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## Maintenance or change? Examining the reinforcing spiral between social media news use and populist attitudes

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### ABSTRACT

Citizens around the world increasingly express support for populism. Here, we apply the reinforcing spirals model to examine whether, and how, social media news use shapes populist attitudes over time. Specifically, we assess if using social media as a news source serves to maintain existing populist attitudes or facilitates a shift in attitudes to a more extreme position. A cross-sectional survey ( $N_1 = 195$ ) highlighted a positive correlation between social media news use and populist attitudes. A four-wave longitudinal survey ( $N_2 = 386$ ) further showed that this relationship reflects media and selection effects. Over a period of three months, more frequent social media news use predicted stronger populist attitudes at subsequent measuring points. In addition, higher levels of populist attitudes were related to more frequent social media news consumption in the following waves. However, the frequency of social media news use did not change over time and populist attitudes did not become stronger during the study period. Taken together, the findings indicate that social media news use contributed to the maintenance of populist attitudes at a stable level. There is no evidence to suggest social media news use predicted more extreme populist attitudes. We discuss these results with respect to the (potentially continued) rise of populism; we also critically reflect on the phenomenon of attitude polarization online.

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effects

Populist parties and actors from across the political spectrum continue to attract substantial support. Populist ideology stipulates that the will of ‘the people’ is to be followed unconditionally (i.e., *demand for popular sovereignty*; Mudde, 2004). While ‘the people’ are equated to what is Good and pure, the so-called elite, including mainstream politicians and the media, are viewed as evil and corrupt (i.e., *anti-elitism*; Jagers & Walgrave, 2007). ‘The people’, as well as the elite, are construed as two homogenous entities; each group is thought to be defined by shared beliefs and needs (i.e., *anti-pluralism*; Akkerman et al., 2014).

Populist attitudes reflect how strongly individuals endorse these three facets of populist ideology (Schulz et al., 2018). Previous research has highlighted that, among others,

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age, gender, personality characteristics, and macro-level factors are associated with support for populism (e.g., Eatwell & Goodwin, 2018; Elchardus & Spruyt, 2016; Rico et al., 2017). Less is known about the role of media use patterns, specifically that of social media. Tentative evidence points out that frequent engagement with news on social media platforms predicts stronger support for populism (i.e., media effects; Groshek & Koc-Michalska, 2017; Hameleers & Schmuck, 2017); however, reverse *selection effects* were suggested as well (Krämer, 2017; Schulz, 2019; Stier et al., 2020).

To date, systematic analyses of both conjectures have not been presented. Importantly, it remains to be shown whether, and how, an interplay of the proposed media and selection effects shapes populist attitudes over time. Following the reinforcing spirals model (RSM; Slater, 2007; 2015; 2017), two scenarios can be envisioned. On the one hand, the association between social media news use and populist attitudes could point to reciprocal media and selection effects that maintain established populist attitudes at a stable level. On the other hand, populist attitudes may also be strengthened to represent a more extreme stance.

Here, we advance the literature and investigate these alternative propositions. Doing so, we draw on data from a cross-sectional (Study 1) and a four-wave longitudinal survey study (Study 2); both were conducted in Germany. As discussed in detail below, the nuanced, long-term assessment of the relationship between social media news use and populist attitudes helps to estimate if social media platforms could yield the continued or growing success of populism. Moreover, disentangling the extent to which social media news use enables attitude maintenance, or facilitates a shift in populist attitudes, reveals the extent to which social media (may) contribute to the polarization of society.

## **Social media and selective exposure to populist ideology**

It is agreed that ‘the media, intentionally or not, may serve as powerful mobilization tools for populist causes’ (Mazzoleni, 2008, p. 50). Notably, Engesser and colleagues (2017a) highlighted the affinity between social media and populism. The authors stipulated that features and affordances of social media platforms reflect key elements of populist ideology and can therefore foster the dissemination of populist messages (i.e., online opportunity structure; see as well Krämer, 2017). Additionally, social media allows populist actors to circumvent the ‘cordon sanitaire’ established by traditional media, where populist, notably, populist radical right voices, are less likely to be given a platform (Littler & Feldman, 2017). In line with these arguments, populist actors were found to promote their ideas more frequently on social network, content sharing, and micro-blogging sites than through other media (Ernst et al., 2019; see Engesser et al., 2017b; Ernst et al., 2017 for studies pointing to a fragmented presentation of populism on social media). There is also evidence to suggest that given its style – expressing fear and anger, presenting the future as bleak, and blaming the so-called elite for exploiting ‘the people’ – content by populist actors is particularly prone to ‘go viral’ on social media platforms (Brady et al., 2017; Oliver & Rahn, 2016).

Citizens use social media increasingly to consume news (Reuters Institute, 2017). If key attributes of social media align with the tenets of populist ideology, and social media is especially suited (and employed) to spreading populist messages (e.g., Engesser et al., 2017a; Ernst et al., 2017), it could be speculated that those who endorse populist attitudes are more likely to turn to social media for information on current affairs and

the news (i.e., *selection effect*). Indeed, previous research has shown that populist attitudes predict the selection of media and sources that are less representative of the so-called elite and that promote people centrality (Krämer, 2017; Müller & Schulz, 2019; Schulz, 2019; Stier et al., 2020). Social media platforms comply with these criteria: they limit the influence of information gatekeepers and grant users the opportunity to curate news as well as enable information flow between ‘the people’ (Engesser et al., 2017a). Furthermore, Twitter – but not Facebook – news use was found to be positively correlated with populist attitudes (Schulz, 2019).

