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Mass Media and Concerns about Immigration in Germany in the 21st Century: Individual-Level Evidence over 15 Years

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Abstract

Mass media has long been discussed as an essential determinant of the threat perceptions leading to anti-immigration attitudes. The field of empirical research on such media effects is still comparatively young, however, and lacks studies examining precise measures of the media environment an individual is likely to be actually exposed to. We employ a nuanced research design which analyses individual differences in the yearly levels of both media salience and attitudes in panel data of 25,000 persons, who were at least interviewed twice, and a time span over 15 years, from 2001 to 2015. We find a substantive and stable positive effect: comparing periods of vivid discussions with times where the issue was hardly discussed in the German media results in an increase in the predicted probability of being very concerned by about 13 percentage points. Deeper investigations reveal that the media effect is most potent for individuals living in areas with lower share of ethnic minorities and for those with lower education or conservative ideology, stressing the importance of individual receptiveness. In sum, our findings strengthen the line of reasoning stressing the importance of discursive influences on public opinion and cast doubt on the argument that threat perceptions stem primarily from the size of ethnic out-groups.

Introduction

Immigration is a re-occurring, hotly debated topic in most European countries. The past 2 years are examples with lively debates on rising numbers of migrants and refugees, immigrant integration, and terror attacks, accompanied by various, large-scale anti-immigration protests. We investigate the fluctuations of media reporting on immigration and its impact on individual concerns about this issue on the example of Germany, investigating very extensive and rich data. We combine about 26,000 news articles from four major German newspapers and news magazines with panel data of 25,773 unique individuals in total and a time span of 15 years. Because we rely on yearly measures over a long time span, our period of investigation covers individual attitudinal reactions to various and diverse discursive triggers, enabling us to make

more generalizable inferences about the relationship be-tween media reporting and public opinion.

In search for contextual explanations of immigration attitudes, many sociological studies in the tradition of the group threat-paradigm (Quillian, 1995) explain atti-tudes towards ethnic minorities and immigration with objective demographics like the share of immigrants in a country, arguing that the presence of a sizeable ethnic minority leads to competition for different resources which, in turn, leads to negative sentiments towards this out-group (for an overview, see Ceobanu and Escandell, 2010). However, this reasoning has been challenged by scholars who found that threat perceptions are only loosely connected to objective immigration rates (Semyonov *et al.*, 2004; Sides and Citrin, 2007; Pottie-Sherman and Wilkes, 2017). From this perspective, it is not surprising that objective demographics often fail to be reliable predictors of migration-related attitudes (Hainmueller and Hopkins, 2014: p. 231).

Therefore, it is important to empirically assess other contextual explanations for the fluctuation of threat perceptions, and ultimately of anti-immigration attitudes (Ceobanu and Escandell, 2010: p. 318). A po-tent explanation is concerned with the coverage of im-migration-related issues in mass media (e.g. Blumer, 1958; Allport, 1979/1954: p. 200ff.). In the lion's share of social science literature on the formation of attitudes towards immigrants, however, the importance of mass media is often simply assumed. But with the increasing availability of large-scale quantitative media and survey data, the role of mass media has increasingly come into focus of empirical research in recent years (e.g. Boomgaarden and Vliegenthart, 2009; Schlueter and Davidov, 2013; Van Klingeren *et al.*, 2015).

We contribute to this growing field by employing a design which offers a very fine-grained view on the rela-tionship between mass media and individual attitudes. To the best of our knowledge, we are the first to investi-gate how the same ethnic majority individuals change their opinion when going through periods of differing levels of media attention on the immigration issue (media salience), fluctuating on a daily level. In contrast to previous research, our design also accounts for indi-vidual unobserved heterogeneity which might bias the relationship between media presence of immigration-related news and concerns about immigration.

Subsequently, we also investigate under which condi-tions effects of frequent media reporting are particularly potent. We distinguish two sets of moderators: (i) con-textual aspects, stressing the importance of the local op-portunity structure for first-hand experiences (Voci and Hewstone, 2003) and (ii) personal characteristics,

identifying who is more prone to media effects (cf. Ward and Masgoret, 2006).

Germany is a very interesting case to study because it has been among the most popular destination countries in Europe since the turn of the millennium[1] and, according-ly, has an increasingly diverse ethnic composition.[2] The media attention on immigration and integration, on the other hand, has fluctuated considerably (Boomgaarden and Vliegenthart, 2009). This is related to certain events such as the reform of the German immigration policy in 2005 (Bauder, 2008), several Islamist terrorist attacks in Europe (Legewie, 2013), and the emergence of the anti-immigration PEGIDA protests in 2014. Moreover, Germany has been the most important country of destin-ation for refugees in Europe in the course of the so-called immigration crisis (Connor, 2016). Violent acts per-formed by individuals reported as refugees (Czymara and Schmidt-Catran, 2017) as well as performed against refu-gees (Jäckle and König, 2017) both lead to significant lev-els of media attention and started extensive national debates. Mass media will hence continue to play an im-portant role in the formation of public opinion on immi-gration in the in the foreseeable future.

Mass Media as a Source of Perceived Threat: Theory and Previous Research

International migration, immigrant integration, and their social consequences are complex, multifaceted phenomena, hardly assessable by single individuals. This gives mass media considerable leeway in shaping individual opinion because they are one of the main sources providing information exceeding personal experiences (Blumer, 1958; McLaren, Boomgaarden and Vliegenthart, 2017). Moreover, the media can potentially transform the uncertainty surrounding immigration-related issues into threatening stereotypes (Esses, Medianu and Lawson, 2013).[3] Even without directly evoking negative stereotypes, increasing the visibility of immigration topics in public discourse heightens the at-tention given to such topics and makes information related to migration accessible in people's minds. Issue sa-lience hence sets the terms by which the topic is eval-uated, a process called priming in communication sciences (Iyengar and Kinder, 2010: p. 63 ff., also see Zaller, 1992). Similarly, the agenda-setting approach argues that issue salience transfers 'from the mass media's pictures of the world to those in our heads' (McCombs and Ghanem, 2001: p. 67). In other words, what is prom-inent and important in the media becomes prominent in the audience. This can be reinforced further when different media outlets decide to copy what is newsworthy and

what is not, also referred to as intermedia agenda-setting (McCombs and Ghanem, 2001). Both priming and agenda-setting should lead to an increased awareness of the immigration topic for natives, which can raise anti-migration sentiments or feelings of anxiety in the individual.

Moreover, effects of media reports are not limited to direct consumers. Rather, mass media shape the *information environment* and the public discourses at large. The information reported in certain outlets is not only picked up by other outlets but also disseminates within the public through indirect channels such as interpersonal communication (Schmitt-Beck, 2003, also see: Boomgaarden and Vliegenthart, 2009; Schlueter and Davidov, 2013; Van Klingeren *et al.*, 2015).

Previous research on various West and Central European countries found mixed evidence regarding the relationship between mass media, actual demographic and economic conditions, and different aspects of (anti-)immigration attitudes. Schlueter and Davidov (2013) show that negative news about immigration correlated with more negative attitudes in Spain, and that this relationship was especially strong in contexts with low shares of migrants. In contrast, the comparison of The Netherlands and Denmark conducted by Van Klingeren *et al.* (2015) suggests that different toning of news seemed to have mattered only regarding positive news and only in The Netherlands. Once the effect of immigrant inflow is statistically controlled, however, mere issue salience was associated with more negative attitudes in The Netherlands, which have a relatively long history of immigration, while the same relationship was somewhat smaller in Denmark, where immigration became relevant not until the late 1990s (Van Klingeren *et al.*, 2015). Similarly, media salience correlated with the vote intention for anti-immigrant parties in The Netherlands (Boomgaarden and Vliegenthart, 2007). On the other hand, Boomgaarden and Vliegenthart (2009) find that salience itself was not connected to citizens' concerns in Germany, but that the framing of immigrant actors in news reports mattered. This is in line with the results of Schemer (2012), who finds an increasing effect of negative news portrayals of immigrants on stereotypic attitudes based on a two-wave panel study before and after a political campaign about immigration in Switzerland.

