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1 How Long Do News Framing Effects Last? A Systematic Review of Longitudinal Studies

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A growing number of experimental studies investigate the duration of news framing effects. This article presents a systematic review of the theoretical premises, experimental designs, and individual-level moderators in these studies. Our results suggest that most studies report effects that persist beyond initial exposure and that may be influential for subsequent decision-making over time, but that durability of effects heavily depends on whether individuals are exposed to competitive frames also. We also find that little is known about duration of news framing effects on behavior and emotional responses. We propose a research agenda for future longitudinal framing studies.

T*ime* is a key concept in news framing theory, but also a tricky one. When studying the effects of news frames on political attitudes and behavior, most researchers are—more or less explicitly—interested in describing substantial and thus lasting effects of news framing on citizens (Tewksbury & Scheufele, 2009). At the end of the day, if all framing effects were only short-term, immediate reactions to media messages with no further implications, the concept would probably not be so popular in communication science, political science, sociology, psychology, and public opinion research. To study over-time effects, a number of studies make use of panel survey designs and media content analysis data (cf. Iyengar & Simon, 1993). However, doing so makes researchers face the near impossibility of establishing an individual-level connection between frame exposure and effects on citizens.

Because framing effects research strongly relies on experimental survey designs, there are efforts within the field to combine the advantages of experiments (i.e., the assumption of causality, the controlled exposure) with the multiple measure perspective of panel designs. This is not surprising, given that framing experiments are usually designed to “*identify how citizens make decisions and respond to real-world political objects, in order to enhance understanding of politics*” (Gaines, Kuklinski, & Quirk, 2007, p. 2; emphasis in original). Experiments, just like all research designs (Campbell & Stanley, 1966), have limitations and can realistically only examine some aspects of (media) reality. For instance, experiments cannot at this point show how and why certain frames emerge in political discourse, nor can they fully explain why some frames gain and hold this prominence over long periods of time

(Carragee & Roefs, 2004; Entman, 2003). Yet, with the addition of longitudinal measurement of effects, framing experiments can provide us with an increased understanding of conditions under which frames really influence us over time. In this sense, time can be understood as a moderator variable in framing effects research.

So far, the literature on over-time experimental designs in framing research is in its infancy and therefore scattered. The field has not yet benefitted from the accumulation of theoretical evidence towards an answer to the question regarding the real-life relevance of framing effects over time. Existing framing experiments test the longevity of effects across varying and seemingly arbitrary time spans, or may not put full analytical and theoretical focus on their over-time designs (Baden & Lecheler, 2012). Therefore, we note that the available research on the duration of news framing effects has not yet attempted to establish a conceptual or empirical standard on how duration of framing effects should be measured, and when exactly a news framing effect could be described as long-, mid-, or short-term in nature. Also, there are many variables and aspects of effect duration yet to be explored in future studies.

In response, this article presents a systematic, albeit modest, review of experimental studies that test the persistence of framing effects over time and thus introduces time as a moderator of framing effects. We begin our argument by providing a short introduction into framing theory and the study of duration in framing research. Following, we systematically search and select relevant framing experiments that have included repeated or over-time measurements of effects. We, first, compare their theoretical premises, focusing on both independent (i.e., the frames) and dependent variables (i.e., the framing effects). Second, we evaluate their designs. Third, we assess the determinants of the duration of framing effects in the form of a review of individual-level moderators in the selected studies. Lastly, we evaluate whether authors themselves label framing effects as short-, mid- or long-lasting. The results of this review can function as an important guidepost for answering the central question of how long news framing effects last. Given the novelty of longitudinal framing experiments, we conceptualize this review not as a final but as a preliminary answer to the question of duration of framing effects. We hope that this review will aid future theoretical and methodological advances in media framing research.

Theoretical Foundations

Understanding Framing Theory

Framing as used in mediated communication research is a concept originating in both psychology and sociology (Carragee & Roefs, 2004; Entman, 1993; D'Angelo, 2002).¹ In psychology, framing research has roots in Kahneman and Tversky's (1979; 1984) prospect theory where decisions taken by individuals can be altered by presenting information in logically equivalent but

semantically different ways. In sociology, Goffman (1974) also constructed the idea of framing on a micro-level. He suggested that individuals organize their daily experiences by means of “frameworks or schemata of interpretation” (p. 21). Most important among these are the so-called primary frameworks, which render “what would otherwise be a meaningless aspect of the scene into something that is meaningful” (p. 21).

Although the term “frame” has been used in mediated communication research for decades now, the question of what exactly constitutes a frame is contested (Matthes, 2009). Frames can be found in various parts of the communication process: within the originating political system through the sponsorship of frames by political actors, institutions, and social movements; through journalists or media institutions; and with recipients (de Vreese, 2002; Entman, 1993; Kinder & Sanders, 1996; Scheufele, 1999). Kinder and Sanders (1996) argue that frames “lead a double life,” because they are present in political discourse, as well as in the mind as “cognitive structures that help individual citizens make sense of the issues that animate political life” (p. 164). Scheufele (1999) distinguishes between “media frames” in content and “individual frames” that are present in a person’s mind as a result of either deep-rooted beliefs or short-term reference changes (pp. 106–107). The notion of the presence of frames in multiple locations has led to the understanding of framing as a process that stretches across all parts of the communication process (D’Angelo, 2002; Scheufele, 1999). De Vreese (2002) thus distinguishes between frame-building, the “process and factors that influence the structural qualities of news frames” and frame-setting, the “interaction between media frames and individuals’ prior knowledge and predispositions” (p. 24).

On a macro-level, a frame “organizes everyday reality” within the media and is thereby “part and parcel of everyday reality” (Tuchman, 1978, p. 193). Frames are “persistent patterns of cognition, interpretation, and presentation, of selection, emphasis and exclusion by which symbol-handlers routinely organize discourse” (Gitlin, 1980, p. 7). In the news, a frame is often described as “a central organizing idea or story line that provides meaning to an unfolding strip of events, weaving a connection among them. The frame suggests what the controversy is about, the essence of the issue” (Gamson & Modigliani, 1987, p. 143; see also Reese, 2001). Entman (1993) highlights the selection aspect of frames in arguing that to

frame is to select some aspects of a perceived reality and make them more salient in a communicating context, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described.

