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Chapter 3: Spiral of political learning. The reciprocal relationship of news media use and political knowledge among adolescents

Manuscript under review

Abstract

This study investigates the dynamics of reciprocal influence of political knowledge and attentive news use. News media are an important source for political information and contribute to political learning. Yet, this process becomes more efficient with increasing levels of pre-existing knowledge about the political world. In extant literature mutual interdependence is often suggested, but empirical proof is scarce. I propose to conceptualize the relationship of knowledge and news use as a reinforcing upward spiral, implying that growth in either of the two factors leads to growth in the other. The model is tested on data from a three wave panel survey among 888 adolescents using growth curve modeling. The results support the model of a reinforcing spiral of political learning. Interestingly, the influence of political knowledge on news use is estimated to be higher than the other way round.

News media are essential for political learning. By covering events and developments in the political world news media contribute to the political knowledge of their audience. Political knowledge, on the other hand, is a powerful predictor of news use (Price & Zaller, 1993). In fact, knowing about politics is a precondition to make sense of news stories, because knowledge about political structures, actors and processes provides the context in which new information is processed. Without basic political knowledge new information remains meaningless. News use and political knowledge are therefore mutually interdependent. From a longitudinal perspective, mutual interdependence means that the process is ought to take the form of a self-reinforcing spiral, or in the words of Norris (2000), “a virtuous circle”. In this chapter I analyze the dynamics of learning from news media in detail using data from a three wave panel survey study of 888 adolescents.

Panel survey data is well suited for this purpose and has several advantages over cross sectional survey data or experimental data. Cross sectional surveys assess whether and under which circumstances news use and political knowledge are correlated (e.g., Price & Zaller, 1993; Shah, McLeod, & Yoon, 2001), but cannot answer questions of causality or dynamics. In other words, these studies cannot provide definite answer to the question whether individuals become more knowledgeable by using news or knowledgeable individuals are more inclined to watch or read the news. Even though, some cross sectional studies, most prominently Norris (2000), conclude that the answer is that both processes are at work simultaneously, they cannot support this notion with adequate empirical data. It is the goal of this study to demonstrate that the relationship between political knowledge and news use is in fact more than a positive correlation, and rather a mutually reinforcing spiral. This is important for our future theorizing about this dynamic relationship.

Experiments, on the other hand, can clearly assess causality. The drawback of this approach is that they are conducted in a laboratory environment while forcing news exposure (e.g. Eveland, Seo, & Marton, 2002). This casts doubts on the external validity of those studies. Moreover, effects found in experimental

studies have only been measured over a very short term and might fade after a while. The foci of this study, however, are stable, long term developments in political knowledge. Therefore the analysis is based on data collected over period of two years.

Political knowledge is a key factor in becoming an engaged citizen. In democracies it is of vital importance that citizens understand the processes and structures of the political system around them to participate (Sotirovic & McLeod, 2004). Any electoral decision can only be meaningful if voters have a general idea about candidates and the offices they are applying for. Moreover, political knowledge is also proven to have a positive impact on attitudes towards politics and participation. In fact, “no other single characteristic of an individual affords so reliable a predictor of good citizenship, broadly conceived, as their level of knowledge” (Delli Carpini & Keeter 1996, 6). The more people know about politics, the more they are inclined to take on an active role in a democracy (Verba, Schlozman, & Brady, 1995). An analysis of how young citizens learn about politics from the news media can therefore provide insight in the antecedents of how adolescents become active citizens. The relationship between political knowledge, the feeling to be informed and engagement is further discussed in Chapter 4.

