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What a difference a day makes? The effects of repetitive and competitive news framing over time

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What a Difference a Day Makes?

The Effects of Repetitive and Competitive News Framing Over Time

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Abstract

Based on a "classic" framing experiment (n=1,324), this study empirically mimics the dynamic nature of framing effects over time. We integrate (1) multiple frame exposures as well as (2) various tests for duration of framing effects into our study design. Our results show that exposure to repetitive frames does not systematically strengthen effects on opinion formation. However, effects can get stronger when the delay between two exposures is short. Competitive news framing is characterised by recency effects; i.e. the latest frame has the strongest impact on opinion formation. Political knowledge functions as a moderator for both effect mechanisms. Participants with higher levels of political knowledge are less prone to recency effects, but show stronger signs of a cumulative framing effect. The results of this study have important methodological and substantive ramifications for framing effects research, as well as for our understanding of the real-life impact of framed media messages on opinions.

Keywords: framing effects, duration, multiple exposure, political knowledge, moderator, experiment

Introduction

How valuable are existing results in news framing research in terms of their real-life adaptability? A majority of framing effect studies *do* emphasize the relevance of their results for actual politics or political communication (e.g., Berinsky & Kinder, 2006; Nelson, Oxley, & Clawson, 1997; Valkenburg, Semetko, & de Vreese, 1999). The substantive and methodological foundations of such conclusions are, however, often unclear. So far, only a fraction of studies have actually empirically assessed the persistence of their results in a real-life context.

This does of course not invalidate existing studies. Framing studies have provided a solid theoretical and empirical foundation from which future studies can depart to evaluate how "the apparent variability of opinion as a function of the framing of an issue" must be understood (Sniderman & Theriault, 2004, p. 145). In recent years, researchers have begun to consider tests of the *duration of effects* as one of the many developments necessary for the future study of framing effects (e.g., de Vreese, 2004; Druckman & Nelson, 2003; Tewksbury et al., 2000). Only by investigating duration, goes the argument, can we make convincing statements about the significance of existing findings, and refute criticism of the "value" of framing theory for politics and political communication (Gaines, Kuklinski, & Quirk, 2007; Tewksbury & Scheufele, 2009).

Recently, we suggested that framing effects evoked by a single news frame can be relatively persistent, with visible effects even a full two weeks after exposure (AUTHORS, 2009a). These results support claims of the real-life applicability of framing effects (see also Tewksbury et al., 2000). However, they have also opened up a plethora of new questions on the role of framing effects in a dynamic media use scenario. Consequently, we propose a more advanced account of the duration of framing effects. Following claims by Gaines et al. (2007) and others, in this study we measured effect duration across a number of delayed time

points. However, we also enriched our design with multiple frame exposures over time, some repetitive, others competitive in nature (e.g., Sniderman & Theriault, 2004). In doing so, we mimicked a dynamic media use scenario, and moved one step further in the direction of a more "realistic" study of news framing (see also Chong & Druckman, 2008).

Our theoretical framework takes its starting point in the psychology of framing effects, and the influences of repetitive and competitive exposure on framing effects. We then combined these insights with recent results on the duration of framing effects. Embedded in a "classic" framing experiment, we tested the magnitude of a framing effect immediately and at four delayed time points. In addition, we investigated the effects of re-exposure to either a repetitive or a competitive news frame. We also assessed the conditionality of the effects, in particular the role of political knowledge as a moderator. It is our aim to advance the temporal dimension in framing research. For too long, framing effect studies have relied on the mere assumption that their results can be generalized and used to make predictions about real-life politics.

The Effects of Repetitive and Competitive News Framing

Investigating news framing effects is fascinating, because it offers the researcher a tool to explain why "(often small) changes in the presentation of an issue or an event produce (sometimes larger) changes of opinion" or other outcome variables (Chong & Druckman, 2007a, p. 104). Framing scholars have undertaken considerable effort to produce a coherent theory of framing effects (e.g., Chong & Druckman, 2007a; Entman, 1993; Scheufele, 2000). Frames can be defined as patterns of interpretation that are used to classify information and process it efficiently. Frames thus stress certain aspects of reality and push others into the background, they have a selective function. In this way, certain attributes, judgments, and decisions are suggested (e.g., Scheufele, 2000).

Scholars often take a rather microscopic view of the influence news frames have on how citizens make sense of politics. This means that, in their design, these studies successfully measure the effects of only *one* frame at a time (e.g., Nelson et al., 1997). Building on this strong empirical foundation, which illustrates the "existence" of the framing effect mechanism, a necessary next step is to evaluate the "meaning" of such an effect in a setting that adheres to the dynamics of day-to-day news use. This means that, while extant studies have provided strong a strong empirical foundation, framing research has yet to deliver a satisfying account of the role of news framing *within* the flow of political communication in a country, or between different news outlets, where the dynamics of argumentation, dispute, and consensus are the order of the day. Such an endeavor can build upon existing research in neighboring disciplines, such as the on the work of Zaller in persuasion (1992, 1996)[1]. Zaller developed a comprehensive model for the effects of dynamic media communication flows on opinion formation, where the media only have a substantial effect when their content is repeatedly presented in one consistent way; i.e. it must be *one-sided* (see also Noelle-Neumann, 1973; Peter, 2004). *Two-sided information*, the exposure to competing and conflicting messages, leads to an annulment of potential media effects (see also de Vreese & Boomgaarden, 2006a). Applying this to framing research, frame flows can thus involve the (1) *repetition of* and (2) *competition between* news frame messages over time. The outcome of these two is likely to vary. The existing framing literature offers a number of explanations for the psychological mechanisms that may underlie these different effects.

Repetitive exposure to news frames is addressed regularly in the literature[2]. A number of scholars have more or less explicitly argued that repetitive news framing leads to stronger effects by causing higher and more constant levels of *accessibility* of framed or applicable considerations (e.g., Iyengar, 1991; Price & Tewksbury, 1997; Cappella & Jamieson, 1997;

Nabi, 2003). This argument is based on the psychological literature, which sees repetition as one of the major determinants of strong and stable attitude change (e.g., Holland, Verplanken & van Knippenberg, 2003). Specifically, Price and Tewksbury (1997) argue that framing effects are predominantly based on *applicability* effects, that is, the creation of new linkages between certain considerations that are highlighted by news frames. However, if a framing effect has taken place, repetition of the news frame heightens the accessibility of the now applicable information, and thus guarantees the strong influence of a frame on a long term basis as well. In anticipation of future research designs, the authors argue that "when particular constructs become subject to routine activation and use over time, via applicability and accessibility, then there is certainly the potential for long-term and perhaps cumulative effects" (p. 199). Similarly, Iyengar (1991) found that, at least in politics, people rely most on information that is continuously made accessible to them in the news media (see e.g., Cappella & Jamieson, 1997; Nabi, 2003). However, it is important to note that there is evidence that stronger effects by repetition are limited by "individual evaluations of the quality of a frame" (Chong & Druckman, 2007b, p. 651). Consequently, heightened accessibility certainly increases the likelihood of stronger framing effects, but depends on how applicable a frame is to the individual in the first place (e.g., Baden, 2009; Matthes, 2007).