(p. 52; emphasis in original)

Yet, this conceptual frame definition does not give much indication of the distinct elements that constitute a news frame or how to actually identify a frame in the news (cf. Matthes & Kohring, 2008). There are, to date, two very

common classifications of news frames—both of which are used in studying the duration of framing effects. The first divides news framing into equivalency and emphasis frames (Druckman 2001). *Equivalency* frames refer to content that is similar or even identical in its logical message, but that is phrased differently (Kahneman & Tversky, 1984). *Emphasis* frames are closer to “real” journalistic news coverage and present “qualitatively different yet potentially relevant considerations” of an issue (Chong & Druckman, 2007, p. 114). Equivalency frames are not often used in mediated communication research, because this rather narrow conceptualization of framing limits its applicability in a social or political context. For that reason, many studies—including the majority of studies reported in this review—have made use of emphasis frames as more realistic translations of political news coverage (de Vreese, 2002; Sniderman & Theriault, 2004; but see Iyengar, 2010; Scheufele & Iyengar, in press). Among emphasis frames, there is a division between issue-specific frames and generic frames. Issue-specific frames are built explicitly for an issue, whereas generic frames are a recurring set of frames that can be applied to a variety of issues (de Vreese, Peter, & Semetko, 2001).

Based on these definitions, framing experiments most often define frames as patterns of interpretation that are used to classify information and that aid audiences in processing information efficiently. Media frames stress certain aspects of reality and push others into the background: they have a selective function. A framing effect is the influence a news frame has on an individual’s framing of issues.

Studying News Framing Effects over Time

Framing effects are often studied using experimentation. Framing experiments are usually conducted online or in a laboratory and are based on survey designs. Participants are exposed to one or more media messages, featuring a particular news frame, and effects of this exposure are then tapped by means of a questionnaire. Such experimental designs are often considered methodologically superior, because they establish causal relationships between frame exposure and changes within the individual (Spencer, Zanna, & Fong, 2005). But, framing experiments are mere snapshots of reality, characterized by forced one-shot exposure to (often researcher-crafted) news messages in a highly artificial media use scenario. This limits their external validity considerably (Barabas & Jerit, 2010) and raises the simple but fundamental question whether framing experiments allow for assumptions about the real-life impact of news reporting on the individual (Baden & Lecheler, 2012; Kinder, 2007).

Still, the greater part of available news framing effects experiments emphasizes the relevance of their results for actual politics and individual decision-making (Lecheler & de Vreese, 2011; Tewksbury & Scheufele, 2009). However, a number of scholars have suggested alterations to the experimental designs used in testing framing effects (Barabas & Jerit, 2010; Kinder, 2007).

Gaines et al. (2007) argue that the potential of the survey experiment in political research can only be fulfilled once researchers start admitting ‘real-life’ factors into their experimental designs. These factors include controlling for pre-treatment exposure, including a control group, exposure to more than one treatment during an experiment, and the measurement of the longevity of effects. This suggests that assumptions about the genuine impact of news framing on the individual cannot be sustained without further investigation of the duration of results (Tewksbury & Scheufele, 2009). Consequently, a growing number of studies do just that: they test for the duration of news framing effects by employing over-time designs.

However, we argue that while there are a number of studies on the duration of news framing effects published, this empirical body of work does not yet allow for clear theoretical expectations for future studies (Baden & Lecheler, 2012). This is surprising, given that there are studies and reviews in other fields such as persuasion research that have accumulated knowledge regarding the duration of mediated communication effects (Hill, Lo, Vavreck, & Zaller, 2013; Hovland & Weiss, 1951; Iyengar & Kinder, 1987; Kleinnijenhuis, van Hoof, & Oegema, 2006; Mitchell, 2012; Wanta & Hu, 1994). Nevertheless, news framing is held to operate on different psychological processes than these theories of media effects (Scheufele, 2000), which warrants a review of the study of duration of framing effects specifically.

What Determines the Duration of News Framing Effects?

In the most general sense, duration is tested in framing effects studies by including additional delayed post-test measures of the dependent variable to a ‘traditional’ one-shot framing experiment (de Vreese, 2012). Valid conclusions about how long news framing effects actually last depend on a number of theoretical as well as empirical aspects of the respective experiment. Figure 1.1 summarizes these aspects and thus functions as the structural model of this review. The model shows that we consider three important groups of variables likely to empirically determine how long a framing effect lasts: (a) the theoretical foundation of the study; (b) its study and design characteristics; and (c) individual-level moderators tested within a study. In the following discussion, we introduce each of these factors.

When planning a news framing effects experiment, researchers must clearly define its *theoretical premise* or the independent (i.e., news frame) and dependent variables (i.e., what represents the “framing effect”) within the design. Both aspects will influence how long reported effects last, because frames vary in strength (Aarøe, 2011) and framing effects on some attitudes, opinions and behaviors should be more or less durable than on others (Hill et al., 2013).

As discussed above, the question as to what exactly constitutes a ‘news frame’ as an *independent variable* remains contested (Matthes, 2009). So far, most framing experiments make use of emphasis frames (see Scheufele & Iyengar, in press) and both generic and issue-specific frames can be found in

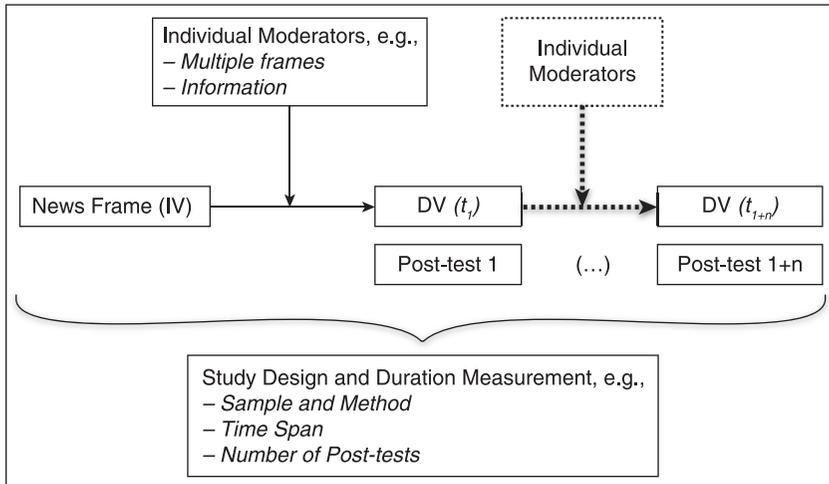


Figure 1.1 News Framing Effects over Time

these experiments. There is, however, evidence that some news frames can have stronger and therefore likely more durable effects on opinion. For example, Aarøe (2011) shows that generic episodic frames (i.e., frames that feature concrete cases and individuals) have stronger effects on opinions than thematic frames (i.e., frames that place an issue in a general or abstract context, see Iyengar, 1991), because they cause greater emotional responses (see also Gross, 2008).

