
Jacobs, L.; Damstra, A.; Boukes, M.; De Swert, K.

DOI
10.1080/15205436.2018.1442479

Publication date
2018

Document Version
Final published version

Published in
Mass Communication & Society

License
CC BY-NC-ND

Link to publication

Citation for published version (APA):

Laura Jacobs and Alyt Damstra
Department of Political Communication and Journalism
Amsterdam School of Communication Research
University of Amsterdam

Mark Boukes
Corporate Communication
Amsterdam School of Communication Research
University of Amsterdam

Laura Jacobs (Ph.D., KU Leuven, 2017) is a postdoctoral researcher at the University of Amsterdam and a member of the Department of Political Communication and Journalism in the Amsterdam School of Communication Research. Her research interests include anti-immigrant attitudes, media effects and intergroup relations.

Alyt Damstra (M.A., University of Amsterdam, 2015) is a PhD candidate in the Department of Political Communication and Journalism in the Amsterdam School of Communication Research at the University of Amsterdam. Her research interests include media effects and the construction of economic news.

Mark Boukes (Ph.D., University of Amsterdam, 2015) is an assistant professor in the Department of Communication Science in the Amsterdam School of Communication Research at the University of Amsterdam. His research interests include the content and effects of infotainment, political communication and economic news.

Knut De Swert (Ph.D., University of Antwerp, 2011) is an assistant professor at the University of Amsterdam and a member of the Department of Political Communication and Journalism in the Amsterdam School of Communication Research. His research interests include news media content, mainly television news quality in a comparative perspective.

Correspondence should be addressed to Laura Jacobs, Department of Political Communication and Journalism, Amsterdam School of Communication Research (ASCoR), University of Amsterdam, Nieuwe Achtergracht 166, 1018 WV Amsterdam, the Netherlands. E-mail: l.c.n.jacobs@uva.nl

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.
Although prior studies investigating immigration news typically documented a dominant focus on negativity and threats, only limited empirical research is available, which scrutinizes the way real-world developments affect these patterns in immigration news. This study aims to fill this void. First, we report results of a large-scale and longitudinal content analysis ($N = 4,340,757$) of trends in immigration news coverage in two Western European cases, Flanders (the northern, Dutch-speaking, largest region of Belgium) and the Netherlands, from 1999 to 2015. Both the salience of immigration as a news topic on itself and its linkages with three prominent issues (i.e., crime, terrorism, and socioeconomic issues) are explored. Second, this study builds on previous insights by comparing dynamics in immigration news to real-world events and developments. Overall, the results show that the linkage of immigration to issues of crime, terrorism, and the economy in Flemish and Dutch newspapers was considerable throughout the 17-year period under study. Yet there is limited evidence for a close relationship between news and real-life developments; hence, trends in immigration news seem largely unaffected by trends in society.

INTRODUCTION

Immigration continues to be one of the most prominent political issues in contemporary Western societies (Castles & Miller, 2013): Citizens in many European countries perceive immigration as one of the most pressing challenges their society is facing. Recently, the European Union (EU) experienced a severe immigration “crisis.” Support for populist right parties, who advocate immigrant restrictions, continues to be high in multiple European countries (Mudde, 2013). Nowadays, many Western European countries host a substantial and rising population of individuals with an immigration background, and conflict and political instability throughout the world mean that the immigration topic will remain a significant and key political issue in the future as well (Castles & Miller, 2013).

Due to its signalling function to report on key events and developments in society, news coverage about immigration provides significant input for the public debate about immigration (Bleich, Bloemraad, & De Graauw, 2015). News content may function as a source of information and social learning, extending citizens’ direct experience with immigrants (Joyce & Harwood, 2014; Schiappa, Gregg, & Hewes, 2005). Hence, the study of patterns in immigration news and its relationship with public opinion has developed into a
prominent subfield within political communication (Schemer, 2014; Schlueter & Davidov, 2013; Van Klinger, Boomgaarden, Vliegenthart, & De Vreese, 2015; Vliegenthart & Boomgaarden, 2007). A well-documented conclusion by news message analysis is that stereotyping of immigrants is widespread, as the portrayal typically includes problems, negativity, and threats (van der Linden & Jacobs, 2016; Van Klinger et al., 2015).

Intergroup relations literature, building on group threat theory (Bobo, 1983; LeVine & Campbell, 1972), asserts that large segments of the native population in present-day Western European societies hold immigrant presence responsible for rising crime and terrorism figures (Ceobanu, 2011; Fitzgerald, Curtis, & Corliss, 2011) and believe that immigration puts heavy strains on the achievements of the welfare state via growing competition at the labour market and increasing social expenditure (Billiet, Meuleman, & De Witte, 2014; Hainmueller, Hiscox, & Margalit, 2015). Media studies provide evidence that these viewpoints are at least partly attributable to news coverage, which depicts immigrants as posing economic and safety threats to the host society and its population (van der Linden & Jacobs, 2016).

However, a relevant question that has not been tackled yet in scholarly debates concerns the interplay between real-world trends and patterns in immigration news, which touches upon the core principles of journalism and news production. How do real-life trends in society, such as rising immigration inflows, increasing crime levels, terrorist attacks, and periods of economic hardship, translate into news coverage about immigration? This study’s goal is twofold: (a) to document the salience of immigration news as well as patterns in immigration news identified on the basis of group conflict theory (e.g., links with crime, terrorism, and socioeconomic issues) and (b) to compare these trends in immigration news with real-world developments.

First, this study offers a systematic and longitudinal investigation of trends in immigration news for the period 1999–2015 in two Western European cases, Flanders (the northern, Dutch-speaking region of Belgium) and the Netherlands. It is especially innovative because it reports the evidence of a large-scale content analysis of more than four million immigration news stories. Both the salience of immigration as a news topic in general and its links to crime, terrorism, and socioeconomic issues—which following group conflict theory have been theorised as recurrent topics in the immigration debate—are explored. This study analyzes all immigration news in the leading newspapers in both regions for a 17-year period.

