



Media messages and attitudes toward muslims and ethnic minorities: A panel study among ethnic majority adolescents in the Netherlands

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ABSTRACT

In recent years, western media coverage is frequently filled with issues relating to Islam, which are unfavorable to Muslims. The attitudinal consequences of such media messages are widely discussed; however, empirical research is scarce. This study uses large-scale panel data on adolescents in combination with newspaper data and takes advantage of an extensive fieldwork period during which media salience of Muslims has fluctuated. All unmeasured time-invariant characteristics are accounted for by adopting a fixed-effects panel design. The results provide evidence of immediate attitudinal responses to media salience: the more media salience of Muslims on the day of survey participation, the more negative adolescents feel about Muslims. However, the results do not point toward a secondary transfer effect because media-induced negative attitudes toward Muslims were not transferred to ethnic minorities. Findings of this study advance current research by providing evidence for the effect of daily variations in media salience on attitudes.

1. Introduction

Since the attack on the Twin Towers on 9/11, the western news media has extensively covered stories related to Muslims and Islam (Ahmed and Matthes, 2017; Powell, 2011). Moore, Mason, and Lewis (2008) found that, in Britain, 36% of the news stories about Muslims between the years 2000 and 2008 related to terrorism, and 22% emphasized differences between British and Muslim culture and religion. Other researchers have found similar results and concluded that the representation of Muslims in western media can be characterized as negative, unbalanced and “demonized” (Ahmed and Matthes, 2017; Akbarzadeh and Smith, 2005; Kabir, 2006). Although the negative media discourse about Muslims has been critically discussed (Jaspal and Cinnirella, 2010; Saeed, 2007; Shadid, 2005), empirical research on the attitudinal responses to such messages is scarce.

Experimental research shows that exposure to media frames containing negative content about *immigrants* induces negative attitudes toward *immigrants* (Matthes and Schmuck, 2017; Seate and Mastro, 2016, 2017). In line with these findings, studies using survey data in combination with media coverage data have shown that respondents surveyed after high media salience of immigration issues think more negatively about immigrants than respondents surveyed following low media salience of immigration (Berning et al., 2018; Boomgaarden and Vliegenthart, 2009; Schlueter and Davidov, 2011; Van Klingeren, Boomgaarden,

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Vliegenthart and De Vreese, 2015; Vliegenthart and Boomgaarden, 2007).

Elaborating on these studies, the present study investigated whether high media salience of *Muslims*, indicated by the frequency of news articles about Muslims, increased negative attitudes toward *Muslims* and toward *ethnic minority groups that are predominantly Muslim*. In addition, we examined whether media-induced negative attitudes toward Muslims (or Muslim ethnic minority groups) are “transferred” to *non-Muslim ethnic minority groups*. By disentangling attitudes toward Muslim groups and non-Muslim groups, the present study broadens research into the impact of media salience, which typically focuses on attitudes toward immigrants in general (Berning et al., 2018; Boomgaarden and Vliegenthart, 2009; Schlueter and Davidov, 2011; Van Klingeren et al., 2015; Vliegenthart and Boomgaarden, 2007).

In addition, little is known about the effect of media salience on adolescents specifically, as previous studies on media salience have focused on the general adult population. The present study fills this empirical gap by studying the attitudes of adolescents (aged 15–25 years). It is especially important to study the development of negative attitudes among the younger population because during this period there are more opportunities for intervention (e.g., at school), whereas during adulthood attitudes are more difficult to change (Rutland and Killen, 2015; Wölfer et al., 2016). If adequate social policies aimed at a cohesive multicultural society are to be deployed, it is important to identify the presence of possible obstacles to social cohesion during adolescence and early adulthood.

The context of our study is the Netherlands—a country that has seen a major rise in immigrants in the past decades, many of whom are Muslim. The two largest non-western ethnic minority groups in the Netherlands are from Turkey and Morocco, and of these two groups, more than 95% identify themselves as Muslim (Maliepaard and Gijsberts, 2012). Research has shown that Dutch ethnic majority adolescents think rather negatively about their Muslim peers as compared to their feelings toward their own majority group or toward non-Muslim ethnic minority groups (Bubritzki et al., 2018). The Netherlands is well-suited to exploring the role of media salience in shaping attitudes toward Muslims and toward ethnic minority groups more generally, as together with other Western European countries, it has seen a significant rise in ethnic-religious minority populations (Castles and Miller, 2009; Pew Research Center, 2017).

The present study also contributes to the field methodologically. Most studies on the effect of media salience rely on cross-sectional data (Boomgaarden and Vliegenthart, 2009; Schlueter and Davidov, 2011; Van Klingeren et al., 2015; Vliegenthart and Boomgaarden, 2007), which are subject to endogeneity issues. This study takes advantage of longitudinal large-scale panel data and fixed-effects techniques that study *within-individual changes* in intergroup attitudes due to media salience. This approach takes all possible time-invariant confounders into account, and thereby presents more robust conclusions about the impact of media salience on intergroup sentiments.

The study uses three waves of panel data from the Children of Immigrants Longitudinal Study in the Netherlands (CILSNL) project with Dutch adolescents, conducted in 2014, 2015, and 2016 (Jaspers and Van Tubergen, 2014, 2015, 2016). The CILSNL survey measures respondents' attitudes toward various out-groups, including Muslims, Muslim ethnic minority groups (i.e., Turks and Moroccans), and non-Muslim ethnic minority groups (i.e., Antilleans and Surinamese). We take advantage of the prolonged fieldwork period of the CILSNL in all three waves—covering several months—and the strong variations in media salience of Muslims during the period of data collection. During the fieldwork period of CILSNL, for example, there were terrorist attacks by “Muslim” terrorists, creating widespread media-attention on Muslims (Ahmed and Matthes, 2017; Moore et al., 2008). The study supplemented the CILSNL data on the respondents' intergroup attitudes with data on the daily media coverage of Muslims in Dutch newspapers, using computer-assisted media content analysis.