Competitive news framing has received substantial attention in the framing literature, possibly because the study of dispute and dissent is one of the most fascinating aspects in political communication research (Neuman, Just, & Crigler, 1992). As elucidated above, in persuasion Zaller (1992, 1996) argued that exposure to two-sided information should lead to the obliteration of media effects, as conflicting measures simply cancel each other out. Several framing scholars have applied and tested this proposition. Sniderman and Theriault (2004) included one additional condition in their experimental design, where two competing

news frames were presented at the same time. Results indicated that competitive framing increased the influence of personal beliefs and therefore decreased the effects of news framing (see also Hansen, 2007). These findings indicate a strong connection with the basic principles of motivated reasoning (Chong & Druckman, 2007a; Druckman & Bolsen, 2009), where the so-called "disconfirmation bias" stands as a central mechanism that "protect[s] or even bolster[s] … prior attitudes and beliefs in the face of discrepant evidence" (Taber, Cann, & Kucsova, 2009, p. 138; see also Kunda, 1990; Taber & Lodge, 2006).   Chong and Druckman (2007b, p. 651) elaborate on these findings, and examine the effects of competitive framing with frames of varying strengths.[3] They show that competitive framing "tend[s] to stimulate individuals to deliberate on the merits of alternative interpretations", which increases the potential of rejecting "weaker" or less applicable frames in communication.

Framing research has, thus, explored the influences of repetitive and competitive news framing on the magnitude as well as the process of framing, and has shown that repetitive framing has the potential to cause strong framing effects, whereas competitive framing may muffle these effects and lead to a return to extant personal beliefs and values as the foundations of individual attitudes. Yet, the results of repetitive and competitive news framing studies based on one-shot experimental settings, where the magnitude of the framing effect was tested only *immediately* after exposure to a frame. The robustness of the effects over time in light of continuous exposure to repetitive or competitive framing remains an open question.

Dynamic Framing Effects over Time

What happens when multiple news frames are presented sequentially, across longer stretches of time? What role does the length of the period between two frame exposures play? There are a small handful of studies that investigate the duration of framing effects by exposing participants to one strong news frame, followed by one immediate and one delayed measurement (e.g., Druckman & Nelson, 2003; de Vreese, 2004; Tewksbury et al., 2000).

Noticeably, very little reasoning for the exact length of the chosen interim period is provided in these studies. Moreover, there seems to be one group of researchers that concluded that framing effects dissipate quickly (e.g., de Vreese, 2004; Druckman & Nelson, 2003), whereas a second group argued that framing effects can be persistent over time (e.g., Tewksbury et al., 2000; AUTHORS, 2009a). For instance, Tewksbury, Jones, Peske, Raymond, and Vig (2000) find that news frames have a curbed, yet still significant, effect on audience perceptions of a political issue a full three weeks after exposure. Druckman and Nelson (2003) report, conversely, that the framing effects they found had dissipated only ten days after initial exposure (see also Chong & Druckman, 2008). De Vreese (2004) also suggests that framing effects perish quickly with effects being muted after two weeks, even in—or possibly because of—the almost total absence of related elite information in the interim period. What is important to note is that none of the existing studies specifically discuss why and when a framing effect would be persistent *enough* to be called "lasting" as opposed to "transitory" or "fleeting" (see Gaines et al., 2007). We argue that, in general, one may want to question the quality of a lasting or non-lasting news framing effect, if this result only holds in the vacuum of a single exposure.

Based on the given assumptions regarding the effects of repetition on the framing process, we can assume that a sequence of repetitive frames over time functions to some extent as a multiplier of effects, if the supplied frame is applicable to the respondent (e.g., Price & Tewksbury, 1997). Yet, in light of frame exposure over longer periods of time, we must also take into account the expected rate of decay of accessibility as a central process. Repetition can thus not work as a pure multiplier over time. Assume that any steady flow of consonant news framing includes a "dry spell" during which no exposure takes place. How does such a gap in exposure affect the expected influence of repetition on a framing effect? According to Feldman and Lynch (1988), accessibility dwindles quickly, depending on how

much time has elapsed since the last activation, and how familiar an individual is with the repeated message already. Departing from the idea that, in politics, previous exposure to political issues is likely to be limited (aside from a small number of highly contended issues), and that political attitudes tend to be volatile (Zaller, 1992), we can assume that the longer the time elapsed between one and the next exposure to a news frame, the weaker the accumulative effect of repetition. Thus, strong effects through repetition are limited by the time that elapses between two exposures (Zaller, 1996).

In sum, given the paucity of empirical findings on this question, we can tentatively hypothesize that repetition will play a role in reinforcing but also in strengthening an effect, but that this mechanism is limited by the delay between two news frame exposures. Yet, we cannot argue a specific curve for these cumulative effects. Thus, our first hypotheses read as follows:

H1a: If an individual is repeatedly exposed to the same news frame over time, initial framing effects get stronger. [accumulation hypothesis]

H1b: This accumulation effect is stronger, the shorter the interim period between two exposures is.

Research on the effects of competitive framing has focused on how the presentation of two contradictory news frames at the same time changes the magnitude and process of framing effects (e.g., Sniderman & Theriault, 2004). Studies in the field have shown that competitive framing leads to the dampening of effects, as individuals tend to rely on personal beliefs and values when confronted with conflicting information. Thus, competition leads to a diminishing of applicability effects, the establishment of new links between available belief considerations. Along these lines, only news frames with very high levels of applicability produce significant effects in competitive environments (Chong & Druckman, 2007b). What role does competitive framing play when frames are presented across longer periods of time?

Chong and Druckman (2008) pioneered the temporal competitive exposure approach to news framing research. The authors combined one re-test after three weeks with exposure to different competitive news frames over time. They showed that the traditional characteristics of competitive framing, increased deliberation on the issue and a decrease of media influence, do *not* apply to competitive framing over time. On the contrary, "when competing messages are received at different points in time, there is no assurance that individuals will deliberately evaluate the opposing arguments" (p. 30; see also Matthes, 2010). However, they also argued that individuals who are prone to on-line processing[4] show a great amount of inertia, and such flimsy effects are then less likely to occur. Yet, early learning and the retrieval of an extant evaluative judgment at a later point in time are also susceptible to the principles of forgetting. Their findings and the authors themselves do thus point to one of the more prominent findings in the psychological literature on memory and knowledge: that of serial position effects, where the first (primacy effect) and the last item (recency effect) in a list are more dominant in recall than items placed in the middle (see e.g., Howard & Kahana, 2002; Murdock, 1962; Neath, 1993). Results stemming from neighboring disciplines such as persuasion confirm the dominance of recency effects in communication, where the latest media exposure shapes attitudes and behavior more strongly (e.g., Carlson & Russo, 2001; Haugtvedt & Wegener, 1994).

Given these first empirical findings, we can assume a dominance of recency effects for sequential competitive news framing. Taking diminishing accessibility into account, we also assume that this recency effect is stronger the further apart in time the two exposures are. Yet, again, we are not able to argue specific time spans for this mechanism. We formulated the following hypotheses:

H2a: If an individual is exposed to competing news frames over time, the most recent frame will be more influential on opinion. [recency hypothesis]

H2b: This recency effect is stronger, the longer the interim period between the two exposures is.

Political Knowledge as a Moderator of Framing Effects over Time

A key aim of framing effects research is the specification of the conditions under which framing effects take place, and the determination of which variables either enhance and which limit them (e.g., Druckman, 2001; Lecheler et al., 2009; Shen & Edwards, 2005). Political knowledge has emerged as an important moderator of susceptibility to framing effects (e.g., Cappella & Jamieson, 1997; Price, Tewksbury, & Powers, 1997; AUTHORS, 2009b). Yet, evidence of the role of political knowledge within the framing process is divided. Some scholars suggest that less knowledgeable individuals are more susceptible to framing effects, because of their inability to counter-argue a framed message (e.g., Haider-Markel & Joslyn, 2001; Kinder & Sanders, 1990; Schuck & de Vreese, 2006). Other studies argue that only knowledgeable individuals can be affected by news framing, because they possess the adequate mental stockpile to understand and process a framed message (e.g. Druckman & Nelson, 2003; Nelson et al., 1997).