Second, this study extends current knowledge by drawing comparisons between patterns in news coverage of immigration and real-world developments, permitting conclusions with regard to the reflection of societal trends in immigration news. Hence, we analyze whether, regarding immigration, news is following (macrolevel) reality by linking immigration to those...
topics that are salient based on real-world indicators, or rather construct an
alternative mediated reality by emphasizing the link between immigration
and certain topics apart from real-world developments. As such, this study
goes further than prior studies, which have assessed the relationship
between the salience of immigration news coverage and immigration fig-
ures, by also examining whether actual news content about immigration (in
terms of links with topics, like crime, terrorism, and the economy) follows
real-life trends.

THEORETICAL FRAMEWORK

Group Conflict Theory and Trends in Immigration News Coverage

In modern-day European societies, the dominant public opinion climate about
immigrants is rather unfavourable (Gorodzeisky, 2013). Literature on intergroup
relations points to group conflict theory as one of the most influential theoretical
perspectives to comprehend the antecedents of anti-immigrant attitudes (Riek,
Mania, & Gaertner, 2006). The premise of this theory is that (perceived) immi-
gen presence and the size of this immigrant community gives rise to threat
perceptions, making it likely that future intergroup interactions between various
groups in society will be largely conflictual in nature (Blumer, 1958; Key, 1949;
LeVine & Campbell, 1972). More specifically, this theory refers to (perceived)
materialistic threats to in-groups’ welfare and well-being due to an out-group’s
presence or actions (Bobo, 1983; Stephan, Ybarra, & Rios Morrison, 2015). The
presence of immigrants, who are considered a major out-group, is theorized to
stimulate competition with the host population or in-group. Hence, the equili-
brium between in-group and out-group members is anticipated to exert powerful
influence on the dynamics of intergroup interactions. A growing out-group size,
caused by, for example, rising immigration inflows, has been theorized to feed
intergroup conflict on a number of dimensions. Most prominent, it may intensify
competition for scarce resources (e.g., money, housing, jobs, but also power and
physical safety), possibly resulting in a clash to defend these endangered goods
and privileges (Gorodzeisky, 2013). Group conflict theory posits that the origin
of anti-immigrant attitudes is largely to be found in perceived threats posed by
rising immigrant presence, which is perceived to result in safety challenges (i.e.,
crime, terror attacks) and economic challenges (i.e., increasing social expenditure
putting strains on the welfare state, intensified competition at the labour market).

Media studies, examining the role of news messages as major socialization
agent in society, typically found that immigration news is skewed to the negative
(Boomgaard & Vliegenthart, 2009; Schemer, 2014; Schlueter & Davidov,
2013; Van Klingeran et al., 2015) with multiple references to social problems
and threats (van der Linden & Jacobs, 2016). There is some prior evidence that immigration has been covered from a safety and economic threat perspective in the news (Caviedes, 2015; Greussing & Boomgaarden, 2017; Lawlor, 2015). First, immigration is depicted as posing threats in terms of rising crime levels and facilitating terrorist attacks. Second, immigration is portrayed as putting the existing welfare system under pressure and exacerbating job rivalry. These messages may facilitate an information environment in which hostile arguments about immigrants are being constructed. Exposure to these negative and threatening news stories have indeed been shown to result in amplified threat perceptions and anti-immigrant attitudes among the audience (van der Linden & Jacobs, 2016; Van Klingeren et al., 2015). Many native citizens in modern-day democracies agree that immigration has a detrimental impact on the economy and exacerbates crime levels and insecurity (Fitzgerald et al., 2011; Malhotra, Margalit, & Mo, 2013). However, prior evidence is largely limited to the U.S. context and is often based on a small sample at one point in time. The question remains to what extent news in Western European societies constructs a vision of immigration as posing safety and economic threats, how this has developed over a longer period, and whether this presents a stable and recurring trend in news coverage.

In summary, we adopt group conflict theory as our theoretical foundation to analyze both general immigration news and specific trends in immigration news. We complement prior evidence by offering a systematic, longitudinal, and large-scale investigation of immigration news in two Western European contexts by assessing whether immigration is a salient topic and whether links with crime, terrorism, and socioeconomic issues present a recurrent and stable trend over time. We pose the following research question:

RQ1: To what extent does immigration news coverage make references to (a) crime, (b) terrorism, and (c) socioeconomic issues?

The Relationship Between Immigration News Coverage and Real-World Developments

Journalists perform a watchdog task in society by taking a critical perspective, uncovering problems, challenging authority, and calling political actors to order (Patterson, 1993; Robinson & Sheehan, 1983). Often-cited journalistic normative standards include objectivity and neutrality (Kuklinski & Sigelman, 1992; Morris, 2007; Shoemaker & Reese, 2011; Tuchman, 1972). Following these journalistic routines is considered crucial, as citizens are unable to observe all things going on in society themselves and the news media may function as their “window on the world” (McNair, 2009). A reason for concern, however, is that
news may not always comply to this generally accepted standard of objectivity and neutrality (Altheide, 1976; Entman, 2007; Shoemaker & Reese, 2011), especially when it concerns news coverage of outgroups in society (Garretson, 2015).

Reporting about social reality is complex: Inevitably, covering each event that occurs in the world is an impossible task for news producers. Being confronted with limits in time and space, journalists have to make choices about which events they cover and which they neglect (Hilgartner & Bosk, 1988; Shoemaker & Vos, 2009). This implies that news is not a full representation of reality, because this selection process always goes hand in hand with a certain amount of media-related and media-unrelated influences (Shoemaker & Reese, 2011). In an attempt to grasp, interpret, and cover social reality, newsmakers choose to reduce complexity and simplify information, thereby gratifying the audience’s need for comprehensible, easy-to-digest news messages. Journalists operate as gatekeepers by determining which events cross the boundaries of news attention (Soroka, 2012). Hence, news can be theorized as an alternative social reality (Adoni & Mane, 1984; Altheide, 1976) or as a pseudo-environment (Lippmann, 1922), a reality deviating from the reality based on hard numerical real-world indicators.

