

D5.4

Emotions and threats to democracy



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EXECUTIVE SUMMARY

This report examines how emotional and empathic responses to political content on social media relate to processes relevant to countering political extremism and understanding political polarization. It presents findings from two longitudinal studies based on a three-wave panel survey conducted in Austria, Bulgaria, Denmark, and Poland within Task 5.4. The first study investigates whether exposure to the political outgroup engaging in self-criticism is associated with greater cognitive empathy toward this political outgroup and stronger support for anti-extremism content on social media. The second study examines whether intentional exposure to political violence is associated with anger toward political violence and emotional desensitization to political violence and, subsequently, with support for polarizing political content online. Random-intercept cross-lagged panel models (RI-CLPMs) were used to distinguish stable differences between individuals from changes occurring within individuals over time.

Across both studies, the findings that regard differences between individuals were highly consistent across the four countries and supported all hypothesized relationships. In Study 1, greater exposure to outgroup self-criticism was associated with higher cognitive empathy and stronger support for anti-extremism content, while in Study 2, greater intentional exposure to political violence was associated with stronger desensitization, anger, and support for polarizing content. By contrast, effects within the same individual were limited, heterogeneous across countries and time intervals, and showed little consistency across waves.

Taken together, the findings show that political media exposure, emotional responses, and online political behavior are consistently linked when comparing different people. However, changes in a person's own media exposure were not consistently followed by changes in their emotions or behavior across countries and over time. These findings also call for caution when interpreting earlier research. Associations observed in studies that survey people once or twice do not necessarily show how changes in media exposure relate to changes in the same person's emotions or behavior, because they may reflect lasting differences between people, because these designs cannot reliably distinguish changes within individuals from lasting differences between people. Similarly, immediate effects observed in experiments should not be assumed to persist over time. Instead, our findings suggest that stable individual differences or enduring contextual factors may account for these relationships. The findings therefore caution against assuming that changing media exposure of an individual alone will reliably change their political emotions or behavior. Future research should therefore use multi-wave designs that explicitly model within-person change and examine whether such effects emerge over longer periods, under specific contextual conditions, or among particular subgroups.

1. INTRODUCTION

1.1 THE ENCODE PROJECT

The ENCODE project, titled "Unveiling Emotional Dimensions of Politics to Foster European Democracy," aims to explore and decode the role of emotions in political discourse and their impact on democratic processes. Recognizing that emotional appeals have significantly influenced political movements and voter behaviour, ENCODE seeks to understand the interplay between emotions, values, and identities. The project's primary goal is to create new positive narratives that can foster trust and engagement in European democratic processes, thereby counteracting the negative emotions that often dominate political discussions. Through innovative methodologies, including social media sentiment analysis, biometric research, and surveys, ENCODE aims to provide policymakers with tools and strategies to better incorporate the emotional needs of citizens into governance, ultimately enhancing democratic resilience and fostering a more inclusive political environment.

1.2 OBJECTIVES OF DELIVERABLE

- Examine how emotional and socio-cognitive responses to political content on social media relate to processes associated with political extremism and polarization.
- Investigate longitudinal processes through which emotional and cognitive responses contribute to changes in digital behaviors that may either reinforce or counter developments harmful to liberal democracy.
- Assess the role of both negative and positive responses, including whether empathic responses may foster support for social media content countering extremism, and whether anger and desensitization in response to political violence may contribute to support for polarizing content online.
- Compare these processes across the four core countries: Austria, Bulgaria, Denmark, and Poland.
- Use three-wave panel data and random-intercept cross-lagged panel models (RI-CLPMs) to distinguish within-person changes from stable between-person differences and identify reciprocal relationships over time.

These objectives address the outcomes related to extremism and affective polarisation specified for Task 5.4 in the DoA. Populist attitudes, also listed in the DoA, were not included as an outcome. Populism is commonly defined by an antagonism between “the people” and “the elite” (Mudde, 2004), that is, a vertical opposition between citizens and political elites. Both studies conducted within Task 5.4 examine horizontal relations between citizens and their political opponents. Addressing populist attitudes would therefore have required a separate theoretical model rather than an extension of the present ones.

Additionally, while the DoA planned to examine both classical and social media, Task 5.4 concentrates on social media alone. Three considerations support this choice: the central role of social media in how citizens encounter political content, its distinctive features that make it a particularly potent amplifier of polarizing and extremist content, and the already mature state of research on classical media. First, social media networks have become the most widely used source of news, overtaking television for the first time globally across 48 surveyed markets (Egan et al., 2026). At the same time, the boundary between classical and social media is increasingly blurred, as legacy outlets increasingly distribute their content via

social platforms (Kleis Nielsen & Ganter, 2018), where users, their social contacts, and algorithms select, reframe, and comment on it (Thorson & Wells, 2016). Studying social media therefore also captures much of the exposure to classical media content, in the form in which citizens actually encounter it. Second, social media differs from classical media in ways that bear directly on the emotional and socio-cognitive mechanisms examined in our studies. Besides consuming political content, users also produce and share content, and out-group hostility and moral outrage attract more engagement and social reward (Brady et al., 2021; Rathje et al., 2021). Users also tend to cluster in like-minded networks, which can create echo chambers that limit exposure to opposing views (Cinelli et al., 2021). Because editorial gatekeeping is largely replaced by user-driven and algorithmic selection (Wallace, 2018), users may encounter unfiltered depictions of political violence and extremist material. D2.3 (Wilczyński & Gumowska, 2025) confirmed these dynamics across the four core countries, identifying social media as a key amplifier of emotional political content even where classical media remain dominant. Taken together, these dynamics give social media a particular potential to amplify the most polarizing voices (Wilson et al., 2020). Consistent with this, a meta-analysis by Wolfowicz et al. (2022) found no association between television use and radicalization, whereas both passive and active exposure to radical content online were meaningfully related to cognitive and behavioral radicalization. Third, the emotional and attitudinal consequences of exposure to political content in classical mass media have a substantial and mature research tradition. Previous research has extensively theorized and examined the role of conventional news media in political polarization (Prior, 2013), while experimental research has investigated the effects of emotionally charged and antagonistic political communication in conventional media environments for more than two decades. For example, Mutz and Reeves (2005) examined the effects of televised political incivility, and Van 't Riet et al. (2019) experimentally investigated responses to anger expression in political news messages. Research has also documented the prevalence and characteristics of emotionally charged and antagonistic political discourse in talk radio and cable television news (Sobieraj & Berry, 2011). This established line of research has continued to examine the relationship between exposure to political content in classical media and polarization across different media and political contexts. Ramírez-Dueñas and Vinuesa-Tejero (2021), for instance, examined selective exposure to newspapers, radio, and television in Spain and found associations between exposure to particular politicized radio and television channels and partisan polarization. At a broader level, the accumulation of research on political incivility and its consequences has become sufficiently extensive to allow for meta-analytic synthesis (Van 't Riet & Van Stekelenburg, 2022). Taken together, this literature provides a well-developed body of evidence on the relationships between exposure to emotionally charged, antagonistic, and polarizing political content in classical media and subsequent political attitudes and responses. By contrast, the longitudinal within-person dynamics through which emotional responses to social media content shape digital behaviors remain less established. Research on social media and polarization has also focused heavily on Twitter and US samples (Kubin & von Sikorski, 2021). Focusing on social media thus allows Task 5.4 to extend rather than replicate existing research and to provide new longitudinal evidence from four underrepresented European countries.

1.3 STRUCTURE OF THE DOCUMENT

The document is structured around two studies based on the three-wave panel survey conducted within Task 5.4. The description of each study includes the following components:

1. **Introduction**, outlining the research question, its relevance, and the study objectives.
2. **Theoretical background**, presenting the relevant theoretical approaches, reviewing prior research, and developing the hypotheses.
3. **Methodology**, describing the research design, data collection, sample, measures, and statistical analysis.
4. **Findings and discussion**, presenting the main results and discussing their broader implications.

The two studies are described sequentially, following a consistent structure. The document concludes with an integrative section that synthesizes findings across both studies and discusses overarching implications.

1.4 RELATION TO OTHER TASKS

Insights from the desk research conducted within WP2 informed the planning and conceptualization of the panel study under Task 5.4. In particular, the scoping review on the intersection of emotions, media, and politics strengthened the conceptual grounding of the task and supported the development of a more focused and methodologically robust design. Additionally, a two-wave pilot study was conducted in Austria to test the survey measures subsequently used in the final three-wave panel study across the four core countries. Based on the pilot study, the measures were reviewed and adjusted where necessary before the main data collection.

Following D2.1 (Nowakowski & Zieliński, 2024), both studies examine how exposure to political content relates to emotive responses and, subsequently, to political behavior online. Cognitive empathy and anger are object-directed emotions in the sense of D2.1, while desensitization, as reduced emotional responsiveness, lies closer to the affective level. Both studies also relate to the Theory of Affective Pluralization (TAP) developed in D2.2 (Zieliński & Nowakowski, 2025), which distinguishes viewing opponents as legitimate adversaries from viewing them as enemies. Study 1 examines the constructive side of this distinction by investigating the understanding of opponents' perspectives and defending democratic rules. Study 2 examines its antagonistic counterpart by measuring support for content that portrays opponents as enemies, the mode of politics TAP seeks to overcome. Although emodiversity, a further element of TAP, was not measured directly, the discussion of Study 2 relates the findings to this concept.

D2.3 (Wilczyński & Gumowska, 2025) provided context on the four core countries and also informed the task's focus on social media. Across countries, D2.3 identified social media as an important amplifier of emotional political content, even where classical media remain dominant. Platforms accelerate the circulation of emotionally charged messages, reward confrontation, and reinforce identity-based interpretations through algorithmic curation. Interviews conducted for D2.3 likewise described a shift from classical to social media that has made political communication faster and more emotional.

Results from Task 5.4 directly contribute to Task 8.4 by providing longitudinal evidence on the role of emotions in political communication and their implications for democratic attitudes and processes, forming an important empirical basis for academic dissemination and public engagement activities. Findings from Task 5.4 will be disseminated through peer-reviewed journal articles, conference presentations, and policy-oriented outputs addressing emotional dynamics in digital political information environments.

Moreover, insights from Task 5.4 can inform WP7 by guiding the design and evaluation of vignette-based policy scenarios. In particular, evidence on how different emotional responses are associated with polarisation, populist attitudes, and other potentially harmful political outcomes, as well as on the potential role of positive emotions in fostering more constructive democratic engagement, can help identify emotional dynamics that should be considered when developing and testing interventions. In this way, Task 5.4 contributes to the broader ENCODE objective of translating knowledge on emotions into actionable tools for democratic communication, depolarization strategies, and policy-relevant future narratives.

2. STUDY 1: OUTGROUP SELF-CRITICISM, EMPATHY, AND ANTI-EXTREMISM SUPPORT

2.1 INTRODUCTION

Political social media has become an important setting in which citizens encounter and form impressions of political opponents. Yet these impressions are often distorted. Citizens tend to perceive opposing parties as more stereotypical and extreme than they actually are, and correcting such misperceptions can reduce perceived extremity, social distance, and support for partisan violence (Ahler & Sood, 2018; Mernyk et al., 2022; Voelkel et al., 2024). Social media can both reinforce and correct such misperceptions, because it exposes citizens not only to political positions but also to how group members respond to them. These reactions shape how groups are perceived. For example, online sanctioning of political speech is interpreted as a partisan group norm, and the composition of social media feeds can shape perceptions of norms surrounding political discourse (Ahn et al., 2024; Brady et al., 2026).