In terms of *dependent variables*, framing researchers often focus on how news frames can affect our thinking about a certain political topic or event (Scheufele, 1999). Along these lines, some studies examine effects on information processing and how citizens interpret and “understand” a political issue or event (Nabi, 2003; Price, Tewksbury, & Powers, 1997; Shen, 2004; Valkenburg, Semetko, & de Vreese, 1999). However, most news framing scholars conceive this process as only a “mediating step on the way to some other effect” (Tewksbury & Scheufele, 2009, p. 26) and concentrate on effects of news frames on opinions (Haider-Markel & Joslyn, 2001; Slothuus, 2008), behavior (Schuck & de Vreese, 2006) and emotions (Gross, 2008). These studies usually report that opinions are susceptible to relatively strong news framing effects (Jacoby, 2000).

The duration of framing effects will also depend on characteristics connected to the overall *experimental design*. This, first, includes general study characteristics such as the decision to use a student sample (Mintz, Redd, & Vedlitz, 2006). Evidence suggests that this should matter for duration also, because there is evidence that survey experiments using student versus nonstudent samples in research related to politics produce results of varying magnitude (cf. Basil, 1996; Falk, Meier & Zehnder, 2013). Also, methodological decisions, such as conducting a study online or in the laboratory (cf. Wurm, Cano, & Barenboym, 2011), or with a within-subject (i.e., variability within an individual or sample) or between-subject (i.e., the difference between

individuals or samples) comparison design (cf. Charness, Gneezy, & Kuhn, 2012), can play a role in how persistent a framing effect is.

When it comes to the elements of a study design that pertain to the actual measurement of duration, scholars are confronted with the question of how many measurement points should be employed and how maturation effects are handled. Naturally, the inclusion of two measurement points will only allow for linear result patterns, while more than two measurement points enables the analysis of more complex over-time changes in framing effects (cf. Zaller, 1992). Another important aspect is the overall time span of the longitudinal experiment. Obviously, a re-measurement after 15 minutes will produce different results than after two weeks. Baden and Lecheler (2012) argue that studies focusing on the duration of news framing effects have so far operated without theoretical guidelines as to ‘when’ a news framing effect should be re-measured. This renders the comparison of the overall time spans of longitudinal experiments paramount for future research.

Third, effect duration depends on a more conceptual aspect, namely which individual-level *moderator* variables are tapped in a study. Previous studies have identified a number of moderators of immediate news framing effects, such as individual-level knowledge (Nelson, Clawson, & Oxley, 1997; Schuck & de Vreese, 2006), values (Shen & Edwards, 2005) or emotions (Druckman & McDermott, 2008). Since these variables regulate how strongly an individual is influenced by a news frame, most or even all of them are also likely to play a role in how quickly a news framing effect dissipates.

A fourth determinant of framing effect duration not specified in Figure 1.1 is the question of how scholars themselves evaluate the relevance of news framing effects over time. Some authors might argue that a framing effect that lasts beyond initial exposure is sufficiently relevant, whereas others might only pass this judgment once an effect has been shown to translate into (voting) behavior. Inferences such as these determine as how pertinent news frames are perceived in future research.

Thus, in sum, we will review framing studies along four dimensions: First, we will evaluate the theoretical premises of longitudinal framing experiments (RQ1). Then we will examine how these experiments are designed and actually measure ‘duration’ (RQ2). Third, we will analyze which individual-level moderators influence the duration of news framing effects (RQ3). Lastly, we want to know if the authors of these studies themselves evaluate news framing effects as short-, middle- or long-term in nature (RQ4).

Method

Literature Search and Selection Criteria

For our review, we searched a number of databases for literature and examined the leading journals in the field (see Dundar & Fleeman, 2014) using the relevant keywords (e.g., *longitudinal experiments*, *delayed measurement*, *duration of*

framing effects). Next, we checked the references section of all selected papers for further relevant studies. Also, we asked a number of experts in the field of news framing effects for help in finding further related works.²

We restrict our review to (a) experimental studies that operate (b) within the wider field of mediated communication research and news framing (including neighboring disciplines such as media studies, psychology, sociology, and political science) and that thus (c) empirically test the persistence of a news framing effect. This means that we only include studies where the researcher operationalized a framing effect in form of a (d) repeated-measure experiment. Because we are interested in classifying empirical results relating to the duration of news framing effects, this means we excluded purely theoretical papers, as well as studies that test other mass media effects, such as persuasion effects. Because longitudinal framing experiments have only recently gained popularity, we also include conference papers in this analysis. We initially selected 28 studies based on our search as detailed above. We then excluded studies that did not fulfil all of the above criteria (e.g., because they were actually panel surveys), and arrived at a final sample of 16 longitudinal experimental framing studies. These were published between 2000 and 2014, as no earlier studies could be found. Ten studies were conducted in the United States and six studies were conducted in Europe. The studies stem from research in communication science, political science, and psychology. We were not able to find eligible studies from other related fields, such as sociology.

Coding of Studies

Our codebook and coding procedure were based on previous reviews in the field of media effects (Roskos-Ewoldsen, Klinger, & Roskos-Ewoldsen, 2007; Mares & Woodard, 2007).