In sum, prior research suggests that the role of mass media remains rather ambivalent and context-dependent. However, comparing results is somewhat complicated due to differing methodology, which is not only related to particular benefits but also to different drawbacks: studies either measured subjective media consumption habits without taking into account the actual content of mass media (e.g. Vergeer, Lubbers and Scheepers, 2000), covered only short periods of time (Schemer, 2012), remained purely on the aggregate macro-level (Boomgaarden and Vliegenthart, 2007, 2009; McLaren, Boomgaarden and Vliegenthart, 2017), or in experimental contexts (e.g. Van Klingeren, Boomgaarden and de Vreese, 2017). Some recent studies tackled these issues by combining data on media coverage with cross-sectional individual-level data from surveys pooled over several years (Hopkins, 2010; Schlueter and Davidov, 2013; Van Klingeren *et al.*, 2015). This is an important step towards ensuring external validity of media effects outside artificial or short-term contexts. These studies, however, observed different individuals in different survey waves and modelled media characteristics as varying only between but not within waves. In contrast, we investigate the same individuals each year and employ a fine-grained, day-specific measure of media salience. We thus aim to advance the state of research on mass media effects on individual perceptions and attitudes by employing a more nuanced design than previous studies with similar scope (also see below).

Subsequently, we test the conditionality of the effect of media salience. It seems reasonable that the influence of media is more powerful under certain circumstances and that not everyone is equally affected by the media.

First, media information can fall on more fruitful ground if natives have less opportunity to collect information on immigrants based on own first-hand experience. This is the case for individuals living in areas where regular exposure or interpersonal contact (Pettigrew and Tropp, 2006) with ethnic minorities is unlikely. In the case of Germany, districts have been shown to be potent contexts in which individuals are likely to act regularly (e.g. Wagner *et al.*, 2006). A high share of migrants in these contexts is likely to lead to inter-ethnic exposure during daily routines like work, shopping, and leisure time (Weber, 2015). Studies have shown that a high share of migrants in these contexts is associated with less exclusionary attitudes towards immigrants (Wagner *et al.*, 2006; Pettigrew, Wagner and Christ, 2010). We hence expect that the media salience effect is weaker for respondents living in districts where ethnic minorities are relatively prominent, since there are more opportunities for first-hand information (Schlueter and Davidov, 2013, also see Zucker, 1978).[4]

Second, the impact of media reports also depends on individual receptiveness and political sophistication (cf. Zaller, 1992). We test if the media salience effect differs across individual party preference and education. Both characteristics have repeatedly shown to be strong predictors of immigration attitudes (for party preference in the German case, see, e.g., Blinder, Ford and Ivarsflaten, 2013;

for education see, e.g., Hainmueller and Hiscox, 2007). Party affiliation is directly connected to liberal and conservative ideology on which grounds information is processed. Voters are more open for information that is in line with their existing beliefs because they aim to uphold their long-term values (Bechtel *et al.*, 2015).

Education correlates with political knowledge which, in turn, determines how open individuals are towards political information (Zaller, 1992; Schemer, 2012). This is because those who are less informed are likely to have less stable attitudes, are less likely to have been exposed to similar political messages before, and have less informational resources to counter arguments (Bechtel *et al.*, 2015: p. 687). These individuals should hence be more prone to effects of media reporting.

Hypotheses

We expect that higher levels of media attention on immigration issues (media salience) increase the accessibility of related information in people's minds and consequently raises individual concerns about these issues (Zaller, 1992; Iyengar and Kinder, 2010):

Hypothesis 1: High visibility of immigration issues in the media triggers individual concerns. (Salience-Hypothesis)

We furthermore expect that individuals in ethnically more diverse contexts perceive news about immigration as less threatening due to regular exposure to ethnic outgroups (Schlueter and Davidov, 2013):

Hypothesis 2: The negative effect of media salience as postulated in Hypothesis 1 is stronger (weaker) for individuals who live in districts with a lower (higher) shares of foreigners. (Information Substitution-Hypothesis)

We furthermore hypothesize that the effect of media salience depends on personal characteristics. First, preferences of certain parties signal a more liberal or a more conservative ideological disposition, affecting the receptiveness to certain political information. Because of their political predisposition, natives who prefer more liberal parties should be less receptive to negative discursive triggers than those who prefer more conservative parties. In the German parliament, the Green and, arguably, the Left Party are more liberal, the Social Democrats are centre-liberal, and the Free Democrats as well as the Christian Democrats are centre-conservative.

Hypothesis 3: The negative effect of media salience postulated in Hypothesis 1 is weaker (stronger) for

natives who identify with more liberal (conservative) parties. (Party-Hypothesis)

Finally, we hypothesize that natives with higher education are less vulnerable to media effects. This is because we assume that natives with higher education not only exhibit a more differentiated worldview in general (cf. Hainmueller and Hiscox, 2007) but that they are also more likely to take the ambivalence and complexity of most political information into account. Assuming that education is a proxy for political knowledge, it furthermore determines motivation and ability to evaluate political information against previously stored information (Zaller, 1992; Schemer, 2012; Bechtel *et al.*, 2015).

Hypothesis 4: The negative effect of media salience postulated in hypothesis 1 is weaker (stronger) for natives with higher (lower) education. (Education-Hypothesis)

Data

We use the German Socio-Economic Panel (GSOEP), an annual, household-based long-term panel study (Wagner, Frick and Schupp, 2007) for yearly information on individual characteristics from 2001 to 2015. To focus on the ethnic majority, we drop respondents with migration background.

Dependent Variable: Concerns about Immigration

Respondents are asked to rate how much they are concerned about certain topics in each year, including immigration to Germany on a three-point scale. We use a dichotomized version for our main analyses (0: 'not concerned' or 'somewhat concerned', 1: 'very concerned'; for similar procedure see, e.g., Lancee and Pardos-Prado, 2013; Lancee and Schaeffer, 2015) and the ordinal variable for robustness checks. This item is likely to capture a combination of two things: a negative evaluation of immigration and individual salience of immigration issue. According to Wlezien (2005), concern measures capture the importance of issues as well as whether these issues are perceived as problematic (also see Lancee and Pardos-Prado, 2013: p. 116; Pardos-Prado, Lancee, and Sagarzazu, 2014: p. 855, Lancee and Schaeffer, 2015: p. 9). Hence, our dependent variable measures whether respondents express an opinion that is both negative and salient. Since our main explanatory variable is capturing macro-level issue salience, the relationship between our treatment and our outcome can theoretically be decomposed into the associations

between, first, salience in the media and salience for (direct or indirect) consumers and, second, into the effect of media salience on negative opinions. While the latter, in our view, is especially interesting, the GSOEP unfortunately does not offer the possibility to disentangle both concepts empirically. However, the outcome is related to well-established predictors of negative attitudes towards immigration (see Online Appendix O1). Independent of the conceptual shortcoming, we understand threat perceptions to be the theoretical mechanism relating media salience and individual concerns, analogous to Lancee and Pardos-Prado (2013).

Media Salience of Immigration-related Issues

We combine the GSOEP with data from a quantitative content analysis of German newspapers and news magazines to measure the presence of issues related to immigration at a given day. To this end, we use digital full texts of the two weekly news magazines with the highest circulation in Germany: *Der Spiegel* and *Stern*, as well as one of the most highly circulated daily, non-tabloid national newspapers: the conservative *Die Welt* and the left *taz.die tageszeitung*. In combination, these outlets reach a large audience and have a balanced ideological position, likely to capture the broader national information environment. The full texts were provided by Nexis.[5]

We scanned the content of all newspaper articles in our period of investigation with a search string based on a keyword list of immigration-related terms based on re-occurring content from random newspaper articles and previous literature (e.g. Schlueter & Davidov, 2013; Van Klingeren *et al.*, 2015). This search string identifies articles which simultaneously include (i) at least one of several terms directly referring to immigration, (ii) the term 'Germany' or synonyms, and (iii) at least one of several terms more broadly connected to immigration.[6] We manually checked the validity of the sample by investigating the content of randomly chosen articles. We deleted duplicates, letters from readers, table of contents, and short news.

