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**Measuring affective polarization, examining its potential as a sociopolitical stressor, and investigating
the role of identity threat: a longitudinal investigation**

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Abstract

Affective polarization—antipathy between members of sociopolitical groups—appears to be increasing in many countries around the world, prompting a surge of research aiming to mitigate its purportedly pernicious effects on society. It is construed largely as an expressive phenomenon driven by identity threats and exacerbated by extended, vitriolic political campaigns in the era of electronic media. It has recently been hypothesised to have an intrapersonal effect on stress, health, and social support.

Progress in understanding affective polarization has been hindered by inconsistent measurement and by the fact that many studies on its causes and consequences use correlational research or survey vignette experiments. This PhD project sought to advance the field by (1) developing a psychometrically sound measure of affective polarization to address scale proliferation, (2) investigating social identity threat as a cause of affective polarization, and (3) testing whether affective polarization (expressed political prejudice) or social identity threat (anticipated political prejudice) exert harmful effects on wellbeing. To investigate (2) and (3), we used a longitudinal survey design and statistical models which are capable of disaggregating within- and between-person variance, to more accurately estimate causal effects between the constructs within individuals over time.

In study 1, the Affective Polarization Scale was developed. Exploratory and confirmatory factor analyses supported a reliable three-factor structure. The scale demonstrated good construct validity, replicating associations with authoritarianism, need for closure, identity strength, and intellectual humility.

Study 2 and 3 used a three-month longitudinal survey of American participants preceding the 2024 US presidential election. Random-intercept cross-lagged panel models revealed that social identity threat predicted subsequent increases in affective polarization. No effects of affective polarization or identity threat on social support, stress, or health were detected, though stress had a

significant effect on affective polarization, and affective polarization was correlated with greater stress, lower social support, and poorer health. No trends in affective polarization, social identity threat, or stress were seen, which conflicts with past research on the effect of contentious elections.

Overall, this thesis contributes to the study of affective polarization by presenting a new affective polarization scale. It then shows that affective polarization may be a defensive phenomenon; driven by anticipated political prejudice and by stress. This suggests that the onus for mitigating opponents' polarization may lie, at least in part, with each of us and what we signal to opponents. It also suggests that claims about harmful effects of identity threat and polarization on wellbeing may arise from a reliance on cross-sectional designs that fail to distinguish between within-person and between-person associations.

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Chapter 1: Introduction

Preface

Political polarization refers, generally, to the divergence and degradation of relations between political-ideological groups within a nation. It appears to be an increasingly pressing issue—one that has captured the attention of researchers, pundits, commentators, and the public—in many western nations and democracies around the world.

Over 2,000 years ago, Aristotle (2004/350 B.C.E) called human beings the “political animal”, or *zoon politikon* (Gintis et al., 2019), and indeed, modern social science agrees that human social-psychology is fundamentally tribal, a quality rooted in our evolutionary history (Clark et al., 2019; Mackiel, 2020). Having evolved under conditions of environmental threat, limited resources, and coalitional conflict, humans labour under dual, competing sets of social instincts. The first are the centripetal social behaviours driving group formation and cohesion—altruism, empathy, and cooperation—which evolved via the advantage they confer on individual members of the group. The second are the centrifugal behaviours driving intergroup competition and conflict, which evolved to mitigate the costs that come with being too cooperative or altruistic under conditions of uncertainty, scarcity, and conflict—suspicion of outsiders, freerider vigilance, sensitivity to threats, intergroup hostility, and so forth (Choi & Bowles, 2007; De Dreu et al., 2014, 2015). Thus, human beings have strong instincts for group formation, cooperation, and altruism, but combined with an instinct for social homophily and group-centric psychology which leads simultaneously to a pronounced propensity for intergroup and interpersonal hostility, prejudice, and competition (McPherson et al., 2001).

Therefore, though we are often described as an “ultrasocial” species (Henrich & Muthukrishna, 2021), our sociality is better described as a “discriminate sociality” (Ihara, 2011; Kurzban & Leary, 2001) marked by a “parochial cooperation” (De Dreu et al., 2014, 2015).

Interestingly, humans form and align with multiple—sometimes conflicting—groups simultaneously, and these exist on different levels of social analysis and serve different goals; we create nested super- and sub-ordinate groups which serve our various goals, and we form and internalise identities based on these group memberships (Crisp & Hewstone, 2007; Prasch et al., 2022). Indeed, even when there is an overarching group identity, such as nationality, the variability in human characteristics, goals, and worldviews means that a myriad of subordinate groups form, and these groups can have stronger or weaker affinities within and between one another depending on the context in which they find themselves and the nature of cross-group interactions (Brewer, 1991; Mackie et al., 2008; Turner, 1985).

Politics, as practiced in most modern nations, reflects this underlying human social-psychology, and even relies on it. Politics—most simply described as the business of forming and making decisions in groups—is characterised by pronounced large-scale cooperation and altruism (the larger political system), and a parochial, tribal combativeness simultaneously (the specific political-ideological coalitions competing within the system). Given the breadth of human variability and the aforementioned multitude of competing identities and goals, people naturally differ in their opinion on what decisions should be made regarding collective values and actions, and thus, being a social and tribal species, people organise themselves into political groups in order to serve their own social needs, assert their goals and have their say on collective decision making (Hibbing et al., 2014; Jost et al., 2009). This is reflected in the structure of government and political parties in most nations, and also in the less formal groups formed by those parties’ supporters in the populace. It is implicitly acknowledged in most modern governance structures that different groups’ worldviews are inherently limited, and that no individual or group has all the requisite knowledge required to unilaterally make decisions on behalf of the larger group, nor can disagreement be eradicated. Politics then, especially in pluralistic democracies, “aims at establishing an order and

organising human coexistence under conditions that are marked by [disagreement] and thus [are] always conflictual” (Mouffe, 2014, p. 150).

A certain amount of conflict in society is thus not only permitted but acknowledged as an inherent part of politics and society. Why then is the concern about polarization currently so pressing and potent? There are many theories and models of socio-political conflict, but here it is convenient to use Mouffe’s theory of *agonism vs antagonism* as a model (Westphal, 2025). According to Mouffe (2014b) all politics contains a dimension of antagonism, and “Once we acknowledge the antagonistic dimension of ‘the political’ we begin to realize that one of the main challenges for democratic politics consists in trying to defuse the potential antagonism that exists in human relations”. This reflects the need to manage and limit the centrifugal forces of human sociality, in order to allow the centripetal forces to hold and to facilitate the maintenance of society. Mouffe asserts that pluralistic democracies should be thought of as socio-politically *agonistic*. That is to say, these systems are designed to let opposing groups clash and fight for dominance in a setting with rules designed to constrain and confine that conflict to certain harm-limiting and goods-producing domains and forms. Given the multiplicity of opinions about what is the correct course of action, this constrained conflict allows a collective decision to be made—for someone to have the final say on a course of action—without excluding the other groups entirely from the decision-making process. Rather, deliberation and conflict occur, and some groups are temporarily ‘beaten’ in a symbolic ‘fair fight’, and thus they, for the moment, concede. Mouffe asserts that this process allows citizens to feel that they were given fair opportunity to influence collective decision making, and will be given another opportunity to do so in the future; that they are included as part of the political process and allowed to express their will and their emotions regarding the direction of society. This inclusion, even in the face of a political ‘loss’ facilitates the maintenance of a collective identity, a superordinate ‘we’, out of the subordinate ideological groups, by incorporating them into an ongoing decision-making process.

Thus, under *agonism*, the different political-ideological groups in society come to view themselves as legitimate adversaries embedded in a larger collective group, with a common in-group identity. These adversaries do not question one another's right to fight for what they believe in, and groups seek only to defeat their adversary temporarily—until their next legitimate conflict (i.e., election cycles, referenda, hearings). On the other hand, under *antagonism*, the more constructive adversarial distinction becomes a 'friend/enemy' distinction. Groups no longer view their outgroups as necessary or even valuable adversaries who are to be defeated temporarily. They may instead seek to defeat the outgroup once and for all, and no longer recognise their legitimacy to engage in the conflict. The collective in-group identity, the "we" possible under agonism, degrades under antagonism until there is nothing left but the "them" and "us" of the conflict. It is under these conditions that conflicts can break out of the constrained realm of agonistic, pluralistic politics and spill over into actual hostilities, resulting in gridlock, democratic backsliding, prejudice, political violence, civil war, even genocide.

This distinction between agonism and antagonism reflects the concern that researchers, pundits, commentators, and the public have regarding political and affective polarization (Westphal, 2025). There is the sense that pluralistic agonism may be taking on a more pernicious form, turning towards antagonism in countries with accelerating polarization (McCoy & Somer, 2019; Somer & McCoy, 2018). There is the sense that the overarching identities, under which pluralism can exist, are dissolving, leaving only our disparate tribes. Numerous hotly debated political issues such as Brexit, Wokeness, immigration, a recent spate of highly contentious elections, as well as instances of political violence—protests and riots of various forms all around the world, vehicle attacks on voting booths in the US, the attempted assassination of Donald Trump, the assassination of Charlie Kirk, the riots of January 6th, the New Zealand parliamentary riots, and a growing sense of widespread incivility among citizens—all apparently serve as potent indicators of this growing antagonism and polarization.

What is Political Polarization?

Political polarization is a complex and multidimensional phenomenon. Generally, it refers to the predominance of the centrifugal social dynamics which drive the divergence and breakdown in relations between members of different socio-political groups. Persily (2015), in *Solutions to Political Polarization in America*, described it as:

“Three separate but interacting phenomena... The first is ideological convergence within parties and divergence between parties—what we might call “hyperpartisanship.” The second, often characterized as “gridlock,” refers to the inability of the system to perform basic policy-making functions due to obstructionist tactics. Third, when we speak of polarization we often mean something beyond government dysfunction: a larger cultural phenomenon of “incivility”, namely the erosion of norms that historically constrained the discourse and actions of political actors or the mass public.” (p. 4)

While Persily’s concept of gridlock is usually viewed as one of the *consequences* of polarization at the elite level rather than a specific type of polarization (McCoy et al., 2018), his concepts of hyperpartisanship and incivility parallel the two main types of political polarization discussed in contemporary polarization research: ideological and affective polarization.

Ideological Polarization

Early conceptualizations of political polarization reflect what is now labelled ideological polarization. In *Parties and Party Systems*, Sator (1976) stated: "Briefly put, we have polarization when we have ideological distance (in contra-distinction to ideological proximity)" (p. 120), which aligns with Persily’s (2015) more recent description of one aspect of polarization as ideological “divergence” between groups or parties.

Ideological polarization therefore relates primarily to issue-positions or beliefs, i.e., the ideological stances of group members on social, political, or philosophical issues. As visualised by Lelkes (2016), ideological polarization between two groups could be represented as a bimodal distribution on a plot visualizing the ideological stance of group members in which there is a large difference between the average issue positions of each group, whereas a non-polarized society would show an almost unimodal distribution of ideological stances, with a significant overlap in the groups.

Social-scientific interest in the phenomenon of political polarization renewed in the late 90s early 2000s, alongside the growing *sense* that political polarization was increasing in many nations, but namely in the US. However, the extent of polarization was hotly debated among researchers (Lelkes, 2016). This debate partly stemmed from the fact that polarization was primarily operationalised in studies as *ideological* polarization. On one side of the debate, a group of authors found evidence that the US was indeed increasingly polarised (Abramowitz, 2010; Abramowitz & Saunders, 2005, 2008), while others presented evidence that this polarization was exaggerated, that most citizens were still functionally centrist and displayed considerable overlap in terms of their actual policy stances (Fiorina et al., 2008; Fiorina & Abrams, 2008).

However, as Lelkes (2016) noted, while polarization was conceptualised in terms of what came to be known generally as ideological polarization, the researchers were operationalising it in slightly different ways, which is what facilitated the conflicting perspectives. Ideological polarization, or the loss of middle-ground ideological overlap between groups, could take either of two forms. As noted in the Persily quote above, it could arise through *divergence* between groups, or *convergence* within groups (Lelkes called this *alignment*). Divergence is when the distribution of beliefs in each group moves farther apart, i.e., groups grow more ideologically ‘extreme’ on average. Convergence is the narrowing of the distribution of beliefs within each group such that the mean differences between the groups do not become more extreme, but members of each group come to align more closely with the paradigmatic dogmas of their group, i.e., groups become more

ideologically narrow or ‘pure’. Both divergence and convergence results in the loss of middle ground, but through different processes. In the US, there was evidence that polarization-as-alignment was occurring, that groups were ‘purifying’ and cross-cutting beliefs were diminishing. However, the evidence for polarization-as-divergence was less clear. While there was some evidence that divergence was occurring among highly identified and committed partisans, divergence among the mass public of more moderate voters was likely not occurring to a similar degree. For a more detailed review, see Lelkes (2016).

Again, the reason for such debate on the issue of polarization was that there was a widespread interest in it, following from the *sense* among pundits, researchers, and the public that something was going on, and that polarization was growing. Why then was the evidence for polarization so mixed? Iyengar et al., in a 2012 article titled *Affect, Not Ideology*, provided the answer.

Affective Polarization

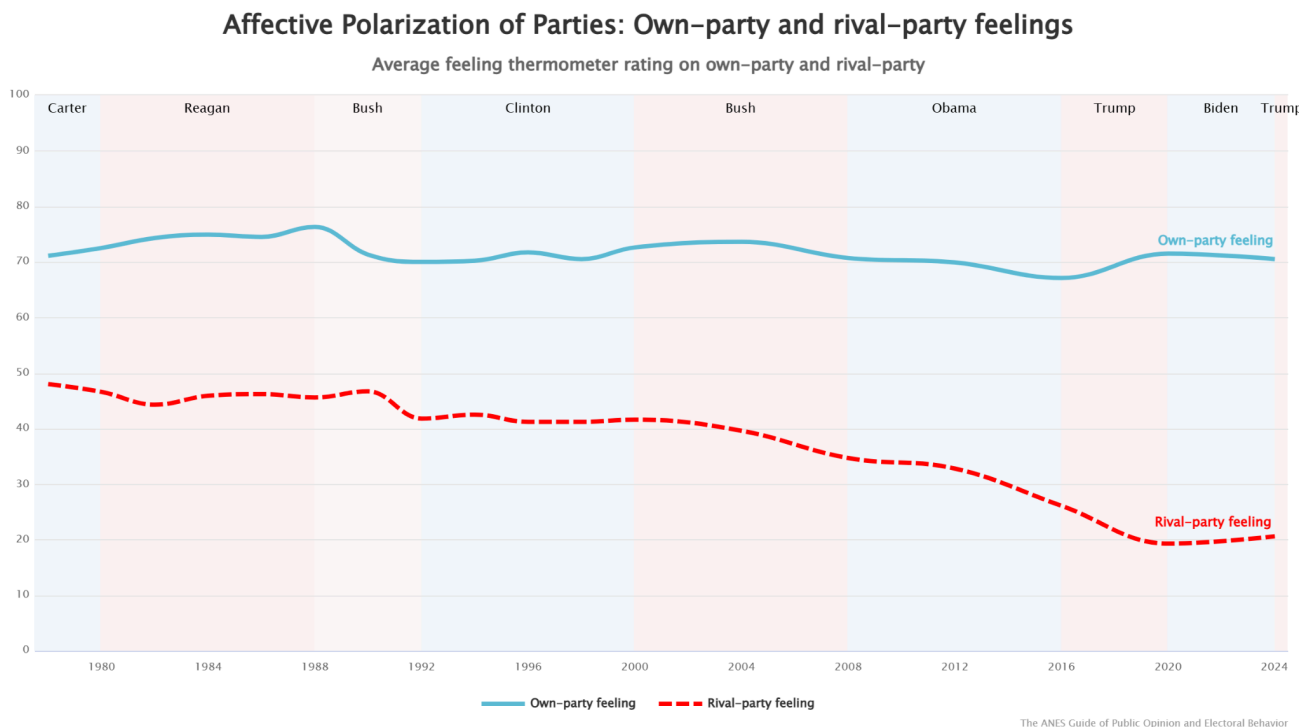
Iyengar et al. (2012) vindicated the sense of growing polarization by showing that, regardless of what was occurring in the realm of actual ideology and beliefs, the United States and the United Kingdom were polarizing in terms of intergroup *affect*. Using YouGov and ANES survey data, they first showed that between the mid 1970’s and the early 2000’s intergroup affect, as rated on feeling thermometers in which participants rate their level of warmth or coldness towards a target group on a scale from 0—100, had diverged quite drastically, an effect driven primarily by out-group antipathy (Figure 1.1). Later studies showed this trend continuing (Finkel et al., 2020), and robustness checks confirmed that this trend, at least in the US, is likely not the result of survey design, priming, or selection (Tyler & Iyengar, 2024).

Iyengar et al. (2012) found that the affective divide between Democrats and Republicans was greater than that between Catholics and Protestants, between Democrats and “big business”, and between Republicans and “Gay men and Lesbians”. Likewise, using measures of affective

polarization that came to be known as the “social distance” measures, Iyengar et al. found that, since the 1960s, the proportion of people who would be upset if one of their children married someone from the political out-group rose from less than 10% on average in both the US and the UK to over 20% in the UK and almost 40% in the US.

Figure 1.1

Affective Polarization by Party (from The ANES Guide to Public Opinion and Electoral Behavior, n.d.).



Iyengar et al. also investigated affective polarization using trait ratings of the political outgroup, and found a similar pattern. Between the 1960s and 2008, they found that citizens’ willingness to impugn and stereotype out-group members—as less generous, honest, intelligent, open-minded, and patriotic, and as meaner, more hypocritical, selfish, and close-minded—rose “exponentially” (p. 420).