Based on our conceptual model (Figure 1.1), a graduate student coder was trained and coded the following variables within the selected experimental studies. For every selected article, the coder entered the appropriate items into a coding sheet according to the following coding schedule: First, we coded studies for (a) *general characteristics* such as author(s), if they were published, date of publication, and if the publication was in a journal or other academic outlet. Next, we focused on the (b) *theoretical approach* and the independent variables (either issue-specific or generic news frames). The coder then detailed the dependent variables in each study, categorizing them into attitudinal, affective or behavioral. The coder also recorded several variables pertaining to the (c) *measurement of duration* within each experiment, such as total number of post-tests, sample quality (non-student or student sample), sample size, method (online, laboratory experiment, quasi or full experiment, natural experiment), and overall time span of the experiment (in days).

We then coded which variables were used as (d) *moderators* within the selected studies with a list of moderators based on pre-existing framing experiments (e.g., values, emotions, information-processing variables, knowledge).

Lastly, the coder assessed (e) *duration according to authors* in three categories according to conclusions made by the authors as to how effects could be conceptualized: short (effects do not last), medium (effects have potential to be lasting), and long (effects are lasting). This variable was only coded, if duration was directly discussed in text (e.g., in the conclusion or discussion section). A random sample of three articles (> 10%) was used to test for intercoder reliability between two coders.³ Overall percent agreement was .83; Cohen's kappa was .76.⁴

Results

The study of duration of news framing effects is a new and popular aspect of framing effects research. In recent years, there has been an increase in studies testing for duration and more studies are to be expected in the near future.

Theoretical Premises (RQ1)

Our review of the theoretical premises of duration experiments focused on the question which independent variables (i.e., which news frames?), and dependent variable were chosen (i.e., what will these news frames influence?). These choices will likely influence how long framing effects last within a study. Table 1.1 provides an overview of news frames and dependent variables used in the included studies. It shows that a majority of studies test how issue-specific news frames influence opinions ($n = 9$; 56.3%).

Independent Variables

Two groups of studies emerge: One in which issue-specific news frames are developed based on salient political issues or events (e.g., current policy debates; $n = 12$; 75%), and a second group where generic news frames are interpreted within a broader, sometimes non-salient, political or social context ($n = 4$; 25%). The first group argues that salient political contexts make their results more valid because reading about these issues feels realistic to participants. However, authors in the second group suggest that the use of broad and recurring news frames allows for greater generalizability of results beyond one issue contexts. Differences in use of generic versus issue-specific frames mirror the conceptual divide within framing research as discussed above (cf. Scheufele & Iyengar, in press).

Specifically, studies focusing on issue-specific frames develop frames from media content analysis or from public opinion data pertaining to the salience of a political issue. For example, Chong and Druckman (2010) report results from an experiment focusing on the U.S. Patriot Act “which was a piece of legislation enacted shortly after the terrorist attacks of September 11, 2001” (p. 666). Those examining the effects of generic frames base their designs on the conceptual importance of recurring journalistic angles, such as loss vs. gain frames (Boydston & Ledgerwood, 2013; $n = 1$), the economic consequences

Table 1.1 Overview of Framing Experiments

Study	Total N	Sample ¹	Method ²	Design ³	Frames in Study	Dependent Var	Stimulus ³	Control ⁴
Boydston & Ledgerwood (2013)	344	combination	laboratory	post-test	Loss/Gain frames	opinions	written	N
Chong & Druckman (2010)	1,302/749	combination	combination	post-test	Issue-Specific frames	opinions	written	Y
Chong & Druckman (2013)	794	non-student	online	post-test	Issue-Specific frames	opinions	written	Y
De Vreese (2004)	83	non-student	laboratory	post-test	Strategy frame	political cynicism/ opinions	audiovisual	N
Druckman & Leeper (2012)	985	combination	combination	post-test	Issue-Specific frames	opinions	written	Y
Druckman & Nelson (2003)	261	student	laboratory	post-test	Issue-Specific frames	opinions	written	Y
Druckman & Bolsen (2011)	621	non-student	combination	post-test	Issue-Specific frames	opinions	written	Y
Druckman et al. (2010)	416	non-student	laboratory	post-test	Issue-Sp. frames/Cues	vote choice	written	Y
Druckman et al. (2012)	547	combination	combination	post-test	Issue-Specific frames	opinions/ attitude certainty/	written	Y
Lecheler & de Vreese (2011)	1,324	non-student	online	post-test	Generic Frames	opinions	written	Y
Lecheler & de Vreese (2013)	625	non-student	online	post-test	Generic Frames	opinions	written	Y
Lecheler et al. (2015)	278	non-student	online	post-test	Issue-Specific frames	opinions	written	N
Matthes & Schemer (2012, study 1)	236	student	online	post-test	Issue-Specific frames	opinions	written	N
Slothuus (2010)	1,636	non-student	natural/quasi	pre/post	Party/Issue-Sp. frames	opinions	combination	N
Tewksbury et al. (2000)	510	student	laboratory	post-test	Issue-Specific frames	issue evaluations	written	N
Vishwanath (2009)	129	student	combination	post-test	Issue-Specific frames	behav. intentions/ beliefs/importance	written	Y

Note: 1 Student/non-student sample or combination.

2 Type of experiment in study (laboratory/online/quasi/field/natural/other experiment, or combination).

3 Experimental design (DV measured pre/post-test, post-test only).

4 Type of stimulus (visual/audio-visual/written).

5 Was there a control condition (Y/N)?

frame (Lecheler & de Vreese, 2011; $n = 2$), and strategy news framing (i.e., frames that emphasize horse race, strategy, and tactics of politics; de Vreese, 2004; $n = 1$). For example, Lecheler & de Vreese (2011) test the effects of a positive or negative version of an economic consequences frame focusing on the role of new EU member states within the EU economy.

Overall, framing experiments have evaluated a range of political issues in connection to duration (e.g., international politics, terror, social policies), but only a limited number of generic news frames have been tested. There seems to be no systematic difference between the two groups in terms of how strong news framing effects are initially. However, studies using non-salient issues are able to detect longer-lasting framing effects, probably because there is less exposure to issue-relevant news in the interim period between initial and delayed post-tests (de Vreese, 2004). Also, other research on framing effects shows that framing effects are weaker, if the issue at stake has been important on the national news agenda before or during an experimental study (Lecheler, de Vreese, & Slothuus, 2009).