For our final media salience measure, we ran an exploratory factor analysis with four count variables indicating the number of articles in each of the four outlets in the past 21 days[7] with the single days as units of analysis and extracted the factor values. These values measure media salience on specific days, higher values implying higher media salience. The factor has an eigenvalue of 1.98. The factor loadings and uniqueness values (in brackets) of the media outlets are Die Welt: 0.78

(0.39), taz. die tageszeitung: 0.73 (0.46), Der Spiegel: 0.68 (0.54), Stern: 0.61 (0.62).

Our period of investigation covers a heterogeneous set of debates. This means that our approach aims at showing the universal effect of salience rather than a particularistic effect of certain topics or tones. On the one hand, we do not want to conceal that this partly relates to the complexities associated with building a detailed, topic-related measure of media over a long time. But on the other hand, we are convinced that investigating a universal effect of mere presence of issues is highly interesting itself because it tells something about the power of media independent of certain idiosyncratic debates. Finding a general effect of media salience on individual concerns is actually more striking than finding an effect of negative news only. At worst, we underestimate the maximum effect of mass media on public opinion.

Contextual Variables

In the models interacting media salience and the local ethnic composition (*Hypothesis 2*), we also include several local context variables on the district level (*Kreise*, NUTS 3 level) provided by the German Federal Institute for Building, Urban Affairs and Spatial Research.[8] Most importantly, we include the share of individuals without German citizenship in a respondent's district to test whether the effect of media salience varies with ethnic exposure. With 402 different districts, this is a fine-grained yet efficacious measure of ethnic exposure (Wagner *et al.*, 2006; Weber, 2015). To control for economic conditions, we also add local unemployment rate, number of training positions, number of students, average household income, and population density to the models (all measured on the district level).

We also include monthly immigration inflow to account for possible demographic developments that could confound the relationship under study.[9]

Individual-Level Variables

We include individual time-varying controls to adjust for confounding influences which are correlated with immigration concerns and possibly also influenced by macro-level developments. For example, individual economic worries partly capture periods of economic deprivation taking place at a certain time in Germany. These variables encompass general interest in politics, age, employment status, satisfaction with own household income, concerns about the own economic situation, and concerns about the general economic situation in Germany. Table A1 contains descriptive statistics and the coding for all variables included in our models.
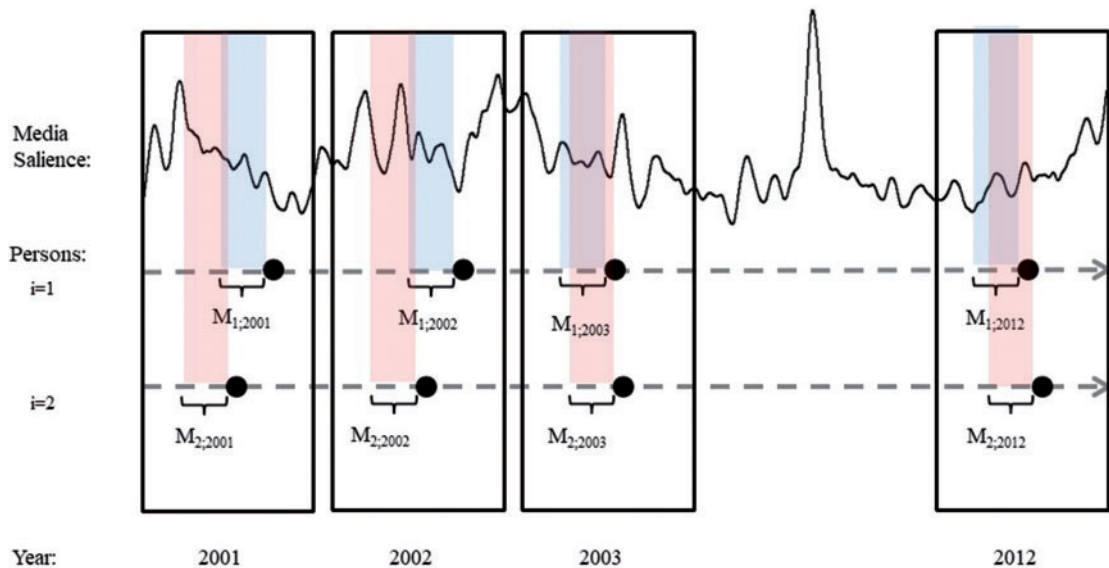
Figure 1. Stylized research design.

Research Design and Statistical Models

To capture individual exposure to media salience as precise as possible, we merge the public media salience measure with the GSOEP data based on the day each interview took place. Figure 1 illustrates our design based on two hypothetical respondents being interviewed in 2001, 2002, 2003, and 2012. The black dots represent the interview date and the two areas illustrate that we aggregate the numbers of articles from the four newspaper outlets 21 days before the interview for respondent 1 and respondent 2, respectively, in each year.

   This operationalization increases the likelihood that an individual has been exposed to the assigned level of media salience at the day of the interview, either directly through individual news consumption or indirectly though information diffusion via other types of communication. As discussed above, prior research with similar scope modelled media variables as stable characteristics within surveys waves (e.g. Hopkins, 2010; Schlueter and Davidov, 2013; Van Klingeren *et al.*, 2015). Assuming the same media environment for everyone within one wave can be critical, however, when media salience strongly fluctuates periodically in short-term intervals. Figure 2 indicates that this is indeed the case in our data. It is hence reasonable to employ a measure of media salience which varies between individuals who were interviewed at different days *within* the same survey wave (see Figure 1).

The measure of media salience is most likely exogenous of respondent-specific characteristics in our models for two reasons. First, it is highly unlikely that the national level of media salience is influenced by individual-level characteristics that are also related to concerns about immigration. This is because the day of the interview, and thus the level of media salience a respondent is assigned to, is out of a respondent's control. Even if respondents with certain characteristics time their interviews differently than others, it is very unlikely that these characteristics affect individual concerns about immigration. Neither is it plausible that these respondents set the dates for their interviews dependent on the amount of articles on immigration in the media.[10] Second, we statistically account for all constant person-specific confounding influences by analysing within variation only, such as stable prejudice, social class, race, sex, and culture.[11] To this end, we estimate panel fixed-effects (FE) linear probability models (LPMs) which eliminate time-constant unobserved heterogeneity (Andreß, Golsch and Schmidt, 2013).[12]