We find that these findings are not necessarily divergent. Rather, the differentiation between effects on high and low knowledge individuals points to different ways of processing a framed message: Traditionally, framing is perceived to be mediated by belief importance change; i.e. by shifting the weights of available and accessible considerations (e.g., Nelson et al., 1997). Naturally, this conception of framing effects requires the availability of a great number of belief considerations, which points to the abilities of more knowledgeable individuals. High knowledge individuals possess a wider variety of available considerations, and can process and integrate framed considerations more quickly and efficiently (e.g., Druckman & Nelson, 2003). However, it is also important to note that high levels of

knowledge are directly related to strong attitudes, which can obliterate media influences (e.g., Haider-Markel & Joslyn, 2001; Lecheler et al., 2009).

How is this relevant for understanding the effects of news frames over time? It is the above function of political knowledge as a *processing variable* that matters for this study. Based on the above, we can assume that individuals with higher levels of knowledge will display stronger framing effects when repetition takes place: If these individuals are framed, they are able to *integrate* a continuous communication flow into their mental stockpile quickly. With a wider range of available belief considerations, knowledgeable individuals are also able to associate and embed a frame more easily. We can thus predict the following:

H3: The cumulative effect of repetitive news framing is stronger for high knowledge individuals. [moderated accumulation hypothesis]

For competitive news framing, we predict that individuals with lower levels of political knowledge will display more susceptibility to a recency effect, because of their inability to integrate and thus counter-argue a framed message. Knowledgeable individuals, however, will base a later judgment predominantly on the earlier frame encounter, and are therefore less prone to recency effects (e.g., Chong & Druckman, 2008; Haugtvedt & Wegener, 1994). We carefully predict:

H4: The recency effect of competitive framing exposure is stronger for low knowledge individuals. [moderated recency hypothesis]

Method

To investigate the effects of repetitive and competitive news framing over time, we conducted an online survey experiment with five measurement points among a representative sample from COUNTRY. As a research subject, we chose the issue of the enlargement of the European Union (EU). Specifically, we tested news framing effects on support for the economic development of the EU's two newest members, Bulgaria and Romania. Unlike

previous EU enlargements, the entry of Bulgaria and Romania into the EU in January 2007 received relatively little media attention – a fate shared by many EU issues (e.g., de Vreese, 2004). This made our experimental design easier to put into practice, because pre-treatment exposure to one of our frames was relatively unlikely (e.g., Chong & Druckman, 2008) and the media coverage in the interim post-exposure periods was limited (e.g., de Vreese, 2004). Yet, we must note that EU issues, particularly when linked to economic consequences, are highly relevant to EU citizens, which guarantees the relevance of our study design. In our study, we first established whether a news frame had a significant immediate effect on our dependent variable opinion. Second, we allocated our sample into subgroups, and traced the effects of repetitive and competitive framing across four delayed measurement points. Third, we tested the influence of political knowledge on these effects across the groups and across all delayed time points.

General Design

In a single-factor, post-tests only, between-subjects experimental survey design, we initially randomly assigned participants to one of two conditions. These conditions represented two alternative versions of a popular generic news frame, the "economic consequences" frame[5]. Specifically, one frame pointed out various *opportunities* Bulgaria and Romania presented to the EU market. The second frame emphasized a number of relevant *risks* the two new EU countries poses for the EU market (see also Schuck & de Vreese, 2006). The use of alternative versions of one generic frame ensures commensurability of the effects across conditions. However, external validity in our study is high, as both the opportunity and risk version of the economic consequences news frame are to be found in real political news coverage on EU integration and enlargement (e.g., Neuman et al., 1992; Schuck & de Vreese, 2006; Semetko & Valkenburg, 2000).

Our design also required participants to be assigned to a frame exposure scenario (repetitive, competitive, single/no re-exposure). We used single exposure as our "control" condition; participants in this group received only one frame at t_1. To create a clean experimental design, each participant was only tested at a maximum of two points in time. This means that, after being tested immediately after a first exposure (t_1), participants were split up into "time groups" and each participant was assigned to only one additional delayed measurement point: after 15 minutes (t_2), one day (t_3), one week (t_4), and two weeks (t_5). This procedure left us with an overall count of 24 experimental conditions (for an overview, see Appendix C). We made sure that each delayed time group contained an equal number of participants for each condition. During the delayed post-test sessions, participants were re-interviewed on the basis of the same measures that were used in the immediate post-test.

Interim Period

We included a number of variables to control for any intervening influences that might have occurred during the interim period between the first and second measurements. In addition to a number of deflective "filler" questions, the delayed post-test questionnaires used at t_3, t_4 and t_5 also contained measurements of issue-specific media exposure during the interim period. Results showed that participants had been exposed to a minimal level of issue-specific news pieces during their respective interim period (only six percent of all participants had been exposed to issue-specific news[6]). Second, we asked participants how much attention they had paid to news about Bulgaria, Romania and the EU during the interim period (1= "no attention" to 4 = "a great deal of attention"). This measurement revealed that participants paid very little attention to related news (*M*=1.26, *SD*=.61). 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 4= "I discussed it quite a number of times"). Our findings suggested that hardly any participant had discussed the issue (*M*=1.16, *SD*= .57). Lastly, we

conducted a content analysis of all major print media in COUNTRY during the interim period. The results of the interim content analysis showed that there was virtually no news coverage about the issue during the data collection period.[7]

Sample

COMPANY recruited a total of 1,324 individuals (44.8% female, aged between 16 and 92 [M=51.20, SD=15.68]) from their representative database consisting of approximately 2,000 households across COUNTRY[8]. Recruitment into the company's database was done using phone, online and face-to-face contacts. Members of their panels are contacted on a regular basis via an online survey tool and are offered incentives for completing online questionnaires on their home computer. The average response rate for t_1 was 54 percent (AAPOR RR1). The recontact rate for the sample for t_2 was 87 percent (n=241), for t_3 60 percent (n=484), for t_4 82 percent (n=320), and for t_5 79 percent (n=279).

Procedure

The experimental procedure consisted of three main steps per participant: First, all participants completed an online pre-test survey, including questions relating to media use, prior attitudes, and political knowledge. Following this, participants were exposed to one news article containing either of the two economic consequences frames. Then, all participants received the online t_1 post-test questionnaire, containing a manipulation check (see below) and stating the dependent variable.

In the next step, each participant was assigned to a re-exposure group (repetitive, competitive, single/no re-exposure). Also, we divided all participants into several post-test groups (t_2 to t_5). This was done to ensure that no participant would be tested at more than two points in time. We chose this procedure to guarantee a comparable experimental setting, independent of the length of time that had passed between the two exposures (e.g., McDermott, 2002). At completing the t_1 questionnaire, each participant was informed that he

or she would be contacted one more time for the purpose of a follow-up study. Participants

did not know that they would be asked the same questions again in this follow-up. The

delayed repetitive or competitive news frame manipulation and post-test (at t_2 to t_5) were then

conducted after the respective delay. Participants in the single exposure group did not receive

an additional news frame. Following the delayed post-test, all participants were debriefed.

A between condition randomization check on age, gender and occupation performed

at the outset of the analysis revealed successful randomization with no between-group

differences for the overall t_1 group. Additional randomization checks for each of the delayed

post-test groups (t_2 to t_5) also showed successful randomization for these subgroups.

Conditions also did not differ with respect to our pre-intervention moderator variable of

political knowledge[9].

Stimulus Material

The stimulus material consisted of one news article per condition at t_1 and one

additional news article at t_2 to t_5 for the repetitive and competitive treatment conditions. The

news articles each contained one version of an economic consequences frame, varied to

express either the *opportunities* or the *risks* of having Bulgaria and Romania as new EU

member states within the EU market (see Appendix A). Articles thus varied both in their

arguments and in evaluative direction. Specifically, we manipulated an article about

investment in the Bulgarian and Romanian market after the countries' accession in 2007.