This journalistic selection process is guided by a set of formal and informal rules and criteria, like news values and commercial concerns (Allern, 2002; Galtung & Ruge, 1965; Harcup & O’Neill, 2016). News value theory asserts that specific elements influence the newsworthiness of an event, such as negativity or proximity. The process of news selection and gatekeeping entails that news may not be fully objective or truthful, as some events are more likely to accumulate journalistic attention than others (Altheide, 1976; Entman, 2007).

Hence, following theory in the field of journalism, it is rather plausible that news does not offer a true reflection of (trends in) immigration as a societal matter (Gerber et al., 2002). As suggested by Dixon and Linz (2000) and by Hetsroni and Tukachinsky (2006), comparison of trends in news with those of real-world developments gives insight into the extent to which the evolution in media depictions deviate from hard, numerical real-world trends. We are among the first to apply this in a comprehensive way to news about immigration; the overall question is whether we find evidence of reality affecting news coverage about this subject. Extant studies directed at the interplay between immigration figures and news coverage are scarce, but they suggest that immigration news is often not in sync with real-world developments (Lubbers, Scheepers, & Wester, 1998; Van Klinger et al., 2015; Vliegenthart & Boomgaarden, 2007). Van Klinger et al. (2015), for instance, argued that news attention for immigration and real immigration statistics show little convergence, and are sometimes even negatively correlated: Whenever real immigration inflows were low, immigration was a more salient news topic than in times of high immigration inflows.
Prior scholarship mostly focused on the convergence between the salience of general immigration news and immigration figures. So far, however, it remains an open question to what degree certain trends in immigration news are inspired by certain real-world developments. As asserted by group conflict theory (see earlier), matters such as crime, terrorism, and socioeconomic issues dominate in native citizens’ assessment of immigration (Riek et al., 2006). This is linked to the tendency of people to find scapegoats that can be stigmatized for detrimental evolutions, which are alleged to erode the social order (Semyonov, Raijman, & Gorodzeisky, 2006). Typically, out-groups, like immigrants, are blamed for aspects (i.e., safety or economic outlook) that are considered dangerous for society. Therefore, it is rather likely that salient developments in the social, political, and/or economic climate of a country or region may affect the way in which journalists cover immigration, which is an assumption that has rarely been tested empirically. From this perspective, we expect rising crime levels, terrorist activity, and deteriorating economic circumstances to be reflected in higher levels of immigration visibility in the news and its linkage with these issues. In addition, alike prior studies, we ascertain whether rising immigration figures are reflected in larger volumes of immigration news stories. Ideally, one would compare real-world indicators of the involvement of immigrants in crime, terrorist activity, or unemployment. Unfortunately, this type of information is not available. Still, we believe that general crime, terrorism, and socioeconomic figures are relevant to address, as trends in the political climate of a region may affect the way in which immigration is covered in the news, particularly given its association with the issues of crime, terrorism, and the economy in the minds of native citizens. Hence, we formulate a second research question:

RQ2: How do trends in the visibility of immigration and its linkage to other topics (i.e., crime, terrorism, and the economy) in news coverage relate to the evolution of real-world indicators of (a) immigration, (b) crime, (c) terrorist attacks, and (d) socioeconomic issues?

DATA AND METHOD

Next we describe the data that we have collected (media data and real-world indicators), and the analytical procedures that we followed to analyse them.

Case Selection

Flanders and the Netherlands are suitable cases for comparison as they fulfill the criteria of most similar cases and share common features. Geographically, they are
neighbouring countries with mutual cooperation. Historically, they once formed a unified nation and have experienced parallel developments. Politically, both are classical prototypes of Western democracies with a division of powers between judicial, legislative, and executive branches; a proportional electoral system; and a multiparty constellation with a sense for reconciliation and coalition governments. Culturally, the same language is spoken in Flanders and the Netherlands (which is advantageous for our content analysis), and they maintain strong friendship ties, cooperating often in cultural domains. Economically, both are transit economies with a large reliance on EU trade and export (Deschouwer, 2012). Importantly, besides these similarities, Flanders and the Netherlands share features in terms of their media system and immigration context.

In their typology of media systems, Hallin and Mancini (2004) classify Flanders (as part of Belgium) along with the Netherlands as typical examples of the democratic corporatist model, which is characterized by an early development of the mass press, professionalization, press freedom, and a viable public broadcaster (Aalberg, Van Aelst, & Curran, 2010; Vliegenthart, 2012). A specification of this model also categorizes the Netherlands and Belgium within the same type of media system (Brüggemann, Engesser, Büchel, Humprecht, & Castro, 2014). They have a diversified media landscape encompassing both quality and popular newspapers, which to a large extent operate in an independent way from political authorities.

The respective immigration history of Flanders and the Netherlands is the result of rather equivalent processes (Berkhout & Sudulich, 2011; Martiniello, Rea, Timmerman, & Wets, 2010). These processes relate to labour migration in the 1960s (from areas around the Mediterranean Sea, most notably North Africa and Turkey), EU integration and enlargement (facilitating free movements of persons within the EU, typically workers from Central and Eastern Europe), and colonization (Democratic Republic of Congo, Burundi and Rwanda for Flanders; Suriname, the Antilles and Indonesia for the Netherlands). Although the specific ethnic composition of the Dutch and Flemish society may diverge, both share a comparable history of immigration and similar challenges in the current era. Immigration is a salient political issue; both Flanders and the Netherlands have witnessed the rise of an anti-immigrant party (Flemish Interest for Flanders and Wilders’ Freedom Party for the Netherlands) advocating fierce immigration restrictions (Vossen, 2011; Walgrave & De Swert, 2004). Altogether, Flanders and the Netherlands are comparable prototypes of modern Western European democracies.

Computer-Assisted Content Analysis. This study applies dictionary-based automated content analysis of news stories to assess the salience of immigration in newspapers, and its links with crime, terrorism, and socioeconomic issues. Conducting automated content analysis entails a
multifaceted process of creating a dictionary with a relevant search string and validating its utility and effectiveness. For this study’s purpose, automated content analysis is the preferred option, as this technique permits processing large amounts of information in a standardized and comparable manner (Grimmer & Stewart, 2013). In addition, we rely on broad subject themes or issues that are relatively straightforward and clear-cut, meaning that they do not demand a challenging level of complexity and nuance and that there is a consensus on their basic definition. The definitions are included in the online appendix.