Results

Immigration Issues in Germany: Time Trends and Key Events

The overall time trend in immigration-related news is shown in Figure 2. The figure illustrates the weekly total
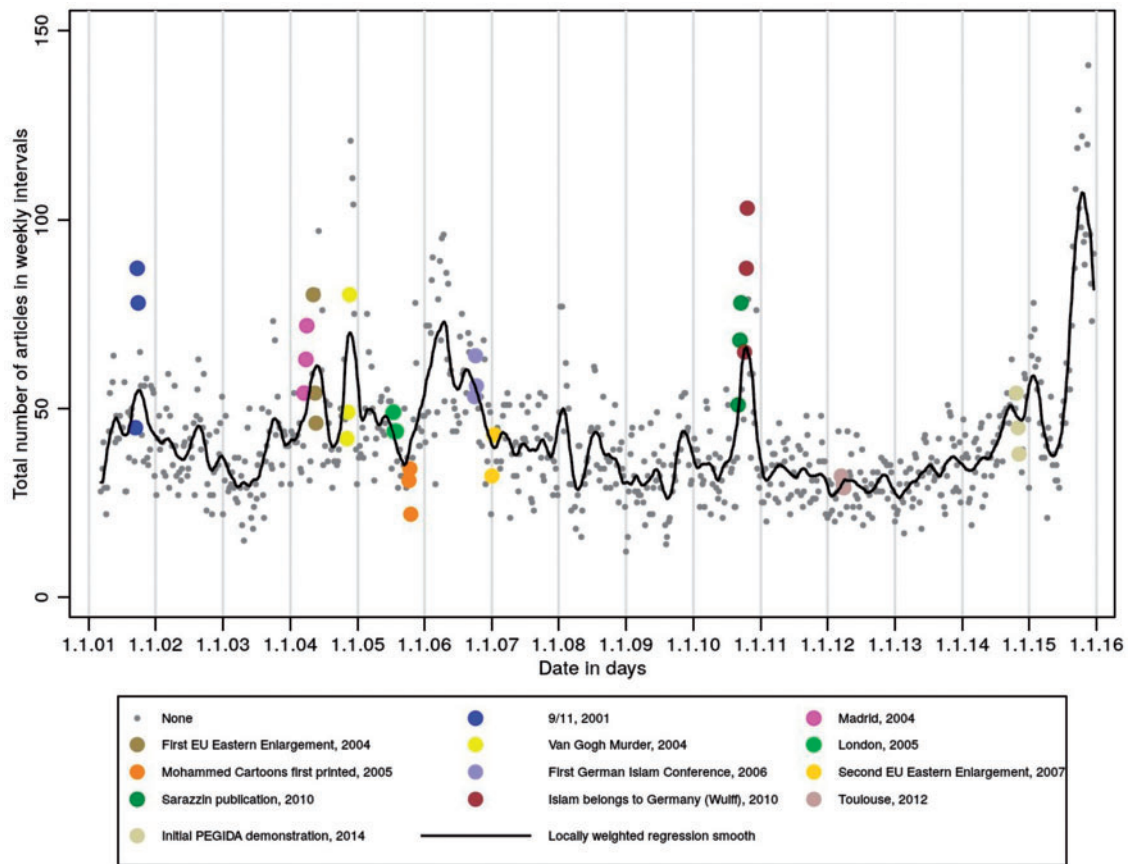
Figure 2. Total number of articles related to immigration per week, and immigration-related key events

Note: Coloured dots indicate a period of 21 days after each event.

numbers of all articles and periods of 21 days after certain immigration related key events (coloured dots).[13]

In the beginning of the millennium, various Islamist terror attacks happened, which were unprecedented in terms of fatalities and impact for Western countries. This includes 9/11 (Boomgaarden and Vliegenthart, 2009), the Madrid bombings in 11 March 2004 (Legewie, 2013), and the murder of Theo van Gogh 2 November 2004 (Finseraas, Jakobsson and Kotsadam, 2011). Consequently, immigration and Islam were much debated during this time, although with quite some fluctuation, as Figure 2 indicates. Moreover, politicians and the German public vividly discussed the new migration law (*Zuwanderungsgesetz*, cf. Pardos-Prado, Lancee, and Sagarzazu, 2014: p. 858), which became effective in January 2005. According to Bauder (2008), considerations about the 'economic utility' of immigration were a rather stable topic in the German immigration discourse during the period from 2001 to 2005.

In September 2005 until the beginning of 2006, media attention increased due to the Mohammed caricatures published in the Danish newspaper *Jyllands-Posten* and the subsequent protests in many Islamic countries. Further debates revolved around the two Eastern Enlargements of the European Union (EU), the first taking place in May 2004 (e.g. Boehnke *et al*., 2007) and the second in January 2007. Both EU expansions were debated in the press, dealing with the potential consequences regarding immigration-related crime, and economic costs and benefits. A third outstanding peak is around 2006. Note that two Islamist terrorist attacks do not seem to have led to major public debates on immigration, London in 2005 and the series of attacks in France in 2012.

Apart from economic and terror-related news, culturalistic discussions were repeatedly part of the immigration discourse in recent years. One trigger of these discussions was the former Federal President Christian

Wulff's statement that 'The Islam belongs to Germany' in 3 October 2010. Almost simultaneously, Thilo Sarrazin's bestseller book 'Deutschland schafft sich ab' ('Germany is abolishing itself') was released in 30 August 2010, in which highly controversial theses about the impact of immigration on German society are put forward. Both events make sense of the steep increase in 2010. Finally, the peak in 2014 coincides with the first PEGIDA demonstrations in Dresden which were primarily targeted against immigration from Muslim countries.

From late summer 2015 on, Europe faced a strong increase in immigration and asylum rates with more than twice as many first-time asylum applications in the EU compared to the year before, including a disproportionate high share of individuals from Syria, Afghanistan, and Iraq (Connor, 2016). From all European countries, Germany received more than a third of these asylum applications, making it by far the most popular destination for these refugees (ibd.). These turbulent times were accompanied by several acts of violence and terrorism. One of the most prominent events was the sexual assaults in various German cities on New Year's Eve 2015/2016, where victims described the perpetrators as men of Arab or North African appearance, leading to a direct connection to the strong increase in asylum rates (Czymara and Schmidt-Catran, 2017). Other events include fatal Islamist terror attacks on the staff of the satirical newspaper Charlie Hebdo and on a Jewish supermarket (January 2015), the attacks on a cultural centre and a Synagogue in Copenhagen (February 2015), the series of attacks in Paris with 130 fatalities (November 2015), and the cancellation of a football match in Germany due to a terror warning (November 2015). At the same time, violence against refugees and refugee shelters erupted during this time (Jäckle and König, 2017). It is hence hardly surprising that Figure 2 shows it strongest increase during the time between 2015 and 2016.

Hence, the information environment our media measure is meant to capture fluctuates strongly, encompassing a heterogeneous set of different discourses and aspects of the immigration issue.

Looking at the association between our media salience factor and individual immigration concerns, we clearly see a similar trend, shown in Figure 3: the trajectories of concerns about immigration (upper panel) and of our media salience factor (lower panel) apparently show similar patterns. This means that respondents were more likely to show higher concerns about immigration when they were interviewed on days with high media salience.[14] This lends initial support to the Issue Salience-Hypothesis, although some debates (in terms of peaks in the time series) seem to be more influential than others. In the following, we put this relationship more rigorously to the test.

The upper panel of Figure 3 also shows the number of interviews per day. It clearly decreases over the year, with very few interviews taking place during the end of each year and in January. Hence, debates happening during these times are unfortunately hardly covered in our analysis. The light grey dots in the lower panel of Figure 3 represent the raw media salience including days when no interviews took place to capture actual trends in media salience.

Media Salience Effects on Concerns about Immigration

The association between media salience and worries about immigration in the FE models is substantial. The coefficient of media salience is 0.05 (Table 1), implying that a one unit increase of our media salience factor predicts an increase in the probability of being very concerned by 5 percentage points. Respondents interviewed during periods when media salience was at its 95 per cent quantile value (1.65) have a 12.76 percentage points higher average predicted probability of being very concerned about immigration than those who were interviewed during times where immigration was not a salient issue (5 per cent quantile: −0.92). In comparison, preferring the conservative Christian Democrats increases this probability by about 3 percentage points (relative to no party preference) and being very concerned about one's own economic situation increases it by about 6 percentage points (relative to not concerned). In addition, monthly immigration rates also have a statistically significant positive association with public concerns.