2. The influence of media salience on attitudes

Media salience or media attention refers to the visibility of certain topics within news media, which scholars commonly express as the frequency of news articles on particular issues. People use information provided by the mass media to form their opinions and attitudes about out-groups (Van Dijk, 1995; Vergeer et al., 2000). By emphasizing particular events through intensive news coverage, the news media have the power to set the agenda for public issues and to determine what people think about (McCombs, 2002; Scheufele and Tewksbury, 2007). Agenda setting also applies to people not directly exposed to the news media, as trending topics are likely to be transmitted through social networks. Frequent consultation of the news media is therefore not a necessary condition for influence by media salience (Bandura, 2009; Schmitt-Beck, 2003).

We elaborate on ethnic competition theory, which argues that perceptions of an out-group threat create negative intergroup sentiments (Scheepers et al., 2002; Vervoort et al., 2011). We posit that frequent media coverage of Muslims can increase perceptions of a Muslim threat, for two reasons. First, frequent mentioning of Muslims in the media increases the *salience* of Muslims in society. This may give the impression that the Muslim population is becoming larger and therefore more threatening. Second, the prevalent *negative* discourse, unfavorable to Muslims, in the western media (Ahmed and Matthes, 2017; Akbarzadeh and Smith, 2005; Kabir, 2006; Moore et al., 2008) may facilitate the development of even greater perceived threat. Muslim groups are often portrayed in the media as “undemocratic” and “dangerous”, as opposed to the “modern” and “dynamic” western society (Shadid, 2005). Media portrayals of Muslims as terrorists increase the perception of Muslims as being aggressive (Saleem et al., 2017).

We argue that media messages about Muslims have short-term, immediate effects on sentiments, as people tend to remember recently obtained information, which is at the forefront of their minds, when they are asked to make a social judgement (Zaller, 1992). Therefore, we hypothesize that: (H1) *The more media salience regarding Muslims there has been shortly prior to the survey participation, the more negatively will ethnic majority adolescents feel about Muslims and about ethnic minority groups that are predominantly Muslim (i.e., Turks and Moroccans).*

Media messages about Muslims may also affect attitudes toward non-Muslim ethnic minority groups. The “secondary transfer effect of contact” posits that positive (or negative) contact experiences with a certain minority out-group lead to reduced (or

increased) prejudice not only toward the contacted minority group but also lead to more positive (or negative) sentiments toward non-contacted minority groups (Pettigrew, 2009). In line with this idea, a quasi-experimental study showed that ethnic majority members who were surveyed shortly after the 2004 Madrid terrorist attack by Al-Qaeda were not only more negative about Arabs, but also toward other minority out-groups (Echebarria-Echabe and Fernández-Guede, 2006). Another study has shown that people surveyed shortly after a terrorist attack by “Muslim” terrorists (the October 12, 2002, suicide bombing in Bali) showed more negative attitudes toward immigrants (in general) than those surveyed before the attack (Legewie, 2013).

Pettigrew (2009) argues that media messages implying threat from a minority group can increase prejudice toward the minority group involved, which in turn, may increase prejudice toward uninvolved minority groups. Correspondingly, negative attitudinal responses to media messages about Muslims may be transferred to non-Muslim ethnic minority groups. Hence, we hypothesize that: (H2) *The more media salience regarding Muslims there has been shortly prior to the survey participation, the more negatively will ethnic majority adolescents feel about ethnic minority groups that are not predominantly Muslim (i.e. Antilleans and Surinamese).*

3. Data and measures

To answer the hypotheses, two data sources were combined: (1) individual-level survey panel data from the CILSNL study, and (2) media data from the LexisNexis Academic digital database of newspapers.

3.1. Individual data

3.1.1. Data

To examine individual attitudes toward Muslims and ethnic minorities, we used the fourth, fifth and sixth waves from the CILSNL project (Jaspers and Van Tubergen, 2014, 2015, 2016). This is the Dutch continuation of the CILS4EU project, which consisted of a three-wave panel in the Netherlands, Germany, Sweden, and England (Kalter et al., 2016). The first wave of the CILS4EU project was collected in 2010/2011, when the students were around 14 years old. To recruit the students, schools were selected with their probability proportional to size. From the schools that were initially approached, 34.9% agreed to participate. Schools that refused to participate were replaced by schools with similar characteristics, resulting in a response rate of 91.7% at the school level. After the school selection, two school classes were randomly selected for participation, for which the response rate was 94.5%. The response rate at the student level was 91.1% (CILS4EU, 2016). The surveys were designed so that inferences could be drawn for the entire Dutch population of adolescents of around the same age.

The fourth, fifth, and sixth waves of CILSNL data collection were conducted in 2014 (27 January–17 June), 2015 (5 January–30 April), and 2016 (6 January–8 May). From these samples, respondents with parents who were born in the Netherlands were selected, as this study focused on ethnic majority perceptions. After this selection, the sample consisted of 8543 observations from 3355 respondents. The type of analysis used for this study did not require that respondents contributed the same number of observations. From the respondents participating in the survey, only 2.4% had missing values on any of the variables included in the analyses. Considering how marginal this number of cases was, these observations were excluded from the analysis, resulting in a final sample of 8334 observations from 3281 respondents ($M_{\text{age}} = 18.59$, $SD = 1.04$). Of the final sample, 2309 respondents (70.37%) participated in all three waves, 566 in two waves (17.25%), and 406 in one wave (12.37%). In addition, 7328 observations (87.92%) were examined through online or paper-and-pencil self-completion, and 1006 observations (12.07%) were collected from telephone interviews, assisted by an interviewer. All respondents were approached during the first week of the data collection and subsequently received reminders. Across the three waves, on average, 65% of the sample completed the survey within the first two weeks after being approached. Participation in the surveys was spread over 279 days within the total CILSNL fieldwork period of 382 days.