Given the design of the study, it was better to use constructed rather than actually published

news material, as the use of real news coverage would have minimized the commensurability

across conditions. We made sure to choose a research issue which can logically be presented

in terms of economic consequences, which is the case for EU enlargement (e.g., de Vreese,

Peter, & Semetko, 2001; Semetko & Valkenburg, 2000). We undertook considerable effort to

adjust the news articles to the common lay-out and journalistic style of day-to-day

COUNTRY news coverage. Following the example of other studies, we kept the basic core information within each news article identical, while some paragraphs in the story pointed out the alternative economic consequences of the issue (see underlined text, Appendix A) (e.g., Price et al., 1997).

Manipulation Check

Directly after exposure to our first news frames, all participants were asked to indicate to what extent the article had dealt with the positive or negative consequences of the issue (1 = "strongly agree" to 7 = "strongly disagree"). The check showed successful manipulation with slightly elevated standard deviations[10]. Participants in the positive opportunity condition ($M = 5.94$, $SD = 1.63$) perceived their article to be more positive than participants in the negative risk condition ($M = 2.35$, $SD = 1.93$) ($t(612) = 2.75$, $p < .001$). This allowed the further experimental proceeding with the design and the ascribing of differences between groups in the post-test to the experimental manipulation.

Measures

Opinion. The dependent variable—perception of economic benefits of Bulgaria and Romania within the EU market—was measured with two items on a seven-point scale, with higher scores indicating increased support for the issue (t_1: $M = 3.78$, $SD = 1.33$, t_2: $M = 3.79$, $SD = 1.32$; t_3: $M = 3.72$, $SD = 1.29$; t_4: $M = 3.90$, $SD = 1.37$; t_5: $M = 3.74$, $SD = 1.36$; Cronbach's $\alpha = .67$; Pearson's $r = .49$, $p < .001$)[11].

Political Knowledge. The moderator variable of political knowledge was measured with five factual multiple choice questions on both national and EU politics ($M = 2.48$, $SD = 1.14$). Differing levels of political knowledge are best measured using factual rather than perceived knowledge on an issue (Delli Carpini & Keeter, 1993). The items were chosen to ensure a sufficient amount of variation in our sample. EU-related knowledge questions often yield low threshold means, and render an adequate split of a sample difficult (e.g., Schuck &

de Vreese, 2006). Extant literature on the definition and measurement of political knowledge indicates that national knowledge can also be used as an indicator in EU-related studies (e.g., Hobolt, 2007). Kuder-Richardson 20 for this scale is .67 (for all measures, see Appendix B).

Results

We examined repetitive and competitive news framing over time in two main steps: First, we traced the effects of both frame scenarios across four delayed time points. Then, we tested the conditionality of the found effects, and introduced political knowledge as a moderator variable.[12]

The Accumulation Hypothesis

We predicted that, if an individual is repeatedly exposed to the same news frame over time, framing effects get stronger (*H1a*). There were two repetitive news framing scenarios in our study: (1) exposure to an economic consequences opportunity frame at t_1, followed by a second opportunity frame at t_n (indicated by "O→O" in the analysis), and (2) an economic consequences risk frame at t_1, followed by another risk frame at t_n (indicated by "R→R" in the analysis). The first columns of table 1 show the means for all time groups and both repetitive exposure scenarios. The mean comparisons show a stable effect across time. For O→O, all time groups displayed comparable mean levels, with small accumulative shifts, albeit not at a significant level. Participants who were exposed to two risk versions of the economic consequences frame (R→R) also showed consistent opinion levels across all time groups. However, the direction of tendential change between means was not in all groups systematic. Possible explanations for this irregularity are discussed in the next section. Yet, given these results, *H1a* cannot be supported.

We also predicted that the cumulative effect of repetitive framing exposure is not consistent across time, but likely to be more pronounced the shorter the delay between both exposures is (*H1b*). Mean comparisons indicate that time group t_2 (after 15 minutes) showed

almost identical means for both repetitive frame scenarios. Along these lines, time group t_3 (after one day) showed a larger absolute change, or frame shift, between first and second opinion measurement (O→O frame shift =.21; R→R frame shift =.23). However, this level of change did not remain constant across the remaining time points (after one week and two weeks), and it did also not always occur in the expected direction (after one week: O→O frame shift =.03, R→R frame shift =.28, after two weeks: O→O frame shift =.24, R→R frame shift=.25). Overall, our findings did not show a clear pattern, and do thus not support *H1b*. We will return to the interpretation of these findings in the discussion section.

<div align="center">TABLE 1 ABOUT HERE</div>

The Recency Hypothesis

For competitive news framing, we predicted that, if an individual is exposed to competing news frames over time, opinion at a delayed time point will be predominantly shaped by the latest frame exposure (*H2a*). We tested two competitive news framing scenarios: (1) exposure to an economic consequences opportunity frame at t_1, followed by a risk frame at t_n (O→R), and (2) a risk frame at t_1, followed by an opportunity frame at t_n (R→O). Table 1 illustrates all mean differences for competitive framing across time groups. The results supported our expectations. The mean comparison showed a "flimsy" framing effect, with significant recency effects for all time points of R→O (t_2: $t(20)=-.295$, $p < .01$; t_3: $t(37)=-3.22$, $p < .01$; t_4: $t(40)=-.329$, $p < .01$; t_5: $t(24)=-.282$, $p < .01$), and two time points for the O→R scenario (t_4: $t(35)=2.12$, $p < .05$; t_5: $t(32)=3.99$, $p < .001$). *H2a* is thus partially supported.

The above results also provide a first indication for an answer to *H2b*, which states that recency effects are likely to be stronger the longer the interim period between first and second news frame exposure. The results of the over-time mean comparisons only partially support this prediction. Participants exposed to R→O displayed significant and strong shifts

across all measured delayed time points. However, while all frame shifts occurred into the expected direction, participants in the O➔R scenario only displayed significant shifts after a somewhat longer interim period, namely after one (t_4) and two weeks (t_5) respectively. *H2b* is thus partially supported.

Moderated Accumulation Hypothesis

For repetitive news framing, we predicted that the cumulative effect of framing would be stronger the higher in knowledge individuals are (*H3*). We took two steps in testing the influence of political knowledge: First, we conducted a subgroup analysis. Second, we tested a regression model, in which we added interaction terms for frame scenario and level of political knowledge.

In the subgroup analysis, mean comparisons for high and low knowledge individuals across time[13] suggest some variation between high and low knowledge individuals for both repetitive news framing scenarios. For instance, for time group t_3 (after one day), frame shift comparisons for O➔O showed that high knowledge individuals displayed a somewhat stronger shift (=.28) than low knowledge individuals (=.11). A similar pattern can be observed for the negative R➔R group, where high knowledge individuals showed a clearer pattern of consolidating effects in all time groups except t_5 (after two weeks). In sum, the subgroup analysis offers tentative support for a short-term moderating effect of political knowledge.

Further analysis was provided by an OLS regression model for each time group. We added interaction effects between the respective frame scenario and political knowledge to this model[14]. The first columns of Table 2 show that there was indeed a difference in framing effects according to differing levels of political knowledge. Models t_2, t_3, and even t_4 show a moderating effect of political knowledge on absolute change between opinions at t_1 and t_n opinion for the O➔O frame exposure scenario.[15] The coefficients indicate that the

combination of two positive news frames led knowledgeable participants to a stronger

increase in support for Bulgaria and Romania within the EU market than it did for low

knowledge participants. In addition, model t_3 also showed a significant interaction between

frame exposure to R→R and political knowledge. Figure 1 illustrates the influence of

differing levels of political knowledge in one of our time group results (re-exposure after one

day). Our analysis illustrates, however, that results were not consistent across all time groups,

which means that only some of our delayed measurements show support for *H3*. This

suggests that this hypothesis is in need of adjustment according to the dynamic nature of over

time experimentation. However, we believe that we can propose an argument for the short-

term effect of political knowledge on the consolidating effect of repetitive framing.

