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The Effects of Repetitive News Framing on Political Opinions over Time

Sophie Lecheler, Mario Keer, Andreas R.T. Schuck & Regula Hänggli

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This study tests how repeated exposure to the same news frame influences political opinions over time. In a survey experiment (N = 296), we repeatedly exposed participants to the same news frame (at the start of the study, after one day, one week, and two weeks) and measured effects on opinions (at the start, after two weeks, and after six weeks). Participants in a control group were exposed only once and the effect was also traced over time. Results show that repetitive framing leads both to stronger and more persistent effects than single exposure. The persistence effects are most evident for individuals with moderate political knowledge. Our study contributes to a more comprehensive model of framing effects in mass communication experiments.

Keywords: News Framing Effects; Repetitive Framing; Political Opinions; Political Knowledge; Survey Experiment

Framing experiments have greatly contributed to the development of political news framing effects theory. However, during recent years, some scholars have criticized these experiments for not sufficiently acknowledging that news framing is an accumulative and dynamic effect process (Gaines et al., 2007; Kinder, 2007). To bridge the discrepancy between one-shot experimental designs and news frame exposure over time, a growing number of studies now test the duration of news framing effects (e.g. De Vreese, 2004; Mitchell, 2012, 2014; Tewksbury et al., 2000;

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Vishwanath, 2009) and/or expose participants to competitive news frames (e.g. Chong & Druckman, 2010; Matthes & Schemer, 2012; Nisbet, Hart, Myers, & Ellithorpe, 2013; Sniderman & Theriault, 2004). These improvements to framing experiments are significant, but most studies have neglected one more important aspect of real-life news media use: how news framing is affected by repeated exposure to the *same* news frame over time (Cacioppo & Petty, 1979; De Vreese, 2012; Druckman, Fein, & Leeper, 2012).

Over time, citizens are exposed to a variety of news frames on a given topic. Repetitive news framing is one important part of our daily news frame exposure (Druckman et al., 2012). Recent research suggests that repetitive or one-sided framing is particularly likely when scandalous, contentious, or value-laden issues are reported (see Schulz, Wettstein, & Wirth, 2014). Mitchell (2014) argues that political scandals attract repetitive media coverage, wherein one (negative) aspect of a political actor is highlighted repeatedly over a period of time. Following the leaking of scandalous information, both media and political actors promulgate the same message in an attempt to get ahead of the opposing side or other media outlets. Druckman et al. (2012) show that exposure to a news frame stimulates repetitive information-search later on. Along these lines, individuals who are exposed to a specific positive or negative news frame search for this frame again, and are also more likely to discard competitive frames later on.

The potential effects of repetitive frames are central to a number of fields within mass communication research. There is evidence that the growing fragmentation of the mass media and their audiences online (Baum & Groeling, 2008; Tewksbury, 2005) and offline (Mancini, 2013) leads to increased exposure to one-sided news—the "echo chamber" effect (Iyengar & Hahn, 2009). Furthermore, the growing success of professional political public relations, spin, and corporate press information leads many journalists to rely on a limited set of identical sources when producing the news (Reich, 2010), thereby increasing the likelihood of the re-occurrence of specific frames in the news (e.g. Entman, 2007). While some see this as the advent of a "minimal effect paradigm" (Bennett & Iyengar, 2008), others argue that only when news frames are repeated will they influence political opinions over time (Peter, 2004; Schulz et al., 2014; Zaller, 1992).

All in all, the literature suggests that repetitive framing is a stand-alone mechanism of news framing effects over time (e.g. Druckman et al., 2012). Yet, empirical evidence on how repetitions affects both the strength and duration of a framing effect is very limited. Available experiments do not yet approach dynamic media use scenarios by testing repetition effects across growing time spans, and they test only a very limited number of frame repetitions. We conduct a framing experiment in which one group of participants is repeatedly exposed to the same positive or negative news frame embedded in different news articles over a growing period of time. To simulate the "classic" one-shot framing effect experiment as a control, a second group of participants is exposed to the same news frame only once. We measure the effects of repetition (vs. "one-shot") on political opinions both right after repetitive exposure as well as after a longer period of time (four weeks later). We also test whether repetition effects depend on individual levels of political knowledge, because knowledge levels should predict how well a repeated news frame is integrated into long-term memory (Lecheler & De Vreese, 2013). Our study is thus the first to

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assess both the strength *and* duration of effects of repetitive framing over time, contributing to a more comprehensive conceptualization of political news framing effects.

Repetitive News Framing Effects

We define "news framing" as a process by which certain facets of social reality are emphasized by the news media, while others are pushed into the background. In this sense, news frames change the weight that is attached to certain considerations over others. Framing effects research focuses on information processing and on how citizens interpret and "understand" a news frame (e.g. Nabi, 2003; Price, Tewksbury, & Powers, 1997; Shen, 2004; Valkenburg, Semetko, & De Vreese, 1999). Yet, more and more, this is conceived only as a "mediating step on the way to some other effect" (Tewksbury & Scheufele, 2009, p. 26), and most framing studies make use of attitudinal dependent variables, most importantly political opinions (e.g. Haider-Markel & Joslyn, 2001; Jacoby, 2000; Lecheler & De Vreese, 2011; Slothuus, 2008). Opinions are relatively volatile, issue-specific beliefs that comprise an evaluative judgment (Druckman, 2004).