Political learning from the news

It is evident that news media are an important source of political information and contribute to political learning (Chaffee, Ward, & Tipton, 1970b; de Vreese & Boomgaarden, 2006; Delli Carpini & Keeter, 1996). However, as it is common for media effects, this is not a straightforward, stimulus-response process. Political learning is a complex procedure, that is conditional upon a multitude of factors: starting from the information environment on the system level (Elenbaas, de Vreese, Schuck, & Boomgaarden, in press; Prior, 2007) to features of the media that transport political information (Chaffee & Kanihan, 1997; Weaver & Drew, 2001). Yet, the most important determinants of political learning reside on the individual level (Delli Carpini & Keeter, 1996). The reason behind the dominance of

individual characteristics is that political learning is in nature a psychological process that consists of a number of cognitive steps (Sotirovic & McLeod, 2004)

First, new information needs to be taken in. Mere exposure is not enough to guarantee an effect on political knowledge. Information also needs to be comprehended and retained (Price & Zaller, 1993). The importance of this step cannot be stressed enough. Graber (1997), showed that most TV news users cannot remember most of the items they saw on the news broadcast, not to speak of any details of the news stories. In explaining whether a news story is remembered or not, individual motivation plays a key role (Elenbaas, de Vreese, Schuck, & Boomgaarden, in press)

Second, mental representations of the information need to be formed and these representations need to be linked to existing representations and schemata. In this context pre-existing mental representations of political actors, structures and processes are of vital importance. The more cognitive networks and schemata already exist, the easier it is to connect and organize new information. Furthermore, individual cognitive abilities determine how much information can be processed (Fiske & Taylor, 1991).

Third, new information needs to be reflected and deliberated. In order to enter the long term memory, new information needs to be recalled several times. Interpersonal communication about the subject plays an important role in this process, so can repeated exposure (Higgins, 1996).

When looking at the process of political learning from the news in detail, it becomes apparent that it cannot be independent from pre-existing political knowledge (Chaffee & Schleuder, 1986). Especially, when considering the ability to link new information into a network of schemata, it is quite clear how essential political knowledge in the acquisition of new political knowledge actually is. To take this argument one step further, pre-existing political knowledge is in fact a precondition to use the news at all. Without it obtained information remains meaningless, and there is no need to tune in.

But pre-existing political knowledge also factors in the motivation to retain information. First of all, because individuals who are motivated to follow the news are likely to be politically interested and knowledgeable in the first place (Elenbaas, de Vreese, Schuck, & Boomgaarden, in press). Second, because knowing about political processes and events that are taking place at a time, makes following the development of this process or event more attractive and relevant (Chang & Krosnick, 2003).

Extant research has shown that efficient information processing is more likely among news users with specific social economic background characteristics. Among them are social economic status (Jerit, 2009), gender (Mondak & Anderson, 2004), formal education (Eveland & Scheufele, 2000) , and composition of the social network (Hively & Eveland, 2009). Yet, the very same factors are also predictors of news use and general political knowledge (Delli Carpini & Keeter 1996). This implies that it is the same group of people that a) watches and reads the news, b) is able to understand and process information they came across, and c) has a high level of political knowledge. This leads to a gap in political knowledge that divides citizenry in those who know and understand politics and those who don't, which has serious implications for democratic societies (Tlichenor, Donohue, & Olien, 1970).

Towards a dynamic model of learning from the news

As I have established in the previous section, political knowledge and attentive news use are mutually interdependent. Higher levels of political knowledge makes news seem more accessible and relevant and provide a framework to make sense of the obtained information. Using the news, on the other hand, is an important source for political learning, at least if new information in the news is retained and processed.

When taking on a longitudinal perspective it can be argued that what is conceptualized as mutual interdependence at a specific point in time, is in fact an upward spiral. Someone who knows already a fair amount about politics, becomes more attracted to news and is more likely to use it attentively in the future.

Following the news attentively leads to rising levels of political knowledge over time. In its structure this spiral resembles the spiral dynamics of selective exposure proposed by Slater (2007). If this theory holds, than the difference in political knowledge between those in the upward spiral and those who are not, should become larger over time. Three hypotheses can be deduced from this notion.

H1: Growth in political knowledge has a positive impact on growth in news use

H2: Growth in news use has a positive impact on growth in political knowledge

H3: The process of growth in news use and growth in political knowledge is mutually interrelated.