**Data.** Our content analysis covers 17 years (January 1999 to December 2015) of news data and 4,340,757 newspaper stories. This time frame is apt to investigate our research questions, as it contains considerable variation in terms of events linked to immigration, crime, terrorism, and the economy. Importantly, it comprises the aftermath of 9/11, the Arab Spring, terrorist attacks in Europe, times of economic crisis, and rising levels of immigration such as the 2015 refugee crisis. All these issues have been dominating public debate in Europe for several months.

Newspaper data have been collected on a monthly basis via LexisNexis (Netherlands) and GoPress (Flanders). LexisNexis and GoPress are reliable academic databases that are publicly available for scientific research; they archive all news articles from a wide variety of print sources from 1999 until the present. The collection of the newspaper data was conducted in four steps (see the online appendix): First, all articles (in any section, and irrespective of the topic) during the observation period were selected, and we calculated a monthly number of articles per newspaper. Second, we developed a search string to select newspaper stories about immigration. Third, we calculated the share of news items covering the immigration issue expressed as the percentage of all news that was published in that month. Fourth, we calculated the share of immigration news items in which a link was made to crime, terrorism, or socioeconomic issues expressed as the percentage of all immigration news that month. Hence, relative measures of these issue links were created.

Six newspapers — three newspapers for each region — have been included. Key criteria taken into account for the choice of newspapers include their reach and relevance in society, and considerations in terms of type of newspaper, including its political orientation. For both regions, two broadsheets and one tabloid newspaper

---

1 With one notable exception: The GoPress data archive does not provide media data for October to December 1999. Moreover, also for July 2001 and June 2010, data about terrorism in immigration news could not be retrieved for Het Laatste Nieuws (Flanders), possibly due to technical issues.

2 We reran the analyses using absolute measures. For Flanders, results are almost identical; for the Netherlands, minor differences for effects of real-world developments were noted. However, a relative measure is preferred: Contrary to absolute measures they offer a more correct reflection by controlling for the total amount of news coverage that greatly differs across outlets and within outlets over time, which permits to substantively assess change over time.
have been selected. This permits close comparison between both regions. For Flanders, the main right-leaning broadsheet *De Standaard* and the main left-leaning broadsheet *De Morgen* have been included, together with *Het Laatste Nieuws*, the largest tabloid newspaper (De Bens, 2001). For the Netherlands, the main right-wing broadsheet *NRC Handelsblad* and the main left-wing newspaper *de Volkskrant* have been selected, supplemented with *De Telegraaf*, as most popular tabloid newspaper (Bos, Kruikemeier, & De Vreese, 2014). All six newspapers are among the most widely read within their respective country/region.

**Search String.** A search string has been developed that identified all newspaper stories reporting on immigration and a specific search string to find articles that have a combination of immigration and crime, terrorism, and/or socioeconomic issues.

For every issue, a search string consisting of relevant key words was constructed based on the definitions (see online appendix). This search string was developed through a combination of relying on existing examples (e.g., Van Klingereren et al., 2015) and fine-tuning and validating key words via a process of trial and error. Each time, sample-wise, the amount of noise (i.e., the selection of unrelated news) was assessed while testing the effectiveness of the search string. A manual coding of 969 news stories shows that the search strings were effective in selecting news stories dealing with the various topics (immigration, terrorism, crime, and socioeconomic issues). A comparison between the manual and computer-assisted coding shows that 86.7% of the news stories selected via the (automatic) search string indeed dealt with these issues, thus implying that the amount of noise is limited. In most news stories (73.1%), these topics even presented the main focus of an article. Full results are available from the authors upon request. Manual scrutiny of a substantial subsample of the selected newspaper stories strengthens our confidence that the measures are well suited to grasp the issues we aim to study, fulfilling the requirement of internal validity. Search strings were identical for Flanders and the Netherlands, although due to linguistic diversity and jargon-specific differences, synonyms were included to be certain to grasp the exact same issue. For the immigration search string, we included the five largest immigrant groups per region\(^3\); for crime, we opted for a

---

\(^3\) We included only the largest immigrant groups in society. Public debates about immigration in Flanders and the Netherlands focus mostly on these groups, and their position and presence is the result of comparable historical events (e.g., EU enlargement and colonization). Still, we tested whether our search string is suited to include news about more recent immigrant groups (e.g., from the Middle East). Findings, available upon request, show that due to the inclusion of generic terms our search string was also effective in selecting news about more recent groups. We included news about people with an immigration background (first- but also second- and third-generation immigrants) and news about ethnic minorities, given the large overlap between both categories: Although distinct concepts, ethnic minorities often have a migration background, whereas most immigrants are ethnic minorities.
broad operationalization of crime issues, including all punishable acts according to the penal code of both regions (from property to violent crime, fraud, and other criminal acts) as we would otherwise introduce bias by the selection of specific offenses.

**Real-World Indicators.** Real-world statistics about immigration flows, crime levels, terrorist activity, and economic performance were collected. For numbers about immigration, we relied on statistics from the statistical offices of Belgium (Statistics Belgium) and the Netherlands (StatLine). These numbers cover the period 1999 to 2014 for Belgium (most recent data available at the moment of writing: April 2017) and 1999 to 2015 for the Netherlands, denoting the permanent immigration inflows (in absolute numbers), which refers to the regulated and free movements of foreigners settling in both countries. For the Netherlands, data are available on a monthly basis; for Belgium, yearly figures are available.

The crime data have been collected via the official police statistics in Flanders and from StatLine in the Netherlands. They capture the absolute number of total criminal offences recorded by the police, as classified following the penal or criminal code in both regions, on a monthly basis for the period 1999 to 2015 in Flanders and on a yearly basis for the period 1999 to 2014 in the Netherlands. Both serious crime offences (e.g., homicide) and less serious crimes (e.g., misdemeanours) are included in these figures.