In this study, we expose participants to either a *positive* or *negative* version of a news frame about elderly care, which are designed to influence opinions by highlighting different aspects of this issue. Valenced news frames have the capacity to affect political opinions (De Vreese & Boomgaarden, 2003; Maier & Rittberger, 2008), the dependent variable in our study and other framing experiments (e.g. Jacoby, 2000; Nelson et al., 1997a, 1997b; Slothuus, 2010). Neutral news frames are more likely to affect issue interpretations only (see also Bizer & Petty, 2005). In this sense, a "framing effect" is often calculated as the opinion change between exposures to differently valenced news frames. We operationalize valenced news frames as emphasis frames. Emphasis frames are close to "real" journalistic news coverage (De Vreese, 2005) in that they offer "qualitatively different yet potentially relevant considerations" of an issue (Chong & Druckman, 2007a, p. 114).

So far, repetition effects have mostly been addressed in panel surveys on the power of consonant and repetitive media environments (e.g. Peter, 2004; Zaller, 1992). These studies suggest that repetitive media coverage is common and that only repetitive news media coverage has strong influences on public opinion as competitive media coverage "cancels out" media effects (see also Chong & Druckman, 2010). This finding is mirrored by a small handful of experiments on repetitive news framing effects. These experiments show that repetition does strengthen the effects of news framing (Druckman et al., 2012; Lecheler & De Vreese, 2013; see also Mitchell, 2014). What all empirical studies have in common is their key focus on repetition as an independent mechanism of news media exposure. In this sense, repetitive exposure could precede competitive framing, or it could follow a specific political event. For instance, Druckman et al. (2012) show that news frame exposure is often followed by repetitive information-search, and that it causes subsequent competitive frames to be perceived as less persuasive.

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In this study, we hypothesize that repetitive framing is likely to influence two interdependent dimensions of a framing effect on political opinions: its (1) *strength* (i.e. the magnitude of the change in political opinions after each exposure) and its (2) *duration* (i.e. how long this change lasts; Baden & Lecheler, 2012; Zaller, 1992). Whereas these dimensions are likely positively correlated, there is evidence that strong effects can dissipate quickly (Druckman & Nelson, 2003) and that small effects may last over longer periods of time (Lecheler & De Vreese, 2013). This suggests that both dimensions ought to be observed separately. So far, studies have focused either on strength or on duration, and have not observed both dimensions at the same time.

Based on the framing literature, we assume that repetition will increase accessibility of the given news frame (Cappella & Jamieson, 1997; Iyengar, 1991; Nabi, 2003; Price & Tewksbury, 1997). This accessibility effect, in turn, may cause strong framing effects as individuals are more likely to use this frame when forming opinions (e.g. Holland, Verplanken, & van Knippenberg, 2003). In this sense, heightened accessibility yields an update effect. However, repetition might also have a strengthening effect in that opinion change increases with repetition. Recent models of the psychology of framing effects argue that frame repetition will also increase knowledge of or familiarity with a news frame (i.e. change "belief content"). Belief content is held to be one important mediator of framing effects (Slothuus, 2008) alongside accessibility and availability effects (Baden & Lecheler, 2012). In this sense, with every frame repetition, individuals are more likely to remember the arguments presented within a news frame. Interestingly, this learning process also heightens the chance of agreeing with a frame's advocated standpoints (e.g. Baden & Lecheler, 2012; Slothuus, 2008).[1] Research in persuasion has shown that repetition indeed leads to increased agreement with a persuasive message, specifically if repetitions are spaced over longer periods of time (Cacioppo & Petty, 1979; Fernandes, 2013; Gorn & Goldberg, 1980; Stephens & Rains, 2011). We thus first hypothesize that, *if an individual is repeatedly exposed to the same news frame, framing effects will get stronger over time* (H1; strength hypothesis).

We also posit that repetition will influence the *duration* of a framing effect, that is, it will lead to longer-lasting framing effects compared to single news frame exposure. There is growing interest in testing the duration of framing effects, because longer-lasting effects are better predictors of subsequent political behavior (see e.g. Kokkinaki & Lunt, 1997). The psychological literature suggests that repetition is one of the major determinants of strong, but also stable, attitude change over time (Holland et al., 2003). Repetition effects on effect duration can be traced back to increased or chronic accessibility of a news frame in mind, as well as well-developed knowledge of that frame (e.g. Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). Repeated contact with a news frame also gives the individual the chance to integrate the news frame into long-term memory (Price & Tewksbury, 1997). In sum, this means that frame repetition is likely to eventually lead to "persistent" framing effects: Baden and Lecheler (2012) argue that a durable or persistent news framing effect is achieved, when this effect is fully supported by applicability, belief content as well as accessibility effects (see also Nelson et al., 1997b; Price et al., 1997). Based on this, we

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predict that *if an individual is repeatedly exposed to the same news frame, framing effects will become persistent over time* (H2, persistence hypothesis).