Studies of knowledge gains have found evidence on specific aspects of this model. For example, Tlichenor, Donohue, & Olien, (1970) demonstrated that coverage of an issue widens the gap in knowledge about this issue, in one of the earliest studies on media related knowledge gaps. Those who knew about an issue beforehand learned more from coverage than those who didn't. Norris (2000), demonstrated that political knowledge and news use are positively correlated based on multiple data sets reaching from European Election data to the U.S. National Election Survey, but causality or dynamics are not tested. Eveland, Hayes, Shah, & Kwak (2005) did test the causal relationship between political knowledge and news use in a two wave panel study, and concluded that a model of unidirectional influence of news use best describes the phenomenon. However, their study differs from this study in a number of aspects. Most importantly, the study is specific to an American presidential campaign. Political knowledge was defined as factual knowledge about issue placements of the two candidates and media use as exposure to campaign related information. Second, the model used in this study is not a model that explains growth in either political knowledge or news use, but the level of knowledge at the second measurement. In this study, however, I analyze the phenomenon as a general causal mechanism that is not specific to a certain political event explaining growth during a two year time span and not the absolute level of knowledge. To do so I assess whether causal relationships in growth in political knowledge and news are still significant when

the other growth process is controlled. In other words, a comprehensive model of a reinforcing spiral of political knowledge is being tested.

Political learning during adolescence

Adolescence is a key phase for political learning, as it marks the period in which the brain is sufficiently developed for abstract and complex thinking. During childhood political knowledge is restricted to the knowledge of symbols and a general idea of power, whereas young adults are able to grasp the complex processes and institutions of modern democracy (Chaffee, Ward, & Tipton, 1970). Moreover, late adolescence is also a period in which many young citizens face their first electoral decisions. This gives political information and political knowledge a new relevance in their lives and a reason to seek out information about politics on news media (Sears & Valentino, 1997). Therefore, adolescence is not only a life phase in which political knowledge develops, but also in which political knowledge is likely to be influenced by news media (Jennings, 1996).

Although political learning in general occurs throughout the entire life course (Sears & Levy, 2003; Sigel & Hoskin, 1981), it is likely to be more pronounced among adolescents. Hence, it is more likely to find evidence for a reinforcing spiral within a two year time frame by using an adolescent sample.

Methods

In order to investigate the reciprocal influence of news use and political knowledge, I rely on a three wave panel survey conducted in the Netherlands between 2010 and 2012 among a sample of adolescents aged 15 to 18 at the beginning of the survey. The data was collected through CAWI. The data collection was funded in part by the Amsterdam School of Communication Research and in part by the Swiss Science Foundation within the framework of NCCR democracy.

Sample

The sample was drawn from a population representative database administered by a Dutch opinion poll institute, GfK, using a quota sample. The quotas used

were age (15 to 18), gender, and education. 1653 respondents participated in the first wave (June 16th through July 10th 2011). 1186 of those respondents also participated in the second wave (June 16th through July 10th 2011). The attrition rate was 28%. The third wave took place from June 14th to July 3rd 2012. 888 respondents participated in the third wave, implying that the attrition rate was 25% from the second to the third wave

Those respondents who did not participate in all three waves did not differ significantly from the panel in terms of gender, age, and educational level.

Measures

News use. News exposure was measured using a combined measure of news exposure and attention to news¹⁰. News exposure is measured as a cumulative scale of exposure to 22 Dutch news sources (TV, newspaper and online new sources). For each outlet the typical exposure per outlet interval is assessed and added up.¹¹ (M: 3.16; SD: 2.21). Attention to news was measured using a single item indicator on a seven point scale (M: 4.34; SD: 3.77)¹². Attention to news and exposure were multiplied to create a combined indicator (M: 12.28, SD: 10.63).