### Attitude maintenance or shift to more extreme positions

The aim of this paper is to examine the dynamic relationship between social media news use and populist attitudes over time. We take the aforementioned selection effects as a starting point and draw on the reinforcing spirals model (Slater, 2007; 2015; 2017) to guide our rationale. The RSM postulates that selective exposure to media that confirms one’s core convictions (e.g., exposure to populist content on social media) directs attention to the respective components of one’s identity (e.g., ‘I support populism’<sup>1</sup>), associated goals, or traits. Specific behavior representations are activated (e.g., ‘People who support populism act like that’) that ultimately drive behavior (see Deshpandé & Stayman, 1994; Dijksterhuis et al., 2007). As a particular identity is salient, identity-aligned stimuli are also evaluated more positively and sought out (Forehand et al., 2002; Forehand & Deshpandé, 2001). Therefore, selective exposure enhances the likelihood that future behavior, including media selection, is belief-congruent (e.g., in line with populist ideology). For example, when focusing on voting behavior, it was shown that more frequent passive social media use predicts a higher likelihood to endorse Donald J. Trump, who was considered as the second-most populist candidate in the 2016 US presidential election (Groshek & Koc-Michalska, 2017). A longitudinal study in Germany conceptually replicated the latter results (Schumann, Boer, Hanke, & Liu, 2019). Importantly, belief-congruent behavior sustains the salience of the relevant attitude or identity – over time, media and selection effects fuel each other.

Applying these insights to our research goal, it follows that populist attitudes and social media news use are expected to be correlated positively (*Hypothesis 1*). This positive correlation should reflect media *and* selection effects. Specifically, we postulate that social media news use predicts future populist attitudes while, *simultaneously*, populist attitudes are associated with future social media news consumption (*Hypothesis 2a*). Over time, the relations between populist attitudes should be mediated by social media news use (*Hypothesis 2b*) and associations between social media news consumption at subsequent measuring points ought to be mediated by populist attitudes (*Hypothesis 2c*).

Thus far, we have not yet discussed whether or how populist attitudes are shaped as a result of these reciprocal media and selection effects. Speaking to this point, Slater (2007) proposed two scenarios: attitude maintenance or a shift in attitudes to a more extreme position. Attitudes are thought to remain stable at an existing level as long as media use patterns do not change, and selective exposure to belief-congruent media does not increase. Attitude change is predicted – but not inevitable – if individuals perceive threats to core aspects of their identity or attitudes. Under such conditions, for example, during

election campaigns, the selective use of particular media can be increased for a short period to attain attitude homeostasis; attitudes that were challenged could thus remain at a (pre-existing) stable level (i.e., *negative feedback loops*; Schemer, 2012; Stroud, 2010).

Increased selective media use, however, is not always temporary. When core convictions are perceived to be persistently threatened, selective media use can continue to intensify over time. It is stipulated that attitudes then change to a more extreme position (i.e., *positive feedback loops*; Slater, 2015). Notably, enhanced selective media exposure reduces contact with rivaling opinions while increasing contact with like-minded voices. In such (more) homogenous environments, attitudes are likely to become more extreme because individuals receive novel arguments to further strengthen their conviction (Burnstein & Vinokur, 1977) and strive to hold positively distinct, slightly more extreme, opinions than others (Crano & Prislin, 2006; Isenberg, 1986).

In the present research, evidence for either negative or positive feedback loops would be provided if selective exposure increased (i.e., social media news use became more frequent over time, *Hypothesis 3a*). Additionally, observing that populist attitudes became stronger, would lend further support to the presence of positive feedback loops (*Hypothesis 3b*). If changes in social media use and changes in attitudes were positively correlated, positive feedback loops would be confirmed (*Hypothesis 3c*). No changes in social media news consumption and populist attitudes, in turn, could be interpreted to reflect a process of attitude maintenance.

## The present research

Taken together, preliminary empirical evidence and theoretical reasoning inform the conjecture that individuals who endorse populism prefer social media to access news. Such selective media exposure may over time – through reciprocal media and selection effects – either contribute to the maintenance of populist attitudes at a stable level, or to the shift in attitudes to more extreme positions. To date, these nuanced, long-term dynamics have not been examined. Addressing this gap, we conducted two studies in Germany, where approximately one-third of the population, across the political spectrum, express moderate to strong support for populist attitudes (Vehrkamp & Wratil, 2017).