Political Knowledge as a Moderator of Repetitive Framing Effects

Previous studies have specified a number of moderators of political news framing effects, such as values (Shen & Edwards, 2005) and source credibility (Druckman, 2001; for an overview of moderators, see Borah, 2011). Yet, a growing number of scholars focus on individual levels of political knowledge as a predictor of susceptibility to news framing effects (e.g. Cappella & Jamieson, 1997; Price et al., 1997; Schuck & De Vreese, 2006). Indeed, knowledge has been identified as a good proxy indicator of the extent to which the individual is able and willing to *process*, *store,* and *recall* a news frame over time (see also Fazio, 1995; Haugtvedt & Wegener, 1994).

The impact of political knowledge on the (1) *strengthening* influence of frame repetition depends both on the extent to which an individual is initially "persuaded" by a news frame (i.e. will not reject it) *and* is able to build on this effect (i.e. is able to retain and increase his or her knowledge of the news frame with each repetition; Spilich, Vesonder, Chiesi, & Voss, 1979). Regarding initial susceptibility to framing effects, some studies find that individuals with higher levels of political knowledge will show stronger framing effects (e.g. Nelson et al., 1997b), whereas others argue that low knowledge increases the proneness of the individual to be influenced by a news frame (e.g. Haider-Markel & Joslyn, 2001). Recent research shows that these results are not divergent, but hinge on the dependent variable in question: whereas high knowledge leads to stronger effects on issue interpretations, it is low-knowledge individuals that show the strongest "persuasive" framing effects on political opinions (Lecheler & De Vreese, 2012). However, because they process news frames superficially, low-knowledge individuals are often not able to retain and build on such a framing effect (Hastie & Park, 1986; Matthes, 2007). This means that, over time and with increasing repetitions, they are unlikely to display a strengthening of the initial framing effects. Consequently, individuals who display *both* vulnerability to being "framed" as well as the ability to build on this repetition effect will show stronger framing effects as a consequence of frame repetition. Zaller (1992, p. 19) calls such individuals the "moderately aware," and labels them as most susceptible to media effects over time, because "they pay enough attention," but "lack the resources to resist."

Because effect strength and persistence are codependent, the mechanism that determines the influence of political knowledge on effect duration follows a similar logic: Individuals with lower political knowledge might be easily influenced by a news frame, but are less likely to actively and *lastingly* integrate the new information into their overall mental stockpile (e.g. Haugtvedt & Wegener, 1994). Higher knowledge individuals possess this ability, but are also more likely to resist a news frame, or to relapse to their own well-defined collection of available beliefs as time passes.

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Therefore, it is those with moderate political knowledge that are likely to display the longest lasting effects (Lecheler & De Vreese, 2011).

Based on the above, and because effects on strength and duration are likely interrelated, we formulate two sub-hypotheses. We first argue that, *when news frames are repeated, moderate levels of political knowledge will lead to the strongest framing effects* (H3a; moderated strength hypothesis). Second, we hypothesize that *when news frames are repeated, moderate levels of political knowledge will lead to the most persistent news framing effects* (H3b; moderated persistence hypothesis).

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Method

General Design

We based our design on previous repeated measure framing experiments (e.g. De Vreese, 2004; Druckman et al., 2012; Lecheler & De Vreese, 2011, 2013; Tewksbury et al., 2000). We conducted an online survey experiment with a 2 (single vs. repetitive exposure) × 2 (positive vs. negative news frame) longitudinal design in the Netherlands; participants were randomly assigned to one of the four conditions. We chose a repeated measure design, wherein the first post-test functions as the baseline for later measurements of the dependent variable (Lecheler & De Vreese, 2013). The topic of the study was investment in elderly care, which is sufficiently relevant to participants and is also regularly discussed in the Dutch news media. In this way, we increase the external validity of our experimental design.

Procedure

First, all participants completed measures of general political knowledge as a possible moderator of repetitive framing effects. Demographic information such as age, sex, and education were already registered in the research company's database. Directly after the pre-test measures, participants in the *repetitive exposure group* were exposed to a stimulus news article containing a news frame that was varied by valence to feature either the advantages or disadvantages of investing more money in elderly care in the Netherlands. They then completed measures of the dependent variable of political opinion (t_1). Subsequently, participants in the repetitive exposure group were exposed to additional, different, news articles one day (t_2), one week (t_3), and two weeks (t_4) after exposure to the first news article. This means that participants in the repetitive group were exposed to a total of *four* news articles containing the same positive or negative news frame. In addition to our immediate measure (t_1), the dependent variable was measured after two weeks (t_4) and six weeks (t_5). This maximum of three measures was deemed acceptable.[2]

Participants in the single exposure groups were exposed to one stimulus article containing one of the two news frames. Immediately after exposure, these participants completed a questionnaire assessing the dependent variable (t_1). The single exposure participants received a follow-up questionnaire featuring only the

dependent variable two weeks (t_4) and six weeks (t_5) after initial exposure. Participants in both the repetitive and the single exposure groups were asked the same questions in the immediate and delayed post-tests in our study.

Sample

Our sample was recruited by a Dutch research institute specializing in online survey research.[3] A representative sample of the Dutch population was invited to participate in a study on "politics and the news" in January 2013. Our t_1 sample contained 296 participants and a total of 278 participants completed the final measure after 6 weeks (t_5, total attrition rate = 6.08%). The mean age of these participants was 54.46 (SD = 17.08), and 48% were female. The number of participants per condition varied from 63 to 87. A one-way between groups multivariate analysis of variance was performed to assess whether the conditions differed with regard to sex, age, socioeconomic and preexisting attitudes about the issue of elderly care status. Randomization was successful for all variables except age. There was a statistically significant difference between the conditions on the combined dependent variables, $F(3, 272) = 2.42$, p = .01. Inspection of the univariate tests revealed that there was a statistically significant difference between the conditions regarding age. Specifically, participants in the single exposure negative frame condition were younger (M = 48.29) than those in the other three conditions (Ms = 56.40–58.80). We therefore control for age in the analyses.