¹⁰ News exposure is combined with a measure of attention, because both of these factors of news use are essential to guarantee news processing (Chaffee & Schleuderer, 1986). In fact, attention to news measures have been proven to explain gains in political knowledge better than exposure as information that is not received attentively fades away quickly (Eveland 2002). Chang & Krosnick (2003) tested a combined measure of exposure and attention as a moderator for various media effects. The moderator, the combined measure, was found to be significant in all cases, whereas the main effects of attention and exposure became insignificant, implying that a combined measure is able to explain most of the variance that would be explained by the individual factors otherwise. For sake of parsimony we rely on a combined measure in the models. To guarantee robustness we conducted additional test using the individual measures.

¹¹ It is important to note that this is a cumulative scale not a factor. Some of the TV shows are being broadcasted at the same time, so it is virtually impossible to be exposed to both. A similar argument can be made for newspapers. If a respondent reads one paid newspaper it is unlikely he will buy another.

¹² We chose a general measure for news attention based on the research of Chaffee and Schleuder, 1986 who have tested a number of detailed attention to news measures, but could not find significant differences compared to a general attention measure.

Political knowledge. Political knowledge was measured using a sum scale of answers to four different questions testing for general knowledge about democratic society. These questions cover knowledge about important aspects of Western democracies like the function of political parties and international politics. The purpose of using rather general questions instead of more common knowledge checks (e.g., by recognition of politicians) was to tap long term knowledge gains that are important for the development of democratic citizens. The questions were adapted from IEA Civic education studies. Each question was recoded into 1=correct answer and 0=wrong answer or don't know¹³. The recoded items were used to construct a scale (Cronbach's Alpha:.70; M: .27; SD: .02).

The same questions were used in all three waves to ensure that the questions had the exact same level of difficulty. Given the long time span between measurements, it could be expected that respondents are likely to have forgotten the questions. To test panel sensitisation a representative sample of 200 respondents in the same age group was asked the same questions during the fieldwork period in 2011. There was no significant deviance in their responses compared to panel members.

¹³ The four questions were: 1) In democratic countries what is the function of having more than one political party? a) To represent different opinions interests in the Parliament; b) To limit political corruption c) To prevent political demonstrations d) To encourage economic competition e) Don't know (Recoded M: .68; SD: .007). 2) What is the major purpose of the United Nations? a) Safeguarding trade between countries b) Maintaining peace and security among countries c) Deciding where countries' boundaries should be d) Keeping criminals from escaping to other countries e) Don't know (Recoded M: .77; SD: .006); 3) The government has lowered tax rates on income from interest and investment (finance income) and raised tax rates on salaries. A large group carried signs in protest in front of the government's buildings. The protesters are most likely to be... a) people who have large savings accounts b) people who own shares in companies c) unemployed d) people who receive government benefits e)... people who are employed in factories f) Don't know (Recoded M: .50; SD: .007); 4) A country has a declining birth-rate and an increasing life span. Which of the following problems will have to be solved as a result? a) Schools need to be built b) Pensions for the elderly have to be financed c) Low income housings have to be built d) Crime and violence have to be fought e) Don't know (Recoded M: .77; SD: .006).