Data on terrorist activity have been obtained from the Global Terrorism Database (GTD), a publicly available and university-led database that collected statistical information about terrorist events throughout the world from 1970 until 2015, using systematic data on domestic, transnational, and international terrorist incidents. Terrorism, according to the GTD definition (2017), is “the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation.” Following this definition, we selected all (attempts of) terrorist attacks for the period 1999 to 2015, which resulted either in fatalities, injuries, or material damage and which took place in Western Europe and the United States, as Belgium and the Netherlands are mainly focused on these countries. Only verified facts by the GTD research team have been included.

Finally, figures about economic performance at the micro- and macroeconomic level have been included: unemployment figures and the Composite Leading Indicators (CLI) measurement. For unemployment, the monthly unemployment rates as documented by Eurostat (EU statistical office) were used for the Netherlands and Flanders for the period 1999 to 2015. CLI is a

---

4 For Flanders, most real-world indicators are based on statistics at the national level of Belgium as a whole, as detailed data for Flanders are not available.
measure developed by the Organisation for Economic Co-operation and Development summarizing a set of macroeconomic indicators into one index, including, for instance, business outlook and consumer confidence indicators, with the goal of reflecting the general state of the national economy. CLI data are available on a monthly basis for the period 1999 to 2015 for Belgium and the Netherlands.

Descriptive statistics can be found in the online appendix. We made a careful selection of the real-world figures to optimize comparability between Flanders and the Netherlands. Some indicators are standardized (CLI, unemployment figures) and were identically measured in both regions. However, some real-world data, most notably crime measures, are affected by distinct legal definitions and systems, counting methods, and rates at which the figures are reported and recorded. Although operationalizations differ, they still provide a reliable indication of societal trends within each respective region. We reran analyses using various data sources, and findings are to a large extent identical.

Method

To offer an overview of trends in immigration news, we made use of descriptive statistics, $t$ tests, and univariate regression analysis. To assess the interplay between immigration news and real-world indicators, we conducted a series of multiple regression analyses: Ordinary least squares regression was applied for each of the four dependent variables, which are all continuous and have been measured on a monthly basis (i.e., percentage of immigration news of total news, percentage of crime/terrorism/socioeconomic news in immigration news). In total, eight regression analyses have been conducted—four for the Netherlands and four for Flanders. All analyses included lagged values of the dependent variable to control for variance accounted for by the same type of news in the previous month (autocorrelation), as well as a time variable to assess change over time. The real-world indicators served as independent variables. More info about the dependent variables and unit of analysis is included in the online appendix.

RESULTS

Patterns in Immigration News Coverage

First, the salience of immigration newspaper coverage is examined, the unit of analysis being the share of newspaper stories about immigration as a percentage of the total amount of newspaper stories. Between January 1999 and December 2015,
Dutch and Flemish newspapers devoted, respectively, 4.8% (104,278 news stories) and 6.7% (135,703 news stories) of their total news reports (for Flanders, 2,193,391; for the Netherlands, 2,054,376) to immigration. Immigration is thus slightly more salient in the Netherlands than in Flanders, \( t(402) = 13.50, p < .001 \). Figure 1 displays the evolution of the salience of immigration news in Dutch and Flemish newspapers. The data show fluctuations over time, with peaks during specific periods. Univariate regression analysis (see the online appendix) shows that there is a significant decrease in the amount of immigration news over time for Flanders (\( \beta = -0.24, p < .001 \)) as well as in the Netherlands (\( \beta = -0.51, p < .001 \)). Of interest, patterns run rather parallel in Flemish and Dutch newspapers (\( r = .71, p < .001 \)), suggesting that news reacts to similar developments.

Next, the link of immigration with crime, terrorism, and socioeconomic issues as a percentage of all immigration news has been assessed. Importantly, these issues are not mutually exclusive, as news stories could contain references to all three issues simultaneously. Hence, the unit of analysis is the proportion of immigration news stories containing a reference to either crime, terrorism, or the economy.

First, we assess the extent to which immigration news makes references to crime. Between January 1999 and December 2015, respectively, 32.0% (or 35,147 news stories) and 33.6% (or 45,529 news stories) of immigration news in Flemish and Dutch newspapers contained a reference to crime (i.e., about one third of all immigration news). The over-time similarity between Flanders and the Netherlands is remarkable (\( r = .52, p < .001 \)). Still, the link between crime and immigration is slightly more pronounced for the Netherlands compared to Flanders, \( t(402) = 3.54, p < .001 \).

As shown in Figure 2, there is fluctuation over time with a decrease in both the Netherlands (\( \beta = -0.21, p < .001 \)) and Flanders (\( \beta = -0.32, p < .001 \)), although references to crime still maintain a considerable share of immigration news coverage in general. At the lowest point, respectively, 16.8% and 23.0% of all
immigration coverage in Flemish and Dutch newspapers deals with crime. A peak of about 59% appears in November 2004, which can be attributed to the murder of Theo van Gogh. In sum, crime seems to be a recurring ingredient of immigration news, even while the prominence of this link slightly declines over time.

Similarly, we investigate whether Flemish and Dutch immigration news contains references to terrorism (Figure 3). Between 1999 and 2015, respectively, 11.8% (13,121 news stories) and 10.7% (15,211 news stories) of monthly immigration news in Flemish and Dutch newspapers makes references to terrorism. Despite the relative homogeneity between both regions ($r = .71$, $p < .001$), linkage between immigration and terrorism is slightly more persistent in Flemish newspapers compared to Dutch newspapers, $t(401) = -1.73$, $p = .042$. 

[Figure 2: Percentage crime in immigration news in Flemish (FL) and Dutch (NL) newspapers (1999–2015).]

[Figure 3: Percentage terrorism in immigration news in Flemish (FL) and Dutch (NL) newspapers (1999–2015).]
The link between immigration and terrorism diverges between periods: Although there is a declining trend in the Netherlands ($\beta = -0.25, p < .001$), this link became more prominent in Flemish newspapers ($\beta = 0.19, p = .008$). At its lowest points, only 2% to 3% of all immigration news contained references to terrorism, whereas high peaks (ranging from 40% to 50%) could be observed in both regions in September 2001 (9/11), July 2005 (London attacks), and November 2015 (Paris attacks). Terrorism presents a recurrent, but nonconsistent (i.e., event-driven) theme in immigration news.