Interim Period

To control for intervening influences that could have occurred during the interim period between our different post-tests, we included some interim control variables. Each of the delayed post-tests comprised questions regarding the issue-specific interim media exposure of the participants in both the repetitive and the single exposure group. These measurements showed that 23.6% of participants thought they had been exposed to some news about the elderly, but not to the exact arguments featured in our stimuli, which were not taken from the actual media debate. We also asked all participants how much attention they had paid to issue-related news during the interim period (1 = *no attention* to 4 = *a great deal of attention*). This revealed that participants paid little attention to related news (t_4: M = 2.08, SD = .920; t_5: M = 2.02, SD = .875). Third, we asked participants whether they had discussed the issue with someone else (e.g. family or friends) during the interim period (1 = *I did not discuss it* to 5 = *I discussed it quite a number of times*). Our findings suggested that hardly any participant had discussed the issue (t_4: M = 1.84, SD = 1.07; t_5: M = 2.15, SD = .135). There were no differences between experimental conditions in terms of interim media use and attention.

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Stimulus Material

The stimulus material for this study consisted of constructed news articles about investment in elderly care in the Netherlands to limit pretreatment effects.[4] The news articles described an initiative that proposed to invest more money in elderly care. As participants in the repetitive exposure condition were exposed to four different news articles, eight news articles were used in this study: four with a positive frame, and four with a negative frame. As done by previous framing studies, we varied the frame by valence as this variation was likely to affect political opinions (Jacoby, 2000; Nelson et al., 1997b; Schuck & De Vreese, 2006).

The news frames were realized by providing multiple and varying arguments in favor of or against the initiative to invest more money in elderly care in the Netherlands. For example, whereas a positively framed news article would state that the proposed initiative for the elderly will improve their situation, a negatively framed article would state that the proposed initiative will have detrimental effects. At each measurement time, the positively and negatively framed news articles were almost identical, apart from the frame manipulation. That is, every sentence had the same structure and order, and approximately the same number of words. Over time, the articles were different, comparable to a number of articles about the same topic in a variety of news outlets (see, e.g. Lecheler & De Vreese, 2013). This was done to guarantee a realistic situation of repeated exposure to the same news frame over time. To avoid any intervening effects of this variation in articles, the articles contained the same information over time, and were equal in length and structure. The articles were successfully pre-tested in a pilot study.

Manipulation Check

To assess whether the manipulation was successful, participants were asked to respond to two items at time points at which exposure to a message coincided with the completing of a questionnaire. As participants in the single exposure group were exposed to only one news article, they completed the manipulation check items regarding that article only. Participants in the repetitive exposure group completed these items twice: after exposure to the first news article (t_1) and after exposure to the fourth news article (t_4, two weeks after the first article). On seven-point scales ranging from "fully disagree" to "fully agree," participants indicated to what degree they agreed with the statements: "The newspaper article emphasized the advantages of the proposed initiative for elderly care" and "The newspaper article emphasized the disadvantages of the proposed initiative for elderly care." A one-way between groups multivariate analysis of variance was performed to investigate whether framing influenced scores on the manipulation check items. Four items were entered as dependent variables: two items were completed after the first news article and two items after the fourth news article (for the repetitive exposure group). Results show successful manipulation: participants exposed to a positively framed article agreed more with the statement that the article emphasized the *advantages* of the proposed initiative (single: $M = 5.01$, $SD = 1.25$; repetitive t_1: $M = 5.48$, $SD = 1.10$, t_4: $M = 5.49$,

SD = 1.13) and less with the statement that it emphasized the *disadvantages* of the proposed initiative (single: *M* = 2.82, *SD* = 1.24; repetitive t_1: *M* = 2.52, *SD* = 1.24, t_4: *M* = 2.47, *SD* = 1.28). Participants exposed to a negatively framed news article agreed more with the *disadvantage* statement (single: *M* = 4.30, *SD* = 1.59; repetitive t_1: *M* = 4.84, *SD* = 1.67, t_4: *M* = 4.67, *SD* = 1.58) than with the *advantage* statement (single: *M* = 3.16, *SD* = 1.59; repetitive t_1: *M* = 3.34, *SD* = 1.79, t_4: *M* = 3.06, *SD* = 1.75). All manipulation check items showed significant differences (t_1: *Fs*(3,292) = 45.39/41.74, $p < .001$; t_4: $t(121) = 8.96$, $p < .001$).