Study 1, a cross-sectional survey study, tested if social media news use and populist attitudes were positively correlated. Only if this correlation is established is it sensible to explore media and selection effects as well as changes in attitudes over time. Thus far, one study has assessed the correlation between social media news use and populist attitudes, but showed inconsistent findings (Schulz, 2019). Therefore, a conceptual replication is warranted. Study 2, a four-wave longitudinal study, then investigated whether the association between social media news consumption and populist attitudes is characterized by reciprocal selection and media effects, as well as whether these foster over time more extreme populist attitudes or attitude maintenance. Additionally, Study 2 applied a novel methodological and analytical framework to examine media and selection effects in longitudinal studies.

Pursuing the aforementioned research questions is relevant for two reasons. Firstly, the documented affinity between social media and populism at the organizational level (Engesser et al., 2017a; Krämer, 2017) may be interpreted such that social media

platforms contribute to the ongoing success of populist actors and parties. This argument could be endorsed if individuals' social media news use was indeed associated with stronger support for populism. More precisely, results that point to positive feedback loops would provide reason to speculate that social media drives a *growing* endorsement of populism in society; if there was evidence for attitude maintenance, it could be envisioned that social media use contributes to the *sustained* success of populist actors. The implications of both developments are manifold, including the proliferation or persistence of a climate in which mainstream media (Fawzi, 2019; Schulz, Wirth, & Müller, 2020) and political parties (Bergh, 2004) are mistrusted such that disinformation flourishes (Castanho Silva, Vegetti, & Littvay, 2017; Hameleers, 2020).

Furthermore, the present studies examine if social media news use predicts attitude change to a more extreme position, and, thus, assess dynamics of polarization in society. Doing so, our research adds theoretical insights to an ongoing scientific discourse: The claim that social media users are immersed in homogenous filter bubbles that facilitate polarization is popular (Bail et al., 2018; Pariser, 2011; Sunstein, 2018) but has been questioned (Flaxman, Goel, & Rao, 2016; Zuiderveen Borgesius et al., 2016). To date, the latter rebuttal focuses largely on demonstrating that online settings are more diverse than is claimed (see, however, Dahlgren, 2019). Relying on self-report measures of attitudes and media use, we study attitude development itself and not its antecedents. We also introduce attitude maintenance as an alternative scenario. If social media news use predicts the maintenance of populist attitudes at stable levels, this would suggest the persistence of existing cleavages in society (even if these are not widened), which can sustain a context in which violence towards outgroups is accepted (Kalmoe & Mason, 2019) and collaboration is unlikely (Barber, McCarty, Mansbridge, & Martin, 2015).

## Study 1

To reiterate, we, firstly, assessed whether populist attitudes and social media news use are correlated positively (*Hypothesis 1*). Data and code used for the analyses of Study 1 are available here: [https://osf.io/xfpn5/?view\\_only=bdb46637391c4de5bd1b3afb9ad7f4ce](https://osf.io/xfpn5/?view_only=bdb46637391c4de5bd1b3afb9ad7f4ce)

## Method

### *Design and sample*

A cross-sectional online survey was completed by  $N = 196$  respondents (13.58% completion rate). Respondents were on average  $M = 29.86$  years old ( $SD = 11.26$ ; range: 18–74); 54.9% reported their gender as female, 43.6% as male. The majority of respondents had a university degree (49.7%) or a high school degree that enabled them to attend university (35.9%). Additionally, 97.4% of respondents had German citizenship and 74.9% reported having no immigration background.

### *Procedure*

Data were collected between 24.07.2018 and 01.08.2018 in Germany. The survey link was posted in four Facebook groups that were likely to attract people interested in politics, sports, and the arts, in order to reach a diverse audience, including – but not exclusively –

people who are interested in politics and therefore the survey topic. Respondents filled in the survey in their own time (average completion time: 14:40 min.).

### Measures

We used the PopAtt12-scale (Schulz et al., 2018) to capture *populist attitudes* on the three sub-dimensions: anti-elitist attitudes, demand for people's sovereignty, and belief in a homogenous and virtuous people (1 = *strongly disagree*, 7 = *strongly agree*).

Populism has been described as a thin ideology; it does not stipulate a comprehensive set of ideas for social and political change but is combined with deep ideologies, such as anti-globalization and nationalism, to constitute a coherent program (Neuner & Wratil, 2020). Following this line of thought, it is suitable to assess populist attitudes without reference to a specific ideology. An assessment of the factor structure of PopAtt12 (Supplementary Material, Table S1) with principal component analysis and oblimin rotation did not yield the expected three-factor solution (see, however, Schulz et al., 2018). Therefore, a mean score across all items was computed ( $\alpha = .91$ ). Higher values on the scale reflect stronger populist attitudes.

Respondents further indicated on how many days of the past week they had used different *media to obtain information about current events and political issues* (1 = 0 days, 8 = 7 days). Answer options included 'online portals of newspapers', 'newspapers (without online-portals)', 'internet blogs by citizen and grassroots journalists', 'radio', 'television (e.g., digital, online, ...)', and 'social media (e.g., Facebook, Snapchat, YouTube, Twitter, ...)'. Analyses involved answers on all aforementioned media, following Dahlgren's (2019) suggestion that one should study the role of social media news use in the context of, and compared to, traditional media use. Measures that were collected in the study but not analyzed in the present research are reported in the Supplementary Material, Table S2.