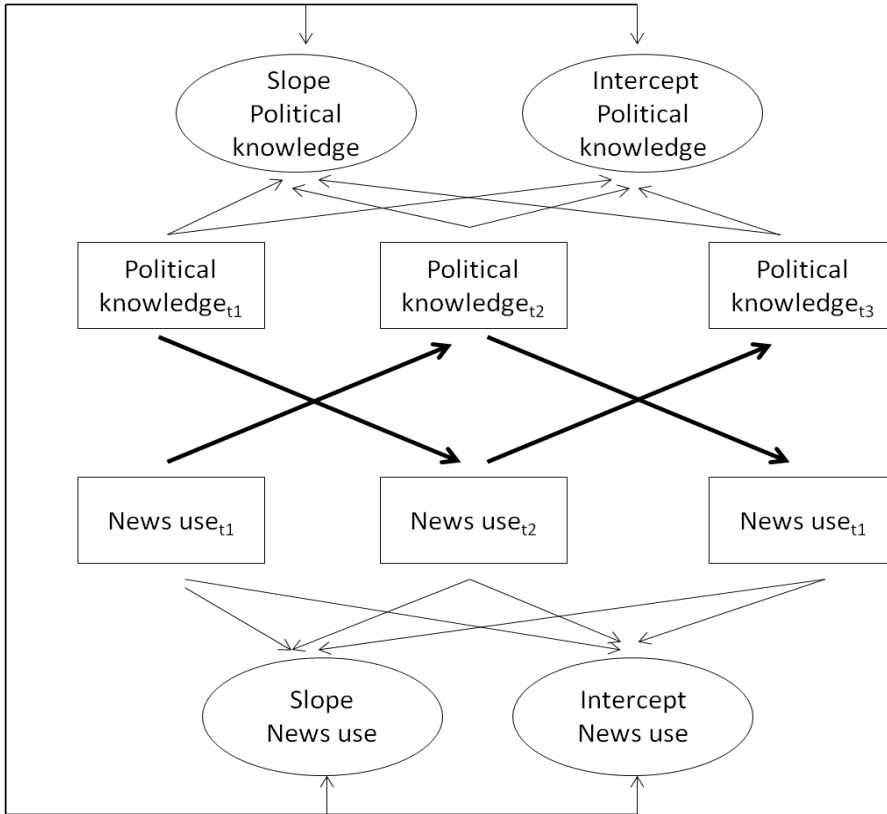
Covariates. Four covariates were used in the analysis; formal education, age, gender, and social economic status (SES). Data on age, gender, and formal education was provided by the research institute that carried out the field work. Formal education is assessed on a three point scale (low, middle and high education in secondary schools in the Netherlands). As we are dealing with an adolescent sample, education did not have to be completed at the time of the interview. Social economic status was assessed using a single item indicator in which respondents self-reported their social class on a five point scale (M: 3.53; SD: .01).

Data Analysis

In order to analyze the reciprocal influence of news use and political knowledge as a reinforcing spiral, two interrelated growth processes need to be modeled simultaneously. I rely on Structural Equation Modeling for this purpose. The model used is an adaption of the model used by Schemer (2012) to model a spiral of negative issue affects and campaign attention. In this model two parallel growth curves are estimated (Bollen & Curran, 2006). In a growth curve model, multiple measurements of the same indicator over time are used to model a latent intercept and a latent slope. The initial level of the dependent variables, political knowledge and news use, is modeled as a latent intercept. Intraindividual variance in the dependent variables across waves is modeled as a latent slope (see Figure 3.1)¹⁴.

¹⁴ To model the latent intercept, the mean of the intercept of the individual indicators is constrained to zero and the regression weight of each of the paths between the indicators and their respective intercepts is set to 1. To model intra-individual linear growth the paths between the indicators and their respective slope are restricted to 1, 2, and 3. To account for autocorrelation the growth factors (latent slopes and latent intercept) are allowed to covary.

Figure 3.1. Analytical model of the reinforcing spiral of political knowledge and news use



Notes: The figure shows only the structural relationships between political knowledge and news use. The effects of covariates are considered but not depicted in the model. Residuals and correlations between residuals are also considered, but not shown.

Results

The model proposed fits the data well (*Chi square*: 13.71; *df*: 7; *p*: .55; *Comparative fit index (CFI)*: .996, *Root mean error square error of approximation (RMSEA)*: .033), implying that conceptualizing political learning from news as an interrelated growth process is appropriate according to my data. Before discussing the reciprocal measures, let me first describe the two growth processes of political knowledge and news use separately.