To give a better interpretability of the results from our first model in Table 1, we predict changes in concerns about immigration for changes in media salience related to a selection of important events discussed above. For example, our media salience factor increases by 2.57 units between 9/11 and 21 days after 9/11. This predicts an increase in concerns about immigration of 12.81 percentage points according to our model. Similarly, the Madrid terror attacks lead to an increase of 1.90 units in media salience predicting an increase of 9.44 percentage points in concerns. The publication of Sarazzins book 'Deutschland schafft sich ab', a major event influencing German wide debates on immigration, went along with an increase of media salience of 2.60 units which predicts an increase in concerns of 12.91 percentage points.
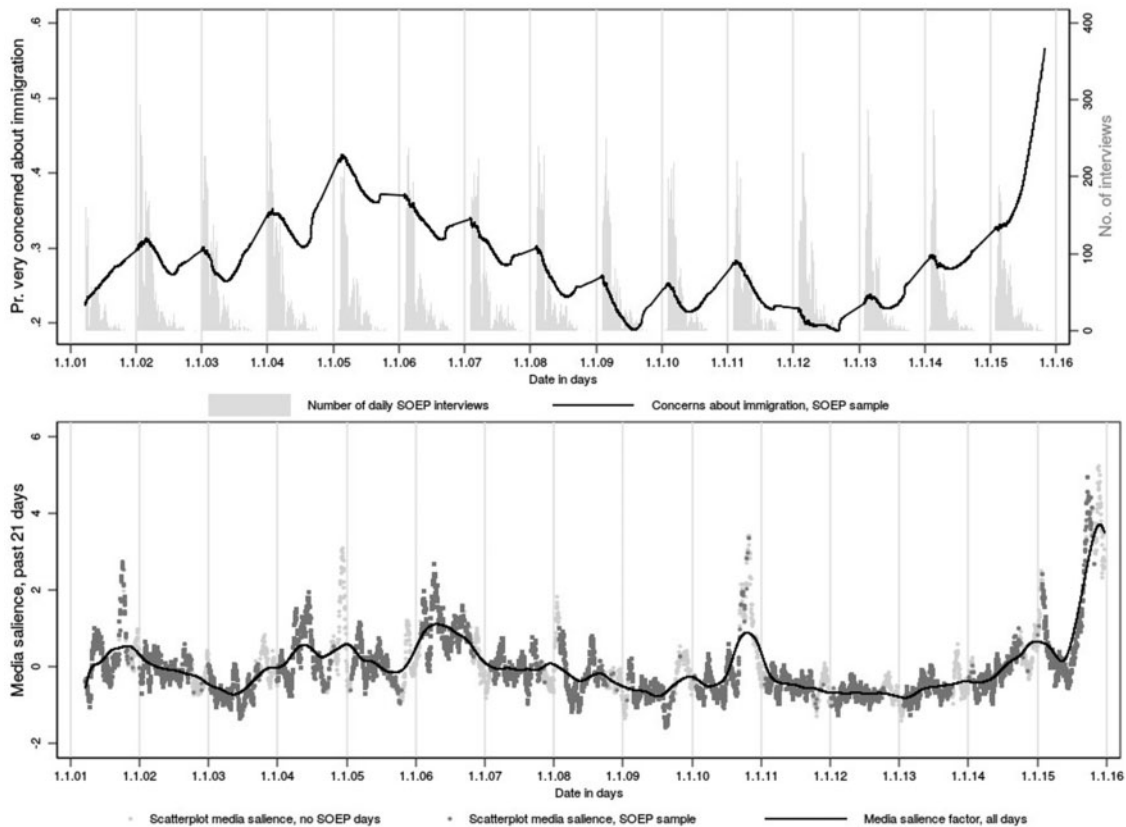
Figure 3. Locally weighted regression trends of concerns about immigration (upper panel) and media salience (lower panel), and distribution of SOEP interviews over time

Note: Trend in lower panel shows the full trend going through all data points, those on which SOEP interviews took place (and make up the sample of analysis) and those where no SOEP interview took place.

Mind that the substantial association between media salience and worries may partly reflect feedback mechanisms and unmeasured periodic shocks. Mass media may partly respond to changes in attitudes, although scholars have argued that, on average, journalist rarely directly take public opinion into account when evaluating what qualifies as 'news' (Patterson, 2008). We present various additional analyses in an attempt to rule out these alternative explanations in the Online Appendix Table O2. These analyses include measures of aggregate worries, general time trends, or restricting the analysis to certain years. In all cases, the effect remains statistically significant, with a minimum effect size of 0.01.

Who Is Prone to Media-induced Concerns?

To investigate the conditionality of the media salience effect, we interact the variable with the share of foreigners on the district level, controlling for all context characteristics discussed above (see Table A2). The emerging pattern depicted in Figure 4 clearly supports our reasoning: the marginal effect of media salience (y-axis) gets substantially smaller as the percentage of foreigners in one's district increases. This means the concern increasing effect of media salience is most substantial for inhabitants of areas with a relatively small to medium share of foreigners. Since the ethnic composition of one's district is a rather stable characteristic in our data, the interaction effect is likely primarily due to the within-variation of the media salience variable. Our results support Information Substitution-Hypothesis, proposing that obtaining information about immigrants from contextual sources prevents fears caused by increasing media attention. One should note, however, that the effect of media salience is still statistically larger than 0 also for individuals living in districts with many

Table 1. Panel Fixed-Effects Linear Probability Models of effect of media salience on concerns about immigration, and effect heterogeneity by education and party

	(1) Main model	(2) Education interaction	(3) Party preference interaction
Media salience, past 21 days	0.050****	0.053****	0.052****
	(0.001)	(0.002)	(0.002)
Party preference (ref.: no preference)			
CDU/CSU (Christian Democrats)	0.027****	0.027****	0.028****
	(0.004)	(0.004)	(0.004)
SPD (Social Democrats)	−0.007*	−0.007*	−0.007*
	(0.004)	(0.004)	(0.004)
Die Grünen (The Greens)	−0.012*	−0.012*	−0.019***
	(0.007)	(0.007)	(0.007)
Die Linke (The Left)	−0.005	−0.006	−0.007
	(0.008)	(0.008)	(0.008)
FDP (Free Democrats)	0.019**	0.020**	0.019**
	(0.009)	(0.009)	(0.009)
Others and mixed	0.015	0.015	0.014
	(0.010)	(0.010)	(0.011)
Radical right	0.144****	0.143****	0.143****
	(0.013)	(0.013)	(0.013)
Interest in politics (ref.: very strong)			
Strong	−0.020****	−0.020****	−0.020****
	(0.005)	(0.005)	(0.005)
Not so strong	−0.026****	−0.026****	−0.026****
	(0.005)	(0.005)	(0.005)
Not at all	−0.025****	−0.025****	−0.025****
	(0.006)	(0.006)	(0.006)
Income satisfaction (ref.: low)			
1	−0.012*	−0.012*	−0.012*
	(0.006)	(0.006)	(0.006)
2	−0.015**	−0.015**	−0.015**
	(0.006)	(0.006)	(0.006)
3	−0.021****	−0.021****	−0.021****
	(0.006)	(0.006)	(0.006)
High	−0.020***	−0.020***	−0.021***
	(0.006)	(0.006)	(0.006)
Worries German economy (ref.: not concerned)			
Somewhat concerned	0.037****	0.037****	0.037****
	(0.003)	(0.003)	(0.003)
Very concerned	0.120****	0.119****	0.120****
	(0.004)	(0.004)	(0.004)
Worries own economic situation (ref.: not concerned)			
Somewhat concerned	0.019****	0.019****	0.019****
	(0.003)	(0.003)	(0.003)
Very concerned	0.062****	0.062****	0.062****
	(0.004)	(0.004)	(0.004)

(continued)

Table 1. (Continued)