### Results and discussion

Mean scores as well as bivariate correlations of all variables are reported in Table 1. Respondents indicated moderate levels of populist attitudes. In line with Hypothesis 1, social media news consumption was positively correlated with populist attitudes. However, the strength of the correlation was weak. Populist attitudes were further moderately, positively related with the use of television to receive news and moderately, negatively correlated with newspaper news use, excluding the online news portals of the outlet. These findings endorse previous research that has examined the media diet of citizens who support populism. We conceptually replicated Schulz's (2019) finding of a positive association between populist attitudes and Facebook news use. Moreover, the negative correlation

**Table 1.** Means, Standard Deviations, and Bi-variate Correlations (Study 1).

Variable	M (SD)	1	2	3	4	5	6
1 Populist attitudes	3.66 (1.20)	1					
2 Social media	4.97 (2.68)	.17*	1				
3 TV	4.02 (2.52)	.29**	.27**	1			
4 Radio	3.86 (2.51)	-.01	-.02	.32**	1		
5 Newspaper	2.64 (2.12)	-.20**	.11	.25**	.32**	1	
6 Online newspaper	5.88 (2.43)	-.09	.17*	.00	-.10	.10	1

Note. \*  $p < .05$  \*\*  $p < .01$ .

between populist attitudes and newspaper use, as well as the positive correlation with television news consumption, likely represent preferences for commercial news and a reduced engagement with high-quality news (see Schulz, 2019; Stier et al., 2020).

In summary, Study 1 suggests that social media news use can, in principle, shape populist attitudes. Due to the cross-sectional design of the survey, however, it is unclear whether both selection and media effects are reflected in the correlation, as well as whether attitude maintenance or change can be inferred. Using a convenience sample recruited on Facebook, the variance of populist attitudes in the sample was low. This may have affected the (weak) strength of the correlation between social media news consumption and populist attitudes and challenges the generalizability of the results.

## Study 2

Given that the positive correlation between populist attitudes and social media news use was supported in Study 1, there was ground to investigate more nuanced dynamics, that is, selection and media effects, as well as potential attitude change over time. More precisely, Study 2 aimed to assess whether social media news use is positively associated with future populist attitudes while, simultaneously, stronger populist attitudes predict more frequent future social media news consumption (*Hypothesis 2a*). To examine if these media and selection effects are reciprocal, we postulated that the relations between populist attitudes over time are mediated by social media news use (*Hypothesis 2b*), and that associations of social media use for news across waves are mediated by populist attitudes (*Hypothesis 2c*).

During the period in which data for Study 2 was collected, several events occurred that may have evoked increased levels of perceived threat for those who endorsed populist attitudes, potentially eliciting either negative or positive feedback loops. Firstly, a journalist working for one of the main German news outlets, the Spiegel, was found to have fabricated news content. This case was instrumentalized by political actors in Germany to criticize the mainstream media and question its capacity/ability to speak the truth to ‘the people’ (Connolley & Le Blond, 2018). At the same time, there were several instances where politicians of the populist radical right party *the Alternative for Germany* (AfD) were sued (e.g., for instance for incitement of the people; dpa, 2018); their co-leader Alice Weidel was found to have accepted illegal campaign donations (DW, 2018) and in January 2019, the party was placed under stricter monitoring by the national intelligence agency (BBC, 2019). Within the populist Left party – an opposition party represented in national, local and regional governments, however, less popular than the AfD – a split was observed as a key party member initiated a new movement that was quickly criticized and deemed unsuccessful (Schneider, 2018).

To assess the extent to which populist attitudes became more extreme or were maintained at a stable level during the study period, we hypothesized that social media news use increased during the study period (*Hypothesis 3a*; evidence for either negative or positive feedback loops), that populist attitudes became stronger (*Hypothesis 3b*; evidence for positive feedback loops), and that these changes were positively correlated (*Hypothesis 3c*; evidence for positive feedback loops). The dataset and code associated with this study is available here: [https://osf.io/xfpn5/?view\\_only=bdb46637391c4de5bd1b3afb9ad7f4c](https://osf.io/xfpn5/?view_only=bdb46637391c4de5bd1b3afb9ad7f4c).



## Method

### Design and sample

We conducted a longitudinal survey study with four measuring points; lags between waves were approximately three weeks. An a-priori power analysis (parameters: 4-wave repeated measure analysis,  $f = .10$ ,  $p = .05$ , power = .95, expected correlation between waves  $r = .30$ ) suggested a longitudinal sample size of  $N = 302$ . Taking into account drop-out over time, we recruited larger samples in the initial waves. The first wave was completed by  $N = 864$ , the second by  $N = 627$ , the third by  $N = 465$ , and the fourth wave by  $N = 353$  respondents. In each wave, we excluded and did not re-invite respondents who (a) did not successfully complete an attention check item, (b) responded to open text questions with gibberish, (c) completed the survey in less than 5 min, (d) had more than 27% missing values (a criterium indicated by the market research company collecting the data), and (e) were identified as outliers on the upper threshold of survey completion time.<sup>2</sup> Additional drop-out was the result of people choosing not to participate again. The analytical longitudinal sample of  $N = 386$  respondents – slightly larger than expected due to practical data collection issues – included all respondents who had reported social media use or populist attitudes in at least *three* waves.