The mean of the slope of political knowledge is estimated to be .19**. This implies that political knowledge has grown significantly over the two year time

span. The mean intercept of political knowledge is estimated to be 2.48. Keeping in mind that political knowledge is measured on a four point scale I can conclude that the initial level of political knowledge is rather high. Intercept and slope of the political knowledge growth curve are significantly correlated (COV: -.10; SE: .49; p: .02). The direction of the correlation is negative. This means that individuals with a high level of political knowledge in wave 1 have obtained significantly less political knowledge than those with a low initial level of political knowledge. Given the high mean intercept of political knowledge, this is most likely a ceiling effect.

When inspecting the estimations for the growth curve of news use, the picture is different. The mean slope is positive, but not significant (M: .51; SE: .49; p: .43). This means that there has not been an increase in attentive news use, besides what can be explained by the of political influence knowledge. Again, I find a negative, significant correlation between intercept and slope of news use (COV: -16.85; SE: 3.43; p: <.01). That means that respondents who use a variety of news media regularly in the first wave are less inclined to expand their news menu.

The latent slopes of political knowledge and news use are not significantly correlated (COV: -.06; SE:.09; p: .51), but the latent intercepts are (COV: 2.12; SE:.81; p: <.01). The correlation of the initial levels of news use and political knowledge mean that the two variables are already dependent upon each other before my first measurement.

Turning to the cross causal paths and hypothesis testing, I find confirmation for most of the hypotheses (see Table 3.1).

Table 3.1: Reciprocal influences of political knowledge and news use

| Parameters | Estimates (SE) | Parameters | Estimates SE |
|--|----------------|--|--------------|
| Political knowledge _{t1} → news use _{t2} | .40* (.182) | News use _{t1} → political knowledge _{t2} | .004 (.003) |
| Political knowledge _{t2} → news use _{t3} | .85** (.331) | News use _{t1} → political knowledge _{t2} | .01* (.005) |

Note: Unstandardized parameters, *p<05; **p<.01

Hypothesis 1 states a significant positive impact of political knowledge on news use. My findings support this hypothesis as there is a significant relationship between growth in political knowledge and growth in news use one year later. It is worth noting that the estimated influence seems to have doubled during one year.

Hypothesis 2 states a significant effect of growth in attentive news use on political knowledge. Here, the results are mixed. Whereas I do not find a significant impact on news use on political knowledge one year later in the first wave, this path is estimated to be significant in the second wave. Eyeballing the results we see that like in the case of the influence of political knowledge, the size of the effect has doubled in the second wave.

With regard to the third hypothesis it can therefore be concluded that growth in political knowledge and growth in attentive news use are interrelated. Yet, the influence of political knowledge on news use is much stronger than the other way round. First, because political knowledge is consistently estimated to influence attentive news use in both time periods. Second, the level of significance for this path is much stronger.

Four control variables were included in the analysis. Adding the control variables to the model did not change the results significantly. When looking at the effect of the control variables on the growth factors, a few interesting observations can be made. The initial level of political knowledge is influenced by all four

control variables. Older, male, highly educated respondents, with a higher social economic status are predicted to have a higher level of political knowledge at the start of the first wave. Yet, younger respondents are likely to learn more about politics during the two year time span. With regard to news use, the picture is slightly different. Older, female, higher educated respondents are estimated to have higher initial levels of news use. Those with a higher education are less likely to increase their use of news over time.

Table 3.2: Effects of control variables on the growth factors

| | Intercept political knowledge | Slope political knowledge | Intercept news use | Slope news use |
|-----------|-------------------------------------|---------------------------------|-----------------------|----------------------|
| Sex | -.18** | .10 | .10** | -.09 |
| Age | .21** | -.23** | .12** | -.09 |
| SES | .12** | .08 | .16 | .09 |
| Education | .29** | -.12 | .27** | -.25** |

Note: Standardized parameters, *p<05; **p<.01

Robustness checks

Given the complex nature of measures and models presented in this chapter, a number of robustness checks have been performed to insure reliability of the results.