A particularly relevant but understudied form of such reactions is outgroup self-criticism, in which members of a political outgroup openly acknowledge problems or criticize positions within their own group. By making internal disagreement within political outgroups visible, it may challenge the image of opponents as homogeneous and extreme, foster more nuanced perceptions of them, and, in turn, elicit empathic responses toward them. Empathy is commonly conceptualized as a multidimensional construct comprising an affective component, i.e., vicariously sharing another person's emotional state, and a cognitive component, i.e., understanding another person's perspective, reasoning, and subjective experience, including their emotional states (Shamay-Tsoory, 2011). Both components are central to how people respond socio-emotionally to others, yet they rely on partly distinct processes and can have different consequences (Shamay-Tsoory et al., 2011). In the political domain, these two components have even been found to work in opposite directions. Whereas affective empathy reinforced political divides, cognitive empathy countered them (Gillissen et al., 2025). The present study therefore focuses on cognitive empathy, which also corresponds to the aims and content of this study. Outgroup self-criticism does not primarily depict emotionally evocative experiences such as suffering or need, which are the typical elicitors of affective empathy (Lamm et al., 2011). Instead, it provides informational signals about diversity of thought and capacity for self-reflection within an opposing group, likely making opponents' perspectives and reasoning more comprehensible. Such understanding counters the perception of political opponents as a homogeneous and hostile enemy, a perception that underlies support for extremism and

violence against outgroups (Saguy & Reifen-Tagar, 2022). By weakening such enemy images and fostering perspective-taking, exposure to outgroup self-criticism may also encourage citizens to actively support content that opposes extremism.

Yet political media research has devoted considerably more attention to communication that intensifies political conflict than to media experiences that may counter such dynamics (Kubin & von Sikorski, 2021). Moreover, much of the existing evidence on outgroup self-criticism and related corrections largely comes from experimental settings (e.g., Saguy & Halperin, 2014; McDonald et al., 2019; Mernyk et al., 2022; Voelkel et al., 2024).

To address this gap, the present study examines whether exposure to political outgroup self-criticism on social media is associated with cognitive empathy toward political opponents and active support for anti-extremism content. Using three-wave panel data from Austria, Bulgaria, Denmark, and Poland, we distinguish stable differences between individuals from changes occurring within the same individuals over time. This allows us to assess both whether people who generally encounter more self-critical outgroup content differ from others in empathy and anti-extremism support and whether increases in such exposure are followed by corresponding changes within individuals.

2.2 THEORETICAL BACKGROUND

Political affiliations can function as meaningful social identities, shaping how citizens evaluate members of their own political group and those they perceive as political opponents (West & Iyengar, 2022). Strong political identities can foster ingroup favoritism and negative evaluations of political outgroups (West & Iyengar, 2022). These dynamics may reduce recognition of heterogeneity within political outgroups and contribute to close-mindedness, intergroup bias, and unwillingness to compromise across political divides (Kelly, 1989; Acosta & Kemmelmeier, 2022; Lin & Haridakis, 2022). Intergroup contact theory provides a framework for understanding how contact with members of an outgroup can improve such intergroup attitudes under appropriate conditions (Pettigrew, 1998). Meta-analytic evidence indicates that contact with outgroup members can reduce prejudice by increasing empathy and perspective-taking (Pettigrew & Tropp, 2008). This logic has also been extended to digital environments, where online intergroup contact is associated with lower prejudice toward outgroups, although effects depend on the form and content of the encounter (Imperato et al., 2021; Pereira da Costa et al., 2024). This makes the characteristics of political outgroup content particularly relevant for understanding when exposure may foster more constructive intergroup responses.

One potentially important form of digitally mediated outgroup exposure is outgroup self-criticism, defined here as encountering social media content in which members of a political outgroup acknowledge and critically address problems within their own group. Such content may challenge homogeneous and uniformly negative representations of political opponents. For instance, Saguy and Halperin (2014) found that exposure to outgroup self-criticism increased openness to the outgroup member's perspective and hope regarding future intergroup relations. Importantly, these effects also emerged when the criticism concerned issues unrelated to the intergroup conflict itself (Saguy & Halperin, 2014). Related research indicates that acknowledging criticism or shortcomings can also improve perceptions of the person engaging in such self-reflection. Politicians who accepted criticism were evaluated as warmer, more moral, and more trustworthy than politicians who rejected it (Methner et al., 2020), while researchers who openly acknowledged shortcomings

in their own practices were perceived as more credible and epistemically trustworthy (Altenmüller et al., 2021). Together, these findings suggest that self-critical communication can differentiate an outgroup member from more generalized negative representations of the outgroup and make that person's perspective more accessible. This provides a basis for expecting greater cognitive empathy as a response to such exposure, which refers to understanding another person's perspective, reasoning, and subjective experience (Shamay-Tsoory, 2011). Evidence from research on interpersonal accountability supports this link showing that apologies and voluntary acknowledgment of wrongdoing can increase empathy toward the person responsible for the transgression (McCullough et al., 1997; Witvliet et al., 2020). Applied to political outgroups, encountering self-critical opponents may therefore facilitate cognitive empathy by encouraging a more differentiated understanding of their perspectives and reasoning.

These relationships can further be situated within the Differential Susceptibility to Media Effects Model (DSMM; Valkenburg & Peter, 2013). The DSMM conceptualizes media effects as processes in which media exposure elicits response states that shape subsequent outcomes. In the present study, exposure to outgroup self-criticism represents the media exposure, while cognitive empathy constitutes an empathic response elicited by this exposure. The model further conceptualizes these relationships as transactional, allowing media exposure, responses to media content, and media-related outcomes to influence one another over time (Valkenburg & Peter, 2013).

Taken together, prior research and theory provide reasons to expect a positive relationship between exposure to outgroup self-criticism and cognitive empathy. Existing evidence, however, derives largely from experimentally induced self-criticism or related forms of acknowledgment and does not establish whether naturally occurring exposure to political outgroup self-criticism on social media is associated with cognitive empathy over time.

Accordingly, we address this gap by expecting the following within-person effects:

H1: People who are exposed to outgroup self-criticism on social media more often than they usually are will experience greater cognitive empathy toward the political outgroup than they usually do.

For between-person effects, we correspondingly propose:

H2: People who are exposed to outgroup self-criticism on social media more often than others will experience greater cognitive empathy toward the political outgroup than others.

Exposure to outgroup self-criticism may also shape behavioral responses. Consistent with the DSMM, media exposure can influence subsequent behavior, and one mechanism through which this may occur is the information that media content provides about social norms (Valkenburg & Peter, 2013). Observing how group members respond to problematic behavior can signal which positions are accepted or rejected within that group and thereby influence observers' own responses (Paluck & Shepherd, 2012). This may be particularly consequential in political conflict, where individuals' own attitudes and behaviors are informed by what they believe political opponents endorse. Partisans substantially overestimate opponents' support for undemocratic practices and political violence, and these perceptions are associated with lower willingness to defend democratic norms themselves (Santos et al., 2024). Correcting such misperceptions can reduce individuals' own

support for political violence and undemocratic practices (Mernyk et al., 2022; Voelkel et al., 2024). Related evidence further shows that learning more accurately about political opponents' democratic commitments can reduce support for undemocratic practices and politicians (Santos et al., 2024).

Outgroup self-criticism may provide similar information without explicitly correcting a misperception. Exposure to a Black authority figure criticizing their own group increased White participants' openness to African American perspectives and their willingness to support racial-equality policies, suggesting that internal criticism can shape broader outgroup attitudes beyond evaluations of the individual speaker (McDonald et al., 2019). Political opponents who acknowledge problems within their own party or challenge extreme positions expressed by fellow group members make visible that such positions are contested within the outgroup. This information may counter perceptions of the outgroup as uniformly accepting of extreme conduct and therefore increase willingness to support messages rejecting political violence (McDonald et al., 2019; Mernyk et al., 2022).

Prior research concentrated on experiments to show that normative signals, corrections of misperceptions, and internal criticism can shape responses toward outgroups and undemocratic political behavior (McDonald et al., 2019; Mernyk et al., 2022; Paluck & Shepherd, 2012; Santos et al., 2024; Voelkel et al., 2024). Whether similar relationships emerge over time when such information is conveyed through political outgroup self-criticism on social media, and whether they extend to active support for anti-extremism content, remains unclear.

Therefore, we expect the following within-person effects:

H3: People who are exposed to outgroup self-criticism on social media more often than they usually are will support anti-extremism content more often than they usually do.

For between-person effects, it follows:

H4: People who are exposed to outgroup self-criticism on social media more often than others will support anti-extremism content more often than others.

Cognitive empathy may provide an additional pathway toward behavioral responses that counter political extremism. Consistent with the DSMM, responses elicited in the context of media use can subsequently shape behavioral outcomes (Valkenburg & Peter, 2013). Additionally, perspective-taking has been shown to reduce stereotyping and ingroup favoritism, improve evaluations of outgroup members, and promote greater intergroup helping (Galinsky & Moskowitz, 2000; Todd & Galinsky, 2014). These processes may be relevant to political extremism because support for intergroup violence is embedded in broader conflict-supporting orientations characterized by negative beliefs, attitudes, and emotions toward the outgroup (Saguy & Reifen-Tagar, 2022).

Empathy may counter these orientations. Higher empathy has been associated with lower approval of ideologically motivated political violence (Jahnke et al., 2022), and engagement with outgroup perspectives can reduce exclusionary attitudes (Kalla & Broockman, 2020, 2023). Evidence from partisan contexts further points to the democratic relevance of cross-party empathy. Research shows that beliefs about the benefits of cross-party empathy can motivate people to seek information about political opponents' democratic commitments,

which subsequently reduces support for undemocratic practices and politicians (Santos et al., 2024). Although this evidence concerns beliefs about the benefits of empathy rather than cognitive empathy itself, it demonstrates how greater openness to understanding political opponents can interrupt processes of political escalation. Cognitive empathy toward political opponents may therefore facilitate responses that reject antagonistic and violent forms of political conflict. Individuals who better understand the perspectives and reasoning of political opponents may consequently be more willing to support social media content opposing political extremism and violence.

Prior research suggests that empathy can reduce exclusionary attitudes and approval of political violence (Jahnke et al., 2022; Kalla & Broockman, 2020, 2023). Whether it also promotes active support for anti-extremism content over time, however, remains unclear.

Therefore, we hypothesize at the within-person level:

H5: People who experience greater cognitive empathy toward the political outgroup than they usually do will support anti-extremism content more often than they usually do.

For between-person effects, we expect:

H6: People who experience greater cognitive empathy toward the political outgroup than others will support anti-extremism content more often than others.

The theoretical model is depicted in Figure 1.

2.3 METHODOLOGY

2.3.1 DESIGN AND DATA COLLECTION

A three-wave panel survey was conducted by a polling company in Austria, Bulgaria, Denmark, and Poland, with approximately two months between waves (W1: March 30 to April 24, 2026; W2: June 10 to July 13, 2026; W3: September 1 to 18), following approval from the Institutional Review Board of the University of Vienna (see Annex 1). The description of the data management is provided in Annex 2.