Respondents were on average  $M = 53.93$  years old ( $SD = 13.32$ ; range: 19–79); 49.9% reported being female and 49.6% indicated being male, one person did not report their gender. The majority (33.8%) of respondents had completed an apprenticeship, followed by 22.3% who had a university degree, and 17.9% with a degree from a technical college. 51.7% reported being an employee, only 3.4% were unemployed, others were self-employed, students, or in the process of completing an apprenticeship. 90.1% of respondents had no immigration background. In the last national election, 25.6% of respondents had voted for the ‘Alternative for Germany’, 18.4% had endorsed the ‘Social Democrats’, 17.4% had voted for the ‘Christian Democratic Union’, 14.4% had supported ‘The Left’, 10.9% voted for ‘The Greens’, and 8% had endorsed the ‘Free Democrats’.

### Procedure

Data was collected between 19.10.2018 and 31.1.2019 using an online opt-in access panel of a professional market research company in Germany. Financial incentives were provided by the company. We recruited respondents who were at least 18 years old and had the right to vote in Germany. In the first wave, we over-sampled respondents who expressed sympathy with the populist parties ‘Alternative for Germany’ or ‘the Left’ to include 1/4 of respondents from these two groups respectively. We also aimed to produce a sample with an equal number of women and men in the first wave. No quotas were introduced in the following three waves. The average response times for Wave 1–4 were 10 min, 10:40 min, 7:25, and 14 min respectively.

### Measures

*Populist attitudes* were examined with the PopAtt12-scale (Schulz et al., 2018). A principal component analysis with oblimin rotation of the 12 PopAtt12 items at all four waves demonstrated, as in Study 1, a two-factor solution for three waves (Supplementary Material, Table S3). To track the same measure over time, we created one mean score

across all items (Wave 1:  $\alpha = .88$ , Wave 2:  $\alpha = .90$ , Wave 3:  $\alpha = .91$ , Wave 4:  $\alpha = .89$ ); higher values indicate stronger support for populist ideology. Respondents reported their media use patterns as in Study 1. See Supplementary Material S4 for a complete list of measures that were assessed in the study across the four waves.

## Results and discussion

### Descriptive findings

Mean scores and standard deviations of populist attitudes and media news use across all four waves are presented in Table 2. At all measuring points, levels of populist attitudes were moderate-high and average social media news use was low.

### Analytical approach

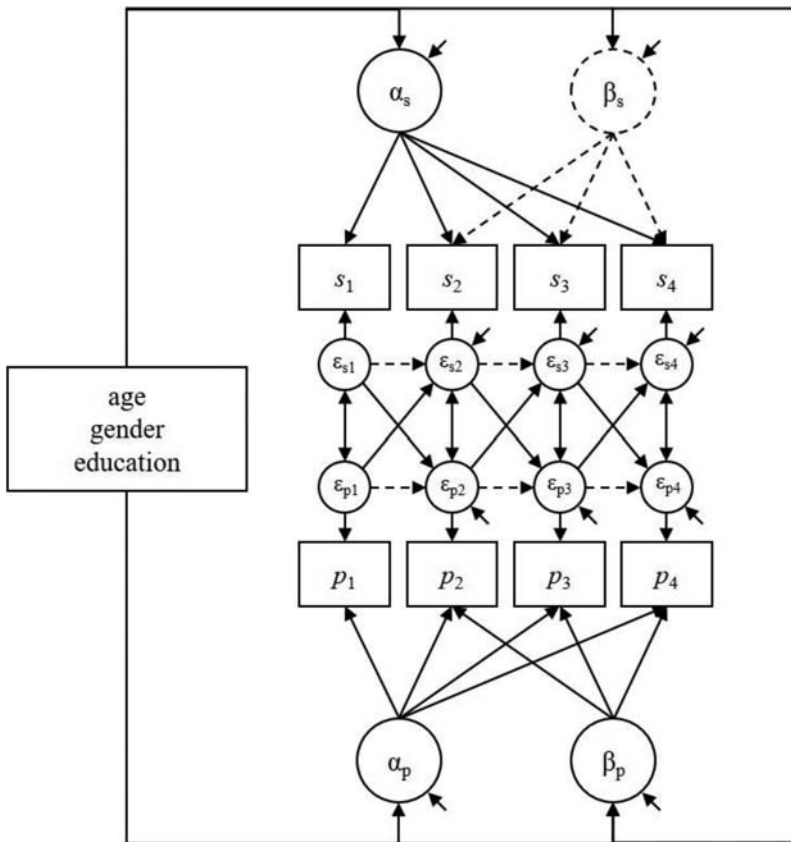
Reinforcing spirals are described and analyzed as an intra-individual (within-person) process taking into account person-specific or contextual factors at an inter-individual (between-person) level simultaneously (Moeller et al., 2018; Thomas, Shehata, Otto, Möller, & Prestele, 2021). To model reinforcing spirals, intra-individual and inter-individual effects must be separated. Latent curve models with structured residuals (LCM-SR; Curran et al., 2014) are the optimal approach to achieve this (Bainter & Howard, 2016). The LCM-SR estimates latent growth factors for populist attitudes and social media news consumption. That is, for both variables a latent intercept, representing the mean starting level, and a latent slope, representing the mean rate of change over the study period, are estimated. Both latent factors and their shared covariance represent inter-individual effects or – expressed differently – *trait-like* developments over time that vary between individuals. Autoregressive and cross-lagged relations between populist attitudes and social media news use are modeled by relying on the residuals of the repeated measures; they are interpreted as time-specific deviations from the underlying growth trajectories and represent intra-individual effects. The autoregressive and cross-lagged residual structure can be understood as the *state-like* component of the model, as residuals fluctuate between waves and reflect within-person variability. Double-sided mediations of social media news use mediating auto-regressive relations between populist attitudes and vice versa (Slater, 2015), are defined at an intra-individual level as well (Thomas et al., 2021).