In the time since Iyengar et al.'s insightful work, many studies have investigated affective polarization in the US and around the world. The global picture is somewhat complicated, as data is scarcer and the measurement of affective polarization can vary by study, by country, and by political system. Boxell et al. (2022) found that affective polarization was increasing fastest and most drastically in the US, but was also increasing in Switzerland, France, Denmark, Canada, and New Zealand—though another study showed largely stable trends in New Zealand using simple party-support measures (Satherley et al. 2020). Interestingly, another study found that New Zealand was as polarized, or more, than the United States (Gidron et al., 2019). Other studies have found that affective polarization has increased markedly in Finland (Kekkonen & Ylä-Anttila, 2021) and throughout Europe (Orriols & León, 2020; Reiljan, 2020; Torcal & Thomson, 2023). It was thought for a time that multiparty systems would show a lower level of affective polarization, as they are less easily divided into large, simple identitarian blocks formed along all-encompassing socio-political cleavages. However, this proved not to be the case, and there is evidence that people in multiparty systems do indeed align with simplified affective-ideological blocs, and that affective polarization in many multi-party systems like Spain, Ireland, Australia, Norway, may be as high or higher than that in the most easily-divided two-party system of the US (Comellas & Torcal, 2023; Gidron et al., 2019; Kekkonen & Ylä-Anttila, 2021; Knudsen, 2021; Orriols & León, 2020).

While many studies track affective polarization as a *process* occurring at the group level; as the divergence in intergroup affect between groups over time, others—especially those investigating the social and interpersonal harms arising from (or at least associated with) affective polarization—operationalise it as a *trait* or *state* of individuals; that is, as an individual difference variable (Carlin & Love, 2025; Röllicke, 2023). Whatever form the research takes, however, the proliferation of measures of affective polarization has created significant ambiguity and inconsistency in the field (Carlin & Love, 2025; Kubin & von Sikorski, 2023; Röllicke, 2023). While the feeling thermometers described above were the primary indicators of affective polarization, a

range of other measures quickly gained popularity and became widely used in the affective polarization research. Social distance items measure a desire to avoid interacting with members of one's political-ideological outgroup, trait ratings measure the degree to which participants endorse negative stereotypes and descriptions of outgroup members, trust ratings measure aspects of social trust towards outgroup members, and various other items measure incivility and expressed prejudice towards outgroup members (Carlin & Love, 2025). These disparate measures of affective polarization are often used in an ad-hoc manner and improvisationally combined into scales of various forms, with reports of Cronbach's alpha being the extent of the investigation into the appropriateness of their use. The measures used vary widely by study, which makes comparisons and cumulative research on the topic quite difficult. There is a need for clarity in the field of affective polarization (Carlin & Love, 2025; Kubin & von Sikorski, 2023) which would benefit from the creation of a measure which captures the variability in expressions of affective polarization, but which can bring consistency to its measurement. This is the focus of the first study from this thesis (McMurtrie et al., 2024), presented in Chapter 2.

Measurement ambiguities aside, many studies have shown that affective polarization likely has a host of negative effects. For example, some experiments have found that affective polarization leads to people to politicize otherwise apolitical issues (Druckman et al., 2021), and makes them more susceptible to misinformation (Jenke, 2023). A natural experiment found that affective polarization may undermine support for democratic norms (Kingzette et al., 2021, though lab experiments found no such evidence, see Broockman et al., 2022), and affective polarization has been associated with higher authoritarianism (Costello et al., 2022; Johnston, 2018; Luttig, 2017; Renström et al., 2022). Expressed and behavioural prejudice based on political ideology exceeds that based on race and religion in some studies (Carmines & Nassar, 2022; Iyengar & Westwood, 2015; Westwood et al., 2018). Affective polarization may also spill over and drive homophily and sorting in aspects of ostensibly non-political life, such as employment, living arrangements, dating, and

patronage (Gift & Gift, 2015; Huber & Malhotra, 2017; McConnell et al., 2018; Shafranek, 2021), as well as generally undermining the social trust upon which pluralistic, agonistic democracies rely (Carlin & Love, 2018; Lee, 2022; Schedler, 2023; Torcal & Thomson, 2023).

Likewise, some assert that affective polarization is experienced as a socio-political stressor which can negatively impact health (Nelson, 2022). Given our designation as a political *animal*, and the incredibly high stakes accompanying intergroup relations throughout evolutionary history, there is a strong theoretical basis for construing political-ideological group dynamics as an intensely *visceral* phenomenon (Tsakiris et al., 2021) which can cause significant physical stress and impact health. While there is some evidence for affective polarization specifically exerting a negative effect on health (Nelson, 2022; Van Bavel et al., 2024), most of the research is cross-sectional, or infers an effect of affective polarization by tracking health outcomes during contentious elections without actually measuring people's affective polarization and showing that it predicts their health outcomes (Mefford et al., 2020; Rosman et al., 2021). The purpose of Chapter 4 was to address this research gap by investigating the purported intrapersonal harm of affective polarization, by quantifying its effect on social, psychological, and physical wellbeing indicators, using a longitudinal design better suited for investigating causal effects.

If Not (only) Ideology, Then What?

Given that the affectively polarized political-ideological groups do form along the lines of somewhat defined and coherent ideologies which come with a set of central political and material concerns (Sowell, 2007; though see Pinosof et al., 2023), researchers continued to investigate the ideological-affective relationship and found that ideological polarization likely does play a part in affective polarization (Rogowski & Sutherland, 2016; Webster & Abramowitz, 2017). In the “oil spill” model of ideological polarization, DellaPosta (2020) showed that ideological sorting, i.e., polarization-as-alignment, has been occurring in parallel with social sorting and affective

polarization, and that “more and more previously “apolitical” attitudes, opinions, and preferences” have been coming to align under the larger partisan identities with the loss of cross-cutting beliefs and preferences (p. 508). Likewise, Boucher (2017) called this “belief congruence theory”, showing that increased issue alignment is associated with greater dislike of the outgroup.

While ideological polarization plays a part in driving affective polarization, with ideological distance closely related to affective distance (Webster & Abramowitz, 2017), this relationship is inconsistent (Iyengar et al., 2012), and social factors often appear to be more relevant than policy factors (Huddy et al., 2015; Huddy & Yair, 2021). Therefore, political polarization is still largely thought of as an expressive phenomenon (Dias & Lelkes, 2022), with affective and ideological polarization being somewhat independent, and with ideological polarization being less pronounced. This state of affairs is what Mason (2013) called “uncivil agreement”.

If the increase in affective polarization seen around the world is not entirely driven by an underlying polarization of belief and ideology, then what (else) is driving it? Increasingly, political-ideological group identification is seen as, largely, an *expressive* rather than an *instrumental* phenomenon (Huddy et al., 2015; Huddy & Bankert, 2017), and affective polarization is thus thought to be a result of processes of group identification and simple intergroup psychology, rather than being purely based on instrumental political-ideological concerns. For example, in a review of research comparing the effects of identity and ideology on affective polarization, Iyengar and DeBell (2023) found that strongly identified partisans expressed substantially higher outgroup animus, whereas highly ideologically aligned partisans only showed marginally higher outgroup animus. Research on affective polarization now primarily relies on social identity theory (Greene, 1999; Huddy, 2001; Huddy & Bankert, 2017) and its off-shoots, intergroup threat theory (Renström et al., 2021; Stephan et al., 2015), and intergroup emotions theory (Mackie et al., 2008; Smith et al., 2007; Smith & Mackie, 2015), as an explanatory framework.

Social identity theory asserts that people are driven to form and identify with groups, based on any number of relevant characteristics—sometimes even relatively unimportant characteristics, as seen in the minimal groups paradigm (Diehl, 1990). These group identities come with internalised norms, concepts, and worldviews, as well as providing a sense of self and a sense of positive belonging and distinctiveness to members (Brown, 2000; Hornsey, 2008). People simultaneously identify with multiple groups at different levels of organisation, and it is thought that whichever group is most salient in a given social context is the one whose norms, expectations, worldview, and value will influence an individual's self-concept and behaviour in the moment. For example, it is thought that getting people out of the competitive 'mode' of sub-ordinate groups by priming them with an overarching common in-group can alter their emotions and behaviour (Levendusky, 2018).

Intergroup emotions theory extends social identity theory by emphasizing that when group identity is salient, individuals experience emotions on behalf of their group. For example, anger, disgust, or fear directed toward outgroups are not merely individual affective responses, but group-based emotions tied to factors which may be relevant to the group as a whole, rather than necessarily relevant primarily to that individual (Mackie et al., 2008; Smith & Mackie, 2015). Intergroup threat theory emphasizes that perceived threats of various kinds, even purely symbolic threats to a group's meaning structures, worldview, or distinctiveness, can have a strong influence on group members behaviour and group-based emotions (Stephan et al., 2015).

Thus, a main driver of affective polarization is thought to be the strengthening of the group identities associated with socio-political group, the increased susceptibility to intergroup threat, and the increased influence of intergroup emotions that comes with a strongly-held identity (Iyengar et al., 2019; Renström et al., 2021, 2023). This appears in large part to be driven and exacerbated by changes to the information environment: the proliferation of electronic and social media, combined with human tribal psychology and the incentives of algorithmic personalisation, means that most people are within reach of political/ideological identity-based cues and threats at all times. The MAD

model asserts that *motivations*, rooted in human tribal psychology, lead highly polarizing moral-emotional content to capture people's *attention* online, which is exacerbated by the *design* and proliferation of electronic and social media, which all combine to drive and exacerbate affective polarization (Brady et al., 2020). This then strengthens the incentive on elites and partisans to use such identity cues and emotionally charged rhetoric to mobilize their bases or garner attention (Brady et al., 2025), increase enthusiasm among supporters, and achieve positive distinction and status among the ingroup (Arora et al., 2022; Sood & Iyengar, 2016). The anonymity or impersonality of social media then allows the most extreme members of groups, or even outside bad actors (for interesting examples of this, see: Network Contagion Research Institute, 2022; 2023; 2025a; 2025b), to fill the space with highly captivating and viral group-identity based threats and targeted campaigns, which causes emotional responses from group members and results in intergroup hostility which can spiral because of the reinforcing effects of all these factors mentioned above (Hutchens et al., 2019).

For this reason, one major cause of affective polarization is thought to be perceptions of social identity threat. Social identity threats, in this context, are the perception that one will be devalued or marginalised by others based on some self-relevant identity or characteristic (Major & Schmader, 2017). There is considerable overlap between social identity threats and a construct known as meta-perceptions—inferences about how “they” see “us” (Lees and Cikara, 2019, p. 279). Research has shown that affective polarization may be driven by identity threats/negative meta-perceptions (Lees & Cikara, 2019; Moore-Berg, 2023; Moore-Berg et al., 2020). However, much of this research uses cross-sectional methods, longitudinal methods which use very long time-lags and do not differentiate between-person and within-person variance, or relies heavily on vignette survey experiments which may lack ecological validity. For this reason, in Chapter 3, we¹ take advantage of the contentious 2024 US presidential election period in order to measure

¹ Given this thesis is largely composed of multi-authored published papers which use the pronoun “we”, I continue to use “we” in the introduction and discussion section in order to be consistent.

metaperceptions and social identity threat and to investigate whether these can be seen to be driving affective polarization over time. We also investigate whether social identity threat drives stress and declines in health over time.

The Present Research

This thesis consists of three pre-registered studies utilizing open-science practices. These three studies address the three research gaps and aims identified above.

In Chapter 2, we present the first published manuscript of this thesis, which seeks to address measurement issues which have complicated the study of affective polarization thus far. We aimed with this study to address the problem of diverse and inconsistent measurement practices in affective polarization (Carlin & Love, 2025; Kubin & von Sikorski, 2023), which makes comparing and interpreting diverse effects and associations seen in the literature on affective polarization difficult. This reflects a larger issue in social science generally—that of the “toothbrush problem”, or the fragmentation of measurement, and scale proliferation (Anvari et al., 2024; Bruner, 2003; Elson et al., 2023). We review the measurement of affective polarization and create an affective polarization scale informed by the most common indicators. However, we inadvertently contributed to the toothbrush problem with Study 1, as at the same time we were creating our scale of affective polarization, multiple other research teams had their own affective polarization scales in development (Campos & Federico, 2025; Flores, 2023; Landry et al., 2024). We provide a comprehensive discussion of the strengths and weaknesses of these new scales in our final discussion chapter.

In Chapter 3, we investigate the effect of negative meta-perceptions and perceptions of social identity threat on affective polarization, finding support for the idea that affective polarization is driven by identity-threat and expectations of stigma from the outgroup. We also investigate whether

social identity threat can be seen to be driving declines in mental or physical health, in line with identity threat research in other realms.

Given that being affectively polarized is associated with a strong desire for homophily and is thought to be characterised by heightened negative emotions and perceptions of threat, it has been characterised by some as a ‘sociopolitical stressor’ which exerts a negative effect on social support and mental wellbeing—though the vast majority of these studies are correlational. Thus, Chapter 4 investigates the effect of affective polarization on social support, stress, and self-rated health.

For all of the research presented in this thesis, we recruited participants from the US, as the simple two-party system is particularly amenable to research into group dynamics and the large pools of online participants make such research more feasible. Sample size requirements would have required us to recruit the entirety of Prolific’s New Zealand participant base had we chosen to use Kiwi participants. This did not seem feasible; it seemed more appropriate to advertise this research to the thousands of US participants in order to increase the chances of meeting our sample requirements. Additionally, for the research presented in Chapters 3 and 4, the timing of the 2024 US presidential election provided a perfect opportunity to monitor trends and model longitudinal relationships between our constructs of interest, at a time when there was likely to be substantial variance in these constructs.

Both chapter 3 and 4 use data collected from a single longitudinal survey project, which collected data over a three month period preceding the US presidential election, and utilizes random intercepts cross-lagged panel models to investigate our hypotheses. Chapter 5 provides a final critical discussion of this thesis’s contribution to the research on affective polarization.

Chapter 2: Development and Validation of the Affective Polarization Scale

McMurtrie, B., Philipp, M., Hebden, R., & Williams, M. (2024). Development and validation of the Affective Polarization Scale. *International Review of Social Psychology*, 37(1), 11.
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STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the student and the student's main supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the student's contribution as indicated below in the Statement of Originality.

Student name:	Brandon McMurtrie		
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In which chapter is the manuscript/published work?	2		
Describe the contribution that the student and members of the supervisory team have made to the manuscript/published work: ¹			
Brandon McMurtrie: Conceptualization, Methodology, Investigation, Validation, Analysis, Data Curation, Writing - Original Draft, Review & Editing, Visualization.			
Matt Williams: Supervision, Writing - Review & Editing, Methodology, Funding, Analysis, Project administration.			
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<input type="radio"/>	It is intended that the manuscript will be published, but it has not yet been submitted to a journal		
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Abstract

Affective polarization—an expressed aversion and dislike of members of one’s political outgroup—has increased in many polities in recent years, and thus published research on the topic has proliferated. Studies have asserted that affective polarization is tied to prejudice and authoritarianism, among other potentially harmful phenomena, and is buffered by intellectual humility. We assert that this literature is hindered by the use of *ad hoc*, heterogeneous measures of affective polarization which have not been properly psychometrically evaluated, and which limit research clarity and make cumulative science on the topic difficult. Informed by the common extant measures of affective polarization we constructed a new scale and investigated its reliability and construct validity. In Study 1 we generated items and had them rated by subject matter experts for content validity ($N = 6$). In Study 2, a sample of US participants completed the scale ($N = 326$), an EFA suggested a three-factor model, which had good reliability. In Study 3, a CFA ($N = 331$) confirmed that a three-factor model fit the data, with subscales labelled Social Distance, Aversion, and Incivility. We also showed that our Affective Polarization Scale had good reliability, at both the full- and sub-scale level, through the results of the α - and ω -indicators of reliability. Construct validity analyses supported all pre-registered hypotheses, showing that scores on our scale were positively correlated with authoritarianism, need for closure, and identity strength, and negatively correlated with intellectual humility. We make suggestions for future research and scale usage, such as investigating measurement invariance in different populations, or with different outgroup targets.

Keywords: affective polarization, prejudice, intellectual humility, authoritarianism, negative partisanship

Introduction

Social and political discourse globally, and in the West specifically, seems to have become increasingly characterised by vitriol, distrust, and resentment between ideological groups in recent years. This apparent polarization has been the subject of a lot of scholarly attention, particularly in Western nations. Initially, polarization was largely defined in terms of ideological polarization, which is the divergence of partisan groups in terms of their positions on major issues (Fiorina et al., 2008). The extent of ideological polarization is debated, however, with some claiming that ideological polarization has increased, exemplified by the apparent loss of moderates in some data from the US; while others claim that most citizens in fact remain centrists (Abramowitz & Saunders, 2008; Fiorina et al., 2008; Fiorina & Abrams, 2008). Many researchers now believe that ideological polarization does not capture the true extent of polarization (Iyengar et al., 2019). Instead, polarization is better described in terms of *affective* polarization, which refers to the level of antipathy felt towards outgroup members (Hetherington et al., 2016; Iyengar et al., 2012; 2019). Even when different ideological groups become more moderate or remain stable in terms of their ideological positions, they can be increasingly affectively polarized, displaying antipathy through avoidance, distrust, schadenfreude (taking pleasure in others' misfortune), and disliking across groups (Levendusky & Malhotra, 2016; Mason, 2013; 2015; Webster et al., 2024). Affective polarization has increased in the American socio-political environment especially but is also occurring in much of Europe (Boxell et al., 2022; Kekkonen & Ylä-Anttila, 2021; Orriols & León, 2020; Reiljan, 2020; Wagner, 2024).

Most explanations of affective polarization are informed by the social identity approach, and related theories such as intergroup emotions theory (Druckman & Levendusky, 2019; Greene, 1999; Iyengar et al., 2019; Kalin & Sambanis, 2018). These assert that partisanship and political orientation functions as a social identity, which provides a range of benefits to the individual, such as fulfilling epistemic needs, providing a sense of belonging and a sense of collective self-esteem, as well as a cognitive framework for interpreting social phenomena and directing behaviour.