A large portion of both generic and issue-specific framing studies make use of “pro” and “con” versions of news frames (cf. Chong & Druckman, 2010; Druckman & Bolsen, 2011; Lecheler & de Vreese, 2013; Lecheler, Keer, Schuck, & Hänggli, 2015; Vishwanath, 2009), even if the used frames also differ along other content-related dimensions. One reason for the occurrence of valenced news frames in longitudinal framing experiments is the focus of a number of studies on competitive news framing over time (i.e., the exposure to news frames that are ‘opposing’; $n = 7$). We discuss the impact of competitive news framing on duration testing below. Nevertheless, our review suggests that there are differences between pro and con frames in terms of duration: Vishwanath (2009) shows that negative news frames are likely to have stronger and therefore longer-lasting effects on opinions than positive news frames (see also Lecheler et al., 2015). This difference in longevity is likely related to a negativity bias in media effects. Negative information about politics has stronger effects, because it is easier understood and integrated into existing opinions and attitudes (Bizer, Larsen, & Petty, 2011; Soroka, 2006).

Dependent Variables

We find that a majority of studies were concerned with effects on *opinions* ($n = 14$; 87.5%), with a few studies reporting effects on issue interpretation ($n = 1$), voting choice ($n = 1$), and other behavioral intentions ($n = 1$). The concept of opinions includes a range of terms and issues used within these studies, such as opinions about emergent technologies (Druckman & Bolsen, 2011), support for increased investment in elderly care (Lecheler et al., 2015), and policy support (Slothuus, 2010). There is conclusive evidence that news frames will have initial (strong) effects on opinions, and that these effects dissipate over time.

As for other dependent variables, Druckman, Hennessy, St Charles, and Webber (2010) test framing effects on vote choice as a behavioral intent over

time (“*Whom would you have voted for in this election?*” p. 139). Similarly, Vishwanath (2009) examines effects of frames on behavioral intentions connected to technology adaption, and finds strong initial and, to some extent, persistent effects. Yet, effects of news frames over time have only been tested on a relatively narrow sub-set of cognitive variables. Over-time designs provide the opportunity to tap real-life behavioral changes, which has so far been left widely unexplored.

All in all, we can argue that the theoretical premises (RQ1) of available over-time studies are homogenous. Most studies seem to compare the effects of pro or con frames on opinions. Results show that this initial cause-effect relationship is strong, and that negative (con) news frames have longer-lasting effects than positive (pro) news frames. The reason for this difference between valence frames is rarely an empirical focus within the reviewed studies, but it is likely connected to the negativity bias of media effects (Soroka, 2006). Our results suggest that, so far, there is no systematic difference in how fast issue-specific versus generic news framing effects dissipate. Also, framing effects pertaining to highly salient issues might dissipate more quickly as respondents are more likely to be exposed to dissonant media exposure later on, and because effects are weaker in the first place.

Experimental Designs (RQ2)

General Study Characteristics

Next, we evaluate the design of the included experiments. Table 1.1 shows that four of the reviewed studies made use of student samples, whereas the rest either employed a non-student sample ($n = 9$), or a combination of student and non-student participants ($n = 3$). Some studies reported samples of above 1,000 ($n = 3$), and typical sample size per condition was between 40 and 70 participants. Longitudinal experiments also showed a relatively even distribution between online survey questionnaires ($n = 5$), laboratory survey experiments ($n = 5$), or a combination of both ($n = 5$). Most studies were “full” survey experiments (i.e., randomized group allocation; $n = 15$), with one natural/quasi experiment (Slothuus, 2010). Table 1.1 also shows that all experiments except one were conducted using written newspaper article stimuli. Interestingly, all studies but one used news material that was made to look real, but which was constructed by the researchers. These articles often contained real facts, and the frames applied in them were obtained in preceding content analyses or pilot studies. Only Slothuus (2010), whose study is based on a natural experiment, taps duration of effects on published media reporting.

In terms of duration, there seems to be no difference between studies using student and non-student samples. However, unsurprisingly, studies using non-student or representative samples are more confident in asserting the generalizability of their results. Lab studies are able to implement more complex designs involving multiple frame exposure scenarios; this is more challenging when online designs are used.

Operationalization of duration

Table 1.2 provides a summary of aspects related to the measurement of duration. The variable *time* shows the total time elapsed between first or initial news frame exposure and the last re-measurement of the dependent variable in days. Time spans range from 0 to 77 days ($Mdn_{time} = 14$ days). With one exception (Slothuus, 2010; quasi/natural experiment), the duration of news framing effects is measured by post-test designs, where change between groups is compared over time. Most studies employed an overall design of two experimental sessions ($n = 10$; $Mdn_{session} = 2$), with a frame exposure and post-test at T1, and one additional delayed post-test at T2. Yet, a number of studies employ more intricate designs: For instance, Matthes and Schemer (2012, study 1) report one immediate frame exposure and post-test at the start of the study, and one delayed exposure and again post-test ten days after the beginning of the study. Lecheler et al. (2015) employ four sessions and frame exposures, paired with three measures of the dependent variable per participant over the course of 42 days with an increasing time span in between delayed post-tests ($Inter1-4 = 1$ day, 13 days, 14 days, 14 days). Druckman, Fein, and Leeper (2012) report results from four sessions across 21 days with seven days ($Inter1-3$) in between sessions.

A substantial portion of framing experiments includes multiple frame exposures over time in their design ($n = 9$; 56.3%). In doing so, these studies mimic a dynamic political discourse where participants are exposed to either competitive ($n = 7$) or repetitive ($n = 4$) news frames over time. Multiple frame exposures function as individual moderators of news framing effects, and are thus explored in the next section. Yet, even given these complex designs, most studies operate along relatively similar time spans of a couple of weeks. Only very few studies include either very short (e.g., Lecheler & de Vreese, 2011) or longer (e.g., Slothuus, 2010) designs. Authors generally do not explain their choice of time spans, but seem to base design decisions on previous studies. This suggests that the actual number of days or weeks between initial exposure and re-measurement might not be that relevant to scholars when planning longitudinal experiments.

In sum, the experimental design (RQ2) of available studies is based on full experimental survey designs using textual, news article-type, framing stimuli. Studies have tested effects across an average of two weeks, with few studies employing time delays below this average. However, there are studies that test framing effects across longer periods of time. Effects outlast initial exposure to some extent, but our review shows that authors do not often argue the question of how long in days or weeks an effect actually lasts.