<div style="text-align:center">TABLE 2 ABOUT HERE</div>

Moderated Recency Hypothesis

For competitive news framing over time, we predicted that a recency effect is stronger

for low knowledge individuals (*H4*). The means for high and low knowledge individuals

indicate a difference in recency effects between participants of differing political knowledge

in some of the time groups. For instance, in time group t_2 (after 15 minutes), high knowledge

individuals were less prone to change in support than low knowledge individuals. A similar

pattern can be seen in group t_3 (after one day).

We also tested a regression model for competitive framing, with interaction effects for

frame exposure and political knowledge. The models show significant effects of political

knowledge on framing effects for two short-term time groups, namely t_2 (after 15 minutes),

and t_3 (after one day). The negative coefficients indicate a smaller absolute change between

first and second frame exposure for individuals with higher political knowledge. Figure 1

demonstrates change of opinion by political knowledge for participants who were re-framed

<div style="text-align:right">21</div>

and re-tested one day after initial exposure. *H4* is thus partially supported. Political

knowledge only has a short-term effect on the propensity for recency effects.

FIGURE 1 ABOUT HERE

Discussion

Research has very successfully shown how news frames can affect issue

interpretations, opinions and behavior. A necessary next step is to determine what exact role

these framing effects play in "real life", where complex communication processes shape our

daily media use (see e.g., Gaines et al., 2007; Sniderman & Theriault, 2004). Accordingly, in

this study, we discuss the possibilities and benefits of testing the persistence of experimental

news framing effects, and enriched our own experimental study with a test of the effects of

repetitive and competitive framing over time.

Our analysis shows that repetitive news framing has no substantive additional effect

on opinion formation. When a news frame is repeated, effects did not add up, but stayed at a

more or less comparable level across time. Competitive news framing in our study was

largely characterized by strong recency effects; i.e. the latest frame exposure was decisive for

opinion formation. Yet, for one of our framing scenarios, this only occurred after a longer

time lag, namely after one week. Our results also give first indication of the influence of

differing levels of political knowledge on the dynamic framing process. Against our

expectations, political knowledge only exhibited a short-term influence on presumed

accumulation and recency effects. When the delay between first and second exposure was

relatively short, we detected some accumulation and weaker recency effects for participants

with a higher level of political knowledge.

The mechanisms shown in this study are—even if not always along the lines of the

posed hypotheses—important for furthering our theoretical as well as methodological

understanding of the study of framing effects. In a novel design with multiple delayed

measurement points, partial findings can by no means be equated with non-findings. Rather, our findings serve as a very specific guideline for amending theoretical expectations and research designs in future studies. We report a *stable* effect in cases where repetition took place, and a largely *flimsy* framing effect in competitive scenarios. These results support previous theoretical as well as empirical arguments made in political communication literature – and test these by means of a clear experimental design. Our results sustain the idea that repeated exposure to consonant media content enables strong but not necessarily cumulative media effects (Zaller, 1992; Peter, 2004). Along these lines, repetition is held to enable both heightened levels of accessibility as well as streamlined learning of applicable information and evaluative judgments (see e.g., Iyengar, 1991). Further research is needed to clarify to what extents both are present during the process. Our findings also lead us to assume that repetitive news framing is by no means the only key to a strong media framing effect, especially not when repetitive frames are presented sequentially over time and not, as is common in many studies, at the same time. Lastly, the inclusion of longer interim periods between two repetitive frame exposures raises the question of what role recency effects play for repetitive framing, i.e., *when* an initial effect has dissipated to such an extent that individuals can be considered "clean slates".

Our findings on competitive news framing show that most delayed frame exposures led to a substantial opinion reversal. This supports the results of Chong and Druckman (2008), who reported that the original effects of competition (i.e., a more conscious evaluation of competing messages, which leads to a decrease in media effects) are not valid for competitive framing over time. Rather, "[e]ven when individuals have been previously exposed to alternative frames, they tend to be susceptible to the most recent frame they encounter, including weak frames" (p. 29-30). These findings seem to bode ill for both a theory of emancipated media users and for long-term framing effects. But, is news framing over time

really characterized by a continuous back and forth? One of our news frame scenarios showed that this is not necessarily the case: if the delay between two dissonant frames is short (in our case, up to one day long), then a second frame did not produce significant recency effects. This means that initial frame exposure did play a role in the process. The extent to which first and second frame exposure interact must, however, be subject of future research projects (see Matthes, 2010).

We chose political knowledge as the main moderator in our study for a number of reasons: First, we believe that the concept of political knowledge and sophistication is central to the study of political communication, where it can function as a moderator, but also as an independent or dependent variable (see e.g., de Vreese & Boomgaarden, 2006b). Second, we argue that political knowledge is a variable that not only affects the magnitude of framing effects (as tested in extant studies), but also functions as a processing variable. We found that political knowledge had only a short-term moderating influence on repetitive and competitive news framing over time. The "short-term" results can be explained in terms of the propensity of high knowledge individuals to possess higher levels of accessibility, and to process and recall information more quickly than individuals with lower levels of knowledge (e.g., Fazio, 1995; Haugtvedt & Wegener, 1994). As this accessibility diminishes quickly, future studies must concentrate on the role of learning in framing over time and determine, for instance, how many exposures are necessary to learn a news frame over time. We observe that the lack of a long-term moderating influence was also connected to the issue used in this study: EU politics. The chosen issue is generally characterized by low levels of media interest, which could have resulted in only minimal learning effects over time. In their seminal study on on-line learning, Lodge et al. (1995, p. 315) argue that "recall of campaign information appears dismal even under the best of circumstances, that is, when the information is processed by knowledgeable citizens or is processed in depth."

Recency effects also depend on a number of other individual or contextual variables, only a few of which we could discuss in this study. Framing scholars should test how, for instance, the strength and nature of news processing styles such as mental effort, prior beliefs, or specific characteristics of the issue at stake, limit recency effects over time (see Chong & Druckman, 2008). Moreover, research on repetitive and competitive framing is necessary in light of Bennett and Iyengar's (2008, p. 724-5) remarks on the increasing fragmentation of audiences into "smaller, like-minded subsets of the electorate", which select media according to already existing beliefs. Here, the media have little more than "reinforcement effects", no matter if information is presented in a consonant or dissonant way (see also Bennett & Iyengar, 2010; Holbert, Garrett, & Gleason, 2010). In light of this "minimal effects" discussion, we also hope for comparisons between US and European audiences, where we expect differing processes of fragmentation to take place.

There are a number of caveats in our study. Generally, we are aware of the delicateness and potential flaw in a study like ours. Including multiple exposures and various tests of duration into an experimental survey design required making sometimes difficult decisions of downsizing the design on one end rather than on another and there are several variations of our design that are thinkable and should be pursued in future studies. Second, we found slightly puzzling differences between over-time effects of opportunity and risk frames on our dependent variable. Intuitively (and based on the literature), we expected the negatively valenced risk frame to be more effective (e.g., Soroka, 2006). This was not the case. Explanations for this phenomenon remain speculative. We assume that individuals exposed to the opportunity frame were somewhat "surprised" by its content, given the overall negative tone towards the European Union and its endeavors in COUNTRY. This surprise might have left participants with a more profound impression of what they had read, while the negative condition involved some kind of a "floor-effect".