Finally, the link between immigration and socioeconomic issues in Flemish and Dutch newspapers has been assessed (Figure 4). Between January 1999 and December 2015, respectively, 24.3% (or 26,510 news stories) and 25.7% (or 34,528 news stories) of immigration coverage contained references to socioeconomic issues, such as unemployment and labour market competition. Again, patterns for Flanders and the Netherlands correlate ($r = .36, p < .001$), although Dutch newspapers make this link somewhat more regularly than Flemish ones, $t(402) = 3.76, p < .001$. The link between immigration and the economy shows some variability and fluctuates from 15% in both regions to almost 40%. Overall, we find a declining trend in the Netherlands ($\beta = -0.30, p < .001$) but not in Flanders ($\beta = 0.04, p = .44$). So, whereas the linkage with socioeconomic issues has become less prominent in the Netherlands, it is rather stable in Flanders.

In conclusion, answering the first research question, immigration news in several instances covers immigration through, respectively, a crime (about one third of all newspaper stories), an economic (about one fourth of all newspaper stories), and a terroristic angle (about one tenth of coverage). Similarities between Flanders and the Netherlands are striking, especially for immigration and its linkage with terrorism. Given the multitude of topics
that immigration news could cover and refer to, these references to crime, the economy and terrorism are remarkable.\(^5\)

The Relationship Between Immigration News and Real-World Developments

Moving from trends within news coverage to its relationships with outside (i.e., real-world) developments, we first analysed the impact of the real world on the salience of immigration news. As shown in Table 1, for the Netherlands (Model I) we find a significant, positive effect of terrorist attacks on the amount of immigration news ($\beta = 0.13, p = .022$). So, in times of terrorist attacks, news about immigration becomes more salient. Moreover, crime also has a positive impact on the attention for immigration in Dutch news, although the effect is only marginally significant ($\beta = 0.234, p = .086$). The other real-world indicators, including immigration and economy figures (unemployment and CLI), are not significantly related to the salience of immigration news.

| TABLE 1  
Predicting the Salience of Immigration News |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DV: % Immigration News</td>
<td>Model 1: The Netherlands</td>
<td>Model 2: Flanders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Constant</td>
<td>$-7.931$</td>
<td>$2.437$</td>
<td>$7.173$</td>
<td>$7.34$</td>
</tr>
<tr>
<td>Immigration news t-1</td>
<td>$0.412^{***}$</td>
<td>$0.535^{***}$</td>
<td>$0.069$</td>
<td>$0.000$</td>
</tr>
<tr>
<td>Immigration</td>
<td>$0.000$</td>
<td>$-0.016^{*}$</td>
<td>$0.084$</td>
<td>$-0.283$</td>
</tr>
<tr>
<td>Crime</td>
<td>$0.003^{†}$</td>
<td>$-0.000$</td>
<td>$0.234$</td>
<td>$0.002$</td>
</tr>
<tr>
<td>Terrorism</td>
<td>$0.017^{*}$</td>
<td>$0.012$</td>
<td>$0.127$</td>
<td>$0.008$</td>
</tr>
<tr>
<td>Composite Leading Index</td>
<td>$0.077$</td>
<td>$0.016$</td>
<td>$0.079$</td>
<td>$0.22$</td>
</tr>
<tr>
<td>Unemployment</td>
<td>$0.129$</td>
<td>$0.054$</td>
<td>$0.050$</td>
<td>$0.135$</td>
</tr>
<tr>
<td>Year</td>
<td>$-0.007^{*}$</td>
<td>$0.003$</td>
<td>$-0.297$</td>
<td>$0.010$</td>
</tr>
<tr>
<td>$R^2$</td>
<td>$0.528$</td>
<td>$0.414$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>$192$</td>
<td>$191$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>$520.2$</td>
<td>$557.7$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Immigration news t-1 = lagged dependent variable (DV); AIC = Akaike information criterion. 
\(^{†}p < .10. ^{*}p < .05. ^{***}p < .001.\)

\(^5\)Our analysis does not allow for determining which news topics are dominant in immigration news; it is beyond this study’s scope to assess references to all potential news topics in immigration news. We included crime, terrorism, and the economy because, following group conflict theory, these issues are theoretically most relevant. Results show that often immigration is linked to crime, terrorism, and the economy; however, whether these issues are dominant is open to future research. Prior research, however, did find that crime references are most dominant in immigration news compared to other topics (Jacobs & Hooghe, 2015).
news. Thus, the salience of immigration in the Netherlands really seems related to safety issues rather than to economic circumstances.

For Flanders (Model II), immigration figures have a significant impact on the salience of immigration news; however, the effect is negative ($\beta = -0.283, p = .017$), indicating that if real immigration inflows increase, news about immigration decreases. None of the other real-world variables is significant. Flemish news coverage about immigration, thus, seems not to respond to over-time real-world developments of safety issues or economic statistics. Hence, in conclusion, immigration numbers do not seem to lead to more immigration news, whereas for the Netherlands there is a positive impact of crime and terrorist figures on the salience of immigration news.

