)	0.010 (0.009)
Foreigners (%)		−0.478*** (0.099)	−0.449*** (0.124)	−0.453*** (0.126)	−0.450*** (0.105)
Foreigners in 1989 (%)		2.069*** (0.273)	2.020*** (0.270)	1.946*** (0.298)	1.957*** (0.335)
Urban county		−0.470* (0.240)	−0.439** (0.224)	−0.424* (0.225)	−0.438** (0.219)
High school dropout (%)		0.004 (0.023)	0.008 (0.023)	0.008 (0.023)	−0.008 (0.022)
High school diploma (%)		0.002 (0.012)	0.003 (0.013)	0.002 (0.013)	−0.004 (0.013)
Disposable income (log.)			1.689 (1.945)	1.630 (1.957)	2.002 (1.875)
Unemployment rate total			0.010 (0.024)	0.010 (0.024)	−0.001 (0.024)
GDP per capita			0.050** (0.022)	0.050** (0.022)	0.050** (0.021)
Foreign visitors			−1.606*** (0.422)	−1.598*** (0.427)	−1.514*** (0.348)
Votes for NSFB in 1924				−0.017 (0.033)	−0.005 (0.033)
GDRT					2.424*** (0.357)
TV-dummy × GDRT					−1.776*** (0.382)
Year dummies	✓	✓	✓	✓	✓
Between R <sup>2</sup>	0.05	0.53	0.54	0.54	0.54
Observations	1,519	1,519	1,519	1,519	1,519

Note: Random effects model. The dependent variable in all models is the voting outcome for right-wing parties in the federal elections from 1994 to 2017. Standard errors in parentheses, clustered at the county level.

Significance levels: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

regions of the former GDR without access to WGTV, the industrialized southeastern and the agrarian northeastern part. Since East Berlin was the capital of the former GDR and its demographic composition was very different from the other regions, we exclude East Berlin from our sample as a further robustness check. None of our previous results change when performing these robustness checks.

While election results provide an excellent measure for individual preferences—they are by definition incentivized and include a large part of the population—one might argue that the motives for electing extreme right-wing parties are not directly observable in these figures and might be different from xenophobic attitudes. An alternative explanation of election outcomes could be that WGTV broadcasting conveyed a more realistic picture of the West German system. People in East Germany could have had different expectations about the new system they were

confronted with in the early 1990s. Those East Germans that received WGTv were consequently less disappointed with the system that replaced the former GDR. If disappointment with the new political system was the primary motivation behind the election results, one would expect East Germans that did not receive WGTv programs to have voted not only for the right-wing parties, but also for the left-wing party (*PDS/Die Linke*).<sup>23</sup> Hence, to investigate whether general dissatisfaction with the political system rather than xenophobia drives our results, we replace the voting outcome for right-wing parties with the voting outcome for the left-wing party as dependent variable. We find no significant relationship between prior WGTv exposure and the election outcome for the left-wing party. If general dissatisfaction with the political system had been the main motivation behind the election results for the right-wing parties rather than xenophobia, we would have expected to obtain a statistically significant and negative effect of the TV-dummy on the vote shares of the left party as well. Following Weber (2011), abstention can be treated as an alternative expression of protest. Therefore, we run the same model with the voter turnout as dependent variable. Again, the television reception has no significant effect.<sup>24</sup>

One question that has yet to be answered is how long the effects of WGTv will last. One might reasonably expect preferences among East and West Germans gradually to converge after reunification. Alesina and Fuchs-Schündeln (2007), for example, find that East and West Germans' preferences for state intervention converge after two generations. The fact that voters who were born after reunification were only entitled to vote in the more recent federal elections should contribute to such a convergence. By contrast, other studies have shown that once cultural traits and attitudes are formed, they can persist over an extremely long period (Guiso et al., 2016; Mocan & Raschke, 2016; Voigtländer & Voth, 2012). Hennighausen (2015) and Giuliano and Spilimbergo (2014) argue that convictions or moral values which evolved over decades can be long-lasting. By analyzing the influence of WGTv on entrepreneurship, Slavtchev and Wyrwich (2017) also report long-lasting effects, which they describe as being due to an inter-generational transmission of the television effect. In addition, the attitudes of people who grew up watching WGTv might be more persistent. For example, Voigtländer and Voth (2015) find that Germans who grew up under the Nazi regime show stronger antisemitic attitudes today than people who were born before or after this period. Overall, it is unclear whether the WGTv effect will disappear after reunification or whether it will persist.

To investigate this question, we analyze each federal election since 1990 separately, using OLS regressions. The results, which are reported in Tables C.12a and 12b of the appendix show that the TV-dummy remains negative and statistically significant for all periods. These results suggest that the WGTv effect is rather persistent.<sup>25</sup> Several phenomena may contribute to the longevity of the WGTv effect after reunification. One reason could be self-selection regarding the relocation decisions of migrants after reunification (Roupakias & Dimou, 2021). Regions without former WGTv reception may have attracted fewer foreigners, which implies that direct contact with foreigners remained low. As Table C.13 in the appendix shows, regions without WGTv reception indeed experienced significantly lower naturalization rates from 2015 to 2018.<sup>26</sup> Another potential reason for a persistent TV effect could be party funding. If right-wing parties receive more votes in non-treated regions, they also receive more party funding, which in turn affects their electoral results in subsequent elections positively (Benoit & Marsh, 2010; Cox & Thies, 2000).