3.1.2. Measures: dependent variables

The well-known “feeling thermometer” (Alwin, 1997) was used to measure the dependent variables. This measure is commonly used and is validated to examine attitudes toward groups (Bobo and Zubrinsky, 1996). Respondents were asked, “Please rate how you feel about the following groups on a scale running from 0 to 100”. As this study examines effects on negative attitudes, scores on the thermometer were rescaled, so that 100 represents the highest possible negative attitude and 0 the highest positive attitude.

Attitude toward Muslims was measured by using the feeling thermometer on attitude toward Muslims. This item was examined in waves five and six.

Attitude toward Muslim ethnic minority groups was measured by using the feeling thermometer for attitude toward Turks and Moroccans. Most Muslims in the Netherlands have a Turkish or Moroccan background, and Turks and Moroccans are predominantly Islamic (Maliepaard and Gijsberts, 2012). To simplify the analysis, we constructed a combined measure by taking the mean of attitudes toward Turks and Moroccans, as these were found to correlate strongly ($r = 0.80$). This high correlation was plausibly related to characteristics shared by Turkish and Moroccan groups, as both are regarded as non-western groups who are predominantly Islamic and share a history of labor migration to the Netherlands. They also make up an equal share of the Dutch population with 2.3% each, which is the highest share relative to other non-western groups in the Netherlands (CBS, 2016). Attitudes toward Turks and Moroccans were examined in all three waves.

Attitude toward non-Muslim ethnic minority groups was measured by using the feeling thermometer for attitude toward Antilleans and Surinamese. These two groups constitute the largest non-western ethnic groups in the Netherlands after Turks and Moroccans (CBS, 2016). Attitudes toward Antilleans and Surinamese correlated strongly ($r = 0.84$), possibly due to their non-western background and their shared colonial history with the Netherlands. Attitudes toward Antilleans and Surinamese were examined in all three waves.

3.2. Media data

3.2.1. Data

Data from the LexisNexis newspaper database was used to assess media salience of Muslims. LexisNexis provides full-text articles from the most popular newspapers in various countries. Media salience of Muslims was identified by searching through the database by means of keywords.

In order to quantify media salience of Muslims in the Netherlands, data from the newspapers *Metro*, *Telegraaf*, *Algemeen Dagblad*, and *Volkscrant* were selected, as these have the largest circulation in the Netherlands (Media Monitor, 2015a).¹ These newspapers are completely independent from political parties. However, the *Telegraaf* and *Algemeen Dagblad* are both regarded as right-wing popular newspapers, whereas *Volkscrant* is more left-leaning (Berning et al., 2018; Roggeband and Vliegthart, 2007; Vergeer et al., 2000). The *Metro* is a free daily newspaper, distributed in public transport locations, which attracts more younger readers than the “regular” newspapers (Bakker, 2002).

A search string including keywords on Muslims was established to collect news articles within the timeframe corresponding to the CILSNL fieldwork period. This search string was entered in the digital search form provided by LexisNexis. The specific search terms used to collect articles on Muslims included: “*moslim! OR islam! OR jihad! OR salafist!*”. These terms retrieved news articles on Islam-affiliated groups. The “!” character ensured that variations of the specified words were also found, for example not only “moslim” [muslim], but also “moslims” [muslims] or “moslimjongeren” [muslim youth]. The “OR” statement was specified so that news articles with either one or multiple keywords would be retrieved (LexisNexis, 2014). Further considerations and quality assessments regarding the search term are discussed in Appendix A. The fieldwork period included 153727 news articles spread across the four newspapers, from which a database of 4618 news articles on Muslims was created. Daily aggregates from this dataset were linked to the respondents, based on the day of their survey participation. This means that respondents who participated in the study three times were assigned three media measurements.

Because media salience of Muslims is repeatedly found to be predominantly negative (Akbarzadeh and Smith, 2005; Jaspal and Cinnirella, 2010; Kabir, 2006; Moore et al., 2008), it was assumed that the majority of the derived media messages consisted of negative content. The probability of deriving negative content was increased by the use of the words “jihad” and “salafist”, which have negative connotations. Consequently, we made the assumption that the search terms used in our study predominantly detected negative news items about Muslims. To check the validity of this assumption, we randomly selected 100 news items from the pool of news articles that were included in our study. Using content analysis, we found that 93 out of these 100 news articles had a negative content (of which 72 were on terrorism, radicalism, or extremism, and 21 on other negative issues), one was positive and six were neutral. This supports the assumption we made.

3.2.2. Measure: independent variable

In correspondence with previous studies investigating media effects (Berning et al., 2018; Boomgaarden and Vliegthart, 2009; Legewie, 2013; Schlueter and Davidov, 2011; Van Klingereren et al., 2015; Vliegthart and Boomgaarden, 2007; Walgrave and De Swert, 2004), we present our findings using a measure of *media salience* that is based on the frequency of news articles that mention Muslims. Because prior research suggests that information messages affect people's attitudes shortly after information is obtained (Boomgaarden and de Vreese, 2007; Zaller, 1992), media salience was expressed by the frequency of news coverage on Muslims on the day of survey participation.

The number of articles within each newspaper differed, and therefore our final media salience measure refers to the mean percentage of news articles on Muslims on a daily level. This means that for each newspaper and each day, relative frequencies were calculated by dividing the absolute frequencies of articles on Muslims by the total number of articles within the respective newspaper. These relative frequencies from the four newspapers were combined into one factor by computing the mean. A high score on the media salience factor indicates a high average percentage of media coverage on Muslims for the particular day.