Intergroup emotions theory (Mackie et al., 2008; Smith & Mackie, 2015) focusses on the way emotions are experienced on behalf of one's social identity group when that group identity is salient, explaining that, in such a context, emotions which arise are often based on group-level rather than individual-level appraisals. Individuals make appraisals of others in their social environment, their group membership, their traits, and their behaviour (Fischer & Manstead, 2008; Smith & Mackie, 2015). Upon appraising an outgroup and its members negatively, as hostile or threatening in some way, emotions arise which perform a social distancing function (Fischer & Manstead, 2008). These social distancing emotions, anxiety and anger, are motivational states which may result in confrontational or avoidant behaviours, depending on the context (Petersen, 2010). Often no simple unidimensional emotional state is experienced, but rather a combination of anger and anxiety which, coupled with contextual factors, produces more specific feelings and states, such as avoidance, schadenfreude, and callousness (Smith & Mackie, 2015).

Affective polarization may cause harm to individuals, and society in general. It has been shown to spill over and influence non-political judgements: people display favouritism towards co-partisans while displaying prejudice towards outgroup members, which in some studies has been seen to exceed discrimination based on race, religion, and gender (Carmines & Nassar, 2022; Iyengar & Westwood, 2015; Westwood et al., 2018). This discrimination has also been observed in the evaluation of job applicants and dating behaviour (Gift & Gift, 2015; Huber & Malhotra, 2017). Some research construes affective polarization in terms of partisans' desire for "social distance" from their political-ideological outgroups, with partisans displaying a moderate reluctance to live near, be friends with, or have family ties to opposing partisans (Iyengar et al., 2012; Levendusky & Malhotra, 2016). Characterised by distrust and antipathy between groups, affective polarization may lower social trust and undermine healthy social and political processes (Druckman et al., 2013, 2021; Gidron et al., 2019; Kingzette et al., 2021; Torcal & Thomson, 2023). Affective polarization is also associated with cognitive biases which leave one susceptible to misinformation (Jenke, 2023). It

likewise contributes to selective exposure and thus echo-chamber formation, or cyberbalkanization, which contributes to the proliferation of mis- and dis-information (Arora et al., 2022; Chan et al., 2019; Lorenzano et al., 2018; Wang & Song, 2020). Those who are more affectively polarized on both the political left and the right show a greater tendency toward authoritarianism (Costello et al., 2022; Johnston, 2018; Luttig, 2017; Renström et al., 2022).

It is therefore important for psychologists to continue to study the antecedents and effects of affective polarization, as it is likely harmful to individuals and society. However, to study affective polarization effectively, there needs to be a clarification and refinement of the measures used. Throughout the literature there is a marked heterogeneity of measures, and there has been little justification or discussion of these various measures (Kubin & von Sikorski, 2021). In this study, we perform an informal review of the measures used to study affective polarization, and strive to develop a new, valid measure.

Measures of affective polarization

The way affective polarization has been measured in previous studies is incredibly inconsistent, and there is a need for a standard measure with a clear construct definition (Kubin & von Sikorski, 2021). In contrast to ideological polarization, which is the divergence of policy positions or ideological positions between partisans, affective polarization is a construct which concerns *social-emotional* polarization specifically, representing a breakdown of cohesion and good-will between group members. In much of the research on polarization, the term “political polarization” has been used to refer to both ideological and affective polarization, with two-thirds of studies failing to define the construct, and many not explicitly specifying which form of polarization is being studied (Kubin & von Sikorski, 2021). Additionally, the terms behavioural polarization, social polarization, partisan prejudice, negative partisanship, and affective polarization have all been used to refer to generally the same construct, which is an expressed dislike and aversion to outgroup members (Garrett & Bankert, 2018; Kubin & von Sikorski, 2021; 2023).

There are three types of measures most commonly used throughout the affective polarization literature: feeling thermometers, trait ratings, and social distance items (Druckman & Levendusky, 2019; Lelkes, 2016). Feeling thermometers ask participants to rate their feelings towards a relevant outgroup on a warmth-coldness scale, usually on a scale of 0 to 100. Trait ratings ask participants to rate a group on a range of traits such as honesty, patriotism, intelligence, selfishness, meanness. Social distance items ask participants how comfortable they would be if their child married a member of a relevant outgroup, or their willingness to befriend outgroup members, and so on. Less often, ratings of trust in outgroup members have also been used (Rudolph & Hetherington, 2021). In a study on the moral roots of affective polarization, Garrett and Bankert (2018) used new hostility items pertaining to schadenfreude, anger, antagonism, and incivility. In many studies, multiple measures are used in tandem, and analysed as separate measures of affective polarization (e.g., Iyengar et al., 2012). Sometimes they are combined to form an overall measure of affective polarization (e.g., Huddy & Yair, 2021).

Evidence does suggest that the disparate methods for measuring affective polarization are related. In a review of the measurement of affective polarization, Druckman and Levendusky (2019) found that the feeling thermometer, trust ratings, and trait ratings were all correlated with one another ($r = 0.44\text{--}0.63$). Social distance items were not highly correlated with the others in their study, though a study by Renström et al. (2021), which used multiple measures of affective polarization, found no difference in results based on which measure was used in analyses, indicating that they were all highly correlated. Similarly, Costello et al. (2022) and Gidron et al. (2022) found that the social distance items and feeling thermometers were highly correlated, and Huddy and Yair (2021) found that trait ratings, social distance items, and feeling thermometers were all associated with one another. Druckman and Levendusky (2019) used the trait ratings and social distance items as separate scales, both of which showed good reliability (trait ratings, $\alpha = .90$; social distance items, $\alpha = .80$). Garret and Bankert (2018) combined the social distance items and hostility items into a scale

($\alpha = .87$). Huddy and Yair (2021) combined all items (feeling thermometer, trait ratings, and social distance items) to calculate single affective polarization score. This was done for participant ratings of both their in-party ($\alpha = .59$) and out-party ($\alpha = .76$). Druckman et al. (2021) combined feeling thermometers, trust ratings, trait ratings, and social distance measures into a single scale ($\alpha = .88$). However, despite these papers reporting high reliabilities, there has been little analysis of content validity, item wording, or construct validity, and the items used varied widely between studies.

While the feeling thermometer is the original and most widely used measure of affective polarization because of its suitability for large scale political polling, the format is abstract and vague, and has been criticized for poor validity (Lelkes, 2016; Wilcox et al., 1989). In order to accurately capture variation in the construct, it may not be appropriate to simply ask participants directly how warm or cold they feel towards the outgroup. Doing so is vague and often it is difficult for participants to properly summarise their feelings on a single item which is devoid of content reflecting the social context of affective polarization.

We assert that the domains most relevant to affective polarization have therefore been previously identified in the affective polarization literature; the trait ratings are the appraisals upon which the intergroup emotions are based, and the social distance, incivility, and schadenfreude type items reflect the negative and social distancing emotions and behaviours which arise. However, as described above, these types of items were rarely combined into a content valid scale which reflected the full dimensionality of the construct, and proper analyses of the psychometric properties of the scales were not performed. Rather, the scales were made “on the fly”, resulting in multiple different measures of the same construct, and the respective authors used the common yet problematic practice of simply reporting Cronbach’s alpha as the extent of their psychometric analyses (Flake et al., 2017).

A standard, content-valid, comprehensive affective polarization scale will provide affective polarization research with greater validity, allow for the comparison of results and effect sizes, and make meta-analytic studies easier (Kubin & von Sikorski, 2023). A measure of affective polarization with more items than the simple feeling thermometer or the short scales used previously will likely provide a scale with better reliability, as reliability generally increases with scale length, at least for short scales (Spearman, 1910). Additionally, while there may be some situations where single-item feeling thermometers are appropriate, these are not ideal for complex or abstract constructs; multiple items are needed to accurately model measurement error, especially for analyses such as structural equation modelling (Fuchs & Diamantopoulos, 2009; Petrescu, 2013). One also needs to properly investigate content validity, dimensionality, and construct validity, which has not been done for the affective polarization scales. Thus, the present study will investigate these issues, and provide evidence for the validity of a new measure of affective polarization adapted from those used previously.

Overview

The present studies were informed by Boateng et al.'s (2018) best practices guidelines for developing and validating scales for health, social, and behavioural research. Phase 1 began by generating a pool of items and submitting them to six subject matter experts (SMEs) for analysis of content validity. Based on the SME ratings of item appropriateness, we produced item and scale content validity index (CVI) scores.

Phase 2 entailed administering the new affective polarization scale (APS) to a sample of participants and performing exploratory factor analyses (EFA) and reliability analysis, to inform the subsequent confirmatory and validity analyses.

In Phase 3 we performed fully pre-registered confirmatory tests of dimensionality, reliability, and construct validity. Construct validity was assessed using six related variables from affective

polarization's nomological network: feeling thermometer scores, need for closure, intellectual humility, authoritarianism, and identity strength.

Phase 1: Item Development

Domain Identification

Based on the research on affective polarization (Iyengar et al., 2019), social identity (Greene, 1999), and intergroup emotions (Mackie et al., 2008; Smith & Mackie, 2015), we arrived at a simple, broad definition: Affective polarization is the degree of antipathy one holds towards their outgroup, expressed as negative appraisals of the outgroup, a desire for social distance from the outgroup, and expressed incivility towards the outgroup.

Based on our definition and theory generated from previous studies, we settled on content sub-domains *a priori*. These domains were to be investigated as actual statistical dimensions of our measure in Study 2, but in this stage they simply informed our attempt to ensure content validity. The domains were:

1. Social Distance: A reluctance to interact with members of the target outgroup, a desire for social distance.
2. Aversion: Trait ratings and negative appraisals of the outgroup.
3. Incivility: Confrontational or callous attitudes and behaviours towards outgroup members, though of a non-violent nature, such as schadenfreude and incivility.

Item Generation

We used the deductive method, or 'classification from above' (Boateng et al., 2018: 5), to generate items based on the descriptions of the domains and assessment of previous scales used throughout the literature. We intended to construct a relatively short scale for researcher and participant convenience. We targeted a scale of approximately 15 items, and therefore generated an item pool at least twice as large (Boateng et al., 2018). We generated 35 items for our initial item

pool. Many of these were informed by and adapted from previous measures of affective polarization reviewed above. The blank space in each item represents the target which respondents will be rating (e.g., “Liberals”, “Conservatives”, “Democrats”, “Republicans”, etc.). Items were to be measured on a 7-point Likert scale, which is recommended for bipolar items (Boateng et al., 2018). Response items ranged from *strongly disagree* to *strongly agree* with a neutral point labelled *neither*.

Content Validity

The construct definition, the content domains, and the initial 35 items were presented to a panel of six psychologists who were asked to rate item appropriateness on a 4-point Likert scale, for calculation of the content validity index (CVI, Yusoff, 2019). All subject matter experts had a PhD in psychology, and currently work as researchers and educators in the field of psychology. Table 2.1 shows the initial 35 items along with the item CVI score, which is the proportion of experts in agreement as to item relevance to its corresponding domain.

Table 2.1*Initial items, item CVI scores, and scale CVI score.*

Domain	Item	Experts in agreement	I-CVI
Social Distance	I would be upset if my friend married a ____.	5	0.8
	I would be upset if a close family member married a ____.	5	0.8
	I would not like it if a ____ moved into the house next door.	5	0.8
	I avoid forming friendships with ____.	6	1
	I would not go into business with a ____.	5	0.8
	I try to avoid socialising with ____.	6	1
	I would not be willing to date a ____.	5	0.8
	I block or unfriend ____ on social media.	4	0.7
	I do not follow ____ on social media.	5	0.8
	I avoid ____ areas.	4	0.7
Aversion	____ are untrustworthy.	6	1
	I dislike ____.	6	1
	____ are dishonest.	4	0.7
	____ are selfish.	3	0.5
	____ are hypocritical.	5	0.8
	____ are mean.	4	0.7
	____ are immoral.	5	0.8
	____ are unfriendly.	6	1
	____ are judgemental.	3	0.5
	____ are cold.	4	0.7
Incivility	____ are dangerous.	6	1
	____ are rude.	4	0.7
	I do not help ____ when they need it.	4	0.7
	I am happy when negative things happen to ____.	6	1
	I would be happy if there were no ____.	5	0.8
	I try not to support ____ businesses.	5	0.8
	I like to see ____ taken down a peg.	5	0.8
	____ need to be punished for the harm they cause.	5	0.8
	When bad things happen to ____ it is their own fault.	5	0.8
	____ do not deserve sympathy.	5	0.8
I am happy when ____ look bad.	5	0.8	
I like to cause ____ trouble.	4	0.7	
I like to make ____ angry.	4	0.7	
I like to see ____ put in their place.	5	0.8	
It is appropriate to mock ____.	5	0.8	

Based on the recommendations of Polit et al. (2007), when using six subject matter experts, items with five or more experts in agreement of item relevance (an I-CVI of 0.8) were retained in the scale for further investigation. Based on this, 24 items would have been retained. However, we also chose to retain the items ‘I like to make ____ angry’, and ‘I block or unfriend ____ on social media’, as variations of these were used in a reliable measure of affective polarization previously (Garrett & Bankert, 2018), and we believe they are likely relevant to the hostility and social distance domains respectively. Likewise, variations of the item ‘____ are mean’ were used previously in studies (Druckman & Levendusky, 2019) so we retained it at this stage also. These items had an I-CVI of 0.67, which is judged by Polit et al. (2007) as *fair*. This resulted in a scale of 27 items to be subjected to EFA.

Phase 2: EFA and Reliability

This phase aimed to explore the structure of the Affective Polarization Scale and also to examine the preliminary evidence for its reliability.

Method

Participants

A total of 326 participants were recruited from Prolific. Participants were required to be American residents to be eligible to participate. The average age of participants was 36 (SD = 12.4), with three participants not stating their age. Sex was 50% male/female. The sample was approximately 80% white, 6% asian, 5% black, 7% mixed, and 2% other. Of these, 143 (44%) described themselves as ‘liberal’, 74 (23%) as ‘slightly liberal’, 46 (14%) as ‘neither’, 38 (12%) as ‘slightly conservative’, and 25 (7%) as ‘conservative’. Of the 46 who identified as neither liberal nor conservative, 16 stated that they least identify with liberals and thus rated a liberal target for the affective polarization scale, while 30 stated that they least identify with conservatives, these participants rated a conservative target for the affective polarization scale. There was no missing data.

Measures

Participants were asked about their political ideology with possible response items: *Liberal*, *Slightly liberal*, *Neither*, *Slightly conservative*, *Conservative*. Those who responded *Neither* were asked to *Please indicate which group you least identify with*, with options *Liberal* or *Conservative*.

Though there may be some issues with using simplified categories of political ideology (Costello et al., 2023), there is also evidence that such such labels do reflect the manner in which polarization drives people to sort into overarching ‘blocs’ which are used frequently in research on political psychology (Bantel, 2023; Comellas & Torcal, 2023; Kekkonen & Ylä-Anttila, 2021; Knudsen, 2021; Oshri et al., 2022; Somer & McCoy, 2018; Wagner, 2021). Likewise, while some people are largely distrustful of politicians and parties in general, most nevertheless align with and hold sets of beliefs which are reflective of the broad worldviews underlying those political divisions or affective blocs (Haidt, 2012; Pinker, 2002; Sowell, 2007). We opted for labels which refer to the broad Liberal versus Conservative ideological divide rather than to party labels like Democrat and Republican, as these party labels may conjure images of politicians or party elites in participants’ minds, and people’s feelings towards party elites versus everyday partisans is often quite different (Druckman & Levendusky, 2019; Druckman et al., 2019).

The affective polarization scale consisted of 27 Likert type items with responses ranging from *Strongly disagree* to *Strongly agree*. Nine of these items were inspired by the social distance items used in previous studies, seven items were trait ratings, and 11 items pertained to schadenfreude and incivility.

Procedure

Participants who were eligible for the present study were invited to participate. Those who chose to participate were given a brief description of the study, before being asked about their political ideology. Those who selected liberal, or who identified least with conservatives, were

assigned an embedded tag of “Conservative”, which the software used as the target for their survey questions. Those who were conservative or who least identified with liberals were tagged “Liberal”, this was inserted into the questions for these participants. Each participant was therefore rating their level of affective polarization from their outgroup. Participants were instructed to indicate their level of agreement with the 27 items, after which they were given a short debrief and redirected to Prolific. Low-risk ethics approval was obtained from the first author’s institution, and participants were adequately remunerated for their participation according to Prolific’s payment guidelines.

Results

We ran an exploratory factor analysis on all 27 items, with Principal Axis Factoring and an Oblimin rotation. We used a parallel analysis to decide which factors to retain, because of the known strength of this method (Horn, 1965; Velicer & Jackson, 1990). This resulted in a three-factor solution which cumulatively explained 67.1% of the common variance. With a few exceptions, the factor analysis retained the three domains of content as separate coherent factors (Table 2.2)

Table 2.2*Initial factor loadings for the full 27 item affective polarization scale.*

	Factor		
	1	2	3
I would be upset if my friend married a ___.	0.93		
I would be upset if a close family member married a _____.	0.79		
I would not like it if a _____ moved into the house next door.	0.79		
I avoid forming friendships with _____.	0.84		
I would not go into business with a _____.	0.63		
I try to avoid socialising with _____.	0.76		
I would not be willing to date _____.	0.47		0.41
I block or unfriend _____ on social media.			0.35
I do not follow _____ on social media.	0.49		
_____ are untrustworthy.			0.59
I dislike _____.			0.47
_____ are hypocritical.			0.79
_____ are immoral.			0.7
_____ are unfriendly.			0.61
_____ are dangerous.			0.62
_____ are mean.			0.83
I am happy when negative things happen to _____.		0.92	
I would be happy if there were no _____.		0.39	
I try not to support _____ businesses.	0.44		
I like to see _____ taken down a peg.		0.68	
_____ need to be punished for the harm they cause.		0.60	
When bad things happen to _____ it is their own fault.		0.63	
_____ do not deserve sympathy.		0.66	
I am happy when _____ look bad.		0.71	
I like to make _____ angry.		0.77	
I like to see _____ put in their place.		0.69	
It is appropriate to mock _____.		0.69	
Variance explained (%)	22.9	23.5	20.7

Note: Loadings below 0.3 were suppressed.