<sup>23</sup>Arguably, the old guard of the left is also rather critical towards migration. However, being critical towards migration is not the same as being xenophobic.

<sup>24</sup>The results are shown in Table C.11 of the appendix. In contrast to our findings, a recent study by Friehe et al. (2020) finds a positive relationship between WGTv exposure and voter turnout in federal and state elections from 1990 to 1999.

<sup>25</sup>It is also noticeable that the coefficient of the TV-dummy has increased substantially, particularly in the last two election years. However, this result at least partly stems from the fact that the average right-wing party election outcome also increased from 3.7% in 2009 to 23.9% in 2017 due to the presence of the AfD. The same logic also applies to the other time-invariant variables; for example, the share of foreigners in 1989. If we exclude the votes for the AfD, we do not find such a strong increase in the magnitude of the TV-dummy. In this case, the point estimate of the TV-dummy is only -0.210.

<sup>26</sup>In addition, there is empirical evidence suggesting that support from prior migrants typically reduces investment costs of migration; for example, by offering finance for travel costs, hospitality on arrival, or access to networks for job search (Collier & Hoeffler, 2018). In this context, Collier and Hoeffler (2018) show that once cultural or ethnic communities emerge in host countries, they ease subsequent migration.

### 6.3 | Hate crimes targeting refugees

In this subsection, we employ another measure for xenophobia, namely hate crimes committed against refugees. According to our hypothesis that WGTV reduces xenophobia, we would expect to find fewer hate crime incidents in counties with former WGTV exposure. Table 5 shows the results of random-effects poisson regressions, in which we report incident rate ratios that can be interpreted as a multiplicative effect or semi-elasticity. Thus, coefficients less than one represent a negative relationship and values greater than one represent a positive relationship. In addition to the control variables that we used in the previous estimations, we also control for the number of refugees registered in each county.<sup>27</sup>

The results in Table 5 reveal a negative and statistically significant relationship between former WGTV exposure and the number of arson attacks, which is in line with our hypothesis. The incident rate ratio of 0.528 suggests that arson attacks on refugee shelters in regions with prior access to WGTV are only about half as numerous as in the control regions. We also find a negative effect of our TV-dummy on the number of incidents related to anti-refugee demonstrations. The difference in the number of incidents corresponds to approximately 35%. To ensure that the treatment effect on demonstrations is not only driven by the “Patriotic Europeans Against the Islamisation of the Occident” (*Patriotische Europäer gegen die Islamisierung des Abendlandes*, Pegida) movement in Dresden, which every Monday organized demonstrations starting in October 2014, we excluded Dresden as a further robustness check. However, none of our results change materially. In the case of bodily injuries and the number of other assaults, we do not find an effect of the TV-dummy. Results from probit estimations support our findings and can be found in Table C.15 of the appendix. Moreover, our results remain unchanged even if we use different TV signal strengths, control for proximity to the inner-German border, or exclude from the treatment group counties that are located at the border of the control group.

## 7 | CONCLUSIONS

Using the natural experiment of the differences in access to Western television that resulted from the division of Germany, we find robust empirical evidence for a mitigating impact of media on xenophobia. By analyzing survey data before and after reunification, our results show that exposure to Western television programs positively affected individuals' attitudes towards foreigners. We also find a higher likelihood of donating to refugee aid among individuals who watched WGTV regularly. In addition to the survey evidence, we document that regions that could receive WGTV before reunification were less likely to vote for right-wing parties during the national elections from 1990 to 2017. Our results also indicate that WGTV exposure has a negative effect on the number of arson attacks and the number of incidents related to anti-refugee demonstrations. Our results are robust and still visible, even 28 years after the German reunification. Differences between regions with and without Western television cannot be explained by economic circumstances, by differences between urban and non-urban regions, or by a long-lasting “right-wing tradition.” Given these results, one might conjecture that it was not by chance that the xenophobic Pegida movement started in 2015 in Dresden. Indeed, the rise of Pegida might be a strange and belated side effect of media censorship in the GDR.

Our results may also be a basis for future research on further media forms and their impacts on xenophobia. Clearly, not only the Internet (Wylie, 2019) but also television content has an impact on people's attitudes. We find that mere exposure to more international programming can reduce xenophobia. Consequently, restrictions on foreign media content such as imposing a minimum percentage of songs from the local country on radio or television could influence attitudes towards foreigners. There could also be advantages in broadcasting foreign original programs and simply dubbing them rather than recreating them as part of domestic programming. Against this background, media localization in state-funded television stations should be critically questioned.

<sup>27</sup>Because we could not obtain our control variables for the year 2018, we take the information from 2017.