During the fieldwork period, there were days when not all four newspapers were published (e.g., weekend days, holidays), resulting in missing data. From the 279 days of survey participation within the fieldwork period, there were 10 days (3.58%) when data from all four newspapers were missing, there were 26 days (9.32%) when data from three newspapers were missing, and 29 days (10.39%) when data from one newspaper were missing. If a newspaper had a missing value on a specific date (e.g., the *Telegraaf* on Sunday, February 2, 2014), this missing value was replaced by the mean from the preceding and following dates for that specific newspaper (e.g., percentage of articles on Muslims in the *Telegraaf* on February 1 and 3, divided by two). In this way, the imputed data were in line with the media context of the surrounding days. This imputation procedure preceded the calculation of the final media salience factor. Imputation based on the surrounding days was considered to be more reliable than imputation based on, for example, the overall mean of media salience, because imputation with the overall mean of media salience would lead to unrealistic imputed declines of media salience during periods of “macro shock”, such as the terrorist attack on Charlie Hebdo. Robustness analyses showed that the conclusions from our study remained the same when we excluded all observations for participants who filled in the survey on a day on which no newspapers appeared.

Table 1 shows to what extent the four newspapers correlate regarding their media salience of Muslims. It appears that high media salience of Muslims in one newspaper, on a certain day, was associated with higher media salience of Muslims in other newspapers on the same day. These correlations thus confirm the overlap in issue visibility across newspapers. This suggests that media salience in newspapers reflects issues that are being discussed more broadly in society (Vliegthart and Boomgaarden, 2007). At the same time, the correlations between the four newspapers were not perfect, which means that there was also something unique to each newspaper in the intensity of its media salience. Including the data from four newspapers rather than using data from one newspaper as a proxy is therefore considered to express the overall media salience of Muslims more adequately.

Table 1
Correlations Between Daily Media Salience of Muslims in Four Dutch Newspapers (N = 382^a).

	Algemeen Dagblad	Volkskrant	Telegraaf
Algemeen Dagblad			
Volkskrant	0.59***		
Telegraaf	0.60***	0.66***	
Metro	0.51***	0.58***	0.52***

*** = $p < 0.001$.

^a Total number of days across three CILSNL fieldwork periods.

Exploratory factor analysis was performed to study the underlying variance structure of the four media salience items, where we used our media-data with days as observations to carry out the factor analysis ($N_{\text{days}} = 382$). The analysis yielded a one-factor solution with an eigenvalue of 2.73, and no other factors with an eigenvalue higher than 1 were identified. The separate newspapers all loaded high on the factor, indicating high correlations between the factor and the separate media salience items: *Algemeen Dagblad* 0.81 (0.34), *Volkskrant* 0.86 (0.26), *Telegraaf* 0.85 (0.28) and *Metro* 0.78 (0.39). The uniqueness (in brackets) shows that most of the variance was explained by the factor. Cronbach's alpha for the factor was 0.84, which means that our constructed media salience factor was found to be highly reliable in expressing media salience. We thus conclude that our composite measure constitutes a valid and reliable indicator of media salience.

3.3. Control variables

We included *age* (mean-centered) as an individual, time-varying continuous control variable, as previous studies have shown that out-group threat increases with age (Schlueter and Davidov, 2011; Vergeer et al., 2000). At the end of each fieldwork period, respondents were approached by phone, and therefore surveys were partly completed through telephone interviews in addition to individual self-completion. This change of interview mode may have affected response as well. People completing a survey with the assistance of an interviewer have less privacy than when participating only through self-completion. This may provoke socially desirable answers to questions on sensitive topics that are taboo or socially sanctioned (Krumpal, 2013). We therefore controlled for the time-varying covariate *mode of survey* (1 = participation through interview, 0 = online or paper and pencil self-completion). Finally, we included *wave* as an additional categorical covariate (waves four, five and six) to account for effects that were related to the particular year of the survey, as specific events or developments may have affected the media salience of Muslims.

3.4. Sample characteristics

Table 2 shows the descriptive statistics for all variables included in the analyses. Attitudes toward Muslims were surveyed from the fifth wave on, and therefore the number of observations was lower with respect to this dependent variable.

Table 2
Descriptive Statistics of Dependent and Independent Variables (CILSNL 2014–2016, Dutch Adolescents).

Variable	Mean/proportion	SD	Min.	Max.
<i>Dependent variables</i>				
Negative attitude toward Muslims ^a	48.04	23.76	0	100
Negative attitude toward Muslim ethnic minorities	48.43	21.44	0	100
Negative attitude toward non-Muslim ethnic minorities	41.26	20.33	0	100
<i>Independent variable</i>				
Media salience on day of survey participation	5.16	4.28	0.23	18.57
<i>Time-variant control variables</i>				
Age	18.59	1.04	15	25
Participation through telephone interview (ref. = individual self-completion)	0.12		0	1
Wave 4 (2014)	0.35		0	1
Wave 5 (2015)	0.33		0	1
Wave 6 (2016)	0.31		0	1
<i>Other sample characteristics</i>				
Female	0.57		0	1
Pre-vocational education	0.40		0	1
Higher general education	0.36		0	1
Pre-university education	0.23		0	1
Number of observations	8334			
Number of individuals	3281			

^a Question not asked in wave four, so for analysis on attitudes toward Muslims: N observations = 5400, and N individuals = 2995.