2.3.2 PARTICIPANTS

Quota-based samples based on gender, age, and education were recruited in each country. Eligibility criteria included citizenship or residency in the respective country, an age between 18 and 69 years, recent social media use, and informed consent. Participants were excluded if they failed both attention checks, completed the survey in less than one-third of the median completion time (Greszki et al., 2014), or reported their gender as “other,” as the resulting group was too small for separate analysis. After these exclusions, the W1 sample consisted of $N = 7,940$ respondents (Austria: $n = 1,980$; Bulgaria: $n = 1,999$; Denmark: $n = 1,979$; Poland: $n = 1,982$). Of these, $N = 4,264$ participated in W2 (Austria: $n = 1,140$; Bulgaria: $n = 1,005$; Denmark: $n = 1,155$; Poland: $n = 1,024$), and $N = 2,488$ participated in W3 (Austria: $n = 625$; Bulgaria: $n = 621$; Denmark: $n = 621$; Poland: $n = 621$).

The final three-wave analysis sample comprised $N = 2,488$ participants and had a mean age of $M = 49.00$ years ($SD = 12.41$). Overall, 49.8% of participants were male and 50.2% were female. Regarding education, 55.9% did not hold a university degree and 44.1% held a university degree. Demographic characteristics of the final analysis sample by country are reported in Table 1.

2.3.3 COUNTRY SELECTION

In accordance with the GA and DoA, the selection of countries was designed to reflect variation in public responses to two major political developments of recent years, namely the COVID-19 pandemic and the EU's stance on Russia-Ukraine relations. Two country-level indicators were used to capture this variation: the proportion of the population having received at least one COVID-19 vaccination as an indicator of confidence in government pandemic policies, and the proportion of citizens supporting the EU's position on Russia and Ukraine as an indicator of political alignment on this issue.

This resulted in the selection of four contrasting country cases: Bulgaria, characterized by low vaccination uptake and low support for the EU position; Poland, by low vaccination uptake and high support; Austria, by high vaccination uptake and low support; and Denmark, by high vaccination uptake and high support. Taken together, these cases represent distinct combinations of public trust and geopolitical alignment, allowing emotional and attitudinal processes to be examined across different societal and political contexts.

2.3.4 PROCEDURE

Before beginning the questionnaire, participants received information about the study, the planned recontact for subsequent waves, and their rights as research participants. After providing informed consent, participants first completed socio-demographic questions, followed by four questionnaire blocks presented in a fixed order. The scales within each block were shown in randomized order, and item order was randomized within scales. The survey ended with a debriefing, and a thank-you message.

2.3.5 MEASURES

All scales were initially developed in English and subsequently translated into Bulgarian, Danish, German, and Polish using AI-assisted translation tools (DeepL and ChatGPT). Native-speaking researchers then reviewed the translated versions for linguistic accuracy and conceptual consistency with the original English items.

To establish a common reference point for the outgroup-related measures, participants were instructed to identify and select the political party that differed most from their own political positions. If the relevant party was not included in the provided list, participants could select "Other" and specify the party. The selected party served as the reference group for the subsequent measures of exposure to outgroup self-criticism and cognitive empathy toward the political outgroup. Responses to this item were not analyzed directly in the present study.

Exposure to outgroup self-criticism was measured with three items assessing how often participants had encountered social media content in which members or representatives of their identified political outgroup engaged in critical reflection about their own group. Items were rated on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., "... politicians from the party you oppose admitted mistakes within their own organization").

Cognitive empathy toward the political outgroup was assessed with three items measuring the extent to which participants understood the perspective and reasoning of supporters of their identified political outgroup when encountering their social media content. Responses were given on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., "... I could see the reasoning behind their argument, even when I disagreed with what they said").

Support for anti-extremism content was measured using three items assessing how often participants had actively supported social media posts opposing political violence, for example by liking, sharing, commenting on, or reposting them. Items were rated on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., "... argued that political violence is never a justified solution").

2.3.6 STATISTICAL ANALYSIS

To examine the longitudinal relationships between exposure to outgroup self-criticism, cognitive empathy toward the outgroup, and support for anti-extremism content, we estimated RI-CLPMs separately for each country. A central advantage of the RI-CLPM is that it separates within-person dynamics from stable between-person differences by including random intercepts (Hamaker et al., 2015). This is particularly important for the present study because our hypotheses concern whether within-person deviations in one construct are associated with subsequent deviations in another. The RI-CLPM therefore provides an appropriate test of the hypothesized processes and reduces the risk of attributing stable between-person associations to within-person dynamics (Hamaker et al., 2015; Lucas, 2023).

2.24 FINDINGS AND DISCUSSION

2.4.1 RESULTS

The between-person results are presented in Table 2, the within-person results in Table 3.

2.4.1.1 MODEL FIT

The RI-CLPMs showed good model fit across all four countries. Fit indices were satisfactory in Austria, CFI = .986, TLI = .983, RMSEA = .030, 90% CI [.023, .037], SRMR = .039; Bulgaria, CFI = .990, TLI = .987, RMSEA = .027, 90% CI [.019, .033], SRMR = .037; Denmark, CFI = .996, TLI = .995, RMSEA = .017, 90% CI [.000, .026], SRMR = .030; and Poland, CFI = .993, TLI = .992, RMSEA = .023, 90% CI [.014, .030], SRMR = .030.

2.4.1.2 BETWEEN-PERSON EFFECTS

At the between-person level, all three constructs were positively associated across all four countries. Individuals who generally reported greater exposure to outgroup self-criticism also tended to report greater cognitive empathy toward the political outgroup (Austria: $r = .78$; Bulgaria: $r = .88$; Denmark: $r = .84$; Poland: $r = .74$; all $p < .001$), supporting H2 in all four countries. Exposure to outgroup self-criticism was also positively associated with support for

anti-extremism content (Austria: $r = .53, p < .001$; Bulgaria: $r = .35, p = .003$; Denmark: $r = .66, p < .001$; Poland: $r = .68, p < .001$), supporting H4 across countries. Similarly, greater cognitive empathy was associated with stronger support for anti-extremism content (Austria: $r = .50$; Bulgaria: $r = .43$; Denmark: $r = .35$; Poland: $r = .72$; all $p < .001$), supporting H6 in all four countries.

2.4.1.3 WITHIN-PERSON EFFECTS

The within-person results revealed fewer and more country- and wave-specific longitudinal associations. In Poland, higher-than-usual exposure to outgroup self-criticism at W2 predicted greater cognitive empathy at W3 ($\beta = .21, p = .040$), providing partial support for H1 in Poland. In Bulgaria, higher-than-usual exposure at W2 predicted greater subsequent support for anti-extremism content at W3 ($\beta = .21, p = .028$), providing partial support for H3 in Bulgaria. No comparable exposure effects emerged in Austria or Denmark. Cognitive empathy did not predict subsequent support for anti-extremism content in any country, providing no support for H5.

Several additional reciprocal associations emerged. In Austria, greater cognitive empathy at W1 predicted lower exposure to outgroup self-criticism at W2 ($\beta = -.21, p = .042$). In Bulgaria, greater support for anti-extremism content at W1 predicted higher exposure at W2 ($\beta = .17, p = .042$). In Denmark, greater anti-extremism support at W1 predicted lower exposure at W2 ($\beta = -.25, p = .025$), while greater anti-extremism support at W2 predicted higher cognitive empathy at W3 ($\beta = .19, p = .043$). In Poland, greater anti-extremism support at W1 predicted lower cognitive empathy at W2 ($\beta = -.19, p = .046$), whereas greater cognitive empathy at W2 predicted higher exposure to outgroup self-criticism at W3 ($\beta = .27, p = .007$).

2.4.2 DISCUSSION

This study examined the longitudinal relationships between exposure to online political outgroup self-criticism, cognitive empathy toward the outgroup, and support for anti-extremism content over time. Using three-wave panel data from Austria, Bulgaria, Denmark, and Poland, we estimated RI-CLPMs to distinguish stable between-person differences from within-person dynamics. Across all four countries, the between-person results were highly consistent. Individuals who were generally more exposed to outgroup self-criticism also reported greater cognitive empathy and stronger support for anti-extremism content, and greater cognitive empathy was likewise associated with stronger anti-extremism support. At the within-person level, however, the pattern was largely inconsistent, selective and country-specific. Greater-than-usual exposure predicted higher subsequent cognitive empathy in Poland from W2 to W3 and greater subsequent support for anti-extremism content only in Bulgaria from W2 to W3, while cognitive empathy did not predict subsequent anti-extremism support at the within-level in any country. Overall, the between-person associations were robust, whereas within-person effects were limited and country- and wave-specific. Thus, the associations between individuals did not translate into corresponding changes within the same person over time.

These findings suggest that the relationships among outgroup self-criticism, cognitive empathy, and anti-extremism largely reflect enduring differences between individuals rather than systematic intra-individual changes over time. People who are generally more exposed to self-critical content from political outgroups also tend to report greater empathy toward those outgroups and stronger support for anti-extremism content. By contrast, a

person who is exposed to more self-critical outgroup content than usual will not necessarily become more empathetic toward the outgroup or subsequently change their online behavior. One possible explanation is that relatively stable dispositions shape both how people respond to political outgroups and the information environments they select into. Big Five personality traits may be particularly relevant in this regard. Openness to experience has been associated with greater empathic concern, perspective-taking and political tolerance (Sommerlad et al., 2021; Tsai & Wang, 2021), and can also shape exposure to attitude-challenging political information (Kim & Kim, 2018). At the same time, lower levels of openness and agreeableness have been linked to greater support for political violence (Gøtzsche-Astrup, 2019). Individuals who are generally more receptive to different viewpoints may therefore be more likely to encounter self-critical outgroup content and also more inclined to respond empathically to political opponents. These differences may become further stabilized in digital media environments, where exposure is shaped by network composition and content-selection choices, while algorithmic ranking can reinforce established patterns over time (Bakshy et al., 2015). The strong between-person associations may thus reflect an interplay between stable dispositions, selective exposure, and persistent features of individuals' online information environments. Accordingly, the observed between-person associations should not be taken as evidence that the same relationships should also unfold within individuals over time.

At the same time, the isolated within-person effects observed in Poland and Bulgaria indicate that changes in exposure may be followed by changes in empathy or behavior in some contexts. However, because these effects were not consistently replicated across countries or waves, the findings do not support a uniform exposure–empathy–behavior process within individuals and provide only limited evidence about the conditions under which such within-person relationships emerge.

3. STUDY 2: EXPOSURE TO POLITICAL VIOLENCE, EMOTIONAL RESPONSES, AND POLARIZATION CONTENT SUPPORT

3.1 INTRODUCTION

Political violence is not confined to offline political conflict but has become increasingly visible within contemporary digital political communication. While political content on social media is frequently hostile, uncivil, and attacking (Hasell et al., 2025), users may also encounter even more extreme content that depicts, endorses, or threatens political violence. Although explicitly violent political rhetoric constitutes a relatively small share of political content, it can spread widely through social networks, while survey evidence indicates that substantial minorities of users encounter online content that supports or depicts violence in pursuit of collective goals (Kim, 2023; Schumann et al., 2024). Actively seeking out such content has been linked to greater support for violent extremism (Schumann et al., 2024), making responses to it relevant for understanding radicalization processes. How citizens respond to such content is therefore an important question for political communication research. Two affective responses are particularly relevant: anger, reflecting heightened

emotional reactivity, and desensitization, reflecting diminished responsiveness to repeated violence. Both may shape how individuals subsequently engage with antagonistic and polarizing political content.