Tables 2 to 4 investigate whether and to what extent the prominence of the linkages between immigration and crime, terrorism, and socioeconomic issues can be predicted by real-world developments using regression analysis. In Table 2, we first assess the visibility of crime in immigration news. For the Netherlands (Model I), none of the real-world indicators is significant: Real-world levels of immigration inflow, crime rates, and terrorist activity do not have any effect on how often the linkage between immigration and crime is made. Overall, this trend is confirmed for Flanders (Model II), with the only exception that immigration figures do have a significant negative impact ($\beta = -0.289, p = .033$). In general, the visibility of crime in

### Table 2

Predicting the Link Between Immigration and Crime in the News

<table>
<thead>
<tr>
<th>DV: % Crime in Immigration News</th>
<th>Model 1: The Netherlands</th>
<th>Model 2: Flanders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Constant</td>
<td>47.205</td>
<td>30.242</td>
</tr>
<tr>
<td>Crime &amp; immigration t-1</td>
<td>0.256**</td>
<td>0.254</td>
</tr>
<tr>
<td>Immigration</td>
<td>-0.000</td>
<td>-0.078</td>
</tr>
<tr>
<td>Crime</td>
<td>-0.008</td>
<td>-0.185</td>
</tr>
<tr>
<td>Terrorism</td>
<td>0.012</td>
<td>0.024</td>
</tr>
<tr>
<td>Composite Leading Index</td>
<td>-0.086</td>
<td>-0.026</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.221</td>
<td>-0.060</td>
</tr>
<tr>
<td>Year</td>
<td>-0.015</td>
<td>-0.185</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.057</td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>1127.4</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Crime & immigration t-1 = lagged dependent variable (DV); AIC = Akaike information criterion.

†$p < .10$. *$p < .05$. **$p < .01$. 
immigration news seems insensitive to real-world developments (including crime figures).

In Table 3, we examine the presence of linkages to terrorism in immigration news. For the Netherlands (Model I), terrorist attacks have a significant positive impact ($\beta = 0.116$, $p < .001$), but no significant effects are found for the other indicators. For Flanders (Model II), none of the real-world figures are significant, not even terrorist acts (borderline) or crime rates.

Finally, we investigate the linkage with socioeconomic issues in immigration news (Table 4). In the Netherlands (Model I), some real-world variables are significant. Crime is negatively related to this type of news ($\beta = -0.572$, $p < .001$), so higher crime levels make it less likely that immigration is linked to socioeconomic issues. Of interest, unemployment also has a negative effect ($\beta = -0.357$, $p < .001$). However, for Flanders (Model II), none of the real-world developments are significantly related to news in which immigration is linked to socioeconomic issues. So, although in the Netherlands higher crime and unemployment rates decrease journalists’ tendency to link immigration with socioeconomic topics, in Flanders news coverage does not respond to such developments at all.

### Table 3

<table>
<thead>
<tr>
<th></th>
<th>Model 1: The Netherlands</th>
<th>Model 2: Flanders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DV: % Terrorism in Immigration News</strong></td>
<td><strong>b</strong></td>
<td><strong>B</strong></td>
</tr>
<tr>
<td>Constant</td>
<td>3.227</td>
<td>31.016</td>
</tr>
<tr>
<td>Terrorism &amp; immigration t-1</td>
<td>0.709***</td>
<td>0.700</td>
</tr>
<tr>
<td>Immigration</td>
<td>-0.000</td>
<td>-0.015</td>
</tr>
<tr>
<td>Crime</td>
<td>0.009</td>
<td>0.148</td>
</tr>
<tr>
<td>Terrorism</td>
<td>0.083*</td>
<td>0.116</td>
</tr>
<tr>
<td>Composite Leading Index</td>
<td>-0.154</td>
<td>-0.031</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.557</td>
<td>0.102</td>
</tr>
<tr>
<td>Year</td>
<td>-0.001</td>
<td>-0.006</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.555</td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>1138.1</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Crime & immigration t-1 = lagged dependent variable (DV); AIC = Akaike information criterion.

†$p < .10$. *$p < .05$. ***$p < .001$. 
DISCUSSION

This study started from the observation that, despite the substantial body of literature about patterns in immigration news, empirical evidence evaluating the relationship of news messages about immigration to real-life indicators is virtually absent. This study clarifies the dynamics through which trends in society are reflected in news reports and relates to discussions about the type of social reality that journalists are (co-) constructing. The dual purpose was to offer a systematic investigation of trends in immigration news, supplemented with an evaluation of whether and how these trends reflect developments in society.

In terms of trends in immigration news, this study shows that, using a large-scale content analysis of more than 4 million newspaper stories in Flanders and the Netherlands, newspapers frequently cover immigration from a security or economic angle: A considerable number of references are made to crime, terrorism, and socioeconomic issues in immigration news. Hence, the framework of group conflict theory seems well suited as a theoretical basis to document trends in immigration news: The theory points to news as an information environment in which immigrants are often depicted as posing threats. This conclusion may, following media effect studies, have important societal ramifications, as covering immigration from a safety or economic perspective has consequences for public opinion: Some native citizens may be strengthened in their beliefs that the presence of immigrants leads to

<p>| TABLE 4 | Predicting the Link Between Immigration and Socioeconomic Issues in the News |
|-----------------------------------------------|
| <strong>DV:</strong> % Economy in Immigration News | <strong>Model 1:</strong> The Netherlands | <strong>Model 2:</strong> Flanders |</p>
<table>
<thead>
<tr>
<th></th>
<th><strong>b</strong></th>
<th><strong>β</strong></th>
<th><strong>SE</strong></th>
<th><strong>p</strong></th>
<th><strong>b</strong></th>
<th><strong>β</strong></th>
<th><strong>SE</strong></th>
<th><strong>p</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>60.650**</td>
<td>21.167</td>
<td>.005</td>
<td>26.072</td>
<td>24.796</td>
<td>.294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economy &amp; immigration t-1</td>
<td>0.247**</td>
<td>0.245</td>
<td>0.072</td>
<td>.001</td>
<td>0.218**</td>
<td>0.218</td>
<td>0.074</td>
<td>.004</td>
</tr>
<tr>
<td>Immigration</td>
<td>0.000</td>
<td>0.063</td>
<td>0.000</td>
<td>.406</td>
<td>-0.031</td>
<td>-0.201</td>
<td>0.023</td>
<td>.175</td>
</tr>
<tr>
<td>Crime</td>
<td>-0.019**</td>
<td>-0.572</td>
<td>0.006</td>
<td>.001</td>
<td>0.000</td>
<td>0.011</td>
<td>0.000</td>
<td>.882</td>
</tr>
<tr>
<td>Terrorism</td>
<td>0.018</td>
<td>0.049</td>
<td>0.025</td>
<td>.469</td>
<td>-0.002</td>
<td>-0.007</td>
<td>0.028</td>
<td>.930</td>
</tr>
<tr>
<td>Composite Leading Index</td>
<td>-0.098</td>
<td>-0.038</td>
<td>0.164</td>
<td>.550</td>
<td>-0.029</td>
<td>-0.009</td>
<td>0.229</td>
<td>.900</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-1.023**</td>
<td>-0.357</td>
<td>0.295</td>
<td>.001</td>
<td>-0.267</td>
<td>-0.056</td>
<td>0.394</td>
<td>.498</td>
</tr>
<tr>
<td>Year</td>
<td>-0.034****</td>
<td>-0.518</td>
<td>0.009</td>
<td>.000</td>
<td>0.014</td>
<td>0.228</td>
<td>0.010</td>
<td>.151</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.305</td>
<td>0.038</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>192</td>
<td>191</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AIC</strong></td>
<td>975.4</td>
<td>1031.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Crime & immigration t-1 = lagged dependent variable (DV) ; AIC = Akaike information criterion.  
**p < .01. ***p < .001.*
insecurity, risk, and law-and-order issues and erodes the economy (Fitzgerald et al., 2011; Hainmueller et al., 2015). Importantly, trends in news coverage between Flanders and the Netherlands run rather parallel, especially for the link between immigration and terrorism, which seems to point to the dominance of foreign-based events. In sum, the association of immigration with crime, terrorism, and socioeconomic issues thus seems a trend that can be found in several contexts, and that, hence, seems to be a generalizable pattern.