4. Modelling strategy

To test our hypotheses on all three waves, we employed a linear fixed-effects panel design. Fixed-effects panel models can be used to examine effects among individuals with repeated measures. These models account for all (un)observed time-invariant characteristics that have confounding effects (e.g., personality, gender) by using only within-individual variation to estimate regression coefficients, which improves interpretation of the results in terms of causality (Allison, 2006). Accounting for time-invariant individual characteristics with fixed-effects models is important, as the exact day on which respondents participated in the survey—which determines media salience during survey completion—was not exogenously determined. Respondents received their first invitation to participate in the survey within the first week of the survey period and were free to decide when to participate. As a result, respondents' day of survey participation, and thus also respondents' media salience context at the time of survey completion, is possibly related to time-invariant heterogeneity. Indeed, regression analysis (results not presented) showed that, on average, boys participated in the survey more than one week later than girls ($B = 8.69, p < 0.001$). In addition, adolescents with a low educational background participated in the survey approximately one week later than adolescents with a high educational background ($B = 6.73, p < 0.001$). The fixed-effects panel model has the advantage that it eliminates the influence of time-constant factors on the day of survey participation.

Statistical modelling was carried out in Stata 13.1 using the *xtreg* command for linear fixed-effect models. In addition, we controlled for the nested structure of the data, as respondents were initially sampled through schools (CILS4EU, 2016). In order to obtain a robust estimate of media salience that adjusts for this clustered data (Williams, 2000), we applied a cluster correction for prior school class in our models. In addition, the fixed-effect panel model requires a substantial within-person variation. Intra-class correlations for attitudes toward Muslims, Muslim ethnic minorities, and non-Muslim ethnic minorities ranged from 0.56 to 0.59, which indicates that there is significant change in attitudes over time. Regression coefficients within the fixed-effects panel models were calculated from respondents with at least two observations.

5. Context of fieldwork period

During the fieldwork for CILSNL, Europe was struck by two terrorist attacks. On January 7, 2015, employees of the French Charlie Hebdo magazine were killed by armed terrorists as a reaction to the magazine's depiction of the prophet Muhammad. On March 22, 2016, three suicide bombers detonated in a metro station and airport in Brussels, Belgium (Global Terrorism Database, 2017a, 2017b). Dutch media covered the news of the attacks in France and Belgium extensively (Volkskrant, 2017a, 2017b), and such "external shocks" are likely to cause strong fluctuations in media salience. Another reason why media attention toward Muslims varies over time is related to the fact that the "integration" of Muslims into society is a widely discussed topic and regularly receives media attention.

Regression analysis (results not shown) showed that media salience in the fifth wave was higher than media salience in the fourth wave ($B = 3.01, p < 0.001$) and in the sixth wave ($B = 1.51, p < 0.001$). Fig. 1 shows that media salience reached its highest point shortly after the terrorist attack on the Charlie Hebdo office on January 7, 2015. On January 11, 2015, 18.57% of all news articles was devoted to Muslim-related content, compared to 4.19% on January 6. In line with the fifth wave, media salience in the sixth wave was highest several days after a terrorist attack: three days after the Brussels attacks on March 23, 2016, media salience reached its highest point with 9.81%, as compared with 1.95% one day prior to the Brussels attacks. Further, Fig. 1 shows that media salience of Muslims generally varied on a daily basis, and that fluctuations in media salience were not exclusively associated with the terrorist attacks that occurred during the fieldwork period.

To test the effect of media salience, substantive over-time fluctuations in Muslim news coverage must be observed in relation to a sufficient number of respondents from a sample. Although the majority of respondents completed the survey within two weeks of being approached, variance in media salience was maintained (Appendix B, Fig. B1). More specifically, 15% of the total sample participated in the survey on days when 10–20% of all news content was devoted to issues related to Muslims, and 20% of the participants were surveyed on days when media salience was between 5% and 10%. For the remaining 65% of the sample, media salience of Muslims was less than 5% on the day when they answered the survey.

6. Results

6.1. Hypothesis testing

Table 3 shows the unstandardized results with respect to our hypotheses. In correspondence with our first hypothesis, we found that higher media salience of Muslims was associated with increased negative attitudes toward Muslims ($B = 0.27, p < 0.01$). Because media salience is operationalized as media coverage of Muslims on the day of survey completion, the effect identified should be interpreted as an immediate or short-term response to media attention. More specifically, if the share of media coverage devoted to issues related to Muslims increased by 10 percentage points, the negative attitudes toward Muslims increased by 2.7 points on that particular day. However, an increase of media salience did not induce more negative feelings toward Muslim ethnic minorities, that is, toward Turks and Moroccans. We expected that adolescents would relate media stories about Muslims to Turks and Moroccans since these ethnic groups are predominantly Muslim, yet our findings depict a differentiated response to media salience of Muslims. Examining the analytical model on attitudes toward Turks and Moroccans separately, instead of testing the model on the composite measure, did not change our findings. This means that our first hypothesis is partly confirmed.