Measures

Dependent variable/political opinion. Five items were used to assess our dependent variable of political opinion. In accordance with previous framing studies (e.g. Nelson et al., 1997b), opinion was measured in regard to the issue featured within the treatment news articles: elderly care. We chose a multi-item dependent variable to decrease sensitizing effects (e.g. Ansolabehere et al., 2008). In line with previous framing experiments, the measure included two more general opinion items about elderly care, and three items about events specifically described in the stimuli (Lecheler & De Vreese, 2011; Vishwanath, 2009). The general opinion items were: "Do you agree or disagree that additional investments should be made in care for the elderly?" "Do you agree or disagree that the growing number of elderly persons is one of the most important challenges facing the Netherlands at the moment?" The issue-specific items concerned particular statements made in the stimulus material. The items were: "Do you agree or disagree that the proposed initiative will improve elderly care?" "Do you agree or disagree that local support for the elderly should be stimulated, for example in the form of neighborhood centers?" "Do you agree or disagree that usual care for the elderly should be improved, for example by providing better transport facilities for them to reach their general practitioners?" Participants responded to all items on seven-point scales ranging from "fully disagree" to "fully agree," (t_1: *M* = 4.48; *SD* = 1.08; t_4: *M* = 4.33, *SD* = 1.12; t_5: *M* = 4.39, *SD* = 1.14). Cronbach's alphas were .77 (t_1), .77 (t_4), and .82 (t_5).

Moderator/political knowledge. This moderator variable was measured during the pre-test with five multiple choice questions on current politics in the Netherlands, constructed by the researchers. We measured factual political knowledge (Delli Carpini & Keeter, 1993) with measures such as "Mona Keijzer [National politician] is a member of which political party?"[5] The number of correct answers to the five items were summed to form a single score for political knowledge, *M* = 3.29, *SD* = 1.43.

Results

Influence of News Frame Repetition on Effect Strength

We predicted that, if an individual is repeatedly exposed to the same news frame over time, effects become stronger (H1).[6] We test this assumption by observing changes in

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political opinion within each experimental condition, as well as by comparing how the difference between positive and negative frame conditions changes over time within both the single as well as repeated exposure participant groups. To differentiate between effect strength and effect persistence, for a test of increase of strength we only compare the framing effects at the start of the study (t_1) with a post-test administered just after the last frame exposure, two weeks later (t_4). We thereby for now exclude the last post-test after six weeks (t_5), which is more relevant for testing effect persistence. At this point in time, participants in the repetitive conditions had received a total of four news frame repetitions (at t_1, t_2, t_3, and t_4).

Table 1 shows that there were no significant changes in political opinions across the time points for *repeated* exposure to the positive news frame, $F(1.771, 90.316) = 2.267$, $p = .116$. Whereas participants in this condition did become slightly more positive between the start of the study and the re-measurement after two weeks, this increase was not significant. Repetitive exposure to the negative news frame, however, did significantly change effects on political opinions over time, $F(1.899, 121.524) = 8.184$, $p < .01$. Post-hoc tests showed a significant change in support in the expected negative direction between immediate exposure (t_1) and two weeks after the start of the study (t_4), which thus includes a total of four exposures to a negative news frame ($p < .01$). There was also an increase in magnitude of the framing effect between t_1 and t_4 (mean difference between positive and negative news frame at t_1 = .50, at t_4 = 1.12). We thus find that repeated exposure to the same news frame strengthened the framing effect for the negative frame only, whereas participants in the positive condition seemed unaffected by repetition. We provide possible explanations for the difference between the positive and negative frame conditions in the discussion section. H1 is partially supported.

For the single exposure group, the initial effect of the positive news frame on political opinions weakened between exposure and the delayed post-tests after two

Table 1 Framing effects on political opinions over time.

	Single exposure		Repetitive exposure	
	Positive (n = 73/62/55)	Negative (n = 87/64/69)	Positive (n = 63/52/56)	Negative (n = 73/65/66)
Start of study (t_1)	4.65^{ax} (1.08)	4.20^{bx} (1.16)	4.83^{ax} (.88)	4.33^{bx} (1.04)
After two weeks (t_4)	4.31^{ay} (.84)	4.18^{ax} (1.19)	5.04^{ax} (.91)	3.92^{by} (1.17)
After six weeks (t_5)	4.18^{ay} (1.05)	4.23^{ax} (1.25)	4.85^{ax} (.88)	4.37^{bx} (1.04)

Note: Different ^{ab} superscripts indicate a significant difference ($p < .05$) between conditions within the single or repetitive group; different ^{xy} superscripts indicate a significant difference ($p < .05$) within each condition between t_1 and one other time point (after two weeks, after six weeks); higher mean values indicate increased support for the issue.

n above refers to group sizes at start of the study ($t1$), after two weeks ($t4$) and after six weeks ($t5$).

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weeks, $F(1.739, 93.931) = 11.764$, $p < .001$. However, the effect of single exposure to the negative frame did not change significantly, $F(1.988, 125.226) = 0.17$, $p > .05$. Table 1 shows that political opinions within the positive frame condition decreased between the start of the study and the lagged measurement after two weeks (t_4; $p < .01$). Political opinions in the negative frame group displayed only minimal changes. Accordingly, the difference between positive and negative frame conditions decreased over time ($t_1 = .45$; $t_4 = .13$). These results show that single exposure effects weaken over time.

Influence of News Frame Repetition on Effect Persistence

Next, we assessed if repetitive exposure leads to more persistent framing effects (H2). As opposed to tests for effect strength, which focused on the difference between t_1 and t_4, we now observe if repetitive news frame exposure led to framing effects still detectable at t_5, which is four weeks after the last frame exposure (t_4) and a total of six weeks after the start of the study. We also measured how much of the single exposure framing effect was still visible two weeks (t_4) and six weeks (t_5) after the start of our study.