Research on media violence provides an extensive basis for studying these responses, but the literature has developed primarily around screen entertainment such as television, films, and video games, with experimental studies playing a particularly prominent role (Anderson et al., 2017; Carnagey et al., 2007; Funk et al., 2004; Krahé et al., 2011). Reviews have consequently emphasized the need for stronger longitudinal evidence on how responses to violent media develop over time (Anderson et al., 2017). Whether similar processes unfold when individuals repeatedly and intentionally encounter political violence on social media, and whether such exposure is followed by within-person changes in anger and desensitization as well as subsequent democratically harmful online behavior across longer time periods, remains less clear.

The present study addresses this gap by examining longitudinal relationships between intentional exposure to political violence on social media, anger, desensitization, and support for polarizing content. Using three-wave panel data from Austria, Bulgaria, Denmark, and Poland, and RI-CLPMs, we distinguish stable between-person differences from within-person changes over time. This allows us to assess whether people who generally encounter more political violence differ from others in their emotional and behavioral responses, and whether greater-than-usual exposure within the same individual is followed by corresponding changes over time.

3.2 THEORETICAL BACKGROUND

The relationship between intentional exposure to political violence and subsequent emotional responses can be situated within the Differential Susceptibility to Media Effects Model (DSMM; Valkenburg & Peter, 2013). The DSMM conceptualizes media effects as processes in which media use elicits cognitive, emotional, and excitative response states and further emphasizes the transactional nature of media selection and media responses over time. Applied to the present study, intentional exposure to political violence constitutes the media-use component, while anger and desensitization represent responses to such content.

One potential response to political violence is anger. Appraisal theories of emotion propose that emotional responses depend on how events are interpreted, with anger particularly associated with perceptions of blame, injustice, and wrongdoing (Lazarus, 1991; Smith & Ellsworth, 1985; Lerner & Keltner, 2001). Political violence may therefore elicit anger when it is perceived as unjustified or attributable to a blameworthy actor. Consistent with this reasoning, experimental exposure to news about terrorist attacks has been shown to increase anger across different perpetrator and victim identities (Wayne, 2023), while televised terrorism elicited greater state anger than non-political criminal violence (Shoshani & Slone, 2016). In social media environments, greater exposure to political attacks has likewise been associated with stronger political anger (Hasell et al., 2025).

At the same time, repeated exposure to violent content may contribute to emotional desensitization, understood as a reduction in affective responsiveness to stimuli that would ordinarily evoke strong reactions (Funk et al., 2004). Habituation provides an explanation for this process, whereby repeated presentation of a stimulus can progressively reduce the

response it elicits (Rankin et al., 2009). Research on media violence supports this mechanism. Repeated exposure to violent media can reduce its psychological impact (Fanti et al., 2009), and experimental exposure to violent video games has been associated with lower physiological arousal during subsequent exposure to real-life violence (Carnagey et al., 2007). Habitual media violence exposure has similarly been associated with reduced neural responsiveness to violent stimuli (Krahé et al., 2011). Related evidence from moral psychology shows that repeated exposure to the same moral transgression reduces the negative affect and moral condemnation toward it (Effron, 2022). Together, these findings suggest that repeated exposure to political violence may gradually reduce individuals' affective sensitivity to such content.

While there seems to be a tension between higher emotional desensitization and higher levels of anger appearing at the same time, the two processes are not necessarily mutually exclusive consequences of repeated exposure. Dual-process theory conceptualizes responses to repeated stimulation as the joint result of two concurrent processes: a decremental habituation process and an incremental sensitization process that initially increases responsiveness (Groves & Thompson, 1970; Rankin et al., 2009; Watts, 1979). Repeated exposure to political violence may therefore reduce general emotional responsiveness through habituation while sensitization simultaneously heightens specific emotional reactions, such as anger.

Research linking political violence to anger has primarily examined experimentally assigned exposure to terrorism or political attacks, whereas existing evidence on desensitization has largely focused on entertainment media violence (Carnagey et al., 2007; Fanti et al., 2009; Shoshani & Slone, 2016; Wayne, 2023). It therefore remains unclear whether intentional exposure to political violence on social media predicts subsequent changes in both desensitization and anger over time.

Accordingly, we expect the following within-person effects:

H1: People who intentionally expose themselves to political violence more often than they usually do will subsequently be **a)** angrier about political violence and **b)** more desensitized to political violence than they usually are.

Between-person differences are also plausible because individuals vary systematically in their propensity to experience anger and in their tendency to habituate to repeated stimulation. Trait anger reflects relatively stable differences in how readily and intensely individuals experience anger, with high-trait-anger individuals showing stronger anger responses across provocative situations (Deffenbacher et al., 1996; Wilkowski & Robinson, 2010). Habituation likewise varies substantially between individuals. Studies of repeated stress exposure show that some individuals display pronounced response attenuation, whereas others show little habituation across repeated exposures (Barthel et al., 2025; Wüst et al., 2005). These individual differences provide a basis for expecting systematic between-person variation in both anger and desensitization among individuals who differ in their typical exposure to political violence.

Therefore, we expect for between-person effects:

H2: People who intentionally expose themselves to political violence more often than others will be **a)** angrier about political violence and **b)** more desensitized to political violence than others.

Online exposure to political hostility can shape how individuals subsequently express themselves and respond to political disagreement. Research shows that exposure to hostile online communication can carry over into users' own expression. For instance, exposure to xenophobic online comments increased participants' own hateful expression (Álvarez-Benjumea, 2023), and exposure to like-minded political incivility increased participants' own use of incivility in subsequent online comments (Gervais, 2015). Exposure to uncivil political disagreement has also been shown to increase attitude polarization (Kim & Kim, 2019). Together, these findings suggest that exposure to hostile political communication can carry over into both political attitudes and subsequent expressive behavior.

Political violence represents a particularly severe form of such hostile political content. Longitudinal research has shown that mediated exposure to political violence can predict stronger subsequent support for war and reinforce pre-existing beliefs about outgroup aggression and threat, making these attitudes more extreme over time (Gvirsman et al., 2016). Likewise, exposure to political violence has been associated with stronger endorsement of an ethos of conflict and lower support for political compromise (Canetti et al., 2017). Together, these findings suggest that exposure to political violence can strengthen conflict-supporting beliefs and make antagonistic interpretations of political competition more salient. This reasoning is directly relevant to polarizing political content that portrays political opponents as enemies, emphasizes "us versus them" divisions, or dismisses dialogue and compromise. Intentional exposure to political violence may therefore increase individuals' willingness to endorse and amplify such polarizing content on social media.

Prior research has linked hostile political communication and exposure to political violence to more antagonistic attitudes and forms of political expression (Gervais, 2015; Kim & Kim, 2019; Gvirsman et al., 2016; Canetti et al., 2017). Whether fluctuations in individuals' intentional exposure to political violence are followed by corresponding changes in their support for polarizing content over time, however, remains unclear.

Therefore, we expect the following within-person effects:

H3: People who intentionally expose themselves to political violence more often than they usually do will subsequently support polarizing content more often than they usually do.

At the between-person level, we expect a corresponding association:

H4: People who intentionally expose themselves to political violence more often than others will support polarizing content more often than others.

Within the DSMM, anger and desensitization can be understood as response states through which media exposure may subsequently shape behavioral outcomes (Valkenburg & Peter, 2013). Although these responses differ in their affective profile, both may increase support for polarizing political content through distinct mechanisms.

Anger may increase support for polarizing content by fostering more confrontational responses to political disagreement. Anger is commonly associated with approach motivation, making active engagement with a perceived source of wrongdoing a likely response (Carver & Harmon-Jones, 2009). In political contexts, experimentally induced anger has been shown to increase social polarization and willingness to sever ties with political opponents (Webster et al., 2022). Anger elicited by disagreeable political incivility has also

been linked to subsequent uncivil expression (Gervais, 2017), while exposure to incivility can increase willingness to comment through heightened anger (Yu et al., 2022). Together, these findings suggest that anger can orient individuals toward confrontation with political opponents and reduce willingness to maintain cooperative or socially connected relations across political divides. Such an action tendency is consistent with support for polarizing political content.

Desensitization may provide a different pathway by attenuating the aversive affective response that normally signals the severity of hostile conduct. Desensitization to media violence has been shown to reduce sympathy for victims and increase enjoyment of violent content (Fanti et al., 2009) and has been linked to greater accessibility of aggressive cognitions (Krahé et al., 2011). Importantly, desensitization can also shape moral evaluations. Repeated exposure to transgressions reduces the negative affect they elicit, which in turn leads to less severe moral condemnation (Effron, 2022). Similar processes have been observed in intergroup contexts. Desensitization to hate speech mediated increases in outgroup prejudice (Soral et al., 2018), and emotional desensitization combined with high aggression has been associated with stronger normative approval of aggression toward an outgroup (Niwa et al., 2016). Individuals who become less emotionally responsive to political violence may therefore also become less averse to antagonistic portrayals of political conflict and more willing to support polarizing content.

These two pathways are compatible with the dual-process theory of habituation. The observable response to repeated stimulation reflects the combined influence of habituation and sensitization rather than either process alone (Groves & Thompson, 1970). Thus, repeated exposure may attenuate some aspects of emotional responsiveness while heightening others. Applied to the present study, desensitization may reduce aversive responses to political violence, whereas anger may sustain a confrontational orientation toward political conflict. Both responses may consequently contribute to support for polarizing content through different processes.

Prior research therefore provides reasons to expect both anger and desensitization to shape subsequent responses to political conflict. However, it remains unclear whether increases in these responses within the same individual are followed by corresponding changes in active support for polarizing content over time.

Accordingly, we expect the following within-person effects:

H5: People who are **a)** angrier about political violence and **b)** more desensitized to political violence than they usually are will subsequently support polarizing content more often than they usually do.

At the between-person level, stable differences in anger proneness are associated with politically consequential orientations. Higher trait anger has been linked to greater authoritarianism and lower trust in government (Milburn et al., 2014; Webster, 2020). Individuals differ in the extent to which their responses habituate to repeated stimulation, and such differences have been associated with other person-level characteristics and subsequent outcomes across different domains (Avery & Blackford, 2016; Kavšek, 2004). Applied to political violence, individuals who are generally more easily desensitized than others may therefore also differ in their receptiveness to polarizing political content.

Thus, for between-person effects, it follows:

H6: People who are **a)** angrier about political violence and **b)** more desensitized to political violence than others will support polarizing content more often than others.

The theoretical model is presented in Figure 2.

3.3 METHODOLOGY

3.3.1 DESIGN AND DATA COLLECTION

The study design and data collection procedures were identical to those described in Section 2.3.1.

3.3.2 PARTICIPANTS

The participant sample and eligibility criteria were the same as those reported in Section 2.3.2.

3.3.3 COUNTRY SELECTION

The country selection followed the same rationale and criteria as described in Section 2.3.3.

3.3.4 PROCEDURE

The survey procedure was identical to that described in Section 2.3.4.

3.3.5 MEASURES

The translation procedure was identical to that reported in Section 2.3.5.