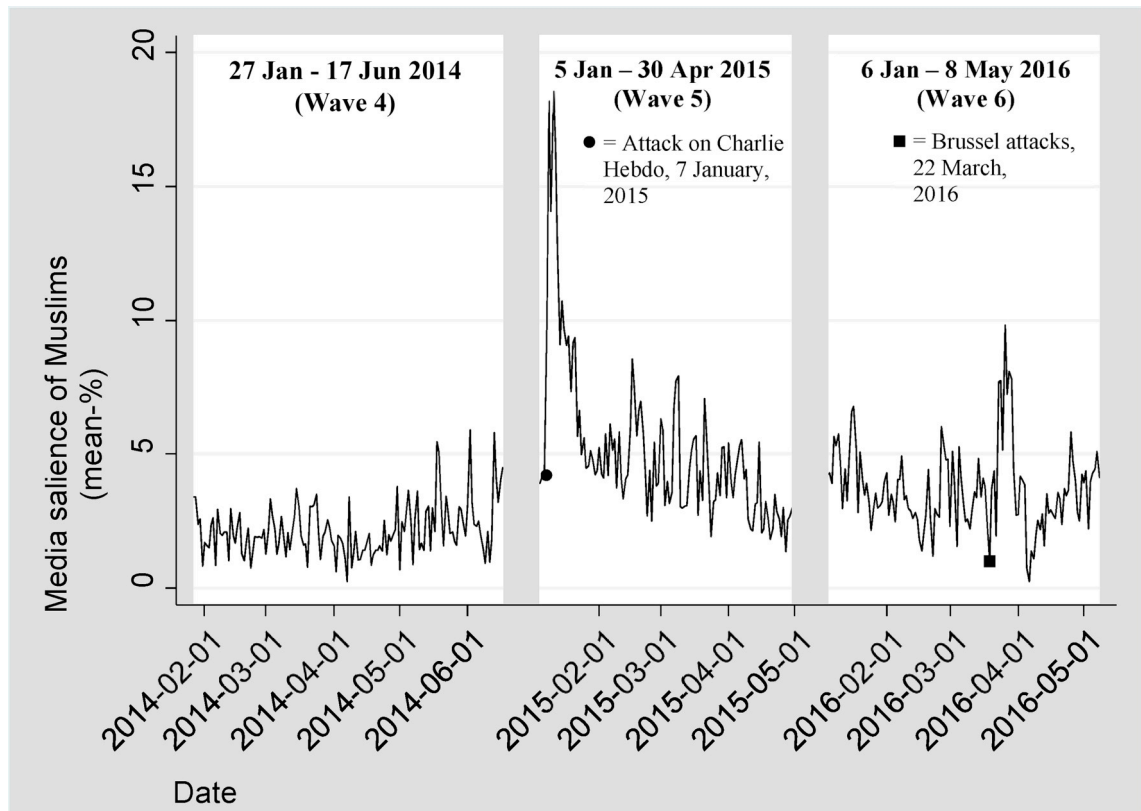


Fig. 1. Media Salience of Muslims, Relative Daily Frequencies of News Articles (CILSNL Fieldwork Period 2014–2016).

Table 3
Panel Linear Fixed-effects, Negative Attitudes (CILSNL 2014–2016, Dutch Adolescents).

	Negative attitudes toward Muslims		Negative attitudes toward Muslim ethnic minorities		Negative attitudes toward non-Muslim ethnic minorities	
	B	SE	B	SE	B	SE
<i>Main</i>						
Media salience	0.27**	(0.09)	0.00	(0.06)	-0.02	(0.06)
<i>Control variables</i>						
Age	3.65	(2.27)	0.23	(1.04)	0.75	(1.18)
Telephone interview	-11.98***	(1.56)	-9.47***	(0.82)	-7.64***	(0.75)
Wave 4 (2014)	n.a.		3.42**	(1.16)	2.51*	(1.24)
Wave 5 (2015)	ref.		ref.		ref.	
Wave 6 (2016)	-2.47	(2.35)	0.70	(1.16)	-0.26	(1.29)
<i>Constant</i>	46.69***	(0.89)	48.14***	(0.65)	41.49***	(0.66)
N observations	5400		8334		8334	
N individuals	2995		3281		3281	

Standard errors in parentheses. * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

n.a. = not applicable, because attitudes toward Muslims were not examined in wave four.

The second hypothesis expected that high media salience of Muslims would induce a spill-over effect toward non-Muslim ethnic minority groups, that is, Antilleans and Surinamese. We did not find evidence for this “secondary-transfer effect”. Furthermore, when attitudes toward Surinamese and Antilleans were studied in separate models, as opposed to using a mean score, we did not find support for the second hypothesis.

6.2. Robustness analyses

Additional analyses were carried out to study the robustness of our findings. First, we examined whether changing the *reference period* of media salience preceding survey participation would produce different findings. For each respondent, we calculated the average percentage of news articles covering content on Muslims for two weeks prior to their survey completion. We found that when

media salience for two weeks before survey completion was taken into account instead of media salience on the day of survey participation only, no effect of media salience was identified. Attitudinal responses were also not found when applying a reference period of one week prior to the survey examination. Using average scores of media salience over longer periods decreases the variance in media salience in our study, and thereby suppresses the effect identified.

Second, we examined whether the observed effect of media salience on attitudes toward Muslims remained stable when respondents who participated during the week immediately after each of the terrorist attacks were excluded from the analysis. This resulted in a sample reduction of 1372 participants who were included in the fifth wave and the exclusion of 16 participants who were included in the sixth wave. This large difference was caused by the timing of the fieldwork, whereby the data collection for the fifth wave started two days prior to the Charlie Hebdo attack, while, at time of the Brussels bombings, most of the respondents had already participated in the survey. Despite the exclusion of these respondents surveyed shortly after the attacks, variation in media salience within the fieldwork period was still observed (Appendix B, Fig. B2). However, this media salience no longer had an effect on attitudes. This finding suggests that the highest peak of media salience as shown in Fig. 1, caused by the terrorist attack on the Charlie Hebdo office, was mainly responsible for the increase in negative feelings toward Muslims found in our study.

6.3. Interview mode

With respect to the control variables, one important pattern needs to be emphasized: The analysis shows that adolescents reported fewer negative attitudes toward Muslims and (non-)Muslim ethnic minorities when they were surveyed through a telephone interview, assisted by an interviewer, than when they completed the survey through self-completion. For example, when adolescents participated through a telephone interview, their attitudes toward Muslims were, on average, 12 points less negative compared to their attitudes reported via self-completion ($B = -11.98, p < 0.001$). Interview mode can therefore be considered a strong effect.