### Model building

All analyses were conducted with *R*, package *Lavaan* (v.0.6-5; Rosseel, 2012). We determined the model with which to test the hypotheses by comparing the fit of six models of

**Table 2.** Means and Standard Deviations (Study 2).

Variables	Wave 1 <i>M</i> ( <i>SD</i> )	Wave 2 <i>M</i> ( <i>SD</i> )	Wave 3 <i>M</i> ( <i>SD</i> )	Wave 4 <i>M</i> ( <i>SD</i> )
Populist attitudes	5.06 (1.06)	5.02 (1.07)	4.98 (1.14)	4.91 (1.09)
Social media	2.46 (2.84)	3.11 (2.98)	2.81 (2.95)	2.71 (2.88)
TV	4.66 (2.67)	4.92 (2.70)	5.02 (2.57)	4.86 (2.63)
Newspaper	2.89 (2.76)	2.93 (2.77)	2.99 (2.76)	2.80 (2.72)
Radio	3.88 (2.71)	4.48 (2.64)	4.38 (2.71)	4.30 (2.70)
Mean score (TV, newspaper, radio)	3.81 (1.98)	4.11 (1.98)	4.13 (1.91)	3.99 (1.97)
<i>N</i>	386	373	385	322



**Figure 1.** Conditional LCM-SR with four repeated measures for social media use ( $s$ ) and populist attitudes ( $p$ ). Factor loadings for slopes ( $\beta$ ) are set to 0, 1, 2, 3; for intercepts ( $\alpha$ ) to 1, 1, 1, 1; for residuals ( $\epsilon$ ) to 1. Full lines represent the final model following a strict modeling strategy. Full lines combined with dashed lines represent the final model following a loose modeling strategy.

increasing complexity (i.e., the successive modeling of slopes and autoregressive/cross-lagged effects; see Curran et al., 2014) following both a loose and a strict modeling strategy. The detailed procedure and fit indices are described in the Supplementary Material S5. The final model (following a loose modeling strategy) included random-intercepts and random slopes for social media news consumption and populist attitudes, as well as an autoregressive and cross-lagged residual structure for both outcomes. We further regressed all latent growth factors on the control variables age, gender, and level of education (Figure 1).

**Hypotheses testing**

To examine whether the positive relationship between social media news use and populist attitudes that has been documented in Study 1 reflects media and selection effects, intra-individual dynamics (i.e., residual structures) must be examined. Results showed a cross-lagged relationship between social media news use at time  $t$  and populist attitudes at time  $t+1$  ( $\rho_{p_{(t+1)}s_t} = .03, SE = .02, p = .048, \text{Table 3}$ ). Higher than usual levels in social

**Table 3.** Intraindividual autoregressive, cross-lagged, contemporaneous, and indirect effects.

	Estimate	SE
<i>Conditional LCM-SR (effects constrained to equality over time)</i>		
Autoregressive effect on social media use	-.02	.08
Autoregressive effect on populist attitudes	.03	.08
Contemporaneous residual covariance	.09*	.04
Cross-lagged effect on social media use	.68**	.23
Cross-lagged effect on populist attitudes	.03*	.02
<i>Conditional LCM-SR (freely estimated cross-lagged effects for each mediation)</i>		
Indirect effect with social media use t2 as mediator (a)	.01	.02
Indirect effect with social media use t3 as mediator (b)	.03	.03
Indirect effect with populist attitudes t2 as mediator (c)	.02	.02
Indirect effect with populist attitudes t3 as mediator (d)	.03	.02

Note. N = 384. Table shows unstandardized coefficients. \*\* $p < .01$ , \* $p < .05$ .