In order to shorten the scale to a convenient length, and to remove items with low loadings, we selected the five highest loading items from each domain and repeated the analysis. The parallel analysis again suggested a three-factor solution, which cumulatively explained 72% of the common variance (Table 2.3).

Table 2.3

Factor loadings of the 15 highest loading items from the full scale.

	Factor		
	1	2	3
I would be upset if my friend married a ____.	0.99		
I would be upset if a close family member married a ____.	0.86		
I would not like it if a ____ moved into the house next door.	0.75		
I avoid forming friendships with ____.	0.71		
I try to avoid socialising with ____.	0.64		
____ are hypocritical.		0.79	
____ are immoral.		0.73	
____ are unfriendly.		0.70	
____ are dangerous.		0.68	
____ are mean.		0.93	
I am happy when negative things happen to ____.			0.88
I am happy when ____ look bad.			0.75
I like to make ____ angry.			0.74
I like to see ____ put in their place.			0.66
It is appropriate to mock ____.			0.70
Variance explained (%)	25.1	25.3	21.3

Note: Loadings below 0.3 were suppressed.

We calculated subscale average scores as well as an overall average score from the 15 items. The correlations between the subscale averages and the scale average were analysed using Pearson's correlations (Table 2.4). While the subscale average scores were quite strongly correlated with one another, the overall scale average was very strongly correlated with each subscale average.

Table 2.4

Correlations between subscale average scores and overall scale average scores.

	Scale Average	SD Average	A Average	I Average
Scale Average	—			
SD Average	0.91***	—		
A Average	0.92***	0.77***	—	
I Average	0.87***	0.65***	0.71***	—

Note: *** indicates $p < .001$.

Lastly, we calculated reliability coefficients for all three factors and an overall reliability score for a single factor containing all 15 items (Table 2.5). All reliabilities were very high, indicating that the proportion of the variance in the responses to our scale which is attributable to true construct variance is very high.

Table 2.5

Cronbach's α coefficients for the three factors and a single factor containing all 15 items.

Factor	Cronbach's α
Social Distance	.94
Aversion	.93
Incivility	.90
Full scale	.96

Note: Macdonald's ω_i coefficients were also calculated, all were within 0.002 of the corresponding α 's.

Phase 3: Confirmatory Factor Analysis and Construct Validity

Introduction

Study 3 entailed investigating the factorial and construct validity of the affective polarization scale. The analyses for this study were pre-registered (https://osf.io/3srt8/?view_only=3f9953c2c88c4499baac89a26614055c), and the survey materials, de-identified data, and the R-code can be found at: https://osf.io/bgx2r/?view_only=9d0429f3502d49c2940a3913bd7a64e3.

Firstly, a confirmatory factor analysis (CFA) was performed, testing the three-factor model seen in Study 2. We hypothesised (H1) that the three-factor model with correlated factors would show acceptable fit, based on the inference criteria outlined in the pre-registration. Construct validity was assessed by analysing correlations between affective polarization scores and constructs which have seen to correlate with other measures of affective polarization.

Feeling Thermometer

To investigate convergent validity, we assessed the correlation between scores on the feeling thermometer and our affective polarization scale. Druckman and Levendusky (2019) found that the scores on the feeling thermometer were significantly correlated with scores on the trait ratings and trust items. Costello et al. (2022) and Gidron et al. (2022) found that social distance items and the feeling thermometer were highly significantly correlated. Likewise, Huddy and Yair (2021) found that scores on the feeling thermometer were closely related to all other measures of affective polarization.

Therefore, we hypothesised (H2) that the subscale and overall affective polarization scores would be significantly negatively correlated with the feeling thermometer.

Authoritarianism

Authoritarianism is a personality construct which reflects a desire to enforce conformity over personal autonomy, to wield and or submit to group authority, and to punish transgressors of the groups' valued norms. Authoritarianism is most commonly studied in its right-wing form, though there is debate about the nature of authoritarianism and the existence of left-wing authoritarianism (LWA). However, LWA is gaining favour in the research community (Conway et al., 2018, 2021; Costello et al., 2022; Costello & Patrick, 2022; Krispenz & Bertrams, 2023).

Measures of Right-Wing Authoritarianism (RWA; Costello et al., 2022; Renstrom et al., 2022), LWA (Costello et al., 2022) and also a politically neutral measure of authoritarianism (Johnston, 2018; Luttig, 2017) have all been shown to correlate with affective polarization. Therefore, we hypothesise that LWA will be positively correlated with subscale and overall affective polarization scores among liberal participants (H3a), as will RWA among conservative participants (H3b).

Identity Strength

Processes of social identity underpin affective polarization (Greene, 1999; Iyengar et al., 2019). Those who more strongly identify with their political-ideological group, those for whom this identity is more central, show higher levels of affective polarization (Huddy et al., 2015; Iyengar & Westwood, 2015; Luttig, 2018; Westwood et al., 2018). For this reason, we hypothesise that identity strength will be positively associated with subscale and overall affective polarization scores (H4).

Intellectual Humility

Bowes et al. (2020) found that both politics-specific and general intellectual humility was negatively correlated with affective polarization across multiple measures of both

constructs, and in multiple studies. Krumrei-Mancuso and Newman (2020) found similar results, with those higher in intellectual humility showing less ingroup favouritism on feeling thermometer ratings. Similarly, Nadelhoffer et al. (2020) found that measures of political animosity and feeling thermometer scores were negatively correlated with intellectual humility. Stanley et al. (2020) also found that those who are low in intellectual humility were less willing to befriend opponents and were more derogatory of the opponents' moral and intellectual character. Therefore, we hypothesise that intellectual humility will be negatively correlated with subscale and overall affective polarization scores (H5).

Need for Closure

Need for closure (NFC) is the degree to which a person feels averse to uncertainty, ambiguity, and confusion. Kruglanski and Webster (1996) describe it as a desire for definite knowledge and a motivated closing of the mind. It describes a style of motivated cognition in which individuals tend to 'seize' and then 'freeze' on an answer or idea in order to settle ambiguity. Need for closure (both self-report scales and behavioural measures of cognitive flexibility) is thought to be a significant component driving a range of group-based phenomena such as polarization, prejudice, and authoritarianism, as the strong need for closure results in prejudice and aversion to groups which present a threat to certainty and closure (Costello et al., 2022; Dhont et al., 2011; Luttig, 2018; Roets & Van Hiel, 2006; Zmigrod et al., 2020). Therefore, we hypothesize that NFC will be positively correlated with subscale and overall affective polarization scores (H6).

Method

Participants

We performed a power analysis for all of the pre-registered analyses. The power analysis for the CFA was performed using the *pwrSEM* web application

(<https://yilinandrewang.shinyapps.io/pwrSEM/>). We estimated power using both the ‘power analysis for parameter estimation’ and the ‘power to detect model misspecification’ methods. Based on the three-factor model from Study 2 and the loadings seen therein, we calculated that a sample size of 300 participants would have adequate power.

For the correlational analyses, we performed a power analysis in G*Power. Based on a power of 80% to detect an effect size of $r = .2$, a sample of at least 193 was required. The power analyses can be seen in more detail in the pre-registration (https://osf.io/3srt8/?view_only=3f9953c2c88c4499baac89a26614055c).

Three hundred and forty-one American Prolific users were recruited for the study. Given the somewhat unbalanced numbers of liberal versus conservative participants in Phase 2, we pre-screened for participants who self-described as liberal or conservative in their Prolific profile and recruited 170 of each. As per the exclusion criteria laid out in the pre-registration, we excluded data from 10 participants. Seven did not pass the attention check and three failed to answer the question confirming that their data was valid. This left a final sample of 331 participants, with a mean age of 41.5 years ($SD = 14.4$); gender and political ideology characteristics of the participants can be seen in Table 2.6.

Table 2.6*Descriptive statistics of participant gender and political ideology.*

Characteristics	<i>n</i>
<u>Gender</u>	
Female	153 (46.4%)
Male	167 (50.6%)
Non-binary	9 (2.7%)
Prefer not to say/did not respond	2 (0.6%)
<u>Political ideology</u>	
Liberal	114 (34.4%)
Slightly Liberal	53 (16%)
Neither	4 (1.2%)
Slightly conservative	82 (24.8%)
Conservative	78 (23.6%)

Of the four participants who indicated they were neither liberal nor conservative, three indicated that they identify least with conservatives, and thus rated the Conservative target for the affective polarization scale and completed the left-wing authoritarianism scale. The single participant who indicated they least identify with liberals completed the right-wing authoritarianism scale and rated a Liberal target for the affective polarization scale.

Measures*Feeling Thermometer*

Participants rated their feelings of warmth towards their outgroup (Liberals or Conservatives) on a 101-point scale, from Cold (0) to Warm (100).

RWA

We measured RWA using Altemeyer's (1996) 22-item RWA scale ($\alpha = .92$). It taps three dimensions: authoritarian aggression, conventionalism, and authoritarian submission. It contains items such as 'Our country will be destroyed someday if we do not smash the

perversions eating away at our moral fibre and traditional beliefs’ and was measured on a 7-point scale from *strongly disagree* to *strongly agree* (unless otherwise indicated, all of the following scales were measured on the same 7-point scale).

LWA

We measured LWA using the LWA-25 scale ($\alpha = .91$). It contains items such as ‘We need to replace the established order by any means necessary’. It taps three dimensions: anti-hierarchical aggression, anti-conventionalism, and top-down censorship (Costello & Patrick, 2022).

Intellectual Humility

We measured intellectual humility using the nine-item specific intellectual humility scale (Hoyle et al., 2016). This scale ($\alpha = .92$) is unidimensional and measures intellectual humility in a specific domain using items such as ‘I am open to new information in the area of Politics that might change my view’.

Need for Closure

We measured need for closure using the 15-item version ($\alpha = .91$) of the Need for Closure Scale (Roets & Van Hiel, 2011). It is a unidimensional scale and contains items such as ‘I dislike questions which could be answered in many different ways’.

Identity Strength

Identity strength was measured using the four-item scale ($\alpha = .88$) from Huddy et al. (2015). Items include ‘When talking about [Liberals/Conservatives], how often do you use “we” instead of “they”?’ Responses were collected on a 5-point scale from *not at all* to *a great deal*.

Affective Polarization

Affective polarization was measured using the 15-item affective polarization scale developed in the present study (Table 2.3). This scale measured affective polarization in terms of social distance, aversion, and incivility ($\alpha = .96$).

Procedure

Participants began the survey by consenting to participate and then answering the demographic and political ideology questions. Those who indicated that they were liberal or slightly liberal were given an embedded tag of ‘Target = Conservative’ and ‘Group = Liberal’. The target label was automatically inserted into the items for the affective polarization scale, and the survey was programmed to show participants in the liberal group the left-wing authoritarianism scale. Those who indicated they were conservative or slightly conservative received embedded tags ‘Target = Liberal’ and ‘Group = Conservative’. Thus, they rated a liberal target for the affective polarization scale and completed the right-wing measure of authoritarianism. The Group tag was also automatically inserted into the identity strength items, such that participants were rating their feelings of identification towards their own ideological label.

After completing the demographic questions, participants were randomly presented with the affective polarization, RWA/LWA, identity strength, specific intellectual humility, feeling thermometer, and need for closure scales, as well as an attention check. The attention check was an instructional attention check: ‘The mood test you are about to take part in is very simple, when asked how you are feeling you must select “Neutral”. This is an attention check.’ Participants who did not select the indicated option were considered to have failed the check. Items within all scales were randomized. Participants then answered questions pertaining to conspiracy theory beliefs, for a related project. The final question asked participants if there is any reason that we should not use their data, participants were assured

of payment regardless of their response. Low-risk ethics approval was obtained from the first author's institution, and participants were adequately remunerated for their participation according to Prolific's payment guidelines.

Statistical Analyses

All analyses were performed in R version 4.2.2. Our hypotheses and inference criteria were fully pre-registered:

https://osf.io/3srt8/?view_only=3f9953c2c88c4499baac89a26614055c. We used the *lavaan* package (v0.6.17; Rosseel, 2012) to perform the CFA. The model tested in the CFA was that from the EFA in study 2, with the five social distance items, five aversion items, and five incivility items loading on separate correlated factors. Because of the ordinal nature of the indicator items, we used the 'ordered = TRUE' argument in *lavaan*, which uses the DWLS estimator to estimate model parameters, and the WLSMV to estimate robust standard errors and test statistics (The Lavaan Project, n.d.). Pearson's correlations between the affective polarization scale and the construct validity scales were analysed.

Results

Hypothesis 1

We assessed fit of the three-factor model using the χ^2 test statistic, RMSEA, SRMR, TLI, and CFI statistics. The chi-square statistic did not indicate perfect fit: $\chi^2(87) = 397.39, p < .001$. Likewise, the RMSEA statistic was beyond the $<.08$ cut-off (RMSEA = 0.10 [0.09, 0.11]). In contrast, the SRMR statistic indicated very good fit (0.03), as did the TLI (0.93), and CFI (0.94). The measurement model, with standardised parameter estimates, can be seen in Figure 2.1.

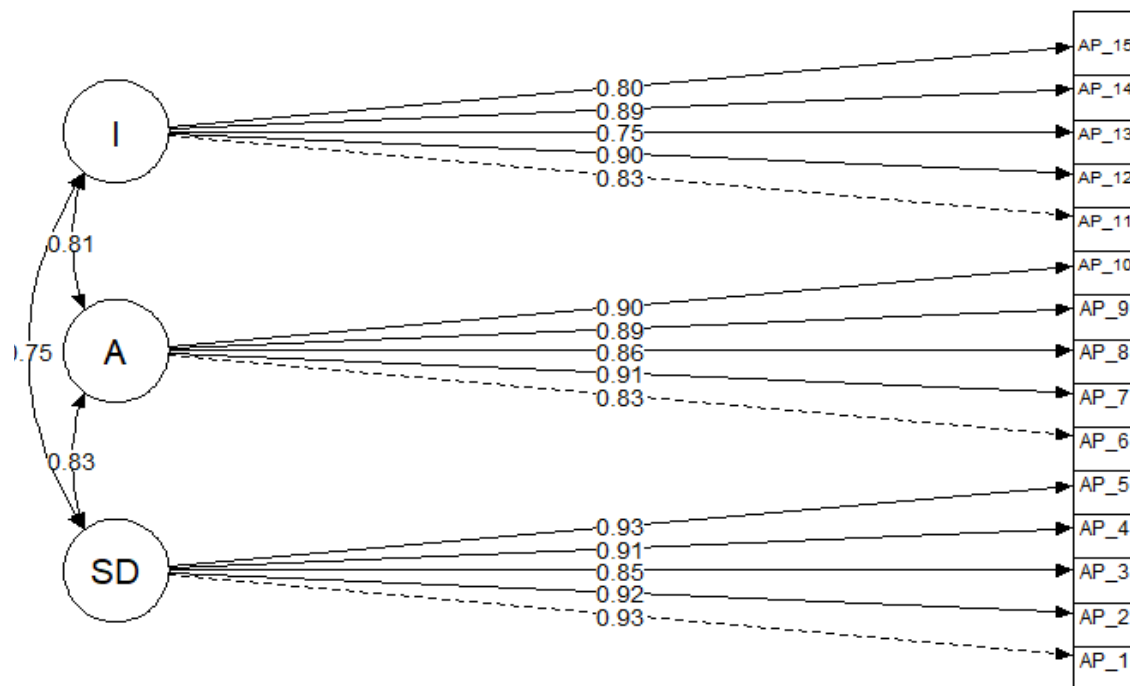
As acknowledged in our pre-registration, a significant chi-square test statistic would not be taken as good evidence against the model fit, as the over-sensitivity of this test under

larger sample sizes is well known; it rejects models for even slight misfitting especially with non-normal data and highly correlated indicators (Boateng et al., 2018). We also acknowledged that when assessing fit using a variety of fit statistics, there is likely to be some level of disagreement between them which necessarily results in a certain amount of researcher degrees of freedom in interpretation of those statistics.

Given that three of the four main measures of fit indicated very good fit, we take this as evidence that the three-factor model adequately fits the data. Hypothesis 1 is therefore considered to be supported.

Figure 2.1

A path model showing the factor structure of the affective polarization scale, using standardized coefficients



Note: Item numbering corresponds to item order in Table 2.3. SD = Social Distance, A = Aversion, I = Incivility.

Reliability

While we did not preregister our reliability analyses, we calculated reliabilities for all the scales used in the present study (Table 2.7). The affective polarization scale had good alpha reliability (α), as did the rest of the scales used. Total omega (ω_t) calculates the total reliability of a scale, while loosening unrealistic assumptions associated with α , such as that of tau-equivalence and uni-dimensionality (Flora, 2020). The fact that the affective polarization scale has good ω_t reliability indicates that a high proportion of variance in both total and subscale scores is attributable to true score, and this means the scale can likely be used to calculate total and subscale scores. All construct validity scales likewise had good reliability.

Table 2.7

Cronbach's alpha and McDonald's omega total reliabilities for the scales used.

Scale	α	ω_t
Affective Polarization	.96	.97
Need for Closure	.91	.93
Identity Strength	.88	.89
Specific Intellectual Humility	.92	.94
RWA	.92	.94
LWA	.91	.93

Hypothesis 2

Hypothesis 2 was supported. All three affective polarization subscales were negatively correlated with the feeling thermometer (Social Distance: $r(329) = -.54, p < .001$; Aversion: $r(329) = -.63, p < .001$; Incivility: $r(329) = -.47, p < .001$), as was the overall scale score ($r(329) = -.61, p < .001$).