7. Discussion and conclusion

Research repeatedly confirms a negative media discourse in the western media with respect to Muslims and Islam (Ahmed and Matthes, 2017; Akbarzadeh and Smith, 2005; Kabir, 2006; Moore et al., 2008). This unique study, based on large-scale individual panel data merged with data on news coverage on Muslims, investigated whether high media salience of Muslims in leading Dutch newspapers immediately affected attitudes toward Muslims and ethnic minority groups. This study, thereby, provides useful insights in understanding the role of mass media in shaping adolescents' attitudes toward specific minority groups.

Our study showed that high media salience shortly prior to survey participation increased negative attitudes toward Muslims, confirming the first hypothesis, derived from ethnic competition theory. Additional analysis suggests that this finding was due to the highly salient terrorist attack on the Charlie Hebdo office on January 7, as the effect of media salience disappeared after excluding those adolescents who were surveyed within one week after this attack. This finding is in line with previous studies on attitudinal responses in the aftermath of terrorist attacks, where it has been found that such external "macro shocks" contribute to negative attitudes toward immigrants (Legewie, 2013; Vliegthart and Boomgaarden, 2007) and to ethnic residential segregation (Edling et al., 2016).

Schools could potentially play a mitigating role in the negative responses to media salience. For example, teachers could open the dialogue with students explaining that those who say they are committing violence in the name of Islam are not representative of the Muslim religion. It is important to raise awareness of this issue at a young age, because negative attitudes toward Muslims may persist during adulthood, at which time they become increasingly difficult to change (Rutland and Killen, 2015; Wölfer et al., 2016).

At the same time, our study also revealed that high media salience of Muslims did not increase negative attitudes toward Muslim ethnic groups, that is, toward Turks and Moroccans. Although Turkish and Moroccan ethnic groups are predominantly Muslim, high salience of Muslims in the news did not affect sentiments toward these groups. Furthermore, media salience of Muslims did not increase adolescents' negative attitudes toward non-Muslim ethnic groups (i.e., Antilleans and Surinamese). Thus, our study did not find evidence for media-induced secondary transfer effects.

Overall, our study suggests that salience of Muslims in the news—even though these messages are overwhelmingly negative—has only a limited impact on negative sentiments among ethnic majority adolescents in the Netherlands. Except for the news coverage surrounding the Charlie Hebdo attack, which increased anti-Muslim sentiment, we find that daily fluctuations in the news coverage of Muslims do not change adolescents' sentiments toward Muslims or toward ethnic minorities.

The findings of this study raise new avenues for research. First, little is known about the possibility that the negative news about Muslims portrayed in the media may have two opposing effects among adolescents—and perhaps in the population at large—that offset each other. On the one hand, they may create perceptions of a Muslim threat, but on the other hand, they may also create sympathy with Muslims. Ethnic majority members may perceive Muslims as being equally the victims of terrorist attacks caused by extremists, which therefore may lead to anti-Muslim terrorist sentiments and pro-Muslim sentiments at the same time. Second, little is known about the role of adolescents' news exposure in the development of their out-group attitudes. Intensity of news exposure may strengthen the effect of media salience on adolescents' attitudes (Boomgaarden and de Vreese, 2007; Saleem et al., 2017; Seate and Mastro, 2016). Nowadays, internet news media reach more people than daily newspapers (Media Monitor, 2015b),² and this is

especially true among adolescents (Casero-Ripollés, 2012). Further research could study the impact of internet news messages on intergroup sentiments.

Declaration of interests

None.

Notes

1. According to research on the reach of the printed newspapers, *Algemeen Dagblad*, *Volkskrant*, *Telegraaf* and *Metro* together reached 31.1% of the Dutch population aged 13 years or older in 2015, which is 3.4% less than the total reach of national newspapers in the Netherlands (Media Monitor, 2015a).
2. In 2014, the news website *nu.nl* reached 46.9% of the total population aged 13 years or older. Also, news websites *nos.nl*, *telegraaf.nl*, *ad.nl* and *rtlnieuws.nl* reached large proportions of the population: 39.4%, 33.9%, 33.9% and 24.9%, respectively (Media Monitor, 2015b). Traditional national newspapers reached 34.5% of the total population in 2015 (Media Monitor, 2015a).

Appendix A. Search term consideration and evaluation

The collection of news articles was based on a self-defined Boolean search term (LexisNexis, 2014) on Muslims: “*moslim! OR islam! OR jihad! OR salafist!*”. The aim of the search string was to collect news articles on Muslim groups or persons. The search term also included the Muslim-affiliated groups “Jihad” and “Salafist”. The Jihadists form a militant movement based on the belief that the Islamic doctrine is being humiliated in modern contemporary society and that Muslim pride should be restored. Salafists are fundamentalist adherents of the Sunni Islam religion, and Jihadist Salafists believe that their religion should be spread through violence (Jackson, 2007). Although western media often associate Muslims with terrorist activities (Shadid, 2005), words such as “terrorism”, “radicalization” and “extremism” were not included in the search string, as they do not necessarily refer to the Muslim-community or issues related to Islam. Since a qualitative assessment of all news articles retrieved was beyond the scope of this study, restricting the search terms to Muslim-affiliated groups was necessary in order to collect news articles on Muslim-related issues with as much certainty as possible.