Fit indices for mediation models:

<sup>a</sup>  $\chi^2(27) = 59.10$ ,  $p < .001$ , RMSEA = .06, CFI = .99, TLI = .98

<sup>b</sup>  $\chi^2(27) = 59.70$ ,  $p < .001$ , RMSEA = .06, CFI = .99, TLI = .98

<sup>c</sup>  $\chi^2(27) = 59.72$ ,  $p < .001$ , RMSEA = .06, CFI = .99, TLI = .98

<sup>d</sup>  $\chi^2(27) = 59.80$ ,  $p < .001$ , RMSEA = .06, CFI = .99, TLI = .98

media news use predicted higher than usual levels in populist attitudes measured in the following wave, where ‘higher than usual’ refers to individuals’ growth trajectories for each outcome. Moreover, we found support for selection effects: higher populist attitudes at time  $t$  predicted higher social media news consumption at time  $t+1$  ( $\rho_{s(t+1)p_t} = .68$ ,  $SE = .23$ ,  $p = .003$ ). Hypothesis 2a was supported. Residuals of populist attitudes and social media news use that were measured at the same wave were also correlated ( $\omega_{p_t s_t} = .09$ ,  $SE = .04$ ,  $p = .032$ ). Additional robustness tests highlighted that the result remained stable when all latent growth factors were regressed on further covariates: individuals’ political orientation, hostile media perceptions, relative deprivation, and voting behavior during the last federal elections (see Supplementary Material S6).

In order to test whether social media news use mediated the auto-regressive associations of populist attitudes at subsequent waves, and vice versa, we freely estimated the cross-lagged relationships for each mediation process separately. Table 3 highlights that none of the indirect effects were significant. That is, we did not find support for mediation processes (i.e., no support for Hypotheses 2b and 2c).

Finally, to assess whether social media news consumption increased and populist attitudes became stronger over the study period (Hypothesis 3a and 3b), we estimated starting values in social media news use ( $\mu_{\alpha p} = 2.65$ ,  $SE = .14$ ,  $p < .001$ ) and populist attitudes ( $\mu_{\alpha p} = 5.06$ ,  $SE = .05$ ,  $p < .001$ ). Both starting values varied significantly between individuals (populist attitudes:  $\omega_{\alpha p} = .89$ ,  $SE = .08$ ,  $p < .001$ , social media news use:  $\omega_{\alpha s} = 5.46$ ,  $SE = .59$ ,  $p < .001$ ). However, the latent slope of social media news consumption was not significantly different from zero ( $\mu_{\beta s} = .07$ ,  $SE = .04$ ,  $p = .088$ ;  $\omega_{\beta s} = .11$ ,  $SE = .09$ ,  $p = .196$ ), indicating no change in the frequency of social media news use during the study period. Hypothesis 3a was not supported and, thus, neither negative nor positive feedback loops should be observed. In fact, the latent slope for populist attitudes showed slight negative growth ( $\mu_{\beta p} = -.05$ ,  $SE = .01$ ,  $p < .001$ ;  $\omega_{\beta p} = .01$ ,  $SE = .01$ ,  $p = .147$ ), which highlights that – contrary to Hypothesis 3b – populist attitudes became slightly weaker over the course of three months. The slopes of social media news use and populist attitudes also did not covary ( $\omega_{\beta_p \beta_s} = -.02$ ,  $SE = .01$ ,  $p = .086$ ; Table 4), rejecting Hypothesis 3c.

**Table 4.** Covariance, variance matrix for latent growth factors.

	Latent factor	1	2	3	4
1	Int. populist attitudes	.89 (.08)***			
2	Int. social media news use	.32 (.15)*	5.46 (.59)***		
3	Slp. populist attitudes	.01 (.01)	.01 (.03)	.01 (.01)	
4	Slp. social media news use	-.03 (.04)	-.04 (.16)	-.02 (.01) <sup>o</sup>	.11 (.09)

Note.  $N = 384$ . Int. = Intercept, Slp. = Slope. Values in parentheses represent standard errors. Diagonals represent variances. Lower left triangle represent covariances. \*\*\* $p < .001$ , \* $p < .05$ , <sup>o</sup> $p < .10$ .

Lastly, exploratory analyses were conducted to establish whether the identified relationship between populist attitudes and social media news use over time can be replicated for other media. We replaced the repeated social media news consumption measures with repeated measures for TV, newspaper and radio news use. We further calculated a mean score of all three traditional media. Results indicated that cross-lagged selection and media effects were absent for all traditional media and their mean score (see Supplementary Material S7). In addition, much like for social media, no systematic changes in traditional media use were observed during the study period – only radio news consumption increased over time.

Taken together, we documented media and selection effects over three months; these were unique to social media news use and not identified for other media. However, there was no evidence for a change in social media news consumption or a shift in populist attitudes to a more extreme stance. The results point to a relationship between social media news consumption and populist attitudes that reflects a process of attitude maintenance.

One explanation for the absence of attitude change in this study might be ceiling effects. On average, respondents scored highly on populist attitudes, such that a further upward trend may not have been captured on our scale. Ceiling and repeated measurement effects may also explain why overall, we observed a small negative slope of populist attitudes (notably, not predicted by social media use). Finally, respondents might not have perceived any salient trigger that elicited a threat to populist attitudes (Slater, 2007). It is therefore our recommendation that future research applies the novel methodological and analytical framework presented here – relying on the reinforcing spirals model (Slater, 2007; 2015; 2017) and the latent curve models with structured residuals (Curran et al., 2014; Thomas et al., 2021) – to replicate these findings in a different setting where such trigger events are manipulated or levels of perceived threat are measured.