Random effects regression model. First, I calculated random effects models using either change in political knowledge or change in news use as dependent variable and the other factor as independent variable. Random effects regression estimation is a more conservative and reliable test of causal relationships. The disadvantage of this type of model is, however, that the interrelation of both factors cannot be tested simultaneously. The results of this test support my analysis. Attentive news use is estimated to have a significant effect on political

knowledge (Beta:.08** SE.01) and political knowledge is estimated to have a significant effect on attentive news use (Beta:.14** SE:.02)¹⁵.

News exposure and attention to news. As I am using a combined measure of news use and attention to news, I tested whether the results hold up when both factors are tested independently. The results are mixed. I do find comparable results for models based on attention to news. (CFI: .97; RMSEA: .02). All relevant estimates that are significant in the combined model are also significant in a model based on attention to news only (w1 news→w2 political knowledge: Beta: .03(*) SE:.01, w2news→w3 political knowledge: Beta: .07; SE: .03, w1 political knowledge → w2 news: Beta: .75*; SE:.34, w2 political knowledge → w3 news: Beta: .15** SE: .06). In the model relying on exposure to news only (CFI: .98; RMSEA: .06) this is not the case. Here, I do find a significant impact of political knowledge on exposure to news, but exposure to news has no significant effect on political knowledge. (w1 news→w2 political knowledge: Beta: .03; SE: .06; w2news→w3 political knowledge Beta: .07; SE: .11; w1 political knowledge → w2 news: Beta: .23**; SE: .009, w2 political knowledge → w3 news: Beta: .46**; SE: .005). It should be noted, that in this model the correlation between the two slopes becomes significant, implying that the relationship between growth in exposure to news and growth in political knowledge is better described as a parallel process.

Discussion

In this chapter I set out to test the idea of a reinforcing spiral of political learning, to get a better understanding of the relationship found between political engagement and political information media use in Chapter 2. Extant studies on the relationship between news use and political knowledge have often concluded that growth in political knowledge and increase in attentive news use must be interrelated (Norris, 2000; Price & Zaller, 1993), but until now empirical proof is

¹⁵ Furthermore, I used SEM to test whether alternative causal paths would fit the data better than the proposed model. Yet, excluding the cross paths or estimating uni-directional effect models (only media effects or only knowledge effects) lead to a significantly worse model fit.

scarce. This study looks at the mutual interdependence from a longitudinal perspective. If the effects of political knowledge and news use are disentangled over time, they take the shape of a reinforcing spiral, which resembles the spiral of selective exposure put forward by Slater (2007).

The results support the conceptualization of a reinforcing spiral. However, according to the data, the two sides of the spiral are not equally powerful. Political knowledge is a much better predictor of future attentive news use than the other way round. Two conclusions can be drawn from this finding. First, the upward spiral of political learning can be entered at both ends. In order to stimulate political learning, it is effective to encourage young citizens to read or watch more news. Yet, it is probably even more efficient to spark the upward spiral at the end of political knowledge. The results imply that adolescents first need to have a general understanding of democratic institutions and democratic processes, before they are willing to follow the news attentively.

Second, we should be careful to over-interpret media effects on political knowledge in cross sectional studies. My findings suggest that causality in the relationship of political knowledge and news use goes in fact both ways, and more importantly, the reverse path is probably stronger. In other words, the commonly found correlation of political knowledge and news use (e.g. Chaffee, Ward, & Tipton, 1970; Norris, 2000); is rather a result of an increased interest in news of individuals with a high level of political knowledge, than a result of political learning through news media. It is important to note that this also holds when covariates are included in the model.