Hypothesis 3a

Hypothesis 3a was supported. Among Liberal participants, all three affective polarization subscales were positively correlated with LWA (Social Distance: $r(168) = .62, p < .001$; Aversion: $r(168) = .62, p < .001$; Incivility: $r(168) = .57, p < .001$), as was the overall scale score ($r(168) = .67, p < .001$).

Hypothesis 3b

Hypothesis 3b was supported. Among Conservative participants, all three affective polarization subscales were positively correlated with RWA (Social Distance: $r(159) = .44, p < .001$; Aversion: $r(159) = .42, p < .001$; Incivility: $r(159) = .25, p < .001$), as was the overall scale score ($r(159) = .41, p < .001$).

Hypothesis 4

Hypothesis 4 was supported. All three affective polarization subscales were positively correlated with Identity strength (Social Distance: $r(329) = .25, p < .001$; Aversion: $r(329) = .25, p < .001$; Incivility: $r(329) = .19, p < .001$), as was the overall scale score ($r(329) = .25, p < .001$).

Hypothesis 5

Hypothesis 5 was supported. All three affective polarization subscales were negatively correlated with specific intellectual humility (Social Distance: $r(329) = -.29, p < .001$; Aversion: $r(329) = -.33, p < .001$; Incivility: $r(329) = -.22, p < .001$), as was the overall scale score ($r(329) = -.31, p < .001$).

Hypothesis 6

Hypothesis 6 was supported. All three affective polarization subscales were positively correlated with the need for closure (Social Distance: $r(329) = .21, p < .001$; Aversion: $r(329) = .21, p < .001$; Incivility: $r(329) = .21, p < .001$), as was the overall scale score ($r(329) = .21, p < .001$).

= .21, $p < .001$; Incivility: $r(329) = .16, p < .001$), as was the overall scale score ($r(329) = .21, p < .001$).

Discussion

The purpose of this study was to create and validate an affective polarization scale informed by the literature on affective polarization and the common items with which it is measured. The affective polarization literature is characterised by a wide array of ad-hoc short scales, and authors often use the same construct name and compare results generated by these heterogeneous scales. We generated items informed by those used in the past and informed by common theories of intergroup behaviour and emotions, assessed them for content validity, and performed reliability and construct validity analyses for the new scale.

The Affective Polarization Scale (APS), developed herein, is composed of three subscales. The Social Distance subscale is composed of items which measure participants' desire for social distance from the target outgroup, that is, a reluctance to form family ties and friendships, a lack of interest in socialising with the outgroup, and a desire for geographical separation. The Aversion subscale pertains to participants' appraisals of the outgroup, measured through trait ratings indicating the degree to which one appraises the target outgroup negatively. The Incivility subscale measures callousness, schadenfreude, and incivility towards the outgroup.

The CFA confirmed that this three-factor structure fit the data well, and the measure of omega reliability, which accounts for dimensionality in the data, indicated very good reliability. The scale will allow researchers to investigate results based on fine-grained subscale scores, while also lending itself to an overall affective polarization score. Previously, most researchers have simply used a small number of items from a single domain of affective polarization content, so using an average score of our three-factor content-valid scale, which

has shown high correlations with subscale scores, is likely to be an improvement over previous research.

We also showed that the scale has good construct validity. Scores on our scale were shown to significantly correlate with the original measure of affective polarization, the feeling thermometer. Scores were also significantly positively associated—in support of our hypotheses—with related constructs such as left and right-wing authoritarianism, identity strength, and need for closure. We also replicated here the finding that affective polarization is negatively associated with intellectual humility. These observed correlations are interesting contributions to the literature on affective polarization, and this speaks to the utility of the APS, as well as providing evidence of the scale’s construct validity.

Therefore, in constructing and validating this scale we have helped to address the issues pointed out by Kubin and von Sikorski (2021; 2023), in that we have produced a validated scale of affective polarization which can bring regularity to the affective polarization literature and improve the ability of researchers to engage in cumulative science. Adopting the APS will allow for meaningful comparisons of effects and associations across studies, which was previously impeded by the ad-hoc nature of affective polarization measurement.

Limitations and Future Directions

The APS is a scale that can be adapted to measure affective polarization between a participant and any relevant outgroup which can be inserted into the items. In the present study we used political orientation labels Liberal and Conservative, though previous studies have used a variety of relevant targets in this domain, such as Republican versus Democrat, or labels indicating outgroup elites or civilians specifically (Druckman & Levendusky, 2019). It may be that the factor structure of the scale varies depending on target appraised and

sample population. Therefore, each time the scale is used – and especially when a new target is being used or the scale is being used in a new context or population – performing a CFA would be recommended, especially if the intention is to use subfactor scores. The R code published alongside this study provides researchers with an easy method for performing these analyses. Additionally, testing measurement invariance in sample sub-groups is also recommended. Because of funding and sample size limitations, we did not test measurement invariance of the scale in Liberals and Conservatives separately, and this is something that may need to be investigated in future studies.

Investigation of “norms” for scores on our scale might also be useful. Given that a certain level of ingroup-outgroup favouritism appears to be quite natural or unavoidable, it is not clear yet what level of affective polarization should be considered benign or pernicious. It may be that people do express affective polarization to a certain degree, but whether this translates into intentional real-world prejudice is unclear (Lelkes & Westwood, 2017). Therefore, investigating the relationship between scores on our scale and real-world outcomes, rather than correlations with theoretically related psychometric constructs, will be highly informative.

Preface to Chapters 3 and 4

Having developed a new measure of affective polarization in Chapter 2, the next step was to put it to empirical use. In Chapters 3 (under peer review) and 4 (published) we investigated several proposed causes and consequences of affective polarization. Initially, I proposed a research program that relied on cross-sectional approaches, in which causal hypotheses would be tested using mediation analyses and other structural equation models. However, my supervisors raised justified concerns about the limitations of these methods as they are typically applied in psychological research, particularly with respect to causal inference.

Many psychological phenomena can be understood as reflecting both relatively stable, trait-like characteristics, and dynamic, state-like processes that unfold within individuals over time. Trait-like constructs are typically conceptualized as stable individual differences that show limited short-term variability, whereas states and processes necessarily involve within-person change and fluctuations. If we were to take a single measurement of a construct from a participant, this measurement would likely be capturing both a stable, trait-like component, and a state-like, time-specific component (Hamaker, 2023). Crucially, stable differences *between* individuals are often larger than the temporal fluctuations *within* individuals, which means that analyses which do not differentiate between the two levels of variance will produce results that reflect the relationships at the *between-person* rather than the *within-person* level (Hamaker, 2023).

This distinction is important because, in psychology, the vast majority of theories make claims about within-person processes and effects—how individuals respond to stress, how changes in affect influence alcohol consumption, how coping strategies affect stress and behaviour, how affective polarization affects stress, and so on (Curran & Bauer, 2011). These

theories concern dynamic processes within individuals over time, rather than static differences between people. However, much observational research investigating such theories uses single timepoint data better suited only for investigating relations at the *between-person* level. As a result, these analyses reflect relationships between stable traits rather than the within-person processes and causal effects that theories typically seek to explain. As Curran and Bauer (2011, p. 2) note, “Thus, theory explicitly posits an effect at one level of analysis, yet standard cross-sectional designs and associated statistical models test an effect at a different level of analysis”.

The most simple example of this difference is in a hypothetical study on the effect of typing speed and the quantity of typing errors, from Hamaker et al. (2012). If we investigated the cross-sectional relationship between typing speed and number of typing errors, we may see a negative relationship; generally, people who type faster than others make less errors than others (as they are better typists). However, if we were to observe each individual multiple times under different circumstances, in which they are typing at various speeds, we would see a positive relationship; as people type faster relative to their natural or average speed, they would make *more* mistakes. A more complex example, but simplified here, is that while exercise is negatively associated with heart attacks at the between-person level (those who tend exercise more long-term tend to be at lower risk of heart attacks), at the within person level one’s chances of having a heart attack actually increases when exercising (relative to your own baseline risk-level, you are more likely to have a heart attack when exercising). Extrapolating results from one level of analysis to another constitutes an ecological fallacy, and may lead to inappropriate conclusions or interventions, for example: recommending exercise during periods of acute cardiac risk, or advising individuals to type as fast as possible to reduce errors. While it is well known that correlation does not equal

causation, it is nevertheless still quite common for researchers to ignore this complexity when investigating causal hypotheses using more complex analyses such as mediation and structural equation models, which don't differentiate between- and within-person effects, and which don't grapple with the fact that effects can be different depending on the time course of analysis.

In the social sciences, there has thus been an increased emphasis on collecting longitudinal data and using multilevel modelling to assess causal claims where experiments aren't possible or ideal. This at least allows researchers to establish temporal precedence, which is a fundamental principle of causality. However, even here, many longitudinal models, such as the cross lagged panel model, don't fully disaggregate between- and within-person variance. In contrast, the random intercepts cross lagged panel model, used in the following chapters, allows us to investigate and quantify the between-person associations between the more stable components of individuals on our constructs of interest, but also allows us to investigate how peoples' temporal deviations from their own trait-like mean influence other constructs over time (Hamaker et al., 2015). Such analyses come closer than other observational methods for testing causal effects, as they more match the level at which most psychological theories are formulated, rather than positing an effect at one level, but testing it at another (Curran & Bauer, 2011).

Therefore, in order to investigate some causes and consequences of affective polarization, we took advantage of the impending 2024 US presidential election period, during which we longitudinally tracked constructs of interest and tested causal hypotheses using random intercepts cross lagged panel models which allowed us to control for autoregressive effects, establish temporal precedence, and disaggregate within- and between-person effects. While these models are not perfect—only able to quantify predictive

or granger causality, and are vulnerable to time-varying confounders—they theoretically provide much better estimates of any causal effects (Hamaker et al., 2015).

Chapter 3: Political social identity threat leads to increased affective polarisation over time, but may not affect wellbeing

McMurtrie, B., Williams, M., Philipp, M., Roemer, A., & Hebden, R. (2026). Political social identity threat predicts increases in affective polarisation over time, but not changes in well-being. *European Journal of Social Psychology*, ejsp.70081.

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STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the student and the student's main supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the student's contribution as indicated below in the Statement of Originality.	
Student name:	Brandon McMurtrie
Name and title of main supervisor:	Dr Matt Williams, Associate Professor
In which chapter is the manuscript/published work?	3
Describe the contribution that the student and members of the supervisory team have made to the manuscript/published work: ¹	
<p>Brandon McMurtrie: Conceptualization, Methodology, Investigation, Validation, Analysis, Data Curation, Writing - Original Draft, Review & Editing, Visualization.</p> <p>Matt Williams: Supervision, Writing - Review & Editing, Methodology, Funding, Analysis, Project administration.</p> <p>Michael Philipp, Ross Hebden, Anja Roemer: Supervision, Writing - Review & Editing, Project administration.</p>	
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Main supervisor's signature:	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Matt Williams</div> <div style="font-size: 8px; color: #ccc;"> Digitally signed by Matt Williams Date: 2025.12.04 14:01:11 +13'00' </div> </div>
<i>This form should be placed at the beginning of each relevant thesis chapter.</i>	

Abstract

Affective polarization, a growing hostility toward political outgroups, is a phenomenon rooted in social identity. Social identity threat—the expectation of experiencing some form of denigration based on a self-relevant group identity—is thought to be a major driver of affective polarization. Using a 6-wave longitudinal survey of 470 American liberals and conservatives, we investigated the impact of social identity threat on affective polarization, perceived stress, and self-rated health. Using random intercept cross-lagged panel models (RI-CLPMs), we found that higher-than-usual identity threat predicted subsequent increases in affective polarization ($\beta = 0.09, p = .025$). There were no direct cross-lagged effects of social identity threat on perceived stress or self-rated health. However social identity threat was correlated at the between-person level with stress ($r = .25, p = < .001$) and health ($r = -.17, p = .002$). These findings replicate and expand on existing research by utilizing a design suited for causal inference, to shed light on how identity threats and the expectation of prejudice influence intergroup relations and affective polarization. While social identity threat plays a significant role in worsening affective polarization, its effects on perceived stress and health are unclear. Further research is recommended to explore interventions aimed at mitigating social identity threats and polarization, and further clarifying their potential health consequences.

Keywords: social identity threat, affective polarization, stress, health, political polarization

Introduction

The phenomenon of political polarization has emerged as a significant challenge to democratic societies worldwide. In response, an incredibly large body of work has been rapidly published on the issue. Initially, the existence and extent of political polarization was debated, with some authors asserting that it was not occurring to a consequential degree (Fiorina et al., 2008; Fiorina & Abrams, 2008) while others disagreed (Abramowitz & Saunders, 2008). These early studies focussed on polarization primarily in the form of ideological divergence, and the evidence for this type of polarization was mixed. Polarization was more conclusively shown to be occurring by Iyengar et al. (2012), when they analysed feeling thermometer items from nationwide political polls in the United States, pertaining to what they called “affective polarization”. They showed that affective polarization—the amount of negative affect felt by citizens toward their political outgroup—had been growing for decades. It became clear that citizens in the United States (Carmines & Nassar, 2022; Finkel et al., 2020; Iyengar & Krupenkin, 2018; Iyengar & Westwood, 2015), and abroad (Garzia et al., 2023; Kekkonen & Ylä-Anttila, 2021; Westwood et al., 2018) increasingly dislike, distrust, avoid, and exhibit prejudice towards members of their political outgroup.

Affective Polarization and Social identity

One of the reasons that the extent of polarization was initially unclear to researchers when analysing data pertaining to issue positions and ideological extremity was that polarization is a phenomenon rooted primarily in social identity and social affect, rather than being based purely on material policy disagreements with the outgroup—though these disagreements (or at least perceptions of such) do play a role in affective polarization (Dias & Lelkes, 2022; Greene, 1999; Iyengar et al., 2012). The social identity approach asserts that when one identifies as a member of a group (e.g. identifies as “a Republican”) and when that

social identity is made salient in a given context, then one's feelings and behaviour will be influenced by the norms, concepts, and culture which come with that social identity, as well as the innate processes of tribal psychology which act on that salient identity category (Clark et al., 2019; Huddy, 2001; Huddy & Bankert, 2017; West & Iyengar, 2022). Even under relatively loose or minimal group categorizations in laboratory settings, social identities have driven intergroup bias (Brown, 2000).

However, behavioural studies on social identity also observed that simply self-categorizing or identifying with a social identity was not enough to drive particularly negative or hostile behaviours. Positive bias towards one's ingroup was routinely seen in the allocations of positive outcomes. However, when these positive outcomes were changed to negative outcomes (i.e., some form of punishment), intergroup bias diminished. It was not until "aggravating conditions" were introduced to the social context that bias in punishment allocations was seen, or in-group affinity turns to out-group antipathy. This came to be known as the negative-positive asymmetry (Brown, 2000; Mummendey & Otten, 1998). This pattern has been found in the minimal groups paradigm and in experiments on political prejudice. For example, Amira et al. (2021) recently found that, in general, participants usually opt for benefitting the ingroup rather than denigrating an outgroup when given a choice—at least until aggravating conditions of symbolic threat are introduced, at which point they switch to denigrating the outgroup. The aggravating conditions which drive negative intergroup dynamics can come in the form of material competition and realistic threats, or in the form of symbolic threats to the value, status, or meaning of the social identity (Riek et al., 2006; Stephan et al., 2015).

Aggravating conditions: Social identity threat and meta-perceptions

Research has shown that both realistic and symbolic threats drive intergroup polarization generally (Mackie et al., 2008; Riek et al., 2006; Stephan et al., 2015), and in the domain of political and affective polarization specifically (Amira et al., 2021; Banda & Cluverius, 2018; Garzia-Sanchez et al., 2024; Huddy et al., 2015; Renström et al., 2021, 2023). Of particular interest to the present research is a form of symbolic threat called social identity threat. Social identity threat is the “situationally triggered concern that one is at risk of being devalued, discriminated against, or negatively stereotyped because of some self-relevant characteristic” (Major & Schmader, 2017, p. 86). Because we have defined social identity threat as the “concern” that one will be discriminated against based on their social identity, one can see that the effect of social identity threat does not rely necessarily on actually witnessing or experiencing such threats or discrimination, but on the mere perception or anticipation of such—perceptions which may or may not be accurate. For this reason, the related concept of meta-perceptions is relevant to the role of social identity threats. Meta-perceptions comprise an aspect of social identity threat—they are inferences about the thoughts of outgroup members, specifically inferences about how “they” see “us” (Lees & Cikara, 2019, p. 279). A negative bias in meta-perceptions, which is the tendency to over-estimate the outgroup’s prejudice and hostility toward the ingroup, has been seen in many intergroup dynamics, not merely politics, and may be an aspect of natural biases in human psychology (Clark et al., 2019; Lees & Cikara, 2019; Moore-Berg, 2023). Research in the United States has shown that partisans consistently over-estimate the amount of prejudice their outgroup holds towards them by a substantial margin—50% to 300%, depending on the measure used (Druckman et al., 2022; Moore-Berg, Ankori-Karlinsky, et al., 2020; Moore-Berg, Hameiri, et al., 2020).

Despite the extant research suggesting that social identity threat and meta perceptions influence affective polarization (Amira et al., 2021; Huddy & Yair, 2021; Lees & Cikara, 2019; Moore-Berg, Ankori-Karlinsky, et al., 2020), there remain gaps in the literature that justify further empirical investigation.

Firstly, most of the existing research in this area relies on vignette-based survey experiments, which some suggest have limited construct and external validity for visceral *social* phenomena, and thus may not capture the full psychological impact of perceived identity threat in real-world socio-political contexts (Collette & Childs, 2011; Eifler & Petzold, 2019). Such designs can limit ecological validity and may underestimate the degree to which these constructs are entangled. In contrast, longitudinal designs which measure the constructs as they naturally vary over time, in response to real world phenomena, could shine a light on how closely social identity threat and affective polarization are related. Moore Berg, Ankori-Kalinsky, et al. (2020) performed a short two-wave survey in which they found that meta perceptions were related to heightened affective polarization over time, but aside from the limited duration of their study, they also were not able to disentangle within- and between-person effects, and their two measurement occasions were three months apart which is likely too long for such studies (Dormann & Griffin, 2015).