## General discussion and conclusions

Extending previous research that has identified individual- and macro-level correlates of support for populism (e.g., Eatwell & Goodwin, 2018; Elchardus & Spruyt, 2016; Rico et al., 2017), we presented two studies that consistently highlighted that populist attitudes are positively related to social media news consumption. Moreover, we showed that over the course of three months, this positive relationship was characterized by (social) media and selection effects. However, we cannot conclude that the media and selection effects predicted a change in populist attitudes to more extreme positions. Rather, the evidence suggests that social media news use was associated with the maintenance of existing populist attitudes at a stable, high level.

The present research thus confirms the affinity between social media and populism that has been previously documented (Engesser et al., 2017a; Ernst et al., 2017, 2019). Specifically, based on the aforementioned findings, we may speculate that social media has the potential to contribute to the sustained endorsement of populist parties. The findings do not allow us to conclude that social media use encourages those who somewhat support populism to take a stronger – more extreme – stance. However, consuming news on social media appears to serve as a means to uphold existing opinions, which could be reflected in consistent voting patterns (Schumann et al., 2019) and the persistence of a climate of mistrust in mainstream media and political actors (Bergh, 2004; Fawzi, 2019; Schulz et al., 2020).

We also extend previous research that has explored the media diet of those who endorse populist ideology (Müller & Schulz, 2019; Schulz, 2019; Stier et al., 2020). While Study 1 confirmed a preference for social media and commercial news, and reduced engagement with high-quality news (see Schulz, 2019; Stier et al., 2020), Study 2 showed longitudinal selection effects that were unique to social media news use. In other words, individuals who hold stronger populist attitudes may be best distinguished from those who show less support for populism in terms of their social media news consumption. This insight speaks once again to the unique role of social, but not traditional media, for sustaining populist attitudes. It also means that mainstream parties or civil society may want to turn to social media platforms to reach individuals who endorse populism to engage them in dialogue.

Study 2 further advances the discourse on attitude polarization and social media. It has been argued that attitudes become more extreme due to social media use, the result of a proliferation of homogenous ‘filter bubbles’ that do not promote diverse views (Bail et al., 2018; Pariser, 2011; Sunstein, 2018). We did not find support for this claim. More specifically, we did not show that social media news use contributes to a change in attitudes. Our findings do, however, highlight that it is worthwhile to shift the current debate in a complementary direction and, in applying the reinforcing spirals model (Slater, 2007; 2015; 2017), focus not only on how social media use fosters attitude change but also on processes of attitude maintenance. The latter may not drive *further* polarization in society but could enable the persistence of established cleavages, which can be a stepping stone for hate and violence.

Unfortunately, our findings cannot specify the exact dynamics of attitude maintenance. We did find support for selection and media effects but no indirect effect of, for example, social media news use mediating auto-regressive relations between populist attitudes. This may be due to the fact that the duration of the lags between waves was too long. It has been proposed that attitude activation is best examined immediately after exposure (Slater, 2015). Being aware of the required resources, future studies should therefore employ designs with more frequent, shorter lags. A further limitation of the present research is that our analyses included populist attitudes as a uni-dimensional measure, not distinguishing the three facets of populist ideology. This choice was informed by principal component analyses. Schulz and colleagues (e.g., Schulz, 2019; Schulz et al., 2018) also used the PopAtt12 scale by relying on one score of the higher-order concept, rather than its sub-dimensions. Doing so, the distinct implications of specific facets of populist attitudes cannot be examined.

Moreover, it must be acknowledged that our measure of social media news consumption was not precise enough to identify what element of social media news

use elicited the selection and media effects: we cannot pinpoint whether the use of a specific platform was relevant. Schulz (2019) showed distinct (positive and negative) relations between populist attitudes and Facebook as well as Twitter use. Platforms differ in terms of the audiences they attract, such that selection and media effects may be more pronounced for some platforms. Schulz' (2019) work would suggest that Facebook news use but not Twitter aligns with (or underlies) our results. Furthermore, given the broad measure for social media news use, it may have been interpreted by some to include news from friends and family received on messenger services (e.g., Telegram, WhatsApp). As a result, the conceptual clarity of the measure is diluted, reflecting hard news as well as interpersonal communication. A more nuanced measure of social media use, as well as detailed media diaries and mobile intensive longitudinal linkage analysis (Thomas et al., 2021), could provide future research with relevant insights to address the aforementioned concerns. Last but not least, one should keep in mind, that our samples are not representative of the German population. Future studies with representative samples and samples from other countries are needed to see whether our findings generalize to the German population at large and beyond.

Despite these limitations, the present research makes a valuable contribution to the existing literature that explores the affinity between social media and populism. Investigating dynamics of attitude development over time and applying a novel methodological approach, we clarify that social media news consumption should not only be conceptualized as a source of opinion change and polarization but as a potentially powerful tool to maintain existing populist attitudes.

## Notes

1. Krämer (2014) speaks in this context of the activation 'of a kind of "populism schema"' (p. 55).
2. Excluded (and not re-invited) cases in Wave 1:  $N = 109$ , Wave 2:  $N = 56$ , Wave 3:  $N = 50$ , Wave 4:  $N = 13$ .

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