We excluded articles from the analysis that did not deal with issues related to Muslims. Specifically, when keywords in the search string appeared in leisure-sections, such as travel or movie reviews, these news articles were ignored. This was achieved by additional explicit restrictions in the search term aimed at selecting specific news sections and by excluding particular topics. For *Algemeen Dagblad*, for example, news sections were selected as follows: “*AND (SECTION(Nieuws) OR SECTION(Stad en Land) OR SECTION(Service) OR SECTION(Economie))*”. Additional restrictions on subjects were applied to eliminate articles within the selected news sections: “*AND NOT (SUBJECT(Television Programming OR Movie Reviews OR Book Reviews OR Pop + Rock))*”. The aim of the data collection was to assess media salience from informative reports about recently occurring issues, that is, from news, and not from other contexts, such as leisure content. We contend that issue visibility primarily expresses itself through informative news sections rather than through leisure items and that eliminating such “noise” was necessary to meet the purposes of this study. In addition, newspaper attachment-magazines were excluded from the search term because some newspapers have no newspaper attachment, or the sizes of the attachments differ greatly, leading to distorted measures of news article frequencies.

Finally, the reliability of the search term was evaluated based on its precision and recall scores (Appelt, 1999). From each of the four newspapers, a random newspaper edition was selected for evaluation. The news articles in these selected editions were manually coded into four categories according to Table A1. Articles were scored on the basis of whether they met the “condition” (1/0), that is, whether Muslims or affiliated groups were mentioned in the respective articles. *Recall* scores were calculated by dividing the number of news articles that met the condition as found by the computer-assisted automated search (*true positives*) by the total number of news articles that met the condition according to the manual assessment (*true positives* plus *false negatives*). Based on the scores in Table A1, recall for *Volkskrant* was 0.78. For the other newspapers there were no false negatives, leading to recall scores of 1. Recall scores above 0.8 can be regarded as excellent scores (Appelt, 1999).

The *precision* score expresses what proportion of the news articles found by the automated search actually met the condition of mentioning Muslim affiliated groups. This was calculated by dividing the number of correctly included articles (*true positives*) by the sum of the number of correctly and wrongly included articles (*true positives* plus *false positives*), which was exactly 1 for all newspapers. It should be noted, however, that a score below 1 was not possible in our case, as retrieving articles not mentioning Muslims or affiliated groups was not possible due to the content of our search terms.

Table A1
Evaluation Metric of Randomly Selected Newspaper Editions

	Predicted condition is negative	Predicted condition is positive
True condition is negative	True negative: news articles that should have been excluded are also excluded by the automated search. <i>Algemeen Dagblad 5 March 2015:115</i> <i>Volkskrant 2 February 2015: 98</i> <i>Telegraaf 4 February 2015: 153</i> <i>Metro 23 April 2015: 112</i>	False positive: news articles that should not have been included are selected by the automated search. <i>Algemeen Dagblad 5 March 2015: 0</i> <i>Volkskrant 2 February 2015: 0</i> <i>Telegraaf 4 February 2015: 0</i> <i>Metro 23 April 2015: 0</i>
True condition is positive	False negative: news articles that should have been included are excluded by the automated search. <i>Algemeen Dagblad 5 March 2015: 0</i> <i>Volkskrant 2 February 2015: 2</i> <i>Telegraaf 4 February 2015: 0</i> <i>Metro 23 April 2015: 0</i>	True positive: news articles that should have been included are also selected by the automated search. <i>Algemeen Dagblad 5 March 2015:2</i> <i>Volkskrant 2 February 2015:7</i> <i>Telegraaf 4 February 2015: 7</i> <i>Metro 23 April 2015: 2</i>

Appendix B. Distribution of media salience

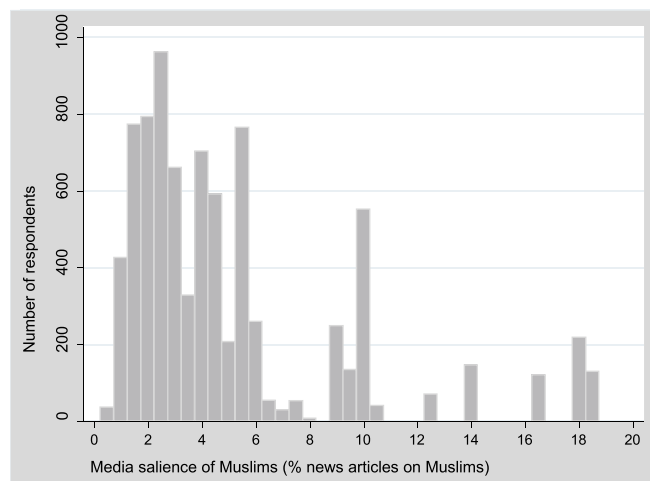


Fig. B1. Distribution of Media Salience (CILSNL 2014-2016, Dutch Adolescents, N = 8334).

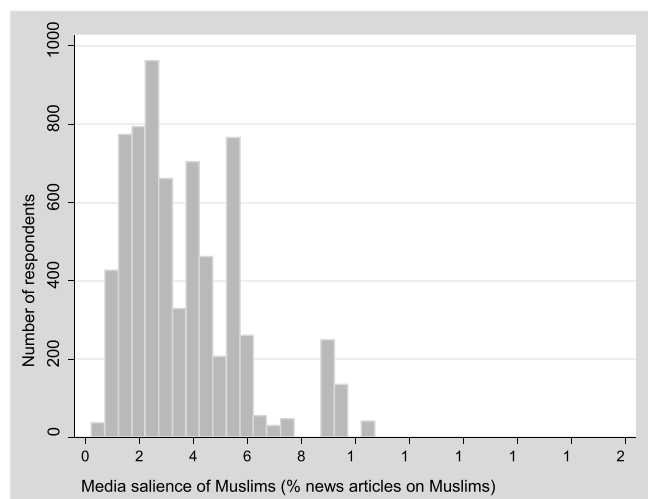


Fig. B2. Distribution of Media Salience after Removing Respondents Surveyed Within One Week Following Terrorist Attack (CILSNL 2014-2016, Dutch Adolescents, N = 6945).

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