The repetitive exposure group displays significant framing effects at *all* measurement points, with a remaining mean difference of 0.48 between the two frames at t_5 (single exposure group: .05). Repeated measure mean comparisons for the repetitive group showed that, while the effect remained significant at t_5, the framing effect had significantly shrunk between t_4 and t_5 ($p < .05$). As noted above, we find that effects in the single exposure group decreased between re-measurement at t_1 and the delayed measurement point t_4. Yet, single exposure still led to detectable framing effects two weeks after exposure. Six weeks after exposure, no significant framing effect for single exposure remained, $t(117) = -.213$, $p > .05$. Specifically, we found a significant reduction of the effect between t_1 and t_4, but no further decline of the effect between t_4 and t_5 (positive frame: $p > .05$; negative frame: $p > .05$; see Table 1). In sum, we thus find that repeated exposure leads to persistent effects and more so than single exposure. We can confirm H2.

Political Knowledge as a Moderator

Next, we predicted that the strengthening effect of repetitive news framing is more visible among individuals with moderate levels of political knowledge (H3a) and that these individuals are also more likely to show persistent framing effects (H3b).

We first test differences in *strength* of effects (H3a). We examine participants in three groups (high political knowledge: Mean + 1 *SD*; moderate political knowledge: Mean ± 1 *SD*, low political knowledge: Mean–1 *SD;* Slothuus, 2008; Zaller, 1992). We again compare opinions at the start of the study (t_1) with our delayed post-test right after the repeated exposures (four frame repetitions). Repeated measure mean comparisons show no strengthening effect of repeated exposure to the positive frame for all knowledge groups. Although there were increases for the high and medium

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knowledge groups, these were not significant between t_1 and t_4 ($p > .05$). When observing repeated exposure to a negative frame, we do see differences between groups: There was a significant change in opinions into the expected direction for participants with moderate political knowledge between t_1 and t_4 ($p < .05$), but not for high and low-knowledge individuals ($p > .05$). Differences between effects magnitudes at first (t_1) and at last frame exposure (t_4) vary little when considering different knowledge levels: Individuals with high levels of knowledge show a mean difference of .75 (t_1: .37, t_4: 1.12); moderate knowledge of .79 (t_1: .55, t_4: 1.34); low knowledge .64 (t_1: .21, t_4: .85). In sum, we can only partially confirm H3a.

We also predicted that the persisting effects of repetitive news framing are more visible for moderately knowledged individuals (H3b). We test this hypothesis by tapping if there is still a significant framing effect visible at the last delayed post-test, six weeks after the start of the study (t_5). We use the PROCESS macro by Hayes (2012), testing for moderation at t_5. Because this way of testing moderation reports significances at differing values of the moderator variable, we are again able to test if individuals in a high, low, or medium knowledge group differ in framing effects over time. Estimates are based on 5,000 bootstrap samples. Our main analysis above (Table 1) shows that, at t_5, the repetitive group still shows significant framing effects. However, the moderator analysis shows that it is in fact only those with moderate political knowledge that show significant effects six weeks after start of the study (b = .47, SE = .20, $p < .05$, 95% bias-corrected and accelerated confidence interval [bca CI]: .074; .871), while those with lower (b = .45, SE = .28, $p >.05$, 95% bca CI: −.102; 1.02) and higher political knowledge (b = .48, SE = .28, $p > .05$, 95% bca CI: −.077; 1.05) are no longer affected. This means that we find support for H3b.

Discussion

Framing effects research suggests that everyday media use is characterized by exposure to repetitive and one-sided news frames over time (e.g. Baden & Lecheler, 2012; De Vreese, 2012). This is particularly the case when the stakes are high, and when scandalous, value-laden, or contentious issues are reported (Mitchell, 2014). In this study, we tested if and how the repeated exposure to the same political news frame changes the strength as well as the persistence of news framing effects on political opinions. Our results show that repetition of a news frame increased the strength of effects, but that this was only the case for exposure to a negative (versus a positive) news frame. Repetitive framing also led to durable effects. We also find that participants with moderate levels of political knowledge displayed the longest lasting framing effects.

Our relatively straightforward study adds to the framing effects literature in several ways. First, our results imply that testing for repetitive framing effects is something future studies should consider, because frame repetitions influence both the strength and duration of reported framing effects. This supports previous theoretical arguments regarding the influence of repetition on framing effects (e.g. Baden & Lecheler, 2012; Price et al., 1997). Our results also suggest that previous studies that

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have used frame repetition in their designs—probably to elude message-specific effects (Slater, 2004)—are likely to have amplified their effects in comparison to studies using only *one* frame stimulus. We must consider that some experiments unintentionally overstated the power and relevance of their news framing effects.

Consequently, we posit that tests for effect strength and duration need to be an integral part of future framing experiments – not only as a proof of relevance but also to test how different types of political news framing effects change over time (Baden & Lecheler, 2012; Chong & Druckman, 2010; Gaines et al., 2007). Experiments can be a great tool to measure framing effects, but their findings must be interpreted in light of the duration and strength of framing effects as shown in our study. This is also important in light of recent scholarly arguments regarding a minimal media effects paradigm (Bennett & Iyengar, 2008). When considering that audiences are increasingly exposed to attitude-consistent news (e.g. Stroud, 2008), and that audience fragmentation leads to a decrease in exposure to varied news frames (Baum & Groeling, 2008; Tewksbury, 2005), the study of news frame repetition becomes ever more important.