Third, given the scarcity of relevant research on the duration of framing effects, we had limited theoretical guidance about how to define the delayed measurement points in our study. Future studies should build on our design, and determine the optimal time lags step-by-step. The optimization of various rates of decay of news framing effects could also leave us with a more substantiated expectation of *when* a framing effect can be called "lasting", "transitory" or "fleeting". Also, varying interim periods between measures can eventually lead to a clearer idea of the exact curve of effect decay for both repetitive and competitive framing. Along these lines, it is particularly important to determine, if there is the potential for ceiling effects or diminishing returns for multiple framing exposures. Moreover, our interim period was characterized by an extraordinarily small amount of elite information on the frame issue (see also de Vreese, 2004). While this was ideal from a methodological point of view, it rendered our design more artificial than originally intended. This leaves us with the question of how quickly our effects would have dissipated, had we chosen a more omnipresent issue. Future studies must employ our design for different political issues of varying levels of salience and contentiousness. Gaines et al. (2007, p. 6) discussed the possibility that durability might depend on the actual issue of a frame – and suggested that "one frame's effects [might] last longer than another's".

Survey experiments have created a strong empirical building block for framing effects theory. However, these studies have often assumed a long-term influence of framing by means of a short-term methodology. To create a more holistic approach to the study of news framing, researchers need to go one step further and consider the function of news framing within a dynamic political communication flow. This includes tests for multiple exposures to various frames, as well as the tracing of effects over time. We view our results as one small step in a long line of future studies dealing with these new and exciting dimensions of framing research.

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Table 1

Repetitive and Competitive Framing over Time

	Repetitive Framing					Competitive Framing				
	t_1	t_2	t_3	t_4	t_5	t_1	t_2	t_3	t_4	t_5
	O→O					O→R				
N=21/25	4.54	4.61				4.10	3.86			
	(1.71)	(1.67)				(1.36)	(1.17)			
N=44/24	4.31		4.52			4.14		3.81		
	(1.33)		(1.40)			(1.07)		(1.55)		
N=46/36	4.51			4.48		4.45*			3.97*	
	(1.68)			(1.65)		(1.21)			(1.37)	
N=27/33	4.00				4.24	4.46**				3.51**
	(1.68)				(1.47)	(1.23)				(1.25)
	R→R					R→O				
N=30/21	3.23	3.30				2.71**	3.33**			
	(1.43)	(1.49)				(1.29)	(1.22)			
N=36/38	3.06		2.83			3.32**		3.92**		
	(1.33)		(1.36)			(1.21)		(1.18)		
N=34/41	2.98			2.70		3.39**			4.03**	
	(1.37)			(1.51)		(1.09)			(1.16)	
N=32/25	3.20				3.45	3.38**				3.94**
	(1.40)				(1.36)	(1.55)				(1.38)

Note. O→O = Opportunity Frame—lag—Opportunity Frame; R→R = Risk Frame—lag—Risk Frame, O→R = Opportunity Frame—lag—Risk Frame: R→O = Risk Frame—lag—Opportunity Frame; t_1= immediate measurement; t_2= re-measured after 15 minutes: t_3= after 1 day; t_4= after 1 week; t_5= after two weeks; *p < .05; **p < .01; ***p < .001.

Table 2

Explaining the Effects of Political Knowledge on Repetitive and Competitive Framing Exposure over Time (Dependent Variable = Change in Opinion between t_1 and t_n [1-7])

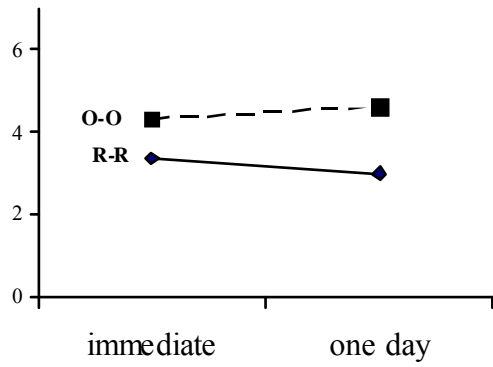| Variable	Repetitive Framing				Competitive Framing			
	Model t_2	Model t_3	Model t_4	Model t_5	Model t_2	Model t_3	Model t_4	Model t_5
O→O Exposure	-.502(.292)	-.237(.323)	-1.04(.483)*	-.748(.584)				
R→R Exposure	.210(.390)	-.610(.392)	-.188(.455)	-.609(.535)				
O→O*Pol. Knowledge	.292(.145)*	.186(.109)*	.373(.178)*	.233(.191)				
R→R*Pol. Knowledge	-.021(.125)	.252(.124)*	.147(.162)	.198(.180)				
O→R Exposure					1.14(.429)**	.737 (.4.01)	.063(.457)	.040(.526)
R→O Exposure					.192(.502)	1.08 (.374)**	-.103(.380)	-.988(.504)
O→R*Pol. Knowledge					-.352(.159)*	-.177(.149)	.081(.157)	.102(.179)
R→O*Pol. Knowledge					.056(.172)	-.284(.134)*	.137(.146)	.382(.192)*
Political Knowledge	-.026(.068)	.062(.048)	-.072(.088)	-.182(.106)*	-.026(.082)	.102(.072)	-.072(.081)	-.182(.113)
Constant	.533(.199)**	.413(.157)**	1.03(.230)***	1.46(.308)***	.533(.240)*	.317(.209)	1.03(.212)***	1.46(.327)
Adjusted R^2	.03	.07	.01	-.01	.08	.04	-.01	.03
N	98	199	143	118	93	181	140	117

Note. Ordinary least squares regression. Data are unstandardized regression coefficients and standard errors (in parentheses), *p<.05, **p<.01, ***p<.001, all tests are one-tailed; O→O = Opportunity Frame—lag—Opportunity Frame; R→R = Risk Frame—lag—Risk Frame; O→R = Opportunity Frame—lag—Risk Frame; R→O = Risk Frame—lag—Opportunity Frame; t_1= immediate measurement; t_2= re-measured after 15 minutes: t_3= after 1 day; t_4= after 1 week; t_5= after two weeks.

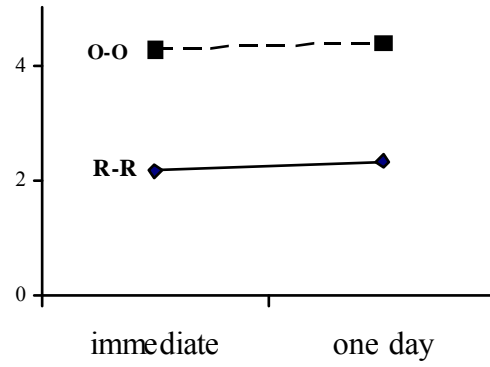*Figure 1.* The Moderating Effects of Political Knowledge on Framing -- Model t_3 (after one day). O→O = Opportunity Frame—lag—Opportunity Frame; R→R = Risk Frame—lag—Risk Frame; O→R = Opportunity Frame—lag—Risk Frame; R→O = Risk Frame—lag—Opportunity Frame.
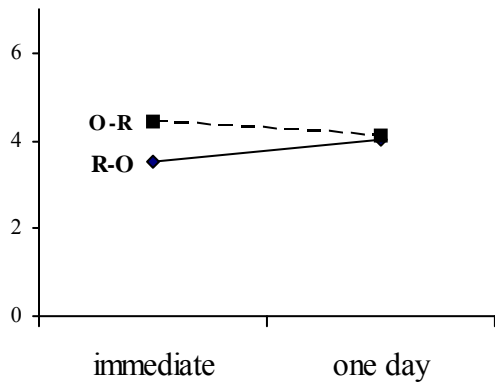
(1) Repetitive Framing
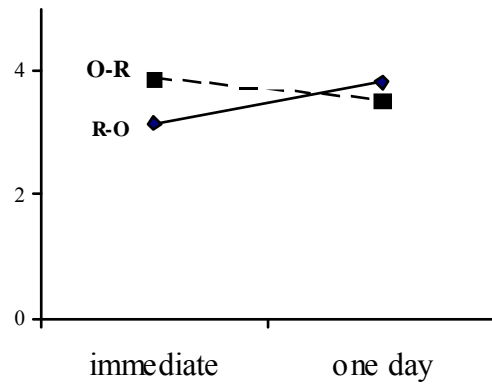
High Knowledge

Low Knowledge

(2) Competitive Framing

High Knowledge

Low Knowledge

Appendix A: Stimulus material (opportunity and risk [in parentheses] economic consequences

frame condition)

(1) News Articles t_1

European Commission: New members Bulgaria and Romania are EU's potential new markets (still EU's economic ugly sisters)

Even though Bulgaria and Romania only just had their membership to the European Union (EU) approved, they are already attracting large investment from all over Europe. With a new agreement with the EU Regional Development Fund ahead, things are looking bright in the East (spurring discussion about their growingly obscure investment markets. Even with a new agreement with the EU regional development fund ahead, the situation is unlikely to improve.).