Individual-level Moderators (RQ3)

Table 1.3 shows an overview of individual-level moderators tested in framing experiments included in this review. In this table, moderators are marked as either having been measured at baseline (i.e., in a pre-test by means

Table 1.2 How was duration measured?

Study	Total N	Time ¹	Session ²	Measure ³	Multiple ⁴	Inter 1 ⁵	Inter 2	Inter 3	Inter 4	Duration ⁶
Boydston & Ledgerwood (2013)	344	0	2	2	competitive	0	—	—	—	—
Chong & Druckman (2010)	1,302/749	10/21	2	2	competitive	10	—	—	—	short
Chong & Druckman (2013)	794	24	2	2	competitive	10	14	—	—	—
De Vreese (2004)	83	14	2	2	—	14	—	—	—	short
Druckman & Leeper (2012, study1)	647	15	1	1	repetitive	5	5	5	—	short
Druckman & Nelson (2003)	261	10	2	2	—	10	—	—	—	short
Druckman & Bolsen (2011)	621	10	2	2	—	10	—	—	—	—
Druckman et al. (2010)	416	14	2	2	competitive	14	—	—	—	medium
Druckman et al. (2012)	547	21	4	2	combination	7	7	7	—	—
Lecheler & de Vreese (2011)	1,324	14	4	2	—	1	6	7	—	long
Lecheler & de Vreese (2013)	625	14	4	2	combination	1	6	7	—	medium
Lecheler et al. (2015)	278	42	4	3	repetitive	1	13	14	14	medium
Matthes & Schemer (2012, study1)	236	10	2	2	competitive	10	—	—	—	—
Slothuus (2010)	1,636	77	11	1	—	7	7	7	7	—
Tewksbury et al. (2000)	510	21	2	2	—	21	—	—	—	—
Vishwanath (2009)	129	7	2	2	—	7	—	—	—	medium

Note: 1 Time elapsed between exposure and last delayed post-test measure; in days.

2 Number of sessions within experiment (e.g., either post-test only or post-test in combination with stimulus exposure, or only stimulus exposure).

3 Number of measurements DV per participant.

4 Multiple frame exposures; competitive (multiple exposure to competitive frames) or repetitive (multiple exposures to repetitive frames); combination (both competitive and repetitive exposures).

5 Time between t1 and t2; Inter2=t2 → t3, Inter3=t3 → t4; Inter4=t4-t5; in days.

6 Effect duration was divided in three categories according to the conclusion made by the authors as to how effects could be conceptualized: short (effects do not last), medium (effects have potential to be lasting), and long (effects are lasting); only coded if directly discussed in text (e.g., in conclusion section).

of trait/perception measures) or as manipulated within the experimental study design. Conceptually, scholars take two approaches towards testing what moderates the persistence of news framing effects. Some test if the duration of news framing effects depends on (a) multiple frame exposure scenarios (competitive/repetitive framing; frames with varying degrees of facts/information; self-selection of frames; $n = 9$), whereas others test how duration is influenced by an individual's state or trait (b) information-processing ($n = 5$).

Complex Frame Exposure Scenarios

Framing experiments including multiple news frame exposure scenarios mimic real-world media exposure. These studies can be classified into those testing the effects of (a) competitive or (b) repetitive exposure over time. Results from these studies provide convincing evidence as to how multiple frame exposure changes news framing effects: Studies focusing on competitive framing often conclude that news framing effects persist beyond initial exposure, but are relatively easily altered, sometimes only one day later, by competitive exposure (Chong & Druckman, 2010; Lecheler & de Vreese, 2013). Thus, most authors conclude that the relevance of news framing is limited by recency effects or the idea that opinions are often shaped by the latest frame an individual has been in contact with. The extent of recency depends on a frame's strength or power in changing opinions. This mechanism depends on individual-level information processing, which is discussed below.

Studies focusing on repetitive framing are less conclusive but suggest that repetitive news frame exposure strengthens the framing effect to some extent, perhaps because repetition causes an increase in attitude certainty (Druckman et al., 2012) or leads to actual longer-lasting effects (Lecheler et al., 2015). Some studies conceptualize multiple frame exposures in terms of 'pre-treatment effects'—news frame exposure prior to experimental treatment (Druckman & Leeper, 2012). In doing so, they offer insights as to how the magnitude of news framing effects produced in experimental studies may be interpreted. Also, Druckman et al. (2012) manipulate the extent to which media exposure is forced within their experiment, allowing participants to choose themselves which news frames they are exposed to over time. Results show that studying frame repetition over time matters, because participants tend to repeatedly choose attitude-consistent frames.

Information Processing

There is a group of studies focusing on the influence of online vs. memory-based message processing on framing effect duration ($n = 4$; Druckman et al., 2010). Generally, these studies demonstrate that online processors exhibit longer-lasting framing effects, because these individuals are able and willing to integrate a frame into their memory to be used at a later point in time. In a similar fashion, Matthes and Schemer (2012) find that framing effects on

Table 1.3 Individual Level Moderators of the Duration of Framing Effects

<i>Study</i>	<i>Moderator</i>
Boydston & Ledgerwood (2013)	—
Chong & Druckman (2010)	competitive frame exposure ² online/memory-based processing (need to evaluate) ¹
Chong & Druckman (2013)	competitive frame exposure ² online/memory-based processing ²
De Vreese (2004)	—
Druckman & Leeper (2012, study1)	online/memory-based processing ²
Druckman & Nelson (2003)	—
Druckman & Bolsen (2011)	—
Druckman et al. (2010)	online/memory-based processing (need to evaluate) ¹
Druckman et al. (2012)	competitive frame exposure ² repetitive frame exposure ² information search behaviour ²
Lecheler & de Vreese (2011)	political knowledge ¹
Lecheler & de Vreese (2013)	political knowledge ¹ competitive frame exposure ² repetitive frame exposure ²
Lecheler et al. (2015)	political knowledge ¹ repetitive frame exposure ²
Matthes & Schemer (2012, study1)	opinion certainty ² competitive frame exposure ²
Slothuus (2010)	partisanship ¹ issue beliefs ¹
Tewksbury et al. (2000)	—
Vishwanath (2009)	—

Note: 1 Measured at baseline (e.g., as trait/perception).