	(1) Main model	(2) Education interaction	(3) Party preference interaction
Age categories (ref.: <25)			
25–34	−0.001	−0.002	−0.001
	(0.006)	(0.006)	(0.006)
35–49	−0.009	−0.011	−0.010
	(0.008)	(0.008)	(0.008)
50–64	−0.014	−0.015	−0.014
	(0.009)	(0.009)	(0.009)
>65	−0.014	−0.015	−0.015
	(0.011)	(0.011)	(0.011)
Employment status (ref.: not working)			
In training/apprentice	−0.010	−0.009	−0.010
	(0.008)	(0.008)	(0.008)
Registered unemployed	−0.009	−0.009	−0.009
	(0.007)	(0.007)	(0.007)
Pensioner	−0.009	−0.009	−0.009
	(0.007)	(0.007)	(0.007)
Working	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)
Month of interview (ref.: January)			
February	0.016****	0.016****	0.016****
	(0.004)	(0.004)	(0.004)
March	0.017****	0.017****	0.017****
	(0.004)	(0.004)	(0.004)
April	0.019****	0.018****	0.019****
	(0.004)	(0.004)	(0.004)
May	0.022****	0.022****	0.023****
	(0.005)	(0.005)	(0.005)
June	0.015***	0.015**	0.015***
	(0.006)	(0.006)	(0.006)
July	0.002	0.002	0.003
	(0.006)	(0.006)	(0.006)
August	0.022***	0.022***	0.022***
	(0.008)	(0.008)	(0.008)
September/October/November	−0.005	−0.004	−0.004
	(0.010)	(0.010)	(0.010)
Monthly in-migration/1,000 (imputed before 2006)	0.001****	0.001****	0.001****
Elementary × media salience, past 21 days			
Secondary I × media salience, past 21 days		0.005	
		(0.003)	
Secondary II × media salience, past 21 days		−0.008	
		(0.006)	
Secondary II (Abitur) × media salience, past 21 days		−0.020****	
		(0.004)	
Other degree/no degree × media salience, past 21 days		0.000	
		(0.009)	
In school × media salience, past 21 days		−0.023***	
		(0.007)	

(continued)

Table 1. (Continued)

	(1) Main model	(2) Education interaction	(3) Party preference interaction
No party preference × media salience, past 21 days			
CDU/CSU (Christian Democrats) × media salience, past 21 days			0.008**
			(0.003)
SPD (Social Democrats) × media salience, past 21 days			−0.006*
			(0.004)
Die Grünen (The Greens) × media salience, past 21 days			−0.036****
			(0.006)
Die Linke (The Left) × media salience, past 21 days			−0.012*
			(0.007)
FDP (Free Democrats) × media salience, past 21 days			−0.004
			(0.010)
Others and mixed × media salience, past 21 days			−0.005
			(0.014)
Radical right × media salience, past 21 days			−0.025*
			(0.015)
Constant	0.191****	0.191****	0.191****
	(0.013)	(0.013)	(0.013)
Number of person-years	190,049	190,049	190,049
Number of persons	25,073	25,073	25,073
Minimum number of person-years per person	2	2	2
Maximum number of person-years per person	15	15	15

Note: Standard errors in parentheses.
Data: SOEP v32.1. April 2001–2015 and media data from Lexis.
$*P < 0.10$; $**P < 0.05$; $***P < 0.01$; $****P < 0.001$.

foreigners. Hence, it seems that even for those who are used to immigrants in their day to day life, this first-hand information does, on average, not completely substitute the information coming from mass media.

We also hypothesized that the effect of media salience differs with individual characteristics because media information is less important for those holding a more liberal world view or having more political knowledge. The former should apply mainly to natives with a preference for the Green or the Left Party, and the latter to those with higher education.

And indeed, the effect of media salience is substantially lower for natives who favour more liberal parties, as Figure 5 indicates (also see Model 2 of Table 1). Relative to individuals without party preference, the differences for those adhering to the Social Democrats or the Left party are moderate, but preferring the Green Party is clearly associated with a smaller effect of media salience. In contrast, the media effect is strongest for those preferring the Christian Democrats. This is in line with our Party-Hypothesis and with previous findings indicating that voters converge to the position of their preferred party when exposed to media information,

independent of the toning of this information (Bechtel *et al.*, 2015).[15]

Finally, the effect of media salience on individual concerns primarily holds for respondents with low or medium education, but it is close to 0 for those with higher education, as can be seen in Figure 6 (or Model 3 in Table 1). This supports our Education-Hypothesis.

Robustness Checks

We intensively tested the robustness of our findings. First, we restricted the analysis to years with similar distributions of media salience to check whether results are driven by excessively high media salience in single years. Second, we restricted the sample to oral interviews to ensure that the date of the interview is not biased due to wrong dates for postal questionnaires. Third, we checked whether our results are affected by the construction of our media salience measure, generating other versions based on 7, 14, or 28 days before each interview instead of 21. Fourth, we checked whether replacing the factor with a weighted count variable changes the results (for past 21 days'-treatment: dailies divided by 18,
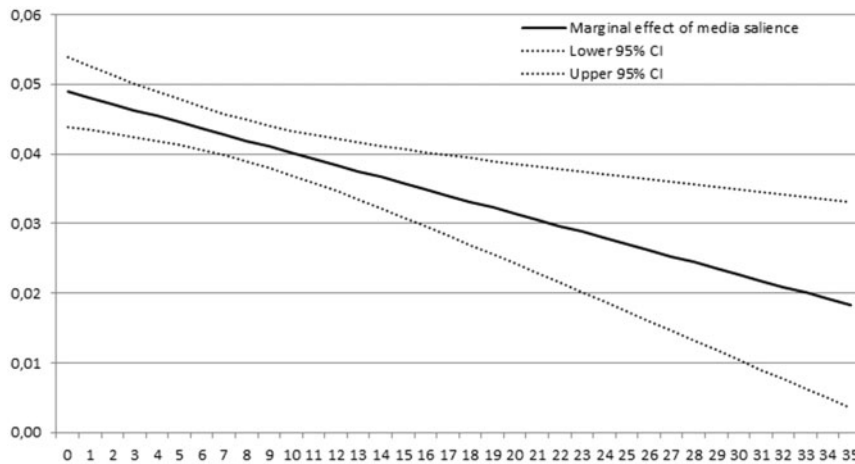
Figure 4. Marginal effect of media salience on concerns about immigration conditional on the local *share of foreigners* (x-axis), with 95 per cent confidence interval (based on models in Table A2).
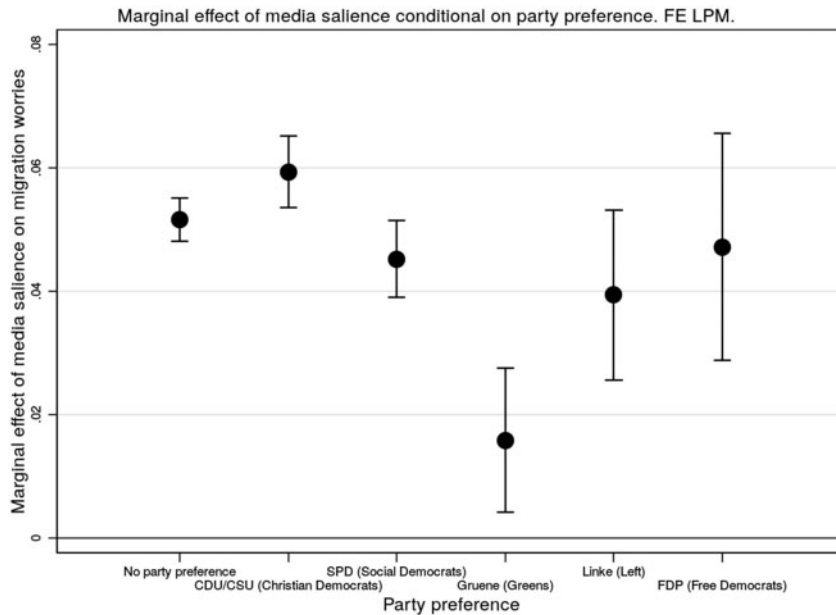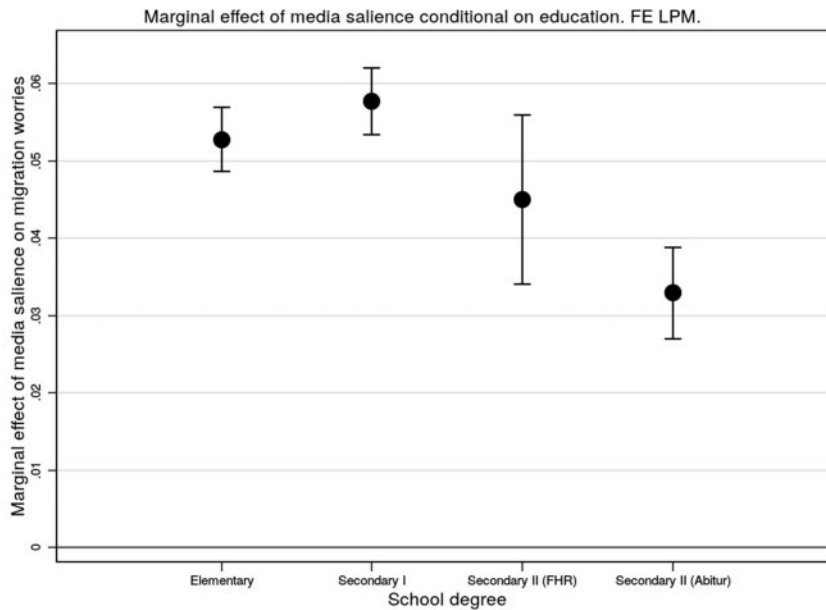