Second, while studies have demonstrated that exposure to political campaigns increases the salience of partisan identity and that affective polarization increases during election periods (Iyengar et al., 2019), few have directly tested, in an ecologically valid manner, what it is that drives affective polarization during this time. This leaves open questions about the degree to which affective polarization is driven by social identity threats specifically, as opposed to other aspects of political messaging such as cues of ideology and issue position disagreements. Likewise, the causal precedence and reciprocal nature of these

constructs has not been properly investigated; it may be that social identity threat drives affective polarization, and/or that people who become affectively polarized, actively feeling antipathy for their outgroup, then come to expect that antipathy to be reciprocated such that affective polarization also drives social identity threat.

By moving beyond hypothetical scenarios and vignette studies and examining how social identity threat and affective polarization function dynamically in politically charged environments, the present study seeks to clarify the real-world effect of identity threat and address a critical gap in the understanding of affective polarization.

Social identity Threat, Stress, and Health

Social identity threat has been hypothesised not only to potentially exacerbate affective polarization, but also to exert a negative effect on health, by acting as a socio-political stressor (Major & Schmader, 2017; Nayak et al., 2021; Nelson, 2022; Smith, 2022). It has been shown that social identity threats are often appraised as genuine threats, and that they may trigger affective stress responses, such as anxiety and perceived stress, and cognitive stress responses, such as greater metacognitive processing and negativity bias (Major & Schmader, 2017). This affective and cognitive stress response to social identity threats can also drive physiological stress responses such as increased cardiovascular reactivity, increased hypothalamic-pituitary-adrenal axis activation, and elevated cortisol levels, among many other physiological markers of stress which indicate an increased allostatic load (Gallo & Matthews, 2003; Major & Schmader, 2017; Slavich, 2016).

While there is some evidence that identity threats based on partisanship specifically may have negative impacts on health, it is not conclusive. After the contentious and polarizing 2016 American presidential election, pre-term births rose among Hispanic women, who were often the subjects of highly polarized rhetoric (Gemmell et al., 2019, 2020; Krieger

et al., 2018). Similarly, there was a large decline in self-reported mental health, and a small decline in self-rated physical health, among gay men and lesbians at that time (Garrison et al., 2018). However, as with much of the research on identity threat's effect on psychological stress, this research highlights the effect of identity threat on health based on threats to a *marginalised identity* like race or sexuality. While these are stereotypically politicised identities which correlate with partisanship, these findings have more bearing on the role of marginalised identity threats and minority stress (Frost & Meyer, 2023) rather than being supportive of a broader effect of political identity threat among the general population. While similar studies did find that, in general, people who view themselves as in the *political* minority in their geographic area reported more days of poor mental and physical health (Fraser et al., 2022), and that acute cardio-vascular disease hospitalisations (Mefford et al., 2020) and arrhythmias (Rosman et al., 2021) among cardiac patients increased during the election period, these studies did not measure social identity threat or other psychological variables, so were unable to specify whether social identity threat was contributing to this decline in health. Additionally, being cross-sectional studies, they are not able to investigate or quantify the causal effects of political polarization and social identity threat. Thus, the question of whether identity threat based on political identity, specifically, acts as a socio-political stressor which can drive declines in mental and physical wellbeing is not yet clear.

The Present Study

In the present study, we aimed to test whether social identity threat based on political identity acts as an aggravating condition which drives affective polarization over time. We utilized a model which also allowed us to investigate alternative relationships such as reverse causality, or a reciprocal relationship between social identity threat and affective polarization.

This allows us to test the claim, from literature at the nexus of social identity theory and intergroup threat theory, that social identity threats act as an aggravating condition, and that this is driving the increase in affective polarization seen in the US. We also explored the “socio-political stressor” hypothesis that perceived social identity threats based on partisanship exerts a negative effect on wellbeing, by testing its effect on two indicators of wellbeing—perceived stress and self-rated health—over time. The present study can therefore be considered a conceptual replication of past research, investigating hypotheses which have been tested elsewhere, but expanding and improving on this research by utilizing methods suited for preliminary causal inference based on longitudinal data.

To address these questions, we used a 6-wave longitudinal survey to track social identity threat, stress, health and affective polarization in American liberals and conservatives over a three-month period preceding the 2024 US presidential election—a period known to heighten partisan identity salience and intergroup tension. This approach provides not only ecological validity, but also the ability to tentatively model causal relationships between these variables over time. In doing so, the study contributes both to political psychology’s understanding of how identity-based threat fuels polarization and to health psychology’s interest in socio-political stressors as a determinant of wellbeing.

We used random intercept cross-lagged panel models (RI-CLPMs) to investigate our primary pre-registered hypothesis that social identity threat will have positive cross-lagged effects on affective polarization over time (H1). We also investigated two non-pre-registered, exploratory hypotheses—that social identity threat would have a positive cross-lagged effect on perceived stress (EH2), and a negative cross-lagged effect on health (EH3). This study was part of a larger election-period research project. The hypothesis we refer to in this manuscript as H1 is recorded as H4 in the pre-registration. The testing of the first three

preregistered hypotheses was performed in a separate study which has been published elsewhere (McMurtrie et al., 2025).

RI-CLPMs can be used to assess causality because the longitudinal design allows us to establish temporal precedence, which is absent in cross-sectional designs but essential for causal claims. RI-CLPMs are also better suited than traditional cross lagged panel models to assess claims of causality (but see *Limitations*), as the inclusion of random intercepts allows us to model both within-person and between-person associations between our constructs, which is vital as the associations at each level may not be the same, and we are interested in the associations at the within person level when estimating these causal effects (Hamaker, 2012). The disaggregation of between and within person associations prevents the confounding of causal estimates at the within person level with the associations between stable traits at the between person level (Curran & Bauer, 2011; Mulder & Hamaker, 2021).

Methods

Sample Size

We aimed for a sample of 500 participants. This sample size was initially determined by our financial constraints. However, we did perform a power analysis for a single-indicator RICLPM using the R package *powRICLPM* (Mulder, 2023; see: <https://jeroendmulder.github.io/powRICLPM/index.html>). The power analysis found that for a 6-wave survey, a sample size of 500 participants would have a statistical power of over 80% to detect standardised cross-lagged effects of 0.2.

As per our pre-registration, we had initially planned to perform multiple indicator RI-CLPMs in this study. This would have included a measurement model at each survey time point, allowing us to model measurement error which is known to increase statistical power

(Mulder, 2023). However, these models encountered convergence issues and errors so, as per our pre-registration, we replaced them with single indicator RI-CLPMs. The power analysis and sample size justification can be seen in our pre-registration:

<https://osf.io/83sgc/overview>.

Participants and Procedure

Our survey ran for 6 waves, administered bi-weekly, for three months preceding the US 2024 presidential election. At the first survey wave we recruited a sample of 552 participants from Prolific. Participants were pre-screened to be of US nationality, and self-described as Liberal or Conservative (quota sampling was used to ensure 50% of each in the final sample), as well as being screened on a small number of Prolific performance criteria (see pre-registration). Informed consent was obtained from all participants.

We applied a multi-stage exclusion criteria to ensure data quality. At wave 1, participants who failed to complete the survey, who failed either of two data quality checks (a commitment check and an attention check), or who exhibited "speeding" (completing 72 items in <142 seconds) were excluded from the analysis and were not invited to subsequent surveys. At wave 1, 27 participants were excluded for failing the attention check and were not invited to subsequent surveys. Additionally, any participants who had not provided more than one wave of data by the end of the study were excluded. There were 42 participants who responded to only one survey, representing an attrition rate of 8%. We also excluded from the study any participants who appear to have changed their declared political orientation over the course of the study, of which there were 15. At the wave level, specific response sets from Waves 2–6 were discarded if they failed the commitment, attention, or speeding checks, or if the Qualtrics metadata indicated a non-normal response. In waves 2 to 6, there were nine, seven, nine, eleven, and nine exclusions respectively, based on these criteria.

All exclusion criteria can be found in the pre-registration, and a full annotated R output detailing all exclusions can be found in the OSF for this project (<https://osf.io/4w2p3/overview>). After exclusions, we had a final sample of 470 participants who provided enough quality data to be included in the analyses ($M_{\text{age}} = 44.4$, $SD_{\text{age}} = 14.1$, 55.7% female, 42.7% Male, 1.5 % Non-binary).

At the beginning of each survey, participants were required to identify their political orientation. Response options were *liberal*, *slightly liberal*, *slightly conservative*, and *conservative*. This response was used to create embedded tags, so that those who identified as liberal received a tag “Target = Conservative” and “Group = Liberal”, and the opposite for conservative respondents. These tags were inserted into the items in the stigma consciousness questionnaire and the affective polarization scale, which allowed items to be tailored to participants, so they were seeing the appropriate ingroup or outgroup label in those items.

Measures

All measures were presented in random order, with items within scales also presented randomly. For all scales, we report Omega total (ω_t) reliability. Omega total is similar to Cronbach’s alpha, but it loosens the assumptions of Cronbach’s alpha, and has been shown to outperform it in most situations, especially when those assumptions have been violated (Dunn et al., 2014; Flora, 2020; McNeish, 2018). Omega total assumes a scale is unidimensional and estimates the proportion of variance in a composite scale score that is attributable to the general factor, while allowing for unequal loadings of items on that factor. A small number of other measures were also administered alongside those described below, as this study was part of a larger project investigating the causes and consequences of affective polarization. The measures are described in full in the pre-registration.

Social identity threat

Social identity threat was measured using the Stigma Consciousness Questionnaire (SCQ; Pinel, 1999). The SCQ ($\alpha_t = 0.75\text{--}0.83$) has been used to measure identity threat according to Major & Schmader's (2017) definition as the "situationally triggered concern that one is at risk of being devalued, discriminated against, or negatively stereotyped because of some self-relevant characteristic" (p. 86). The SCQ contained 10 items on a 7-point Likert scale (1 = *Strongly disagree* to 7 = *Strongly agree*). It contained items referring to actual experienced identity threats, such as "*Stereotypes about [ingroup] have not affected me personally*", and items which pertain to meta-perceptions, such as "*When interacting with [outgroup], I feel like they interpret all my behaviours in terms of the fact that I am [ingroup]*". Given that the SCQ contains both experiential items and meta-perception items to tap identity threat based on political orientation, we performed a CFA at each wave to ensure that the use of a single unidimensional score was appropriate. To account for method effects of positively and negatively worded items, we allowed the residuals of those items to correlate. Fit indices supported the treatment of the SCQ as unidimensional (CFIs $\geq .95$, TLIIs $\geq .93$, RMSEAs $\leq .07$, and SRMRs $\leq .04$).

Affective Polarization

Affective polarization was measured using the affective polarization scale (APS; $\alpha_t = 0.96\text{--}0.98$), which consists of 15 items (McMurtrie et al., 2024). The items measured Social Distance (*I would not like it if an [outgroup] moved into the house next door*), Aversion (*[outgroup] are dangerous*), and Incivility (*I am happy when negative things happen to [outgroup]*) and were measured on a 7-point Likert scale.

Perceived Stress

We measured perceived stress using Cohen and Williamson's (1988) Perceived Stress Scale-10 (PSS-10), which contains 10 items with responses collected on a 5-point scale (*Never—Often*), and had good reliability in our sample ($\alpha_t = 0.92-0.95$). It contains items such as “*In the past week, how often have you felt that things were going your way?*” and “*In the past week, how often have you found that you could not cope with all the things that you had to do?*”.

Health

Self-reported health status was measured with the item: “*Would you say that in general your health is currently poor, fair, good, very good, or excellent?*”. This item has been used in studies globally, in many languages, and is considered to be a valid indicator of health and a good predictor of mortality (Jylhä, 2009; Sturgis et al., 2001).

Statistical Analyses

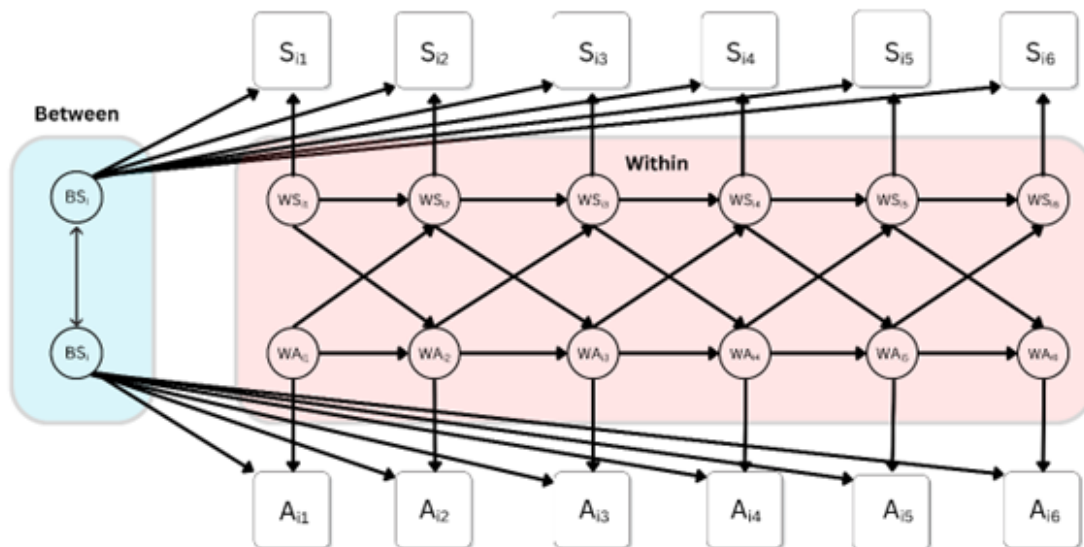
We used a single indicator RI-CLPM to test our hypotheses, following the process described by Mulder and Hamaker (2021). As stated earlier, our intent was to run multiple indicator models which have a measurement model built in at each time point, allowing us to model measurement error and assess measurement invariance over the course of the study. However, the models met with convergence issues and failed to run properly. As per our pre-registration, we therefore opted to run a single indicator model, with the indicator being average scores on our scales.

We imposed constraints on the models such that autoregressive effects and cross-lagged coefficients were held to be constant over time. These constraints allow us to

model average within-person dynamics over time, facilitate replication and comparison across studies, and yields a single, interpretable cross-lagged path estimate rather than a host of noisy, wave-specific estimates. Such constraints are frequently imposed on these models (Albath et al., 2024; Liekefett et al., 2023). We used robust full information maximum likelihood (MLR) estimation in the R package *lavaan*. Analyses were performed in R version 4.3.2 (R Core team, 2023).

Figure 1

A depiction of the 6-wave RI-CLPM model of the longitudinal relationship between Social Identity Threat and Affective polarization.



Note: S_{i1} is the participants' social identity threat score at T1, and so on to S_{i5} . BS_i represents the random intercept for each participant, which captures their stable, trait-like component. WS_i represents participants' temporal deviations from their expected score, based on their random intercepts and the grand means. Causal relations occur at the within person level, cross sectional associations at the between person level.

Results

The data for these analyses and a full annotated R output displaying all code and statistical output can be seen at the OSF for this study, alongside the survey materials (<https://osf.io/4w2p3/overview>). For all variables, descriptive statistics, including intraclass coefficients (ICCs), can be seen in table 1.

Table 1

Descriptive statistics and intraclass coefficients (ICC) for affective polarization, social identity threat, perceived stress, and health in the present study across six survey waves (T1-T6).

	T1	T2	T3	T4	T5	T6	ICC
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	
Affective Polarization	3.5 (1.4)	3.4 (1.5)	3.6 (1.5)	3.5 (1.5)	3.5 (1.5)	3.6 (1.5)	0.86
Social Identity Threat	4.0 (0.8)	4.0 (0.8)	4.0 (0.9)	4.0 (0.9)	4.0 (0.8)	4.0 (0.9)	0.70
Perceived Stress	2.5 (0.8)	2.4 (0.8)	2.4 (0.8)	2.4 (0.9)	2.4 (0.9)	2.4 (0.9)	0.78
Health	3.3 (0.9)	3.3 (0.9)	3.3 (0.9)	3.2 (0.9)	3.2 (0.9)	3.2 (0.9)	0.88

Average levels of affective polarization, social identity threat, perceived stress, and self-rated health were quite stable in the sample over the course of our three-month survey, as

indicated by the relatively high ICC values (table 1). This indicates that most of the variation was between individuals, though there was still a non-trivial amount of within-person variation which is required for the RICPLM to calculate cross-lagged coefficients after the between-person variation had been controlled. Average affective polarization remained below the neutral midpoint in our sample across all waves, and this held true for both liberals and conservatives separately, though liberals showed consistently slightly higher affective polarization than conservatives ($d = 0.17 - 0.27$; Figure 2). Average social identity threat in our sample also remained at about the neutral midpoint during our study, though conservatives showed slightly higher social identity threat than liberals ($d = 0.07 - 0.2$; Figure 2). Average perceived stress remained stable and relatively low: between a two and a three on the five-point symptom frequency rating scale. Liberals showed consistently higher perceived stress during our study ($d = 0.13 - 0.28$; Figure 2). The average health rating for our sample remained at slightly above three over the course of the study, indicating “good” health on average in our sample, though again, liberals showed worse self-rated health than conservatives ($d = 0.27 - 0.36$; Figure 2).

Figure 2

Pre-election trends in political social identity threat, affective polarization, perceived stress, and health among liberals and conservatives in our sample. Surveys conducted fortnightly for three months before the 2024 US presidential election. Error bars indicate 95% CI's.