On 1 January 2007, Bulgaria and Romania joined the EU, taking the membership of the bloc from 25 to 27 member states. The two countries applied to join the EU in the early 1990s, along with eight other states of Central and Eastern Europe.

Last week, the EU's Regional Fund, which concentrates on economic development, presented a new cooperation agreement between the two newcomers and other countries such as Germany, the UK and the Netherlands. (But the) The agreement, which involves financial incentives for European companies investing in the new member states and guarantees of fair competition, is bound to establish Bulgaria and Romania on the international investment map (is unlikely to establish Bulgaria and Romania on the international investment map).

"We are gaining from the agreement, because it gives us the opportunity to move to where the critical growth today is," says Ian Hudson, President of a British multinational products and services company. Last month, Hudson announced the opening of the first offices in the two countries: "Eastern and Central Europe are important markets; they are growing at an enormous speed," says Hudson ("We are not sure about the agreement," says Ian Hudson, President of President of a British multinational products and services company. Last month, Hudson announced the closing of all offices in the two countries: "Eastern and Central Europe are important markets; but there are still too many difficulties," says Hudson.)

Romania has averaged an annual economic growth rate of 5.8 percent over the past five years, making it one of Europe's fastest growing economies. Bulgaria is not too dissimilar, with growth seen at 5 percent this year, and an economy that is shifting towards the more modern sectors of technology and tourism.(Even though Romania has averaged an annual economic growth rate of 5.8 percent over the past five years, it is one of the poorest members of the EU, with a GDP per head about a third of the EU average. Bulgaria, with growth seen at 5 percent this year is raising concerns among critics about mass migration and the states' ability to implement reforms while keeping state finances in order.)

"Bulgaria and Romania are chances for European investors to establish themselves in a growing market" says *Olli Rehn*, the EU's Enlargement Commissioner. "The EU, and all its' member states, can and

will benefit from these two fresh economic forces on board", *Rehn* said in Brussels. (Many observers are questioning, whether the two newcomers will be able to keep up with Europe's economic growth plan. "Bulgaria and Romania still have a long way to establish themselves in a growing market" says *Olli Rehn*, the EU's Enlargement Commissioner.)

(2) News Articles delayed post-tests (*t₂-t₅)*

Financial Experts: Investment into Bulgarian and Romanian markets on the rise (is risky)

Bulgaria and Romania are the youngest members of the European Union (EU). Recently, the two countries settled further economic cooperation with other EU countries with means of a Regional Funding agreement, which is already receiving acclaim from financial experts. (which is now receiving harsh criticism from financial experts)

As reported earlier, the EU's Regional Fund, which concentrates on economic development, presented a new cooperation agreement between the two newcomers and other European countries in Brussels. European Commissioner for Enlargement, *Olli Rehn*, presented the results of one year long negotiations that facilitate financial support for companies investing in the area and guarantees fair competition.

At a symposium, organized by the World Economic Forum in Davos, Switzerland, experts have now pronounced their support (expressed their doubts) for the new EU agreement. "It substantially facilitates the cooperation between Western companies, private investors and Bulgarian and Romanian companies" ("It does not change much concerning the big problems that still exist when Western companies and investors and Bulgarian and Romanian companies try to cooperate") says Dr. *Marc van Leeuwen*, Economic forum deputy head for Europe. "Eastern and Central European markets are booming –

it's a gold rush" (only developing – but still have a long way to being competitive partners"), *van Leeuwen* said at the symposium.

Investment in the area has risen and the region boosts since the last year accession, now further heated-up by the fund agreement. (is often held back by incompatible competition procedures and corruption). "As Eastern European economies started to reform and develop, Western companies became increasingly interested in investing in the region" ("Eastern European economies have only started to reform and develop, and it might still be risky for Western companies to invest in the region"), *van Leeuwen* concludes. It is believed that the growth in the region is bound to establish Bulgaria and Romania (consistent problems in the region are still holding Bulgaria and Romania back on becoming established) on the international investment map.

Appendix B: Overview of Pre- and Post-Test Measures

Pre-test Measures

Socio-Demographic Variables

Gender: Male = 0; female = 1 (44.8%)

Age: Measured in years (M = 51.20, SD = 15.68).

Education: Six levels of education from lowest to highest (COUNTRY originals) (M=3.61, SD=1.48): (1) primary education (5.9%), (2) pre-vocational secondary education (25.6%), (3) senior general secondary education (13.6%), (4) secondary vocational education (20.3%), (5) higher professional education (24.3%), (6) university (9.8%).

Prior Attitudes towards the EU (M=3.27, SD=1.01)

Two items measured in the form of opposing statements: "First a question about the enlargement of the European Union. A says: Further enlargement will weaken the EU. -- B says: Further enlargement of the EU is a necessary next step in the development of the EU. Do you mostly agree with A or B?" and "Now a question about the membership of COUNTRY within the European Union. A says: The membership of COUNTRY in the EU is a good thing. – B says: The membership of COUNTRY in the EU is a bad thing. Do you mostly agree with A or B?". Response categories for both scenarios were "1=strongly agree with A", "2=Somewhat agree with A", "3=Somewhat agree with B", "4=Strongly agree with B", "5=Do not agree with either A or B" and "8=I don't know" *(recoded to fit scale from 1=negative prior attitude to EU to 5=positive prior attitude to EU)*; Cronbach's α = .63.

Political Knowledge M=2.48, *SD*=1.14)

Five item index scale ranging from 0 to 1, with higher values indicating higher level of political knowledge, "Which parties are at present members of the COUNTRY

government?" "POLITICIAN belongs to which party?", "POLITICIAN belongs to which party?", "Who is the current president of the European Commission?", "Which state is not yet a member of the European Union?"; KR-20=.67

Post-Test Measures

Opinion (M= 3.78, SD=1.33)

Two item index scale; asked on a scale from 1 to 7 with higher values indicating more support, "To what extent do you support the idea that an agreement for economical cooperation between the EU and Bulgaria and Romania will be profitable for investors?"; "To what extent do you support the idea that Bulgaria and Romania are an asset to the economic growth of the European Union?"; Cronbach's α = .68.