Figure 5. Marginal effects of media salience on concerns about immigration conditional on *party preference*, with 95 per cent confidence intervals (based on Model 2 in Table 1).

weeklies by 3). Fifth, we ran panel random effects-(RE) and FE-ordered logistic regression models to see whether the regression link function affects results (for results of RE logistic regression model see Figure 7). Sixth, we included the moderate left Frankfurter Rundschau to the media salience variable.[16] Finally, we allowed for effect heterogeneity of media salience between years and calculated the average effect over all years. In all cases, the results are similar to the ones of our main analyses

(see the Online Appendix for selected robustness checks, all further results are available upon request).

Summary and Discussion

Investigating a period of 15 years, we find that public concerns about immigration in Germany vary systematically with the amount of media attention on this issue. The probability of being very concerned about

Figure 6. Average marginal effects of media salience on concerns about immigration conditional on *education*, with 95 per cent confidence intervals (based on Model 3 in Table 1). FHR: Fachhochschulreife.
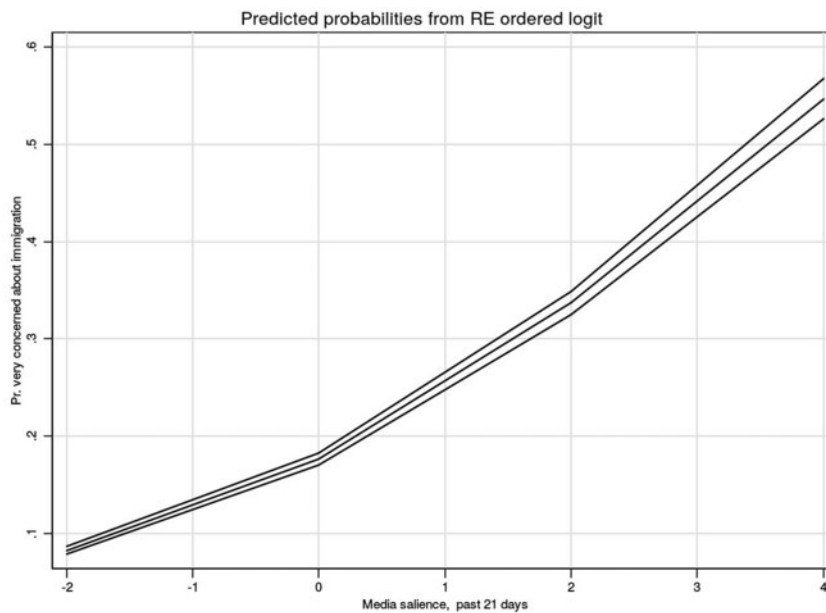
Figure 7. Predicted probabilities from an RE ordered logistic regression. Variables set at means.

immigration is about 13 percentage points higher when immigration was vividly discussed before an interview compared to times when the issue played a minor role in the press. Moreover, we have shown that media attention varies considerably on a short-term basis. Hence, we suggest that it is very well suited to explain fluctuation in public opinion, adding theoretical and statistical explanatory power beyond general immigration rates.

Deeper analyses reveal that individuals who live in districts with a higher share of ethnic minorities are much *less* likely to be concerned in times of high media salience. These findings are contrary to the realistic group threat-paradigm according to which feelings of ethnic competition should increase in contexts with high or increasing shares of out-group members, particularly when this out-group is made salient (see Hopkins, 2010). These different findings might be due to the comparatively stable regional share of foreigners within districts in our data, pointing to the importance of familiarization with ethnic minorities.

Furthermore, the negative impact of media salience diminishes for natives with higher education and those who prefer the Green Party. Hence, it seems that prior knowledge and more stable attitudes as well as a liberal ideology can be effective barriers for such media effects (cf. Bechtel *et al.*, 2015).

We stated that we are interested in analysing a universal effect of general issue salience over a long time span covering various debates. While we stressed our motivation behind this above, it is of course also associated with shortcomings, reflecting a general dilemma between the identification of generalizable, universal effects and an in-depth understanding and identification of effects of particular discourses.

First, we did not differentiate the toning of our news measure. It is reasonable to assume that negative news have a stronger negative effect than neutral or positive ones. However, recent research on media effects suggest that reports in high-quality print media are actually too balanced to classify as primarily negative or positive (Lawlor, 2015). Hopkins (2010) even argues that one 'cannot draw conclusions about whether the tone of coverage matters above and beyond the fact that there is coverage at all' (Hopkins, 2010: p. 58). Moreover, the fact that we find a statistically significant and robust effect using an undifferentiated measure actually strengthens the general importance of mass media as a determinant of individual concerns about immigration. Put differently, finding an effect of negative news on negative attitudes may also be seen as more trivial.

Second, we also neither differentiate topics nor aspects of our attitudinal outcome. Again, this is also due to data restrictions. But specifying which types of debates (e.g. McLaren, Boomgaarden and Vliegenthart, 2017) affect which kinds of attitudes (e.g. Czymara and Schmidt-Catran, 2017) would certainly be a promising endeavour for future research.

Moreover, individuals differ in their media consumption habits. Although we understand our media measure as a proxy of both direct individual exposure and the indirect information environments, frequent consumption most probably increases the media effect. Unfortunately, there is no measure of individual media consumption available in the GSOEP.

Finally, we investigated the impact of print media outlets only. First, this misses the dominating medium for political news: TV. Second, with the growing supply of (free) online news, sales of print media are decreasing steadily. Social media are of increasing importance as platforms for political debates. How these developments affect public opinion and the political culture is hardly known yet, although there are pioneering studies (e.g. Bakshy, Messing and Adamic, 2015). The increasing availability and comprehensiveness of media data provides many promising opportunities for more nuanced research regarding the impact of such media in the future.

We see our study as a step towards a more fine-grained, yet generalizable understanding of mass media effects on public opinion. We aimed at developing a nuanced design that extends previous research by drawing on within individual variation and fluctuations in the media on a daily basis. Yet, our observational 'real-world' approach complicates the identification of the causal media effect (see Online Appendix). To obtain a picture of the impact of media, our results are, thus, ideally complemented by (quasi-)experiments (e.g. Legewie, 2013; Van Klingeren, Boomgaarden and de Vreese, 2017).

While we believe that the general effect of media salience is highly interesting, we certainly do not deny the additional insights a more differentiated media measure could bring. As manual coding with such a large number of articles is impossible, the rapidly growing field of text as data in the information sciences should be of great help here, offering methods like topic modelling or sentiment analysis (similar to, for example, Greussing and Boomgaarden, 2017). Such quantitative investigations of the media discourses on immigration over such a long time span, however, would already be a study on its own. Still, adding such information to our approach could lead to further insights and, thus, deepen the understanding of the relationship between mass media and public opinion formation.

Notes

1   According to the International migrant stock 2015 database of the UN as well as the Organisation for Economic Co-operation and Development (OECD) Statistics, both retrieved 6 January 2018.

2   https://de.statista.com/statistik/daten/studie/28347/umfrage/zuwanderung-nach-deutschland/ (retrieved 16 August 2017).