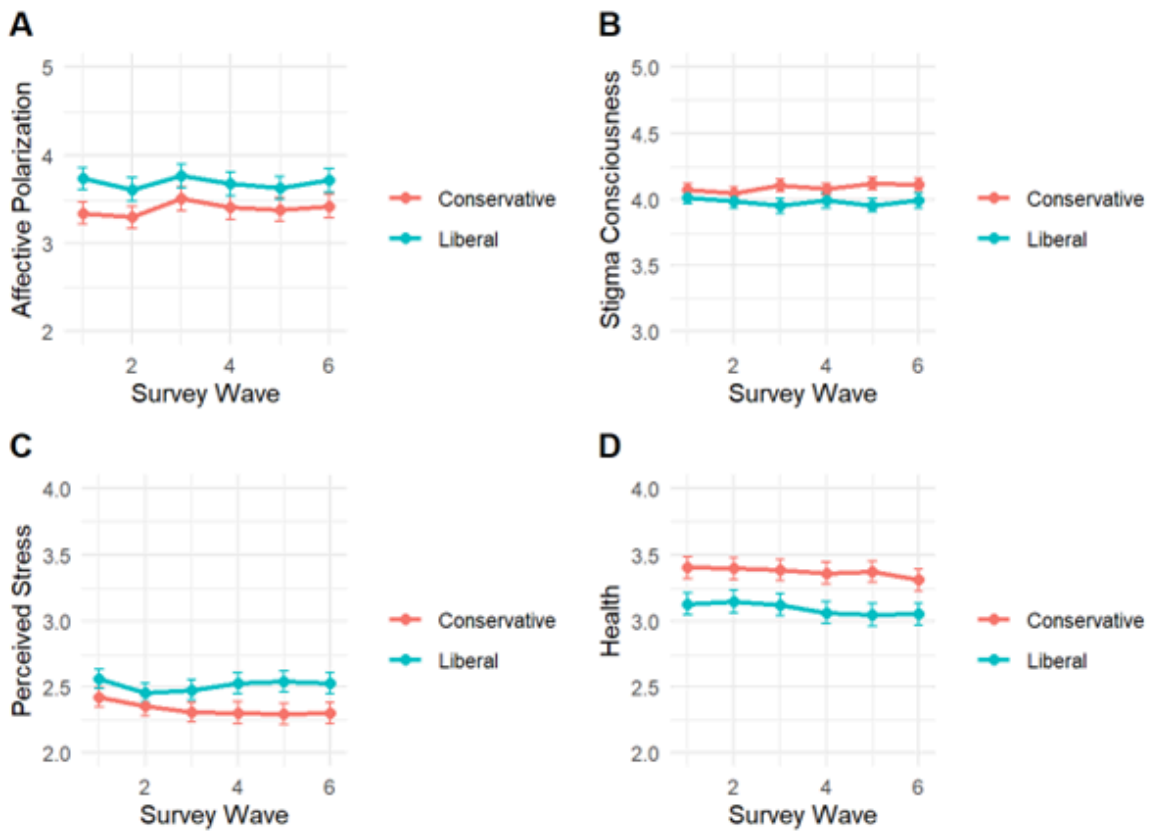


Table 2*Fit statistics for the RI-CLPM models testing H1, EH2, and EH3.*

Fit statistic (pre-registered fit criteria)	H1	EH2	EH3
RMSEA (< .06)	0.05	0.05	0.03
SRMR (< .08)	0.04	0.06	0.05
CFI (> .95)	0.99	0.98	0.997
TLI (> .90)	0.99	0.98	0.996
X^2	115.1, $p = .000$	118.5, $p = .000$	78.29, $p = .125$
ΔX^2	48.23, $p = .01$	32.53, $p = 0.25$	18.35, $p = .91$

Note: ΔX^2 indicates the results of a chi-square difference test, between the constrained and an unconstrained models.

Pre-registered Analyses

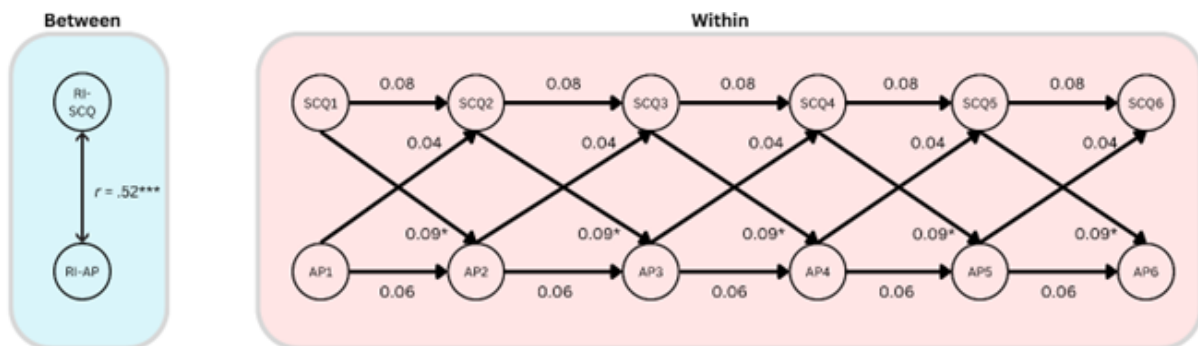
All RI-CLPMs with constrained autoregressive and cross-lagged coefficients showed good fit according to our pre-registered criteria (table 2). For our model testing H1, the chi-square difference test, comparing our constrained model to an unconstrained model ($\Delta X^2(28) = 48.23, p = .01$) showed that the constrained model showed a slightly worse fit than the unconstrained model. Given the model met our fit criteria, however, we present the constrained model here (the results for the unconstrained model can be seen in the full analysis html output in the OSF repository).

Our hypothesis, H1, was supported (Figure 3). We hypothesized that social identity threat would have significant positive cross lagged effects on affective polarization over time

which was observed in our sample ($\beta = 0.09, p = .025, 95\% \text{ CI } [0.012, 0.17]$). An effect of this size ($\beta_{\text{standardised}} = 0.08 - 0.09$) is considered medium to large for these models (Orth et al., 2022). The autoregressive effect for social identity threat was non-significant ($\beta = 0.08, p = .074, 95\% \text{ CI } [-0.01, 0.16]$), likewise for affective polarization ($\beta = 0.06, p = .33, 95\% \text{ CI } [-0.06, 0.19]$). There was no statistically significant effect of affective polarization on social identity threat ($\beta = 0.04, p = .22, 95\% \text{ CI } [-0.02, 0.09]$) despite a small to medium effect size. The random intercepts were strongly correlated ($r = .52, p < .0001$), indicating a strong between-persons association between affective polarization and social identity threat.

Figure 3

A simplified RI-CLPM diagram depicting the cross-lagged and autoregressive coefficients, along with the correlations between random intercepts, for social identity threat (SCQ) and affective polarization (AP) over time.



Note: * = $p < .05$

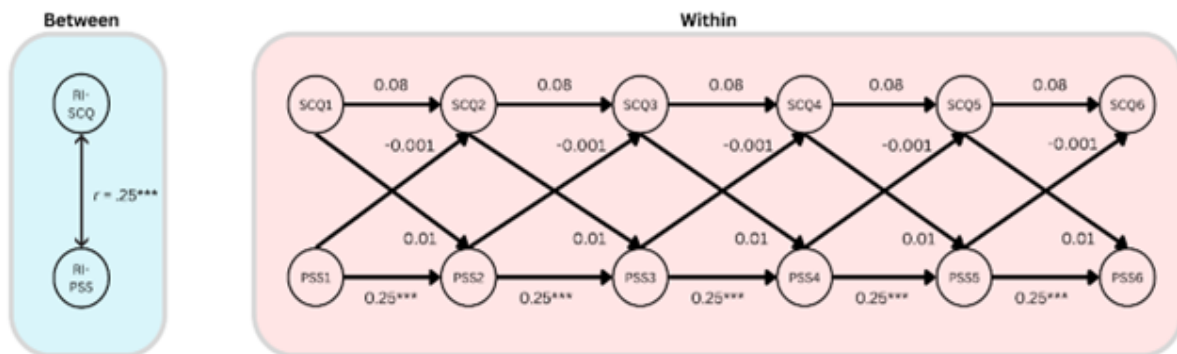
Exploratory Analyses

Both RI-CLPMs with constrained autoregressive and cross-lagged coefficients, for EH2 and EH3, showed very good fit according to our pre-registered criteria. The chi-square difference tests for these models showed that the constrained models did not show worse fit than the unconstrained models.

Exploratory hypothesis 2 was not supported (figure 4). The cross-lagged effect of social identity threat on perceived stress was not significant ($\beta = 0.01, p = .74, 95\% \text{ CI } [-0.04, 0.06]$). There was also no evidence of reverse causality, from perceived stress to social identity threat ($\beta = -0.001, p = .99, 95\% \text{ CI } [-0.08, 0.07]$). The autoregressive effect of social identity threat was not significant ($\beta = 0.08, p = .06, 95\% \text{ CI } [-0.003, 0.16]$), however the autoregressive effect for perceived stress was significant ($\beta = 0.25, p = .000, 95\% \text{ CI } [0.13, 0.37]$). The correlation between the random intercepts was significant ($r = .25, p < .0001$) indicating that those who tend to display higher stigma consciousness tend to be higher in perceived stress.

Figure 4

A simplified RI-CLPM diagram depicting the cross-lagged and autoregressive coefficients, along with the correlations between random intercepts, for social identity threat (SCQ) and perceived stress (PSS) over time.



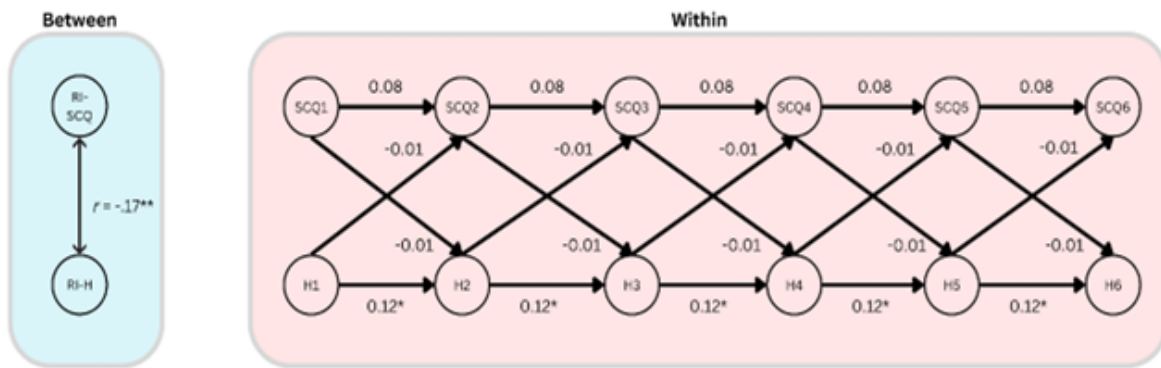
Note: *** = $p < .001$

Exploratory hypothesis 3 was also not supported (figure 5). The cross-lagged effect of social identity threat on health was not significant ($\beta = -0.01, p = .82, 95\% \text{ CI } [-0.04, 0.03]$). There was also no evidence of reverse causality, from health to social identity threat ($\beta = -0.01, p = .86, 95\% \text{ CI } [-0.10, 0.08]$). The autoregressive effect of social identity threat was

not significant ($\beta = 0.08, p = .06, 95\% \text{ CI } [-0.003, 0.16]$), however the autoregressive effect for health was significant ($\beta = 0.12, p = .041, 95\% \text{ CI } [0.01, 0.23]$). The correlation between the random intercepts was also significant ($r = -.17, p = .002$), indicating that those who tend to be higher in social identity threat tend to also have lower self-rated health.

Figure 5

A simplified RI-CLPM diagram depicting the cross-lagged and autoregressive coefficients, along with the correlations between random intercepts, for social identity threat (SCQ) and self-rated health (H) over time.



Note: ** = $p < .01$, * = $p < .05$

Discussion

This study investigated the longitudinal relationships between social identity threat, affective polarization, stress, and health outcomes in the context of the 2024 U.S. presidential election. Using a 6-wave longitudinal design with a sample of American liberals and conservatives, we sought to understand whether social identity threat exacerbates affective polarization over time, and whether such threats affect perceived stress and self-rated health.

Our results supported the hypothesis that social identity threat has a significant positive cross-lagged effect on affective polarization over time. These findings align with

earlier studies suggesting that perceived threats to social identity amplify intergroup biases and antipathy toward political outgroups (Amira et al., 2021; Huddy & Yair, 2021; Slater, 2015). This supports the notion that affective polarization is at least partly rooted in social identity and intergroup affect, rather than merely ideological disagreements (Iyengar et al., 2012). It also shows that affective polarization is at least partly rooted not only in what one does not like about their outgroup, but in their “meta-perceptions”—how they think the outgroup feels towards them.

While the effect of social identity threat on affective polarization was statistically significant and the reciprocal effect was not, we cannot make a strong claim here about unidirectionality of effects. The reciprocal effect of affective polarization on identity threat was of a small to moderate magnitude (Orth et al., 2022), and a post-estimation Wald test revealed that the two coefficients did not significantly differ from one another ($B_{\text{difference}} = -0.056, p = .231$). This suggests that while our data provide evidence for a directional effect, we lack the statistical precision to definitively rule out a reciprocal process of comparable magnitude. Consequently, the relationship between these constructs may be more mutually reinforcing than a strictly unidirectional result would suggest, and future research with larger samples are required to investigate this.

Our results suggest that the impact of political social identity threat on well-being may be less clear than previously theorized. However, it is important to distinguish between our two indicators of well-being. For perceived stress, a psychological variable with less inertia and more sensitive to environmental influences, the lack of a significant effect over three months suggests that political social identity threat may not cause increases in stress, but rather an increase in a reactive negative affect towards the threatening group, as seen by the significant effect of identity threat on affective polarization. We therefore found no

evidence in our study that increases in political social identity threat is experienced as distressing to participants.

In contrast, for self-rated health, the null findings may be less informative. As the effects of psychophysiological stressors on health are considered to arise from a ‘weathering’ effect over time, self-rated health here could be considered a lagging indicator. Thus, our study window may have been insufficient to capture meaningful variation or the cumulative effect of identity threat on health. Though as previously discussed, we also did not find evidence that identity threat caused an increase in consciously perceived stress, which may call into question the effect of identity threat as a stressor with impacts on health, it is possible that the physical toll of identity threat may manifest independently of consciously reported stress (e.g., through allostatic load). Therefore, while our study utilized a longitudinal design superior to cross-sectional designs, it remains possible that measuring health-related effects of identity threat requires a longer observational period. The length of longitudinal designs, and the spacing of “lags” between measurements is a major factor in the validity of longitudinal study findings, and the optimality of the length of our study and the duration of our lags is an open question. Though there is some evidence that, typically, the lags used in social sciences are too long, and that shortitudinal studies with shorter lags are more appropriate (Dormann & Griffin, 2015), it is possible the overall length of our study was not adequate for quantifying health impacts.

Implications

This study contributes to the growing body of literature on the role of psychological processes in affective polarization (Clark et al., 2019; Huddy & Bankert, 2017). The findings emphasize the importance of addressing social identity threats and meta-perceptions to mitigate affective polarization, particularly in politically charged environments. Policymakers

and interventions might focus on fostering positive intergroup interactions and reducing meta-perceptive biases, and partisans or politicians interested in constructive intergroup relations may benefit from reducing the level of identity threat they communicate to outgroups, if co-operation and depolarization are indeed their priority (Lees & Cikara, 2019; Moore-Berg, 2023; Paolini et al., 2024). Indeed, this lends support to the findings of studies showing that fostering positive intergroup encounters can help to vitiate affective polarization, even when group-members disagree on substantive issues (Huddy & Yair, 2021; Druckman & Levy, 2022).

Limitations and Future Directions

The use of single-indicator RI-CLPMs, due to the convergence issues encountered with our multiple-indicator models, limited the ability to account for measurement error and likely lowered the power of our tests, as accounting for measurement error has been shown to increase statistical power in these models (Mulder, 2023). This, along with the financial constraints of the project, means that our power to detect small effects was constrained, and thus the study may still need to be replicated with a larger sample. Additionally, while RI-CLPMs are suitable for tentatively estimating causal effects, they are still vulnerable to the influence of time-varying confounding variables which may affect the results (Rohrer & Murayama, 2023).

Additionally, our study focused exclusively on American liberals and conservatives during a highly polarized election period, potentially limiting the generalizability of our findings to other political systems and contexts. Future research could explore these dynamics in multiparty systems or cross-culturally to assess generalizability.

The use of a sample combining liberals and conservatives is also a potential limitation of our study as the effects and relations between the constructs may not be the same in

different political groups. Additionally, the lack of moderates or independents in the present sample limits the generalizability of our findings to those without a strong political identity. Likewise, given the average level of social identity threat, polarization, and stress in our sample over the course of the study, a substantial portion of our participants appeared not to be overly stressed or affectively polarized, nor prone to perceiving social identity threat. In order to home in on the effects of these variables, future studies may need to pre-screen participants to limit the investigations to those participants who are very prone to perceiving identity threats and experiencing affective polarization.

Finally, the moderate effect size found in this study also suggests that social identity threat is one of many variables impacting affective polarization, and future research should perform a more comprehensive data collection procedure to investigate other factors which may influence affective polarization. Additionally, the lack of significant autoregressive effects in our analyses (apart from for perceived stress) suggests that the within-person fluctuations in our constructs over time were potentially driven by unmeasured variables rather than construct inertia and the effects of our measured variables. The factors which drive fluctuations on these constructs over time is thus still unclear.

Conclusion

This study underscores the significance of social identity dynamics in the development and propagation of affective polarization. Social identity threats exacerbate affective political divisions, thus interventions that foster positive intergroup interactions, and encourage standards of social conduct which lower identity-threatening behaviour, may attenuate affective political divisions.