Appendix C: Experimental Study Design: Time Groups and Frame Scenarios

#	t_1	t_2	t_3	t_4	t_5	Condition
1	PRO	--				T_2 Single (Pro)
2	PRO	PRO				T_2 Repetitive (Pro)
3	PRO	CON				T_2 Competitive (Pro→Con)
4	CON	--				T_2 Single (Con)
5	CON	PRO				T_2 Competitive (Con→Pro)
6	CON	CON				T_2 Repetitive (Con)
7	PRO		--			T_3 Single (Pro)
8	PRO		PRO			T_3 Repetitive (Pro)
9	PRO		CON			T_3 Competitive (Pro→Con)
10	CON		--			T_3 Single (Con)
11	CON		PRO			T_3 Competitive (Con→Pro)
12	CON		CON			T_3 Repetitive (Con)
13	PRO			--		T_4 Single (Pro)
14	PRO			PRO		T_4 Repetitive (Pro)
15	PRO			CON		T_4 Competitive (Pro→Con)
16	CON			--		T_4 Single (Con)
17	CON			PRO		T_4 Competitive(Con→Pro)
18	CON			CON		T_4 Repetitive (Con)
19	PRO				--	T_5 Single (Pro)
20	PRO				PRO	T_5 Repetitive (Pro)
21	PRO				CON	T_5 Competitive (Pro→Con)
22	CON				--	T_5 Single (Con)
23	CON				PRO	T_5 Competitive (Con→Pro)
24	CON				CON	T_5 Repetitive(Con)

Note. ; t_1= immediate exposure; t_2= re-exposed after 15 minutes: t_3= after 1 day; t_4= after 1 week; t_5= after two weeks; design contains a control group (single treatment only)

Notes

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[1] The distinction between persuasion and framing theory has been subject to some discussion in the literature (e.g., Chong & Druckman, 2007a; Tewksbury & Scheufele, 2009). For instance, Tewksbury and Scheufele (2009, p. 20) note that framing is usually concerned with the "origin, evolution, presentation, and effects of frames" produced by journalists for an audience that is unaware of these mechanisms, whereas persuasion studies "involve the presentation of intentionally persuasive content to audiences presumably aware of that intent". However, we must note that the distinctness of framing effects theory from other effect theories is a developing argument. Moreover, we see huge potential for framing in harvesting observations of communication flows made already in the much larger field of political persuasion.

[2] Some studies address repetition, albeit not in a substantive way. A number of scholars have incorporated multiple exposures to the same news frames as a means to achieve greater "experimental realism" in their designs. Berinsky and Kinder (2006, p. 644), for instance, presented a treatment consisting of five repetitive frames. The authors argued that, in doing so, they were able to capture "the ways in which different media outlets could present the same information in qualitatively different ways" (see also Valkenburg et al. 1999).Yet, these studies do not address how framing effects stemming from multiple exposure compare in magnitude and process to effects of being exposed to only one frame.

[3] "Strength" is defined as depending on the "qualities of frames … such as the credibility of their source and their relationship to consensus values and prior beliefs" (Chong & Druckman, 2007b, p. 639).

[4] When on-line processing occurs, "judgments are formed when the information is encountered", i.e. when an individual first processes new information (Matthes, 2007, p. 56). This judgment can then be retrieved at a later point in time; a subsequent judgment does thus not depend on a re-evaluation of the stored information (see also Hastie & Parks, 1996).

[5] Framing studies typically employ either equivalency or emphasis frames. Equivalency frames refer to logically alike content, which is presented or phrased differently (see e.g.,

Kahneman & Tversky, 1984). Emphasis frames are closer to "real" journalistic news coverage and present "qualitatively different yet potentially relevant considerations" (Chong & Druckman, 2007a, p. 114). Research has, moreover, worked with two alternative operationalizations of frames in the news, namely issue-specific and generic frames (Semetko & Valkenburg, 2000). Issue-specific frames pertain to a specific topic, while generic news frames are applicable to a wide range of topics. The wide application of generic frames makes it easier to compare framing effects across issues and generic frames have thus been utilized in framing experiments (see e.g., Lecheler, de Vreese, & Slothuus, 2009 for a recent example).

[6] We decided to keep these participants in the analysis for three reasons: First, they were only exposed to a minimum of news coverage during the interim period. Second, we did not want to limit the representative and "real-life" nature of our study design. Third, we did not want to diminish sample size within the various delayed post-test groups. Yet, we analyzed our data without these participants, and did not find substantially different mechanisms.

[7] We coded ten major print news outlets of COUNTRY for (1) issue, (2) presence of the "economic consequences" frame, and (3) tone. Ultimately, the analysis only included 20 issue-relevant articles published within the data collection period. The economic consequences frame did not feature prominently in the coded articles (*M*=.25, *SD*=.35). Measurement consisted of three items: (1) "Is there a mention of the costs/degree of expense involved?", (2) "Is there a reference to economic consequences of pursuing or not pursuing a course of action?", and (3) "Is there a mention of financial losses or gains now or in the future?". Questions were answered with a yes (1) or a no (0), and the score was built by adding items and dividing by total number of items. Cronbach's alpha was .745. (see Semetko & Valkenburg, 2000; de Vreese et al., 2001). The tone of the articles was overall more negative than positive (*M*=3.86, *SD*=.37; tone measured on a 5-point scale from 1=only positive to 5=only negative). Krippendorff's α was .66.

[8] We compared our sample with the official census records of COUNTRY (2009). Results showed high compliance between sample and population on key socio-demographic data. The minimum voting age in COUNTRY is 18 years.

[9] Overall t_1: $t(1322)$=.455, $p > .05$; at t_2: $F(2,238)$=.04, $p > .05$; t_3: $F(2,481)$=2.17, $p > .05$; t_4: $F(2,317)$=2.07, $p > .05$; t_5: $F(2,276)$=.276, $p > .05$).

[10] We did not measure as how positive or negative an individual *perceives* the frame stimuli (see Tao & Bucy, 2007). We assume that the slightly elevated standard deviations in our manipulation check are related to this fact. For instance, some participants in the opportunity condition could have rated the positive stimuli as less positive, based on negative pre-existing attitudes towards the issue.

[11] We repeated our analysis for each of the two opinion items separately, and did not find substantially different results.

[12] We found a significant immediate news framing effect for our two news frames, even though we did not focus on this effect in our analysis. Results showed that participants in the opportunity condition displayed higher levels of support at t_1 (M=4.27, SD=1.26) than participants in the risk condition (M=3.29, SD=1.22) ($t(1231)$=13.73, $p < .001$). We also tested whether each post-test group of participants (t_2 to t_5) displayed analogous results at t_1. This analysis was performed to guarantee that the results in each time group mirror the results of the overall t_1 group. The analysis showed that the different time subgroups did not deviate substantially from the overall group results. All subgroups show a similar significant t_1 framing effect in the expected direction. Thus, t_2 group: opportunity (M=4.35, SD=1.32), risk (M=3.30, SD=1.20),($t(234)$=6.61, $p < .001$) ; t_3 group: opportunity (M=4.17, SD=1.25), risk (M=3.27, SD=1.18), ($t(396)$=7.35, $p < .001$); t_4 group : opportunity (M=4.49, SD=1.27), risk (M=3.27, SD=1.17), ($t(318)$=8.89, $p < .001$); $t5$ group : opportunity (M=4.09, SD=1.27), risk (M=3.35, SD=1.35),($t(277)$=4.62, $p < .001$)

[13] In an earlier study, we divided our sample of political knowledge into three levels, namely high, low, and moderately knowledgeable (AUTHORS, 2009a). In the current study, we could not test three groups due to sample size considerations and thus had to draw on a two-group analysis of high versus low knowledge individuals. Because we reinforce our sub-group analysis by analyzing interaction effects also, we deemed the present two-group solution to be a good oversight of the effects of political knowledge on framing.

[14] Although we employed an experimental design, we included a number of control variables in our analysis. A number of variables were used as *socio-demographic* control variables, namely gender, age, and education (M=3.61, SD=1.48, range=1-6; participants were

asked for their highest completed degree). Extant studies also state that political predispositions, represented by prior attitudes on an issue, play an important role when determining framing effects (e.g., Brewer, 2001; Chong & Druckman, 2007a). To measure *prior attitudes* towards the EU, participants were presented with two scenarios, where opposing opinions were represented by a person "A" and a person "B" (Slothuus, 2008). With each scenario, participants had to indicate, with which person's opinion they agreed with to a greater extent (*M*=3.27, *SD*=1.01) (for scenarios and scaling, see Appendix B).

[15] The reported regression models used absolute change in support as dependent variable (e.g., Singer & Willett, 2003; Taris, 2000). We also tested our models with opinion at t_n support and relative change in support as dependent variable. The results of these alternative tests did not change our findings substantially.