Intentional exposure to political violence was measured with three items assessing how often participants deliberately encountered social media content showing, promoting, justifying, or depicting physical violence in pursuit of political goals. Items were rated on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., “I saw violent political content while actively searching for it”).

Desensitization to political violence was assessed with three items measuring reduced emotional responsiveness when encountering violent political content on social media. Responses were given on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., “I was feeling emotionally numb to much of the violent political content I saw on social media”).

Support for polarizing content was measured with three items assessing how often participants actively supported polarizing social media posts, for example by liking, sharing, commenting on, or reposting them. Items were rated on a seven-point frequency scale (1 = *Never*, 7 = *Very often*; e.g., “... portrayed political opponents as enemies rather than legitimate competitors”).

3.3.6 STATISTICAL ANALYSIS

The statistical analysis followed the same RI-CLPM approach described in Section 2.3.6.

3.4 FINDINGS AND DISCUSSION

3.4.1 RESULTS

The between-person associations are reported in Table 4, and the within-person cross-lagged effects are reported in Table 5.

3.4.1.1 MODEL FIT

The RI-CLPMs showed good model fit across all four countries. Fit indices were satisfactory in Austria, CFI = .988, TLI = .986, RMSEA = .025, 90% CI [.019, .030], SRMR = .035; Bulgaria, CFI = .994, TLI = .993, RMSEA = .018, 90% CI [.010, .024], SRMR = .029; Denmark, CFI = .991, TLI = .989, RMSEA = .023, 90% CI [.015, .029], SRMR = .037; and Poland, CFI = .990, TLI = .988, RMSEA = .026, 90% CI [.021, .031], SRMR = .031.

3.4.1.2 BETWEEN-PERSON EFFECTS

At the between-person level, all four constructs were positively associated across all four countries. Individuals who generally reported greater intentional exposure to political violence also tended to report greater anger about political violence (Austria: $r = .51$; Bulgaria: $r = .36$; Denmark: $r = .30$; Poland: $r = .52$; all $p < .001$) and greater desensitization to political violence (Austria: $r = .51$; Bulgaria: $r = .57$; Denmark: $r = .81$; Poland: $r = .68$; all $p < .001$), supporting H2a and H2b in all four countries. Intentional exposure was also positively associated with support for polarizing content (Austria: $r = .64$; Bulgaria: $r = .75$; Denmark: $r = .86$; Poland: $r = .78$; all $p < .001$), supporting H4 across countries. Greater anger was associated with stronger support for polarizing content (Austria: $r = .54$; Bulgaria: $r = .49$; Denmark: $r = .42$; Poland: $r = .68$; all $p < .001$), as was greater desensitization (Austria: $r = .66$; Bulgaria: $r = .64$; Denmark: $r = .82$; Poland: $r = .55$; all $p < .001$), supporting H6a and H6b in all four countries. Anger and desensitization were also positively associated with one another across countries (Austria: $r = .26$, $p = .012$; Bulgaria: $r = .55$, $p < .001$; Denmark: $r = .47$, $p < .001$; Poland: $r = .42$, $p < .001$).

3.4.1.3 WITHIN-PERSON EFFECTS

The within-person results revealed fewer and more country- and wave-specific longitudinal associations. In Bulgaria, higher-than-usual intentional exposure to political violence at W2 predicted greater anger about political violence at W3 ($\beta = .18$, $p = .028$), providing partial support for H1a in Bulgaria. Intentional exposure did not predict subsequent desensitization in any country, providing no support for H1b. In Poland, higher-than-usual intentional exposure at W2 predicted greater support for polarizing content at W3 ($\beta = .21$, $p = .039$), providing partial support for H3 in Poland. No comparable exposure effects on support for polarizing content emerged in Austria, Bulgaria, or Denmark. Anger did not predict subsequent support for polarizing content in any country, providing no support for H5a. Greater desensitization at W1 predicted greater subsequent support for polarizing content at W2 in Poland ($\beta = .20$, $p = .015$), providing partial support for H5b in this country. This effect did not emerge in the other countries for any wave-interval.

Several additional reciprocal associations emerged. In Denmark, greater support for polarizing content at W1 predicted higher intentional exposure to political violence at W2 (β

= .25, $p < .001$). In Poland, greater support for polarizing content at W2 predicted greater desensitization at W3 ($\beta = .16$, $p = .040$).

3.4.2 DISCUSSION

This study investigated how intentional exposure to political violence on social media relates over time to desensitization, anger, and support for polarizing content. Drawing on three-wave panel data from Austria, Bulgaria, Denmark, and Poland, we used RI-CLPMs to separate enduring between-person differences from within-person changes across waves. At the between-person level, the pattern was highly consistent across countries. Individuals who were generally more intentionally exposed to political violence also tended to report greater desensitization, stronger anger, and more support for polarizing content, while both emotional responses were themselves positively related to polarization support. At the within-person level, only a small number of significant effects emerged, and these were inconsistent on both the country- and wave-level. Greater-than-usual exposure predicted higher subsequent anger only in Bulgaria and greater subsequent polarization support only in Poland, all from W2 to W3. Desensitization predicted later polarization support at the within-person level only in Poland from W1 to W2. Overall, the findings suggest that the three constructs are closely connected at the between-person level, whereas the within-person evidence was limited and not consistently replicated across waves and country contexts.

These findings suggest that the associations among intentional exposure to political violence, desensitization, anger, and polarization support may largely reflect enduring differences between individuals rather than systematic changes within individuals. One possible explanation is a broader aggressive or antagonistic disposition that predisposes some individuals toward all four processes. Trait aggressiveness provides one plausible example. Individuals higher in trait aggression are more likely to select violent media and to experience stronger anger after viewing violent content (Bushman, 1995). Aggressive dispositions have also been associated with more callous and hostile interpretations of interpersonal conflict, while lower aversive responsiveness to violence has been linked to greater aggression and aggressive cognitions (Kiewitz & Weaver, 2001; Krahé et al., 2011). In the political domain, trait aggression predicts greater support for political violence, and related antagonistic personality characteristics have been linked to more severe forms of political norm-breaking escalation (Kalmoe, 2014; Berntzen et al., 2024). A relatively stable disposition toward aggression and antagonism could therefore make individuals simultaneously more inclined to seek out violent political content, react to political conflict with anger, show weaker aversive responses to violence, and endorse polarizing communication. Within the ENCODE framework, the co-occurrence of desensitization and anger may thus reflect a stable emotional profile with a narrow range of responses to political violence dominated by anger, resembling low emodiversity (Quoidbach et al., 2014; Zieliński & Nowakowski, 2025).

The strong between-person associations therefore indicate that individuals who generally score higher on one of these constructs also tend to score higher on the others. However, these relationships remain correlational and cannot establish the direction of influence. The particular strength of the RI-CLPM lies in testing whether deviations within individuals predict subsequent changes in other constructs over time. At this study's within-person level, significant effects were sparse and not consistently replicated across waves, providing only limited support for a temporal process in which increased exposure leads to subsequent changes in emotional responses or polarization support.

4. CONCLUSIONS

In Task 5.4, we examined how emotional and empathic responses to political content on social media relate to processes relevant to mitigating political extremism and political polarization. Using three-wave panel data from Austria, Bulgaria, Denmark, and Poland, two longitudinal models investigated potentially contrasting pathways. The first focused on whether exposure to political outgroup self-criticism fosters cognitive empathy and support for anti-extremism content. The second examined whether intentional exposure to political violence contributes to desensitization and anger and, in turn, to support for polarizing content. RI-CLPMs allowed us to distinguish stable differences between individuals from changes occurring within individuals over time.

Across both models, the between-person results were highly consistent across countries, whereas the proposed within-person processes received very limited support. Individuals who were generally more exposed to outgroup self-criticism also tended to report greater cognitive empathy and stronger anti-extremism support, and those who were generally more intentionally exposed to political violence also reported greater desensitization, stronger anger, and higher support for polarizing content. At the within-person level, however, significant effects were sparse and largely country- and wave-specific. Taken together, the between-person findings consistently supported our hypothesized relationships and aligned with expectations derived from prior literature. However, these associations did not generally translate into corresponding within-person dynamics over time, which suggests that the proposed media-effects processes do not unfold uniformly across individuals. These findings are important for the use of broader theories of and research on media effects, as cross-sectional and between-person associations may be used to explain dynamic psychological processes even when the underlying designs cannot directly distinguish between- from within-effects. Likewise, short-term experimental effects demonstrate that media exposure can produce immediate within-person responses under controlled conditions, but do not establish whether these responses persist as sustained longitudinal change. Multi-wave longitudinal research is therefore needed to determine whether, when, and for whom changes in political media exposure are followed by enduring changes in empathy, desensitization, anger, and political behavior.

These findings also have practical implications. Interventions that seek to promote constructive outgroup content or reduce the effects of violent political content should not assume that altering exposure will necessarily produce corresponding and sustained changes in emotional responses or online behavior. Their effectiveness should therefore be evaluated over longer periods and with designs capable of distinguishing temporary responses from enduring within-person change.

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ANNEXES

ANNEX 1: ETHICAL APPROVAL CONFIRMATIONS

Confirmation-1580-Stephanie Bühner
Department of Communication



Research Ethics Screening Confirmation

The Institutional Review Board of the Faculty of Social Sciences (IRB) at the University of Vienna confirms that the Research Ethics Screening, filled out by Stephanie Bühner for the research project "Panel Studies on Social Media, Emotions, Political Attitudes, and Behavior", has classified the project in the category of minimal ethical risk. This self-assessment is based on the information provided by the applicant as enclosed in the appendix. The IRB checked the coherence of the information on potential ethical problems or challenges with the overall project description provided by the applicant and concludes that the project can be realized on the researcher's own responsibility.

This confirmation does not constitute formal ethics approval by the University of Vienna Ethics Committee, which is not required for this kind of research according to the Statutes of the University of Vienna and the Austrian 2002 Universities Act. If any doubts or ethical challenges occur during the further planning and/or implementation of the research project, or if circumstances change that could raise ethical concerns, please contact the IRB.

- ☒ I confirm that I filled out the Research Ethics Screening to the best of my knowledge and that I am aware that this confirmation is only valid together with the information provided as enclosed in the appendix.
- ☒ I confirm that I will take all measures necessary to identify and address ethical issues in all stages of my research project.
- ☒ I am aware that I have to re-run the Research Ethics Screening if there are changes regarding the research design or the use of data that could raise ethical issues.


Researcher



On behalf of the Institutional Review Board of the Faculty of Social Sciences

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ANNEX 2: DATA MANAGEMENT

No personal data (e.g., names or addresses) were collected. All contact information necessary for communication with participants was managed exclusively by the sample provider. Respondents were identified only through anonymous identification codes. At the end of the survey, respondents were provided with an open form through which they could contact the research team. The service provider received a contact list containing the relevant IRB contact information and the contact details of the GDPR data protection officer, along with instructions to forward participants' messages in accordance with the ethical guidelines of the Department of Communication. All data were treated with strict confidentiality and are stored securely on university servers for a period of ten years. Access to the data was restricted to authorized researchers involved in the study, all of whom were bound by confidentiality agreements. All data management procedures were approved by the Institutional Review Board of the Faculty of Social Sciences at the University of Vienna.