**TABLE 5** The effect of WGTV on hate crimes targeting refugees (2015–2018)

	(1)	(2)	(3)	(4)
Dependent variables:	Arson attacks	Bodily injuries	Other assaults	Cases related to anti-refugee demonstrations
TV-dummy	0.528*** (0.000)	0.821 (0.185)	0.945 (0.587)	0.647* (0.072)
Refugees in 1,000	1.138*** (0.000)	0.999 (0.943)	1.024** (0.017)	1.026 (0.261)
Population density (log.)	1.167 (0.244)	0.927 (0.478)	0.945 (0.475)	1.793*** (0.000)
Women (%)	1.025 (0.108)	1.008 (0.484)	1.023*** (0.004)	1.087*** (0.002)
Average age	0.622*** (0.000)	0.844*** (0.002)	0.878** (0.017)	0.806*** (0.007)
Total net migration	0.955*** (0.001)	0.992 (0.180)	0.993* (0.079)	1.015 (0.185)
Foreigners (%)	0.541*** (0.000)	1.060 (0.427)	0.947 (0.275)	0.815** (0.046)
Foreigners in 1989 (%)	0.956 (0.883)	1.897*** (0.002)	3.009*** (0.000)	4.215*** (0.000)
Urban county	0.672 (0.119)	0.884 (0.422)	0.864 (0.322)	0.815 (0.257)
High school dropout (%)	1.011 (0.826)	1.001 (0.968)	1.016 (0.595)	1.039 (0.415)
High school diploma (%)	1.014 (0.424)	0.989 (0.322)	1.018* (0.074)	0.988 (0.647)
Disposable income (log.)	0.087 (0.440)	0.462 (0.660)	1.921 (0.359)	0.372 (0.718)
Unemployment rate total	1.068 (0.311)	1.100** (0.038)	1.071** (0.019)	1.039 (0.548)
GDP per capita	0.996 (0.830)	1.019 (0.198)	1.004 (0.713)	0.921*** (0.000)
Foreign visitors	0.604** (0.023)	0.998 (0.989)	1.154 (0.304)	1.362 (0.194)
Votes for NSFB in 1924	0.912*** (0.004)	1.007 (0.635)	0.986 (0.396)	1.028 (0.357)
Year dummies	✓	✓	✓	✓
Log pseudolikelihood	−614.62	−2102.57	−2583.87	−703.18
Observations	868	868	868	868

Note: Random-effects poisson model. In all models, we report incident rate ratios. The dependent variables in Models 1 and 2 are the number of arson attacks and the number of bodily injuries. In Models 3 and 4 the dependent variables are the number of other assaults and the number of cases related to anti-refugee demonstrations. Standard errors in parentheses, clustered at the county level.

Significance levels: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$ .

Our findings might also have some broader implications. The recent literature on economic preferences suggests that preferences are affected by experience with markets (Falk & Szech, 2013, Fehr & Hoff, 2011, Henrich et al., 2010). Our results indicate that media provides another channel that has a lasting effect on preferences. Media content may not only reduce xenophobia, but might also, for example, shape preferences in favor of democratization more generally. The easy transfer of information between individuals via social media has led oppressive regimes such as China, Iran, and North Korea to restrict access to internet services out of fear of democratic influences. Television might be another channel to impact people's attitudes towards democratic values.

On the other hand, modern media might also contribute to the rise of populism. Conducting a text analysis of politicians using Facebook and Twitter, Engesser et al. (2017) provide evidence that populism manifests itself on social media. With the rise of smart television, social media functionalities have recently been evolving in television as well. Our analysis contributes to this literature by showing that television can have a positive and lasting effect on individual attitudes towards foreigners. However, unlike in the case of social media, television content has traditionally been decided upon by program directors that are elected by semi-public broadcasting councils. The content of social media is largely determined by algorithms creating what has been referred to as a “filter bubble” (Pariser, 2011).

Future scholarship might investigate the channels through which television affects xenophobia more precisely. Was it a familiarity effect, with foreigners becoming “normal” for East Germans who saw them more often on the television screen? Or was it a positive image of foreigners that was established by WGTv, despite widespread suspicion of a negative bias in the depiction of foreigners in movies and shows? And how has this difference been preserved since reunification? To answer such questions, a more in-depth look at surveys regarding attitudes towards foreigners and their demographic distribution would be needed. Such data, however, does not seem to be available in a high geographical and temporal resolution.

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## DATA AVAILABILITY STATEMENT

Data that support the findings of this study are available in the GESIS Data Archive at <https://doi.org/10.4232/1.6004>, reference number ZA6004 (Data file Version 1.0.0). Data that support the findings of this study are available from the German Socio-economic Panel Study (SOEP) due to third-party restrictions. Data is accessible after signing a data distribution contract, which can be requested with a form, available at: <http://www.diw.de/soepforms>. <http://www.diw.de/soepforms>. Data that support the findings of this study are openly available from the Amadeu Antonio Foundation and PRO ASYL at <https://www.mut-gegen-rechte-gewalt.de/service/chronik-vorfaelle>. Election data are available from the corresponding author upon reasonable request.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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