Our second, more innovative aim was to study whether and how real-world developments in terms of immigration, crime, terrorism, and the economy are reflected in immigration news trends. Can the prominence in news coverage of such links be related to processes that are taking place in society? Our study provides limited evidence for this. Results indicate that trends in immigration news and real-world developments either greatly diverge or are negatively correlated. Only in a few instances, evidence was found for a positive significant relationship. This prompts the observation that dominant trends in immigration news are largely unaffected by events occurring in the social, political, and economic context of society.

First, at least in Flanders, immigration is a more salient news topic during periods in which actual immigration flows are low, whereas immigration attracts less news visibility when immigration is on the rise. This confirms results by Van Klingeren et al. (2015). A possible explanation is that real-life trends demand some time before they are considered as newsworthy issues. In the Netherlands, real immigration figures are not related to the salience of immigration news at all. Hence, there seems to be none or even a negative relationship between news and reality; possibly, the salience of immigration as a recurring news topic is the result of journalistic choices and practices, rather than real-world numbers. Hence, it is not necessarily events occurring in reality that are setting the news agenda with regard to immigration.

Second, comparisons validate that the dominant patterns in immigration news— in terms of links with crime, terrorism, and socioeconomic issues—are not closely guided by developments related to these issues in reality. Still, results differ somewhat across topics and across the two regions: Although real crime figures do not seem to drive the coverage of immigration from a criminal angle in both Flanders and the Netherlands, it seems that whenever terrorist attacks occur, Dutch and Flemish newspapers report about immigration from a terrorist angle more often. Foreign-based events, rather than domestic crime numbers, seem to translate more easily into news about immigration, which may be linked to a dominant climate of increasing vigilance for terrorism. However, real-world developments in terms of the economy, such as unemployment rates and general economic performance measures, were only weakly related to the way immigration news was covered; for Flanders, almost no significant relationships were found, whereas in the Netherlands rising unemployment rates actually led to less linkages between immigration and the economy. Importantly, there is little evidence that during periods of economic crisis, news reports about immigration adopt an economic angle. Together, the findings
offer a preliminary indication that news and real-world indicators (at least the ones under study here) are only weakly correlated, signifying that a close, direct relationship between news coverage about immigration and developments taking place in society is largely absent, both for Flanders and the Netherlands. This presents a relevant conclusion, because it shows that what is happening in reality is not really permeated in the news content but that journalists to a large extent seem to autonomously put together the news agenda, and the way they report about immigration in particular.

A potential explanation for the limited predictive power of real-world developments may be due to the journalistic routine of focusing extensively on events or incidents rather than on broader trends. Prior studies found that the occurrence of specific events can lead to media hypes and have a direct impact on news coverage, which can be intensive but fleeting and impermanent (Vasterman, 2005; Vliegenthart & Boomgaarden, 2007). This fits within the tendency by newsmakers to employ episodic frames while covering immigration (Jacobs, Meeusen, & D’Haenens, 2016). In this regard, it is telling that terrorist events were found to have some impact on the link between immigration and terrorism in news coverage; a terror attack can, as opposed to unemployment rates or immigration figures, be seen as a key event, whereas the other real-world factors are general trends that are arguably less newsworthy.

Our conclusions can be traced back to broader discussions and speculations about the role and function of news media in democracies (McQuail, 2005; Shoemaker & Reese, 2011). Our results at least attenuate the vision of journalists as neutral portrayers of reality in terms of their responsibility to inform the public about immigration. Implications are that news media are not simply reflecting societal developments while covering immigration but rather promote a specific view on immigration as a news issue in which economic and safety threats are often present. References to crime, terrorism, and socioeconomic issues seem a component of immigration news that is largely unaffected by real-life figures; immigration, irrespective of developments in society, is always to some extent linked to these issues.

Despite our contributions, some limitations should be acknowledged. First, the selected issues were assessed only in terms of the frequency with which they were linked to immigration in the news without a tone analysis. Our explicit aim to expand the scope and conduct a large-scale study made that more detailed coding was not feasible. Future studies might want to include a tone analysis to allow a distinction between positive and negative news. Second, our real-world indicators dealt only with crime, terrorism, and the economy in general. No data about immigrant involvement in these issues are available due to sensitivities within society about these type of figures, rendering more fine-grained comparisons impossible.
ACKNOWLEDGEMENT

We would like to express our gratitude to Rens Vliegenthart for his valuable feedback and suggestions.

FUNDING

This work was supported by the Netherlands Organisation for Scientific Research (NWO) with a VIDI grant of Prof. dr. Rens Vliegenthart (project number: 016.145.369).

SUPPLEMENTAL DATA

Supplemental data for this article can be accessed here.

REFERENCES