ANNEX 3: STUDY 1 TABLES AND FIGURES

TABLE 1

Demographic Characteristics of the Final Three-Wave Analysis Sample

	Gender		Age	Education		Political orientation
	Male <i>n</i> (%)	Female <i>n</i> (%)	<i>M</i> (<i>SD</i>)	Without university degree <i>n</i> (%)	With university degree <i>n</i> (%)	<i>M</i> (<i>SD</i>)
Austria (<i>n</i> = 625)	345 (55.2%)	280 (44.8%)	49.95 (12.87)	458 (73.3%)	167 (26.7%)	3.05 (0.90)
Bulgaria (<i>n</i> = 621)	292 (47.0%)	329 (53.0%)	47.53 (11.04)	245 (39.5%)	376 (60.5%)	3.14 (0.81)
Denmark (<i>n</i> = 621)	288 (46.4%)	333 (53.6%)	49.50 (13.39)	370 (59.6%)	251 (40.4%)	2.83 (1.11)
Poland (<i>n</i> = 621)	314 (50.6%)	307 (49.4%)	49.00 (12.09)	317 (51.0%)	304 (49.0%)	3.06 (1.11)

Note. The final RI-CLPM sample includes respondents who completed W3 and reported gender as male or female.

TABLE 2

Between-Person Random-Intercept Relations in the RI-CLPM

	Relation	Covariance	SE	r	p
Austria	Exposure to Out-Group Self-Criticism ↔ Cognitive Empathy	0.58	0.09	0.78	< .001
	Exposure to Out-Group Self-Criticism ↔ Support for Anti-Extremism Content	0.52	0.10	0.53	< .001
	Cognitive Empathy ↔ Support for Anti-Extremism Content	0.69	0.10	0.50	< .001
Bulgaria	Exposure to Out-Group Self-Criticism ↔ Cognitive Empathy	0.71	0.12	0.88	< .001
	Exposure to Out-Group Self-Criticism ↔ Support for Anti-Extremism Content	0.36	0.12	0.35	.003
	Cognitive Empathy ↔ Support for Anti-Extremism Content	0.48	0.14	0.43	< .001
Denmark	Exposure to Out-Group Self-Criticism ↔ Cognitive Empathy	0.65	0.08	0.84	< .001
	Exposure to Out-Group Self-Criticism ↔ Support for Anti-Extremism Content	0.70	0.08	0.66	< .001
	Cognitive Empathy ↔ Support for Anti-Extremism Content	0.50	0.11	0.35	< .001
Poland	Exposure to Out-Group Self-Criticism ↔ Cognitive Empathy	0.71	0.12	0.74	< .001
	Exposure to Out-Group Self-Criticism ↔ Support for Anti-Extremism Content	0.76	0.11	0.68	< .001
	Cognitive Empathy ↔ Support for Anti-Extremism Content	1.01	0.13	0.72	< .001

Note. Covariance and SE are unstandardized; r is the standardized random-intercept association.

TABLE 3

Within-Person Cross-Lagged Associations in the RI-CLPM

	Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Austria	W1 → W2	Cognitive Empathy → Exposure to Out-Group Self-Criticism	-0.15	0.07	-0.21	[-0.41, -0.01]	.042
	W1 → W2	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	-0.05	0.05	-0.09	[-0.28, 0.10]	.364
	W1 → W2	Exposure to Out-Group Self-Criticism → Cognitive Empathy	0.03	0.14	0.02	[-0.17, 0.21]	.832
	W1 → W2	Support for Anti-Extremism Content → Cognitive Empathy	0.03	0.07	0.04	[-0.13, 0.21]	.660
	W1 → W2	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.16	0.21	0.09	[-0.14, 0.33]	.436
	W1 → W2	Cognitive Empathy → Support for Anti-Extremism Content	-0.11	0.12	-0.09	[-0.27, 0.10]	.357
	W2 → W3	Cognitive Empathy → Exposure to Out-Group Self-Criticism	0.06	0.07	0.07	[-0.12, 0.27]	.440
	W2 → W3	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	-0.03	0.05	-0.05	[-0.19, 0.10]	.539
	W2 → W3	Exposure to Out-Group Self-Criticism → Cognitive Empathy	0.07	0.21	0.05	[-0.25, 0.34]	.747
	W2 → W3	Support for Anti-Extremism Content → Cognitive Empathy	0.04	0.08	0.05	[-0.14, 0.25]	.587
Bulgaria	W2 → W3	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.11	0.22	0.06	[-0.18, 0.30]	.626
	W2 → W3	Cognitive Empathy → Support for Anti-Extremism Content	0.05	0.12	0.04	[-0.15, 0.23]	.660
	W1 → W2	Cognitive Empathy → Exposure to Out-Group Self-Criticism	0.04	0.07	0.05	[-0.13, 0.22]	.608
	W1 → W2	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	0.13	0.06	0.17	[0.01, 0.34]	.042
	W1 → W2	Exposure to Out-Group Self-Criticism → Cognitive Empathy	-0.07	0.13	-0.05	[-0.22, 0.12]	.589
	W1 → W2	Support for Anti-Extremism Content → Cognitive Empathy	0.06	0.07	0.06	[-0.09, 0.22]	.416
	W1 → W2	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.07	0.14	0.05	[-0.14, 0.24]	.614
	W1 → W2	Cognitive Empathy → Support for Anti-Extremism Content	0.10	0.10	0.09	[-0.09, 0.27]	.326

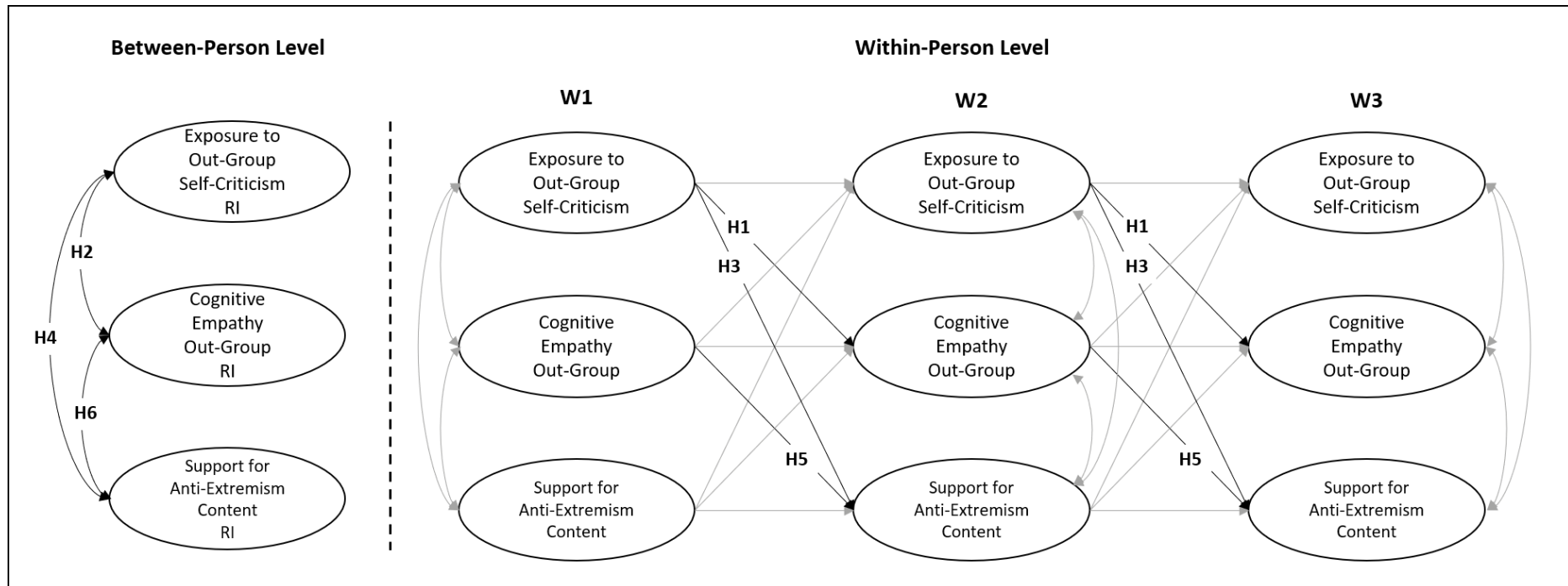
	Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Denmark	W2 → W3	Cognitive Empathy → Exposure to Out-Group Self-Criticism	-0.05	0.08	-0.07	[-0.26, 0.13]	.517
	W2 → W3	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	0.07	0.07	0.09	[-0.10, 0.28]	.344
	W2 → W3	Exposure to Out-Group Self-Criticism → Cognitive Empathy	0.10	0.11	0.08	[-0.10, 0.27]	.380
	W2 → W3	Support for Anti-Extremism Content → Cognitive Empathy	0.05	0.08	0.06	[-0.11, 0.23]	.505
	W2 → W3	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.30	0.13	0.21	[0.02, 0.40]	.028
	W2 → W3	Cognitive Empathy → Support for Anti-Extremism Content	0.00	0.10	0.00	[-0.18, 0.18]	.996
	W1 → W2	Cognitive Empathy → Exposure to Out-Group Self-Criticism	-0.07	0.05	-0.12	[-0.31, 0.07]	.206
	W1 → W2	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	-0.13	0.06	-0.25	[-0.46, -0.03]	.025
	W1 → W2	Exposure to Out-Group Self-Criticism → Cognitive Empathy	-0.08	0.15	-0.05	[-0.23, 0.13]	.603
	W1 → W2	Support for Anti-Extremism Content → Cognitive Empathy	-0.01	0.09	-0.01	[-0.18, 0.17]	.946
	W1 → W2	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.04	0.14	0.02	[-0.16, 0.20]	.803
	W1 → W2	Cognitive Empathy → Support for Anti-Extremism Content	0.12	0.09	0.12	[-0.06, 0.30]	.186
	W2 → W3	Cognitive Empathy → Exposure to Out-Group Self-Criticism	-0.07	0.05	-0.13	[-0.30, 0.04]	.145
	W2 → W3	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	-0.00	0.06	-0.01	[-0.19, 0.18]	.947
	W2 → W3	Exposure to Out-Group Self-Criticism → Cognitive Empathy	-0.27	0.18	-0.15	[-0.33, 0.03]	.107
	W2 → W3	Support for Anti-Extremism Content → Cognitive Empathy	0.19	0.09	0.19	[0.01, 0.37]	.043
Poland	W2 → W3	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	-0.24	0.21	-0.15	[-0.40, 0.09]	.227
	W2 → W3	Cognitive Empathy → Support for Anti-Extremism Content	0.12	0.09	0.15	[-0.06, 0.35]	.159
	W1 → W2	Cognitive Empathy → Exposure to Out-Group Self-Criticism	-0.05	0.07	-0.07	[-0.25, 0.12]	.486
	W1 → W2	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	-0.08	0.06	-0.11	[-0.31, 0.08]	.247

Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
W1 → W2	Exposure to Out-Group Self-Criticism → Cognitive Empathy	0.29	0.15	0.20	[-0.01, 0.42]	.066
W1 → W2	Support for Anti-Extremism Content → Cognitive Empathy	-0.18	0.09	-0.19	[-0.37, -0.00]	.046
W1 → W2	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.08	0.16	0.05	[-0.16, 0.26]	.627
W1 → W2	Cognitive Empathy → Support for Anti-Extremism Content	-0.16	0.09	-0.15	[-0.31, 0.02]	.085
W2 → W3	Cognitive Empathy → Exposure to Out-Group Self-Criticism	0.20	0.07	0.27	[0.07, 0.47]	.007
W2 → W3	Support for Anti-Extremism Content → Exposure to Out-Group Self-Criticism	0.04	0.06	0.05	[-0.13, 0.24]	.578
W2 → W3	Exposure to Out-Group Self-Criticism → Cognitive Empathy	0.29	0.14	0.21	[0.01, 0.42]	.040
W2 → W3	Support for Anti-Extremism Content → Cognitive Empathy	-0.03	0.08	-0.03	[-0.20, 0.14]	.736
W2 → W3	Exposure to Out-Group Self-Criticism → Support for Anti-Extremism Content	0.11	0.14	0.07	[-0.10, 0.24]	.448
W2 → W3	Cognitive Empathy → Support for Anti-Extremism Content	-0.06	0.09	-0.05	[-0.21, 0.10]	.500

Note. *B* and *SE* are unstandardized estimates; β and its 95% confidence interval are standardized estimates.