The results showed that political knowledge moderated repetitive framing effects. There is much interest in the framing literature on gauging under which circumstances a news frame has stronger or weaker effects (Borah, 2011; De Vreese, 2012; Levin et al., 1998). While our findings for effect strength were mixed, we did find that the "moderately aware" show most persistent news framing effects. This supports Zaller's (1992) argumentation on the nonlinear effects of political knowledge when studying the formation of public opinion (Slothuus, 2008) and provides answers for previous mixed evidence on the influence of knowledge on framing effects (see e.g. Schuck & De Vreese, 2006). Individuals with lower levels of general political knowledge might be most susceptible to immediate news frame exposure, but these individuals are not motivated or able to integrate the frame into long-term memory. High knowledge individuals were also affected in our study, but they are also more likely to encounter other information over time and have a higher ability of rejecting a political argument. Thus, the most durable effects are found with individuals of medium political knowledge, "a group characterized by a certain level of cognitive engagement, but without access to a plethora of possibly competing considerations on the issue" (Lecheler & De Vreese, 2011, p. 976). The growing importance of including delayed post-tests in framing experiments will also shed more light on how political knowledge may change over time, and how such change can interact with the framing effect.

Our findings also indicate the need to further study the strength of framing effects. We find some support for the hypothesis that political knowledge mattered for effect strength, but our results were mixed. One explanation could be that opinions regarding elderly care could only be altered to a certain extent due to pretreatment effects (see also below; Druckman & Leeper, 2012). In this sense, our frames altered opinions enough to matter, but attitudes regarding this topic were already relatively stable to begin with so as to not allow a greater magnitude of change. This also shows that context matters, and that replicating framing effects by using different (political)

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issues context is a worthwhile endeavor (Lecheler, De Vreese, & Slothuus, 2009). Mitchell (2014) suggests that repetition matters when political scandals are leaked to the media. Following this argumentation, contentious news coverage might cause the promulgation of repetitive messages from political actors. But, how does this process translate into more abstract, technical issues such as economic issues?

We were not able to determine whether the effects of repetition are linear or if there is a "tipping point" after which a news frame cannot elicit stronger or more durable results (see, e.g. Mitchell, 2014). Persuasion studies have found that repetitions will eventually lead to reactance and a decrease in message agreement (e.g. Koch & Zerback, 2013). This reactance could occur after as much as three repetitions (Cacioppo & Petty, 1979). However, repetition effects in news framing are likely to differ: many studies of persuasion are based on commercial or political advertising, whereas frame exposure occurs in a journalistic news consumption environment. Reactance thresholds for news frames might be higher than for advertising messages as news frames are experienced as journalistic products of less "persuasive intent" (Tewksbury & Scheufele, 2009). Our study, which featured four repetitions, provides initial evidence for this assumption. However, more research is needed to specify how an increasing number of repetitions influences political news framing effects. Along these lines, future studies must also consider which psychological processes can explain repetition effects or what the relationship between increased accessibility and belief content changes is over time.

We also found a difference between the effects of a repeated positive versus a negative news frame. Results show that, while both positive and negative frames elicited effects, it was particularly the negative news frame that was sensitive to repetition (i.e. participants' opinions became more negative with each repetition). This points to a "negativity bias" – the idea that negatively valenced messages are more powerful in affecting political opinions when it comes to valenced media content (e.g. Meffert, Chung, Joiner, Waks, & Garst, 2006). Previous framing studies have also indicated that negatively valenced frames are most powerful (e.g. Cappella & Jamieson, 1997). However, a closer look at the data (Figure 1) shows that individuals with high and medium levels of political knowledge were also influenced by repeated exposure to a positive news frame. Low knowledge individuals, however, showed a decrease of the effect between the start of the study and the first delayed measurement point after two weeks. This difference has potentially "canceled out" the strengthening effects of the positive frame in the main effects analysis. Additionally, comparisons with the single exposure group show a significant decrease of the positive news framing effect over time, which indicates that this frame had effects in the first place. In this study, we can only speculate about the reasons for these findings, but it seems that the low-knowledge individuals rejected the positive news frame after repetition occurred. Further studies must test if this is related to other processing variables (e.g. perceived complexity of the positive message) or preexisting attitudes that remained untapped in this study.