3   Mass media may affect the political public negatively through primarily focusing on negative news

(Robinson, 1976). However, whether Western media indeed reported immigration-related news more often in a negative tone (Ter Wal, D'Haenens and Koeman, 2005) or in a rather balanced one (Lawlor, 2015) is far from clear. Since our study covers a large time span, it is very likely to include very different debates, topics, and sentiments.

4 Based on US data, Hopkins (2010) argues that media salience is more potent under strong changes of the ethnic environment. However, given that the ethnic composition of districts in Germany is rather stable during our period of investigation, this mechanism should be less important in our case.

5 https://www.nexis.com/

6 The search string reads as follows (! are wildcards): (!wander! OR !migration! OR !migrant! OR !flücht! OR !flucht! OR !ausländer! OR !asyl!) AND (deutschland OR bundesrepublik OR brd) AND (!integration! OR !abschieb! OR abgeschob! OR !einbürgerung! OR aufenthaltsgenehm! OR ausländerkriminalität OR (!kriminalität! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (!kriminell! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR !fachkr! OR (!qualifi! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (arbeit! w/3 (!wander! OR !migration! OR !flücht! OR !ausländer!)) OR (!erwerbs! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (!beruf! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR ((!terror! OR !anschlag!) w/5 !islam!) OR zwangshochzeit OR zwangsheiratOR !parallelgesellschaft! OR !kopftuch! OR ehrenmord OR hasspredigerOR !burka! OR (!islam! OR !muslim! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR mohammedkarikatur OR (mohammed w/3 karikatur!)).

7 While the time span of 21 days is somewhat arbitrary, it ensures that the topic was salient for long enough to be a discussed topic but short enough to be remembered at the time the interview took place. Generally, the results hold for different specifications of the chosen time span (see robustness checks).

8 Source: http://inkar.de/. Values for 2015 were forwarded from 2014. We also run models with a time-stable share of foreigners to rule out that artificial fluctuations affect our results (e.g. through changes in measurement in certain districts).

9 Data on monthly migration inflows from 2006 to 2015 stems from the German Statistical Office through email contact. We imputed monthly

inflows from before 2006 by dividing the available yearly inflow by 12 for each year.

10 If there is geographical variation in the timing of the interviews (for example between the regional sampling points that underlie the stratified GSOEP sampling procedure), it is highly unlikely that this geographical variation is related to the debate on immigration as captured by our media salience measure.

11 However, there may still be confounding factors on the aggregate level, that is, unmeasured period effects. See the Online Appendix O2 for a variety of strategies how we dealt with these issues.

12 We use Stata 13.1's *xtreg* command for our RE and FE LPMs and *xtlogit* command the RE logistic regression models. The use of robust standard errors did not change our results in any substantive way. The analyses including district level variables were conducted with 'SOEPremote', a remote access possibility offered by the DIW Berlin. All do-files are available at: http://dx.doi.org/10.17605/OSF.IO/W8UZ9

13 For certain events, the coloured dots are not very likely to mark the actual time of the main public debate. For example, the Eastern Expansion of the EU was discussed before it legally became effective and the main debate on the Mohammed cartoons took place several months after their original publication. Moreover, we do not use these weekly totals in our statistical analysis but a measure on a daily basis.

14 Note that there are seasonal fluctuations with highest concerns in winter. This is in line with research on the seasonality of depression and other negative moods (Harmatz *et al.*, 2000) and could further reflect the yearly summer slump. We control for seasonal effects in our regression models.

15 We refrain from making inferences about the interaction between radical right party preference and media salience because the number of observations is too small. The category is hence not included in Figure 5 (but it is included in the underlying model).

16 We did not include this outlet in our final analysis because data from the Frankfurter Rundschau is only available from 2003 onwards and because its distribution is limited.

Supplementary Data

Supplementary data are available at *ESR* online.

Acknowledgments

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Appendix

Table A1. Descriptive statistics of sample of analysis

Variables	Mean	Number of person years
Monthly in-migration/1,000	66.05	190,049
Categorical variables	**Per cent**	**Number of person years**
Very concerned about immigration		
Not/somewhat concerned	70.79	134,527
Very concerned	29.21	55,522
Party preference		
No party preference	54.38	103,351
CDU/CSU (Christian Democrats)	18.27	34,730
SPD (Social Democrats)	16.05	30,509
Die Grünen (The Greens)	4.80	9,117
Die Linke (The Left)	3.09	5,876
FDP (Free Democrats)	1.77	3,355
Others and mixed	0.92	1,755
Radical right	0.71	1,356
Interest in politics		
Very strong	7.64	14,518
Strong	31.15	59,209
Not so strong	48.52	92,208
Not at all	12.69	24,114
Household income satisfaction on 10 point scale, five categories		
Low	3.25	6,171
	9.41	17,893
	21.74	41,309
	32.01	60,831
High	33.59	63,845
Concerns general economic development		
Not concerned	10.96	20,832
Somewhat concerned	54.31	103,218
Very concerned	34.73	65,999
Concerns own economic situation		
Not concerned	27.70	52,641
Somewhat concerned	51.73	98,304
Very concerned	20.58	39,104
Age, five categories		
<25	7.61	14,463
25–34	12.83	24,382
35–49	29.55	56,152
50–64	25.33	48,147
>65	24.68	46,905
Employment status		
Not working	5.84	11,103
In training/apprentice	5.70	10,825
Registered unemployed	5.43	10,315
Pensioner	27.99	53,196
Working	55.04	104,610
Month of interview		
January	7.27	13,821
February	33.10	62,908
March	27.64	52,531
April	14.54	27,639

(continued)

May	7.39	14,048
June	4.38	8,325
July	3.06	5,809
August	1.73	3,279
September/October/November	0.89	1,689
State of Residence		
Schleswig-Holstein	3.06	5,825
Hamburg	1.49	2,833
Lower Saxony	9.18	17,447
Bremen	0.59	1,119
North-Rhine-Westfalia	19.18	36,445
Hessen	5.85	11,126
Rheinland-Pfalz	4.61	8,753
Baden-Wuerttemberg	9.77	18,573
Bavaria	13.44	25,541
Saarland	1.17	2,221
Berlin	3.85	7,315
Brandenburg	5.31	10,086
Mecklenburg-Vorpommern	2.82	5,355
Saxony	8.97	17,040
Saxony-Anhalt	5.21	9,906
Thuringia	5.51	10,464
Survey year		
2001	3.64	6,921
2002	7.72	14,673
2003	7.72	14,669
2004	7.54	14,327
2005	7.21	13,696
2006	7.61	14,471
2007	7.42	14,106
2008	7.04	13,384
2009	6.58	12,514
2010	6.02	11,444
2011	6.30	11,977
2012	6.67	12,678
2013	6.56	12,466
2014	6.22	11,812
2015	5.74	10,911
N	190, 049	

Table A2. Moderating effects of district level share of foreigners

Variable	FE-LPM	FE-LPM with time-stable contextual covariates	FE-LPM with categorical share foreign variable
Share foreign	0.011***		
Media salience factor	0.049***	0.058***	0.049***
Share foreign × media salience factor	−0.001**		
Share foreign 2001 × media salience factor		−0.001***	
Share foreign categorical (per cent)			
2–6			0.015
6–10			0.027*
10–15			0.033*
15–35			0.035*
Share foreign categorical × media salience factor			
2–6			−0.005
6–10			−0.001
10–15			−0.012**
15–35			−0.020***
Contextual controls:			
Unemployment rate	0.005***		0.005***
Vocational training positions	−0.002***		−0.002***
Number of students	−0.000		−0.000
Average household income	0.000***		0.000**
Population density	0.000		0.000
Constant	0.127*	0.191***	0.183***
Number of person-years	166,399	166,399	166,399
Number of persons	22,487	22,487	22,487
Minimum observations per person	2	2	2
Maximum observations per person	15	15	15

Note: *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Results from FE LPMs. All models control for the full set of individuals level covariates (not shown), plus additional district level controls (unemployment rate, training positions, number of students, average household income, population density). Sample is restricted to those who had no changes in district over time to rule out individual selection into contexts. Complete table available upon request.