FIGURE 1

Theoretical Model



Note. Graphical representation of the random-intercept cross-lagged panel model depicting the theorized relationships between exposure to outgroup self-criticism, cognitive empathy towards the outgroup, and support for anti-extremism content online. Ovals represent latent variables. Non-hypothesized and autoregressive paths are gray. W1 = Wave 1, W2 = Wave 2, W3 = Wave 3.

ANNEX 4: STUDY 2 TABLES AND FIGURES

TABLE 4

Between-Person Random-Intercept Relations in the RI-CLPM

	Relation	Covariance	SE	r	p
Austria	Intentional Exposure to Political Violence ↔ Anger About Political Violence	0.62	0.11	0.51	< .001
	Intentional Exposure to Political Violence ↔ Desensitization to Political Violence	0.46	0.09	0.51	< .001
	Intentional Exposure to Political Violence ↔ Support for Polarizing Content	0.54	0.10	0.64	< .001
	Anger About Political Violence ↔ Desensitization to Political Violence	0.34	0.13	0.26	.012
	Anger About Political Violence ↔ Support for Polarizing Content	0.68	0.12	0.54	< .001
	Desensitization to Political Violence ↔ Support for Polarizing Content	0.62	0.10	0.66	< .001
Bulgaria	Intentional Exposure to Political Violence ↔ Anger About Political Violence	0.55	0.12	0.36	< .001
	Intentional Exposure to Political Violence ↔ Desensitization to Political Violence	0.60	0.09	0.57	< .001
	Intentional Exposure to Political Violence ↔ Support for Polarizing Content	0.77	0.10	0.75	< .001
	Anger About Political Violence ↔ Desensitization to Political Violence	0.83	0.12	0.55	< .001
	Anger About Political Violence ↔ Support for Polarizing Content	0.72	0.14	0.49	< .001
	Desensitization to Political Violence ↔ Support for Polarizing Content	0.65	0.10	0.64	< .001
Denmark	Intentional Exposure to Political Violence ↔ Anger About Political Violence	0.31	0.09	0.30	< .001
	Intentional Exposure to Political Violence ↔ Desensitization to Political Violence	0.52	0.09	0.81	< .001
	Intentional Exposure to Political Violence ↔ Support for Polarizing Content	0.60	0.09	0.86	< .001

	Relation	Covariance	SE	<i>r</i>	<i>p</i>
Poland	Anger About Political Violence ↔ Desensitization to Political Violence	0.54	0.11	0.47	< .001
	Anger About Political Violence ↔ Support for Polarizing Content	0.52	0.10	0.42	< .001
	Desensitization to Political Violence ↔ Support for Polarizing Content	0.63	0.09	0.82	< .001
	Intentional Exposure to Political Violence ↔ Anger About Political Violence	0.91	0.14	0.52	< .001
	Intentional Exposure to Political Violence ↔ Desensitization to Political Violence	0.83	0.12	0.68	< .001
	Intentional Exposure to Political Violence ↔ Support for Polarizing Content	1.20	0.13	0.78	< .001
	Anger About Political Violence ↔ Desensitization to Political Violence	0.58	0.14	0.42	< .001
	Anger About Political Violence ↔ Support for Polarizing Content	1.19	0.16	0.68	< .001
	Desensitization to Political Violence ↔ Support for Polarizing Content	0.67	0.13	0.55	< .001

Note. Covariance and *SE* are unstandardized estimates; *r* is the standardized random-intercept association.

TABLE 5

Within-Person Cross-Lagged Associations in the RI-CLPM

	Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Austria	W1 → W2	Anger About Political Violence → Intentional Exposure to Political Violence	0.06	0.06	0.08	[-0.09, 0.26]	.352
	W1 → W2	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.07	0.11	-0.07	[-0.28, 0.14]	.517
	W1 → W2	Support for Polarizing Content → Intentional Exposure to Political Violence	0.09	0.10	0.10	[-0.11, 0.31]	.353
	W1 → W2	Intentional Exposure to Political Violence → Anger About Political Violence	-0.05	0.18	-0.03	[-0.22, 0.16]	.754

Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
W1 → W2	Desensitization to Political Violence → Anger About Political Violence	0.27	0.16	0.18	[-0.03, 0.40]	.087
W1 → W2	Support for Polarizing Content → Anger About Political Violence	0.02	0.11	0.02	[-0.15, 0.18]	.834
W1 → W2	Intentional Exposure to Political Violence → Desensitization to Political Violence	-0.14	0.18	-0.09	[-0.34, 0.15]	.453
W1 → W2	Anger About Political Violence → Desensitization to Political Violence	0.10	0.09	0.14	[-0.09, 0.36]	.231
W1 → W2	Support for Polarizing Content → Desensitization to Political Violence	-0.13	0.11	-0.12	[-0.33, 0.08]	.240
W1 → W2	Intentional Exposure to Political Violence → Support for Polarizing Content	-0.08	0.17	-0.06	[-0.28, 0.17]	.610
W1 → W2	Anger About Political Violence → Support for Polarizing Content	-0.04	0.08	-0.05	[-0.25, 0.15]	.620
W1 → W2	Desensitization to Political Violence → Support for Polarizing Content	-0.13	0.12	-0.11	[-0.32, 0.10]	.299
W2 → W3	Anger About Political Violence → Intentional Exposure to Political Violence	0.04	0.06	0.06	[-0.10, 0.22]	.472
W2 → W3	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.04	0.06	-0.04	[-0.18, 0.10]	.570
W2 → W3	Support for Polarizing Content → Intentional Exposure to Political Violence	0.13	0.08	0.16	[-0.03, 0.34]	.095
W2 → W3	Intentional Exposure to Political Violence → Anger About Political Violence	0.16	0.13	0.11	[-0.07, 0.29]	.219
W2 → W3	Desensitization to Political Violence → Anger About Political Violence	-0.00	0.09	-0.00	[-0.14, 0.14]	.984
W2 → W3	Support for Polarizing Content → Anger About Political Violence	-0.13	0.10	-0.10	[-0.25, 0.05]	.189
W2 → W3	Intentional Exposure to Political Violence → Desensitization to Political Violence	0.12	0.10	0.10	[-0.08, 0.29]	.277
W2 → W3	Anger About Political Violence → Desensitization to Political Violence	0.07	0.08	0.09	[-0.10, 0.28]	.360
W2 → W3	Support for Polarizing Content → Desensitization to Political Violence	-0.09	0.09	-0.09	[-0.25, 0.07]	.288
W2 → W3	Intentional Exposure to Political Violence → Support for Polarizing Content	0.14	0.10	0.12	[-0.05, 0.30]	.171
W2 → W3	Anger About Political Violence → Support for Polarizing Content	-0.00	0.07	-0.00	[-0.18, 0.17]	.976

	Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Bulgaria	W2 → W3	Desensitization to Political Violence → Support for Polarizing Content	0.03	0.07	0.03	[-0.12, 0.17]	.718
	W1 → W2	Anger About Political Violence → Intentional Exposure to Political Violence	0.01	0.08	0.01	[-0.18, 0.20]	.890
	W1 → W2	Desensitization to Political Violence → Intentional Exposure to Political Violence	0.12	0.10	0.14	[-0.09, 0.36]	.232
	W1 → W2	Support for Polarizing Content → Intentional Exposure to Political Violence	0.02	0.09	0.02	[-0.17, 0.21]	.850
	W1 → W2	Intentional Exposure to Political Violence → Anger About Political Violence	-0.05	0.20	-0.03	[-0.28, 0.21]	.791
	W1 → W2	Desensitization to Political Violence → Anger About Political Violence	0.04	0.12	0.04	[-0.18, 0.25]	.734
	W1 → W2	Support for Polarizing Content → Anger About Political Violence	0.12	0.11	0.11	[-0.09, 0.32]	.289
	W1 → W2	Intentional Exposure to Political Violence → Desensitization to Political Violence	0.06	0.17	0.04	[-0.20, 0.28]	.727
	W1 → W2	Anger About Political Violence → Desensitization to Political Violence	-0.06	0.08	-0.08	[-0.27, 0.12]	.439
	W1 → W2	Support for Polarizing Content → Desensitization to Political Violence	0.02	0.09	0.02	[-0.17, 0.22]	.808
	W1 → W2	Intentional Exposure to Political Violence → Support for Polarizing Content	-0.04	0.17	-0.03	[-0.26, 0.20]	.798
	W1 → W2	Anger About Political Violence → Support for Polarizing Content	0.04	0.08	0.05	[-0.14, 0.23]	.625
	W1 → W2	Desensitization to Political Violence → Support for Polarizing Content	-0.10	0.10	-0.10	[-0.29, 0.09]	.301
	W2 → W3	Anger About Political Violence → Intentional Exposure to Political Violence	0.06	0.06	0.07	[-0.06, 0.21]	.291
	W2 → W3	Desensitization to Political Violence → Intentional Exposure to Political Violence	0.03	0.08	0.03	[-0.14, 0.20]	.720
	W2 → W3	Support for Polarizing Content → Intentional Exposure to Political Violence	0.07	0.07	0.08	[-0.08, 0.24]	.317
	W2 → W3	Intentional Exposure to Political Violence → Anger About Political Violence	0.23	0.10	0.18	[0.02, 0.33]	.028
	W2 → W3	Desensitization to Political Violence → Anger About Political Violence	-0.20	0.11	-0.16	[-0.32, 0.01]	.060
	W2 → W3	Support for Polarizing Content → Anger About Political Violence	0.01	0.10	0.01	[-0.16, 0.18]	.886

	Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Denmark	W2 → W3	Intentional Exposure to Political Violence → Desensitization to Political Violence	0.15	0.10	0.13	[-0.04, 0.29]	.134
	W2 → W3	Anger About Political Violence → Desensitization to Political Violence	0.09	0.08	0.10	[-0.06, 0.26]	.226
	W2 → W3	Support for Polarizing Content → Desensitization to Political Violence	-0.09	0.10	-0.09	[-0.28, 0.10]	.379
	W2 → W3	Intentional Exposure to Political Violence → Support for Polarizing Content	0.13	0.10	0.11	[-0.06, 0.28]	.195
	W2 → W3	Anger About Political Violence → Support for Polarizing Content	0.09	0.07	0.10	[-0.05, 0.25]	.205
	W2 → W3	Desensitization to Political Violence → Support for Polarizing Content	-0.16	0.11	-0.14	[-0.32, 0.04]	.121
	W1 → W2	Anger About Political Violence → Intentional Exposure to Political Violence	0.01	0.04	0.01	[-0.12, 0.14]	.891
	W1 → W2	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.02	0.06	-0.02	[-0.14, 0.11]	.782
	W1 → W2	Support for Polarizing Content → Intentional Exposure to Political Violence	0.22	0.07	0.25	[0.11, 0.38]	< .001
	W1 → W2	Intentional Exposure to Political Violence → Anger About Political Violence	0.22	0.19	0.11	[-0.08, 0.29]	.252
	W1 → W2	Desensitization to Political Violence → Anger About Political Violence	-0.08	0.12	-0.06	[-0.23, 0.11]	.482
	W1 → W2	Support for Polarizing Content → Anger About Political Violence	0.00	0.11	0.00	[-0.16, 0.17]	.971
	W1 → W2	Intentional Exposure to Political Violence → Desensitization to Political Violence	-0.07	0.19	-0.05	[-0.29, 0.19]	.708
	W1 → W2	Anger About Political Violence → Desensitization to Political Violence	0.12	0.07	0.16	[-0.04, 0.36]	.110
	W1 → W2	Support for Polarizing Content → Desensitization to Political Violence	-0.00	0.09	-0.00	[-0.18, 0.18]	.982
	W1 → W2	Intentional Exposure to Political Violence → Support for Polarizing Content	0.07	0.14	0.06	[-0.16, 0.27]	.609
	W1 → W2	Anger About Political Violence → Support for Polarizing Content	0.05	0.05	0.09	[-0.08, 0.26]	.303
	W1 → W2	Desensitization to Political Violence → Support for Polarizing Content	-0.05	0.07	-0.06	[-0.22, 0.10]	.485
	W2 → W3	Anger About Political Violence → Intentional Exposure to Political Violence	0.07	0.04	0.11	[-0.04, 0.27]	.137

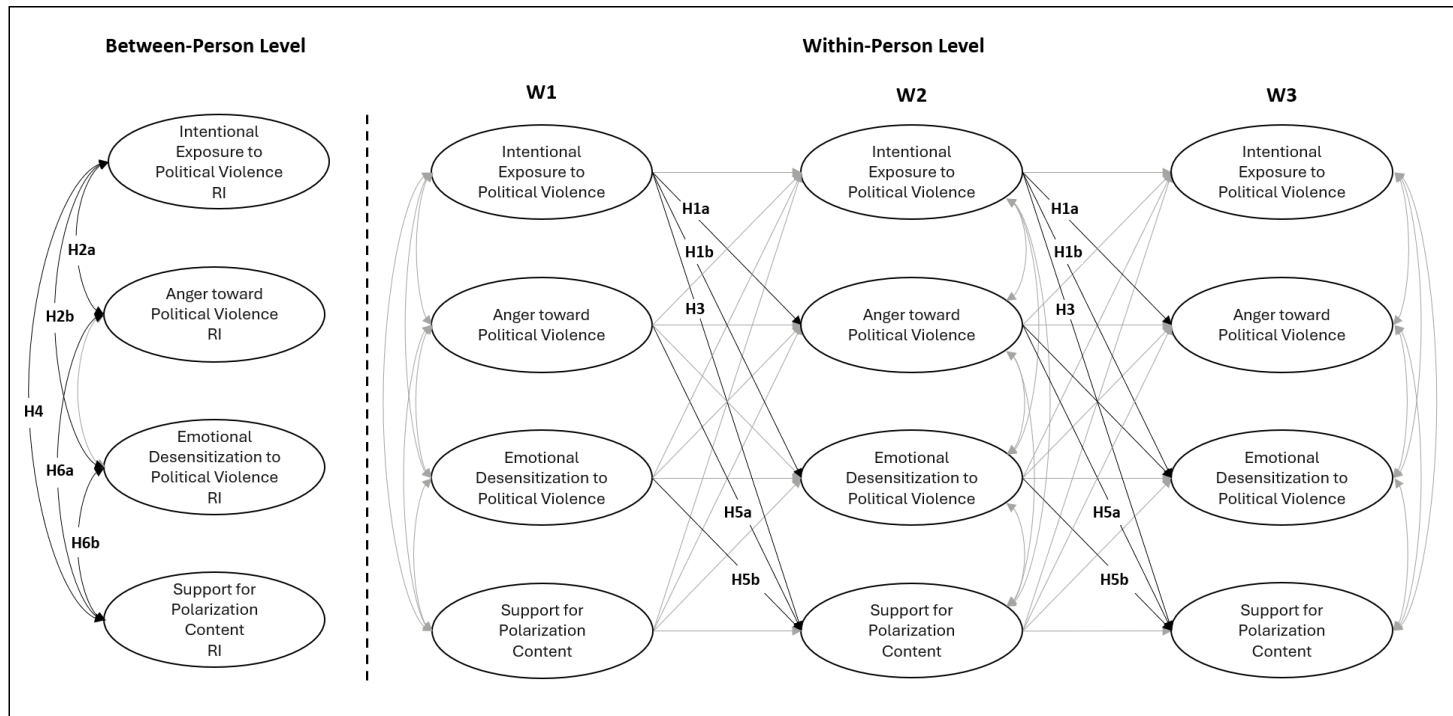
Transition		Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
Poland	W2 → W3	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.02	0.06	-0.03	[-0.20, 0.13]	.693
	W2 → W3	Support for Polarizing Content → Intentional Exposure to Political Violence	-0.00	0.09	-0.00	[-0.21, 0.20]	.980
	W2 → W3	Intentional Exposure to Political Violence → Anger About Political Violence	0.27	0.16	0.18	[-0.04, 0.39]	.104
	W2 → W3	Desensitization to Political Violence → Anger About Political Violence	0.12	0.13	0.09	[-0.10, 0.28]	.347
	W2 → W3	Support for Polarizing Content → Anger About Political Violence	0.02	0.16	0.01	[-0.18, 0.20]	.891
	W2 → W3	Intentional Exposure to Political Violence → Desensitization to Political Violence	0.13	0.11	0.10	[-0.08, 0.28]	.278
	W2 → W3	Anger About Political Violence → Desensitization to Political Violence	0.05	0.06	0.05	[-0.09, 0.20]	.458
	W2 → W3	Support for Polarizing Content → Desensitization to Political Violence	-0.10	0.11	-0.07	[-0.23, 0.08]	.346
	W2 → W3	Intentional Exposure to Political Violence → Support for Polarizing Content	0.22	0.14	0.23	[-0.08, 0.54]	.139
	W2 → W3	Anger About Political Violence → Support for Polarizing Content	-0.08	0.05	-0.13	[-0.29, 0.03]	.101
	W2 → W3	Desensitization to Political Violence → Support for Polarizing Content	-0.04	0.09	-0.05	[-0.25, 0.15]	.622
	W1 → W2	Anger About Political Violence → Intentional Exposure to Political Violence	0.09	0.07	0.12	[-0.07, 0.30]	.207
	W1 → W2	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.02	0.07	-0.03	[-0.20, 0.14]	.752
	W1 → W2	Support for Polarizing Content → Intentional Exposure to Political Violence	0.02	0.06	0.02	[-0.13, 0.18]	.765
	W1 → W2	Intentional Exposure to Political Violence → Anger About Political Violence	0.14	0.16	0.09	[-0.11, 0.30]	.375
	W1 → W2	Desensitization to Political Violence → Anger About Political Violence	-0.03	0.09	-0.03	[-0.18, 0.13]	.727
	W1 → W2	Support for Polarizing Content → Anger About Political Violence	-0.07	0.08	-0.07	[-0.22, 0.08]	.381
	W1 → W2	Intentional Exposure to Political Violence → Desensitization to Political Violence	-0.11	0.14	-0.08	[-0.30, 0.13]	.439
	W1 → W2	Anger About Political Violence → Desensitization to Political Violence	-0.12	0.08	-0.14	[-0.33, 0.05]	.149

Transition	Cross-lagged association	<i>B</i>	<i>SE</i>	β	95% CI for β	<i>p</i>
W1 → W2	Support for Polarizing Content → Desensitization to Political Violence	0.09	0.08	0.10	[-0.08, 0.27]	.275
W1 → W2	Intentional Exposure to Political Violence → Support for Polarizing Content	-0.10	0.15	-0.07	[-0.27, 0.13]	.480
W1 → W2	Anger About Political Violence → Support for Polarizing Content	-0.01	0.08	-0.01	[-0.19, 0.16]	.893
W1 → W2	Desensitization to Political Violence → Support for Polarizing Content	0.22	0.09	0.20	[0.04, 0.36]	.015
W2 → W3	Anger About Political Violence → Intentional Exposure to Political Violence	0.00	0.08	0.00	[-0.21, 0.22]	.964
W2 → W3	Desensitization to Political Violence → Intentional Exposure to Political Violence	-0.06	0.08	-0.08	[-0.28, 0.12]	.449
W2 → W3	Support for Polarizing Content → Intentional Exposure to Political Violence	0.03	0.07	0.03	[-0.15, 0.22]	.722
W2 → W3	Intentional Exposure to Political Violence → Anger About Political Violence	0.08	0.12	0.06	[-0.13, 0.25]	.522
W2 → W3	Desensitization to Political Violence → Anger About Political Violence	-0.05	0.10	-0.04	[-0.23, 0.14]	.637
W2 → W3	Support for Polarizing Content → Anger About Political Violence	-0.08	0.09	-0.08	[-0.25, 0.09]	.361
W2 → W3	Intentional Exposure to Political Violence → Desensitization to Political Violence	-0.01	0.10	-0.00	[-0.16, 0.15]	.952
W2 → W3	Anger About Political Violence → Desensitization to Political Violence	-0.04	0.08	-0.05	[-0.20, 0.11]	.568
W2 → W3	Support for Polarizing Content → Desensitization to Political Violence	0.16	0.08	0.16	[0.01, 0.31]	.040
W2 → W3	Intentional Exposure to Political Violence → Support for Polarizing Content	0.22	0.10	0.21	[0.01, 0.40]	.039
W2 → W3	Anger About Political Violence → Support for Polarizing Content	-0.14	0.08	-0.17	[-0.36, 0.01]	.070
W2 → W3	Desensitization to Political Violence → Support for Polarizing Content	-0.11	0.09	-0.12	[-0.30, 0.06]	.190

Note. *B* and *SE* are unstandardized estimates; β and its 95% confidence interval are standardized estimates.

FIGURE 2

Theoretical Model



Note. Graphical representation of the random-intercept cross-lagged panel model depicting the theorized relationships between intentional exposure to political violence, anger about political violence, emotional desensitization towards political violence, and support for polarization content online. Ovals represent latent variables. Non-hypothesized and autoregressive paths are gray. W1= Wave 1, W2= Wave 2, W3= Wave 3.

ACRONYM	FULL NAME
DoA	Description of Action
DSMM	Differential Susceptibility to Media Effects Model
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation
IRB	Institutional Review Board
RI-CLPM	Random-Intercept Cross-Lagged Panel Model
TAP	Theory of Affective Pluralization
W	Wave
WP	Work Package