By using an adolescent panel I intended to measure the antecedents of the upward spiral. At this age neurological development is advanced enough to enable grasping abstract information (Chaffee, Ward, & Tipton, 1970a) , and individuals are slowly growing in their role as active participants in democracy (Sears & Levy, 2003) , which makes political information relevant for the first time. However, the results suggest that political knowledge and news use are already correlated at the age of fifteen. That means that the analysis does not cover the antecedents of the spiral. Accordingly, children younger than fifteen must already

be able to make enough sense of news to learn from it about political structures. The observed high initial level of political knowledge supports this conclusion. That means that the foundation of the spiral of political knowledge is probably laid much earlier. This finding is in line with a recent study of Prior (2010) on the development of political interest over the life course. He found that political interest is already fully developed at the age of 16 and changes little over the life course. To fully uncover the beginning of the spiral it is necessary to start observing the process at a young age in future research. Yet, even though the very beginning of the spiral was measured, it was still investigated at an early stage.

A similar conclusion can be drawn with regard to the effect of covariates in my analysis. According to the data, male, highly educated respondents, with a high social economic status have higher initial levels of political knowledge and news use (with the exception of the higher initial level of news use among women). This finding is in line with extant literature on the knowledge gap (Eveland & Scheufele, 2000; Jerit, 2009; Mondak & Anderson, 2004). Yet, these factors had little impact on the growth in political knowledge and news use. However, the analytical model was designed to validly measure news effects and the effect of background variables were used as covariates only, we should not interpret too much into the lack of effects of background factors on growth in knowledge.

Another interesting finding of this study worth noting is that the upward spiral of political learning is not found when news use is defined as mere exposure to news. Only once exposure is weighted by the amount of attention news users are paying to the news, the spiral occurs. This finding reiterates the results of other studies on knowledge effects of news (Chaffee & Schluender, 1986), and is linked to the argument that political learning is a psychological process that is dependent upon motivation and ability of the recipients of political information to retain and process new information (Price & Zaller, 1993). By weighting exposure with attention to news measures the notion of motivated news use was included in the model, as it allows to distinguish between those who are not interested in processing information and those who actively seek out the news.

In this study a complex structural model based on three waves of panel data is presented. Though the data fits the theoretical model well, a number of limitations of this study should be taken into account when interpreting the results: First, the interval of one year in between the measurements, which could be either too long or too short, depending on the point of view. Political learning is a life-long process (Sears & Levy, 2003) , and a time span of two years is therefore relatively short. An interval of one year in between the measurements, on the other hand, can be considered to be rather long. It might very well be that political knowledge and news use develop in a much faster pace. For example, de Vreese and Boomgaarden (2006) demonstrate knowledge gains during a very short time period, so do many studies of knowledge gains during electoral campaigns (W. P. Eveland, Hayes, Shah, & Kwak, 2005). That means that I am neither able to present a complete model of the dynamics of political learning nor a model on a very detailed level. Instead I provide a compromise between long and short term effects – a model of a specific section of the spiral in bird’s eye view. Second, as an adolescent sample forms the bases of this analysis, the generalizability of my results can be questioned. In order to be confident that my results hold for the general population, the analysis would have to be repeated with older and younger respondents. Third, in this study only three waves of data are available to model longitudinal developments. This is the minimal amount of measurements to construct such a model. Additional measurements would increase the robustness of the model as such.

These shortcomings aside, this study contributes to the extant body of literature on news effects on political knowledge by proposing and testing a theoretical model of the dynamics of political learning from the news. It advances our knowledge on the topic in several ways: 1) By using a measure of news use, that combines exposure on all major sources of news in one country, including specific internet news sources, and attention to news, 2) By taking on a longitudinal perspective which allows to test the mutual causal influence of news use and political knowledge simultaneously, 3) By adding the dimension of time

to the notion of mutual interdependence of the two factors, which leads to the conceptualization of a reinforcing spiral of political knowledge.

One question remains open. What happens to those who have no part in the upward spiral? Those who never build in enough knowledge to get interested and understand the news? If only those who already know fairly much about politics can learn from the news, how can adolescents with low political knowledge become informed and engaged citizens? It is clear that media can only provide a very small part to the solution for this problem and the importance of political education in school cannot be emphasized enough. But once the foundation is laid, news media are a prime place to enrich and reinforce political knowledge. The possibilities to raise political engagement through media is further explored in Chapter 5.

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