2 Manipulated in study design; only hypothesized, framing- and duration-related moderators; excludes “control variables” as moderators.

opinions paired with strong opinion certainty are less likely to be cancelled out by a competitive news frame than those paired with low opinion certainty. Another cluster of studies (Lecheler & de Vreese, 2011; $n = 3$) argues that the duration of framing effects depends on political knowledge. Results suggest that individuals with moderate knowledge will display the most persistent news framing effects, because they are most likely to integrate a news frame into their long-term memory. An exception to the focus on information processing is presented by Slothuus (2010), who shows that frame susceptibility is moderated by partisanship and issue beliefs—albeit within a natural quasi-experimental design.

In sum, the available research provides a comprehensive view of how duration of news framing effect is moderated by multiple frame exposures and information processing (RQ3). Competitive framing diminishes the influence of news frames—framing is susceptible to strong recency effects depending on how strong a news frame is. Repetitive framing leads to (somewhat) stronger news framing effects. Individuals who are online processors and those with high opinion certainty show greater opinion stability, which means longer-lasting effects. Also, those with moderate levels of political knowledge display the most durable news framing effects.

Lasting? Or Not? (RQ4)

We also examined if scholars themselves judge their framing effects as short-, mid- or long-term. Table 1.2 contains an overview of judgments found in the analyzed manuscripts. Almost all studies included in this analysis find news framing effects to last beyond initial exposure, but most authors are careful in producing clear statements as to the relevance of their results for political decision-making over time. Four studies characterized their effects as short-term or not lasting. For instance, de Vreese (2004) did not find a significant framing effect two weeks after initial exposure and concludes that framing effects are short-term. A second group of studies concluded that their effects were moderately durable, meaning that some effects may persist while others vanish ($n = 4$): Vishwanath (2009) studied the impact of news framing on technology adoption over time and posits that “framing effects attenuated over time” when it came to behavioral intent, but that effects did “persist” over time when it came to the influence of frames on beliefs (p. 197).

A third group of authors argues that their effects are long-lasting. For instance, Lecheler and de Vreese (2011) note that their effects were “surprisingly resistant to dilution,” with substantial news framing effects two weeks after news frame exposure (p. 975). Notably, however, authors that did not test for moderators of duration are most willing to define effects as short- or long-term (or as relevant or not relevant for real-life politics and decision-making), whereas those testing for moderators produced more nuanced judgments. Importantly, Druckman et al. (2012) posit that news framing effect experiments should, in addition to over-time designs, also relax conditions of forced exposure within their experimental designs. Their first results illustrate that individuals will retreat to attitude-consistent news if given a choice. This has additional implications for how realistic framing effects from previous experiments actually are.

Overall, we find that most authors are cautious in their view of how long news framing effects last (RQ4). Yet, with increasing empirical data and growing insights into the dynamics of media use over time, effects seem to become smaller and less persistent. Empirical evidence also suggests that repetitive exposure to news frames causes stronger or lasting effects, and that frames still impact decision-making later on. This at least somewhat supports the idea of a powerful news framing effect.

Conclusion

The goal of this review was to provide a first and systematic answer to the question how long news framing effects last. Our results show that available longitudinal framing studies have already produced an important body of work. In sum, our review suggests the following:

- Theoretical premises (RQ1) of over-time studies are relatively homogenous. Most studies compare the effects of pro or con frames on opinions and find initial strong news framing effects. So far, results suggest that types of frames (e.g., generic vs. issue-specific) do not influence duration. There is data that shows, however, how negative news frames can have longer-lasting effects than positive news frames. Also, those studying salient political issues seem to report shorter-lasting framing effects compared to those focusing on non-salient issues. Similarly, we suggest that the duration of framing effects on dependent variables such as behavioral intentions or emotions should be similar to that on opinions. Yet, further study is required to show if this is actually the case.
- Experimental designs (RQ2) are typically full experimental survey designs using non-student samples and textual framing stimuli in the form of newspaper articles. Many studies test effects across two weeks, with only a few employing time delays below or above this average. Our review suggests that most studies do not emphasize how long in days or weeks exactly an over-time framing effect lasts. Also, studies provide little or no detail as to why a specific time span in a longitudinal experiment was chosen.
- The duration of news framing effect is moderated by multiple frame exposure and information processing (RQ3). Competitive frame exposure shows that recency effects dominate framing effects. Repetitive framing leads to stronger effects and greater attitude certainty. Online processors and those with high opinion certainty show greater opinion stability after a framing effect. Also, moderate levels of political knowledge lead to the most robust framing effects. There is so far no evidence on how other moderators of framing effects, such as values, beliefs, and emotional states and traits, influence duration.
- Most authors are careful when predicting how long their news frames last and if they are 'relevant' for real-life politics (RQ4). With increasing empirical data regarding the complexities of real-life media use, effects seem to become smaller and less durable. But, our review also shows that repetitive or pre-treatment exposure to news frames still to some extent impacts decision-making later on, which supports the idea that experiments can provide a useful picture of real-life mediated communication effects.

We appreciate that the focused nature of this study has provided us with both a US/European-biased sample and a small number of studies to review.

Our focus on experiments also renders it beyond the scope of this article to present an in-depth discussion of the benefits of experimentation in framing effects research versus other research designs, such as panel survey in combination with content analyses. We consciously tried to uncouple the studies discussed in this review from panel survey studies, simply because their claim for causality and their methods are different. We encourage future studies to not lose sight of existing and continuing threats to ecological validity in media effects research.

Future Research Agenda

Based on this review, we identify a number of future avenues for research on the duration of news framing effects. These are particularly important given the restricted number of studies available for our review at this point in time.