Our study has a number of limitations. First, we present results from a post-test-only design, which means we cannot compare our findings at t_1 with a baseline

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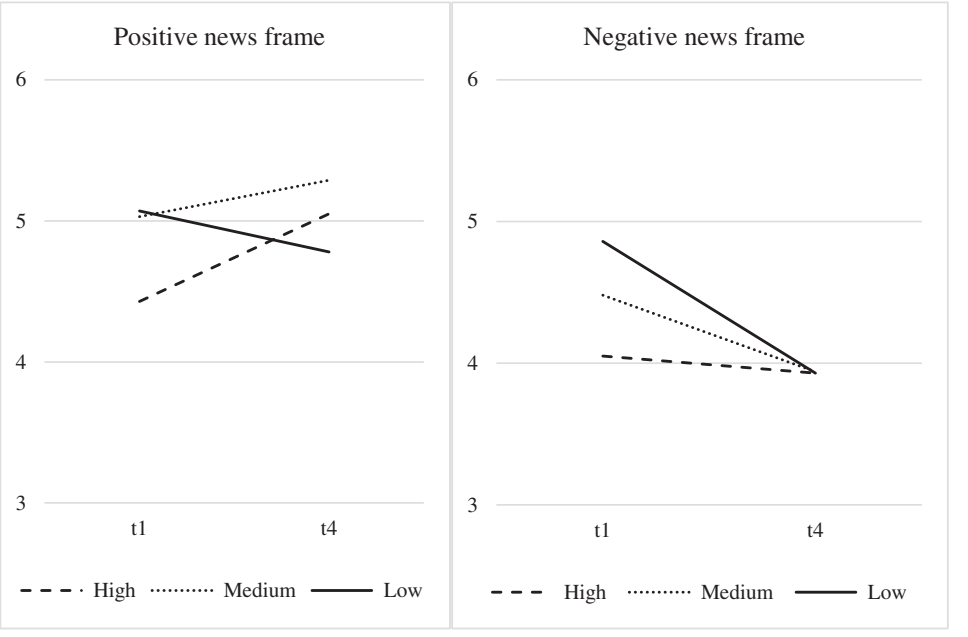

Figure 1 Effects of repetitive framing for three groups of political knowledge (high/medium/low).

opinion measure. This means that we do not know which specific opinions participants held prior to entering our experiment, and our repetitive framing argument is thus only valid from the first exposure (Druckman & Leeper, 2012). We did, however, use an issue that was relevant, yet not immediately salient on the media agenda, at the time of our study to limit pretreatment effects. While similar studies to ours suggest that sensitizing is limited (e.g. Mitchell, 2012), the repeated measure of the dependent variable with the same items must be taken into account when evaluating our findings. Because all experimental groups were given the same measures and same questionnaires (order and length) over time, sensitizing effects should not differ between groups. This might even have rendered our results more conservative, because sensitizing effects should work against experimental expectations of change in opinions. We also used a multi-item dependent variable to maximize the likelihood that participants forgot answers they had given in earlier post-tests.

We also only tested for repetitive framing and therefore did not show how competitive news framing will interact with it. There are studies that show how competitive framing changes framing effects (e.g. Sniderman & Theriault, 2004), but others may choose to include both repetitive and competitive conditions. Previous research has suggested that repetitive framing is a stand-alone mechanism alongside competitive framing. Also, repetitive framing at one point in time will influence (competitive) news framing exposure later on. We see our experiment as original because we produce a dynamic test of repetitive framing over time. However, we by no means claim to capture the full and complex dynamic of repetitive and

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competitive media effects. We see our study as one step in the incremental process of understanding the duration of framing effects.

As is true for any study measuring changes over time, the results of our study are influenced by the time points we chose. We chose our delayed measurement points based on previous studies (e.g. Chong & Druckman, 2010) but still had no solid theoretical expectation of when to test and re-test for repetition effects over time. Our findings thus highlight the need for conducting further studies that include measurement over time, as well as multiple exposures to news frames. Finally, we did not perform manipulation checks on all our stimulus materials, but only when a post-test was administered. This was done to keep the additional frame exposure as "realistic" as possible (i.e. not following each exposure up with a questionnaire). Finally, as noted in the method section, our randomization check failed for age in one instance. While we can see no systematic impact of this error on our results, we acknowledge this as a limitation of the interpretation of our results.

All in all, our study shows that repetitive news framing leads to both stronger and more persistent effects than single exposure. We believe this study contributes to a more comprehensive model of framing effects in mass communication research.

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Notes

[1] This explanation does not contradict other models, which argue that framing is defined by applicability changes (Nelson et al. 1997b). Applicability changes are also part of repetitive framing, but might not always increase with repetition (Chong & Druckman, 2007b).

[2] Mitchell (2012) presents findings from a 10-week longitudinal experiment, where the dependent variable was measured each week. A diagnostic test, where the treatment group was compared to another group that had only been measured in the first and last week showed "no evidence of reactivity to the measure" (p. 302). We discuss any issues with sensitizing effects in the limitation section of this paper.

[3] Participants receive fixed incentives for participating in online survey experiments.

[4] The full text of the stimulus articles is available from the authors upon request.

[5] The other measures were: "Which politician recently left the PVV [PARTY] and has set up their own political party?" "Who is the current president of the European Commission?" "Which country is not a member of the European Union?" "How many seats are there in the Dutch senate?"

[6] We also tested for immediate framing effects. At t_1, participants in the single exposure group exposed to a positive news frame showed stronger support for a policy related to elderly care ($M = 4.65$, $SD = 1.08$) than those exposed to a negative frame ($M = 4.20$, $SD = 1.16$), $t(158) = 2.50$, $p < .05$. Similarly, individuals in the repetitive group showed that exposure to a positive frame increased ($M = 4.83$, $SD = .88$) support for the issue relative to a negative frame ($M = 4.33$, $SD = 1.04$), $t(134) = 2.99$ $p < .01$. There was no significant difference between participants in the single or repetitive group who had been exposed to positive and negative news frame respectively.

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