Compare News Frame Types

Framing experiments have tested longevity using a variety of issue-specific and generic news frames. What has been left untouched is the question if there are types of frames that differ across the board in how long they impact individual opinions, attitudes and behaviors. For instance, one could assume that episodic news frames, which have been shown to elicit stronger news framing effects due to their emotive qualities (Aarøe, 2011), might also lead to longer-lasting framing effects than thematic frames. Along the same lines, human interest or conflict frames might have substantially different effects over time (see Semetko & Valkenburg, 2000). For those interested in issue-specific news frames, we suggest that there could be differences at the issue-level. Our review suggests that issue saliency will impact duration, and there could be other important issue dimensions, such as issue contestation, framing within media hypes, and the connection between an issue and certain political values. Combinations of issue-specific and generic frames might also yield new insights as to the effects of competitive and repetitive frame exposure over time.

Test Visual Framing Effects

This review shows that almost all repeat-measure framing studies operated with textual, newspaper-style experimental stimuli. However, there is reason to believe that effects of textual information substantially differ from that of audio-visual stimuli (Geise & Baden, 2014; Messaris & Abraham, 2001; Powell, Boomgaarden, de Swert, & de Vreese, 2015). There is increasing interest in studying visual framing via qualitative and quantitative content analyses, and future studies can learn from other fields such as visual argumentation in their theoretical and methodological set-up (cf. Cloud, 2004; Greenwood & Jenkins, 2015; Smith & McDonald, 2011). These content analyses show different categories of visual representation in the news media that may be

used in experimental studies. Along the same lines, studies using related theoretical approaches, such as persuasion and learning (Jackob, Roessing & Peterson, 2011), have plotted the effects of visuals. These studies should be followed up by evidence from framing research and in particular by studies using longitudinal research designs.

Also, there are suggestions that using visual rather than textual stimuli in framing experiments is more theoretically rigorous. Scheufele and Iyengar (in press) suggest that framing researchers move away from emphasis frames towards equivalency frames, and that they operationalize these frames by using visual cues. They point out that visual cues make up a majority of our daily media use and that visual stimuli offer researchers greater control as they allow for the clean variation of specific factors of a frame in an experimental setting.

Specify Results by Introducing Shorter Time Spans

The available studies test longevity across a time span of approximately two weeks. While an obvious extension might be to also examine framing effects across longer time spans, we also suggest the introduction of shorter delays. Shorter delays between frame exposure and re-measurement could be particularly insightful for those studying affective variables and arousal as a result of news framing. Also, shorter time spans allow for the inclusion of psychophysiological measures within laboratory designs. By studying bodily responses to news frame exposure, researchers may be able to disentangle the psychological processes that lead to (lasting) news framing effects. Studies might make use of both methodological as well as theoretical insights from neuroscience and psychology (cf. de Martino, Kumaran, Seymour, & Dolan, 2006).

Culture as a Variable

Many existing studies on duration are conducted within the United States or Western Europe. None of them takes an intercultural or comparative view on effect duration (see van Gorp, 2007). This is surprising, given the fact that the persistence and strength of media effects by no means only depends on individual level moderators, but is likely also related to media landscapes, the journalistic style of a country and the national salience of a political issue (Esser, Strömbäck, & de Vreese, 2012). Comparative research designs have the ability of showing if the information environment of news frames affect the duration of effects (Schuck et al., 2013).

Diversify Dependent Variables

Almost all framing studies in our review tested news framing effects on opinions. While testing effects on (public) opinion is at the center of understanding how news work within political discourse, this still leaves a big gap. The study of news

framing effects over time offers the possibility to introduce measures of actual behavior and decision-making into experimental designs. This may happen both in a laboratory and online. For instance, in laboratory experiments, over-time designs allow for the observation of information searching and selection behaviors after frame exposure. When conducting research online, follow-up surveys could contain a variety of measures addressing real behavior between frame exposure and re-measurement. Beyond behavior, there is also the need to further study the role of emotions in the duration of news framing effects.

Go Beyond Information-Processing

We also suggest diversification regarding the individual-level moderators of the duration of news framing effects. There is plenty of evidence on moderators of immediate news framing effects (Borah, 2011). At the moment, information processing is the number one determinant of how well framing effects persist over time. However, duration might also depend on emotional states or mood when encountering a news frame (Druckman & McDermott, 2008). Also, how well a news frame corresponds to pre-existing values, beliefs and ideology is likely to influence duration, as will a range of personality traits from the psychological literature (Blais & St-Vincent, 2011; Blickle, 1996; Hastie & Kumar, 1979). Lastly, variables that are popular in public opinion research, such as partisanship, previous voting behavior, and cynicism should be tested when predicting framing effect duration (e.g., Schuck & de Vreese, 2012).

Use Real News Coverage as Stimulus Material

All but one study analyzed in this paper used constructed rather than actually published news material as a stimulus. The constructed news media stimuli often contained real facts, and the frames applied in them were obtained in preceding content analyses or pilot studies. Only Slothuus (2010), whose study is based on a natural experiment, taps duration of effects on real-life media reporting. Given that longitudinal framing studies are designed with the goal of increasing external validity, future studies should consider the possibility of using actually published news material as stimuli. This approach, naturally, is limited in that control for pre-treatment effects to published material is decreased (e.g., Druckman & Leeper, 2012). However, the use of actual news content may substantially increase awareness among framing scholars as to the actual complexity of news framing effects.

In sum, our results show that, even though the available studies stem from different academic fields, they are remarkably similar in their approach towards studying framing effects over time. This entails that many determinants of the duration of framing effects are still untested. We thus view this article not as a final account of the question posed in its title, but as an invitation for future research and the better integration of the variable ‘time’ into current theoretical models.

Notes

- 1 Parts of this introduction to framing theory have been derived from Lecheler (2010) and de Vreese and Lecheler (2012).
- 2 We searched databases such as Web of Science and web search engines such as Google Scholar; we consulted journals within mass communication research, e.g., *Communication Research*, *Communication Monographs* and *Journal of Communication* as well as journals in psychology and political science (e.g., *The Journal of Politics*, *American Journal of Political Science*); we contacted the authors of some of the articles (e.g., JD; DT), but also other experts in framing research (e.g., JM).
- 3 The second coder was one of the authors.
- 4 *Percentage*: General characteristics = 1.00; theoretical approach = .83; measurement of duration = 1.00; moderators = .66; duration according to authors = .66. *Cohen's kappa*: General characteristics = 1.00; theoretical approach = .77; measurement of duration = 1.00; moderators = .55; duration according to authors = .50.

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