Chapter 4: Political polarization and wellbeing: Investigating potential intrapersonal harm from affective polarization

McMurtrie, B., Philipp, M., Hebden, R., Roemer, A., & Williams, M. (2025). Political polarization and wellbeing: Investigating potential intrapersonal harm from affective polarization. *International Review of Social Psychology*, 38(1).

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STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the student and the student's main supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the student's contribution as indicated below in the Statement of Originality.

Student name:	Brandon McMurtrie		
Name and title of main supervisor:	Dr Matt Williams, Associate Professor		
In which chapter is the manuscript/published work?	4		
Describe the contribution that the student and members of the supervisory team have made to the manuscript/published work: ¹			
Brandon McMurtrie: Conceptualization, Methodology, Investigation, Validation, Analysis, Data Curation, Writing - Original Draft, Review & Editing, Visualization.			
Matt Williams: Supervision, Writing - Review & Editing, Methodology, Funding, Analysis, Project administration.			
Michael Philipp, Ross Hebden, Anja Roemer: Supervision, Writing - Review & Editing, Project administration.			
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Abstract

Affective polarization—antipathy towards members of one’s political outgroup—may pose challenges to social cohesion and personal well-being. Prior studies have suggested that one’s affective polarization may cause intrapersonal harm as well as interpersonal harm. It has been associated with reduced social support, increased stress, and worse physical health. This pre-registered study investigated the intrapersonal harm of affective polarization using a six-wave longitudinal survey (N = 470). Affective polarization, social support, perceived stress, and self-rated health were measured fortnightly for three months preceding the 2024 U.S. presidential election. Random Intercept Cross-Lagged Panel Models were employed to investigate the within-person effects of affective polarization on these indicators of wellbeing. Contrary to hypotheses, none of the hypothesised cross-lagged effects were significant, suggesting that changes in affective polarization did not predict changes in social support, stress, or health. However, cross-sectional analyses did reflect past findings, showing that higher levels of affective polarization were associated with lower social support, greater stress, and worse health. We additionally found evidence for perceived stress causing moderate increases in affective polarization. Stable differences by political orientation were also observed in our sample, with liberals reporting higher affective polarization and stress, lower social support, and worse health. Despite the lack of significant effects, potentially due to limitations such as sample size and measurement constraints, our findings underscore the importance of further investigations with appropriate robust designs to clarify the relationship between affective polarization and well-being. These results challenge the assumption that affective polarization directly drives declines in well-being.

Keywords: affective polarization, stress, social support, health, political polarization

Introduction

A wealth of research has shown that, in recent decades, affective polarization—antipathy and aversion to one’s political outgroup—has been increasing between members of political-ideological groups in the United States, and in other countries around the world (Boxell et al., 2022; Finkel et al., 2020; Iyengar et al., 2012; Kekkonen & Ylä-Anttila, 2021; Orriols & León, 2020). People appear to increasingly dislike members of their ideological-political outgroups, being increasingly reluctant to associate or have family ties with them (Huber & Malhotra, 2017; Iyengar et al., 2012), appraising them more negatively (Carmines & Nassar, 2022), and expressing and displaying prejudice towards them (Gift & Gift, 2015; Iyengar & Westwood, 2015; Westwood et al., 2018).

Affective polarization has been shown to influence a range of phenomena and increase behaviours that are counterproductive in pluralistic societies that rely on a certain level of goodwill and cooperation between ideological groups. Experiments have shown that it politicises and undermines ideals of political belief formation (Druckman et al., 2013, 2021) and increases belief in in-group-congruent misinformation (Jenke, 2023). Longitudinal studies suggest that it negatively impacts support for democratic norms (Kingzette et al., 2021), and it likewise harms social trust (Lee, 2022; Torcal & Thomson, 2023). Additionally, expressed prejudice based on political orientation can exceed prejudices based on race, religion, and gender (Carmines & Nassar, 2022) and multiple studies using behavioural experiments such as selection tasks and trust games have verified this (Iyengar & Westwood, 2015; Lelkes & Westwood, 2017; Westwood et al., 2018). Other experiments have shown that this animosity also affects economic decisions and willingness to cooperate with others (Engelhardt & Utych, 2020; McConnell et al., 2018), and can drive discrimination in

employee selection (Gift & Gift, 2015), dating preferences (Huber & Malhotra, 2017; Nicholson et al., 2016), and even roommate selection (Shafranek, 2021).

While these findings highlight how affective polarization damages the socio-political environment and promotes prejudice toward others, some research suggests it also harms the polarised individual—negatively affecting their interpersonal relationships, stress levels, and even physical health. The present study investigated this potential for intrapersonal harm using a longitudinal survey measuring the impact of affective polarisation on social support, stress, and health.

Affective Polarization, Social Support, Stress, and Health

Social support is the perception that one is a part of a social network of individuals who can provide love, care, support, and mutual assistance (Willis, 1991). It can come from relatives, romantic partners, co-workers, mentors, or other social-community ties (Taylor, 2012). Social support can help lower anxiety and depression and consistently reduces psychological distress during crises such as terror attacks or serious medical diagnoses. Social support powerfully predicts health and longevity outcomes, rivalling the influence of well-established risk factors such as smoking, blood pressure, obesity, and physical activity. For a review of this research, see Taylor (2012).

Affective polarization is usually studied through the lenses of social identity theory and intergroup threat theory (Tajfel & Turner, 2001; Stephan et al., 2009; Renstrom et al., 2021). Social identity theory suggests that strong ingroup identification inherently creates preferences for ingroup members and avoidance of outgroups, especially in the presence of so-called “aggravating conditions” like contentious election periods (Brown, 2000). This aversion to the outgroup drives selective association and a desire for homophily. Indeed, political affective polarization is characterised by an aversion toward—and a desire for social

distance from political outgroup members (McMurtrie et al., 2024; Iyengar et al., 2012). Highly polarised individuals show particularly strong preferences for homophily in their social networks, friendships, romantic relationships, work relationships, and family ties (Arora et al., 2022; Huber & Malhotra, 2017; Iyengar et al., 2012; McPherson et al., 2001), which suggests that affective polarization may constrain one's ability to form and maintain supportive social networks, and there is some evidence for this. For example, during times of heightened polarization people are less likely to travel to visit family for holidays, and if they do, are more likely to cut visits short (Chen & Rohla, 2018; Lee, 2021). For those who live in a politically dissimilar area, affective polarization and the desire for homophily may make it more difficult to find romantic partners (Huber & Malhotra, 2017; Iyengar et al., 2018; Nicholson et al., 2016), harder to find jobs (Gift & Gift, 2015), and is associated with lower social support (Chopik & Motyl, 2016; Panagopoulos et al., 2022). Polarization also undermines social trust, a vital component of social network formation (Lee, 2022). Political moderates find cues of strong partisanship off-putting, suggesting that polarized individuals likely drive politically disinterested others away (Klar et al., 2018), and people do indeed report losing meaningful relationships to politics (Smith et al., 2019).

Collectively, these findings suggest a theoretical mechanism whereby affective polarization undermine individuals' ability to build and maintain robust social support networks and creates a self-reinforcing cycle of social network constriction—polarized individuals may both actively avoid outgroup members and inadvertently repel potential network partners, undermining their access to diverse sources of social support. However, empirically, it is still unclear whether this is truly the case and whether it translates into lower social support among polarized partisans. Many of the studies reviewed above either do not measure affective polarization, instead merely tracking behaviours during times of

heightened polarization such as during elections (Chen & Rohla, 2018; Lee, 2021), or they investigated whether affective polarization and partisanship drives people to discriminate against others (Huber & Malhotra, 2017; Nicholson et al., 2016; Shafranek, 2021) with no indication of whether this translates into a loss of social support for those who are affectively polarized.

Affective polarization may also exert a direct negative effect on partisans' mental wellbeing. Social identity theory posits that when individuals identify strongly with a group—especially when that group forms a core part of their self-concept—they become more sensitive to the presence and actions of outgroups. In competitive or ideologically charged contexts, this often leads to automatic dislike of outgroup members and the perception of outgroups as symbolically or literally threatening (Stephan et al., 2009). Such environments are hypothesized to be psychologically stressful, activating chronic vigilance for threat, anxiety about group status, and general emotional strain (Major & Schmader, 2017; Stephan et al., 2009). Consistent with this view, individuals highly engaged in politics or socio-political discourse often report impaired wellbeing, including elevated stress, sleep disruption, and even suicidal thoughts (Smith, 2022). Affective polarization has also been linked to poorer mental health outcomes such as depression and anxiety (Fraser et al., 2022; Nayak et al., 2021; Panagopoulos et al., 2022), and stronger outgroup antipathy predicts worse mental health (Smith et al., 2019). Moreover, affective polarization and outgroup hostility are frequently accompanied by anxiety and anger—emotions that contribute to stress (Fraser et al., 2022; Hackett et al., 2018). Finally, longitudinal evidence shows that stress and anxiety increased during the 2016 U.S. election period (Hagan et al., 2020; Roche & Jacobson, 2019).

Thus, intergroup threat theory and the studies reviewed above, support the idea that affective polarization increases stress. However, as with social support, the extant evidence comes from either cross-sectional studies, or from longitudinal studies which do not directly measure affective polarization but simply track indicators of stress during an election period. It may be that the stress induced during an election period is due to other factors, such as anxiety produced by a potential status loss in an election defeat or is due to the ambient tension and instability accompanying the election period. The current research does not allow an inference to be made as to whether being affectively polarized definitively increases one's stress.

Theoretical models of political stress propose that affective polarization also exerts a negative effect on health. The effect is proposed to occur both indirectly, by changing citizens' health behaviours and receptivity to public health messaging from ingroup and outgroup authorities, and directly, by *visceral politics* (Tsakiris et al., 2021) acting as a socio-political stressor which exerts the well-known detrimental effect of stress on health (Braveman et al., 2011; Nelson, 2022; Slavich, 2016). Affective polarization has its basis in cognitions of social identity threat and negative emotional reactions to outgroup members, which—like other negative emotional states—has been theorised to be produce physiological stress responses, including heightened cardiovascular reactivity, elevated cortisol levels, and increased allostatic load (Major & Schmader, 2017; Slavich, 2017).

The evidence supporting the relationship between affective polarization and health varies in quality and in whether it focuses on the direct or indirect effect of affective polarization on health. For example, a study by Van Bavel et al. (2024) empirically showed that polarization affected belief formation, receptivity to public health messaging, and health behaviours during the covid-19 pandemic which had an effect on health outcomes. They also

claimed that “Polarization can also directly affect an individual’s health by increasing stress and feelings of isolation” (p. 3087). Supporting this idea, Nelson (2022) found that participants’ level of affective polarization was significantly negatively associated with a measure of self-reported health that has been shown to be a valid indicator of actual health status, and thus they asserted that affective polarization is “like drinking poison” (p. 1). However, they used cross-sectional designs which are not suitable for establishing causality. Likewise, Fraser et al. (2022) found that those who feel more politically distant from the average voter in their state reported more days of both poor mental and physical health—again a cross-sectional finding. In the same vein, Mefford et al. (2020) showed an increase in acute cardiovascular disease hospitalizations after the 2016 US presidential election, and Rosman et al. (2021) found that patients in North Carolina who were wearing cardiac monitoring devices during the election period were more likely to experience arrhythmias than at other times. However, in these studies individuals’ affective polarization was not measured, the markers of health were simply tracked during a time of purported heightened polarization.

Thus, these studies provide only indirect theoretical support for the effect of affective polarization on health. It is not possible, based on these studies, to ascertain whether affective polarization exerts an intrapersonal negative effect on health. It is unclear in studies such as these whether it is other politics-related stress (such as a potential election loss), the polarization of those in one’s social environment, or one’s own level of affective polarization which is related to the decline in health outcomes.

The Present Study

While the findings from prior research support a theoretical argument for how affective polarization could exert a negative impact on social, mental, and physical wellbeing,

such effects have not been investigated using analyses that are suitable for investigating causality. Thus, the claim that affective polarization exerts an inward harm and that “resentment is like drinking poison” (Nelson, 2022, p. 508) has not yet been supported. We perform the first investigation of the intrapersonal harms of affective polarization using designs and analyses suitable for investigating causal effects.

The present six-wave longitudinal study, which ran for three months preceding the 2024 US presidential election, investigated the effect of affective polarization on social support, stress, and health, using single-indicator random intercept cross lagged panel models (RI-CLPM’s: Mulder & Hamaker, 2021). The RI-CLPM is well-suited for investigating causality because it establishes temporal precedence in estimating effects, which cannot be inferred from standard cross-sectional designs.

As in standard cross lagged panel models, the RI-CLPM models the autoregressive effects over time, and thus controls for the carry-over effects of variables with themselves. The inclusion of the random intercepts allows the RI-CLPM to partial out stable between-person differences and model the within-person relationships between variables more accurately, whereas the traditional cross lagged panel model confuses interindividual associations for intraindividual processes (Hamaker et al., 2015). The results of between-person analyses often do not reflect the actual relationships between variables *within* individuals when there are both stable trait and state level components to the variance (Hamaker, 2023). Because of this, we can assume that the cross-lagged coefficients from an RI-CLPM more accurately reflect causal relationships (Lucas, 2023), though we still cannot make strong causal claims—rather, relying on a weaker claim akin to *Granger causality* (Bressler & Seth, 2011; Hamaker et al., 2015). The RI-CLPM is one method of analysis which can better address questions of causality from non-experimental data.

We hypothesised that affective polarization would have a significant ($p < .05$) negative cross-lagged effect on social support (H1), a significant positive cross-lagged effect on perceived stress (H2), and a significant negative cross-lagged effect on health (H3).

Methods

The present study received low-risk ethics approval by the first author's institution (application ID: 4000027301), and the research was conducted in accordance with the principles outlined in the Declaration of Helsinki (WMA, 2024). The analyses and measures reported here were part of a larger research project, which included a fourth research hypothesis (H4) as seen in the pre-registration. Due to constraints of publication word limits and the fact that the fourth hypothesis does not directly relate to the first 3 hypotheses of this paper and its focus on wellbeing, the analysis of the fourth hypothesis is to be reported in a separate research paper.

Sample Size Determination

The primary criterion for determining sample size was the financial constraint of the project. We aimed for a sample of 500 participants at each wave. We did however perform an a priori power analysis. We used the R package *powRICLPM* (Mulder, 2023; See accompanying website-app: <https://jeroendmulder.github.io/powRICLPM/index.html>) to perform a power analysis for a single indicator RI-CLPM over 6 survey waves. The power analysis shows that with a sample size of around 500 participants, we would have a statistical power of 70% to detect standardised cross-lagged effects of 0.15, and over 80% to detect cross lagged effects of 0.2. Given our financial constraints, we found this to be an acceptable level of power for this initial study.

A fuller description of the sample size determination process, as well as the R code for the power analysis can be seen in the pre-registration:

https://osf.io/83sgc/?view_only=eaa9fbc0af614f8cb63a2b6036dfa88b

Participants and Procedure

Participants were recruited from Prolific and were required to have listed US in their nationality and to have self-described as either Liberal or Conservative on their profile. We used quota sampling to recruit an equal number of each to ensure the sample was more politically representative of the general American population. We conducted our study over a three-month pre-election period from August to October 2024. This period provided us with an opportunity to collect data at a time when the relevant constructs were likely in a state of flux, as variation in the constructs over time is a requirement for modelling change and causal effects. It also allowed us to investigate trends in these constructs seen in past election periods.

At the first wave, T1, we recruited an initial sample of 552 participants. Exclusions were applied either at the study-level such that no data from excluded participants was used, or at the wave-level such that only data from a particular wave was excluded. Our exclusion rules can be seen in the pre-registration

(https://osf.io/83sgc/?view_only=eaa9fbc0af614f8cb63a2b6036dfa88b), and a detailed

account of all exclusions can be seen in the Data Preparation file found in the OSF repository for this project (https://osf.io/d8sbw/?view_only=e3aa8c392ee44680ba494479ee39ea96).

After applying the exclusion criteria at the wave and study level we had a final sample of 470 participants ($M_{age} = 44.4$, $SD_{age} = 14.1$, 56% female, 43% Male, 1 % Non-binary, and an even 50% liberal/conservative).

At the beginning of each survey, participants were asked to place themselves on a political orientation scale (*liberal, slightly liberal, slightly conservative, conservative*). An embedded tag was created in the survey, such that those who indicated they were liberal received a tag of “Target = Conservative”, and “Group = Liberal”, and vice versa. These were then inserted into the relevant items in the affective polarization scale, allowing the items to be tailored such that each participant was seeing the appropriate ingroup and outgroup labels in the items.

Measures

The following measures were presented in random order in each survey, and the items within these measures were also presented in random order. Scores for affective polarization, perceived stress, and social support were calculated as average scores on each scale. We reported Omega total (ω_t) reliability ranges over the course of the study. Omega total is analogous to Cronbach’s alpha but loosens the assumptions necessary for the accurate assessment of reliability using Cronbach’s alpha and has been shown to outperform it when these assumptions are violated (Dunn et al., 2014; Flora, 2020; McNeish, 2018).

This study was part of a larger survey project, so a small number of other measures were also administered in the survey but are not described here, though the project as a whole is described in the pre-registration.

Affective Polarization

Affective polarization was measured using the affective polarization scale (APS; McMurtrie et al., 2024). This scale ($\omega_t = 0.96\text{--}0.98$ across waves) was composed of 15 items measuring Social Distance (*I try to avoid socialising with [outgroup]*), Aversion (*[outgroup] are immoral*), and Incivility (*I like to make [outgroup] angry*). Responses were collected on a

7-point Likert scale (*strongly disagree* to *strongly agree*, with a neutral midpoint, *neither agree nor disagree*).

Social Support

Social support was measured using the 24-item Social Provisions Scale (SPS; Curtrona & Russel, 1987). The scale ($\alpha_t = 0.96\text{--}0.97$) contained items measuring social support in the form of practical help, informational support, emotional support, social integration, esteem support, and providing support. Items such as “*There are people I can depend on to help me if I really need it*” and “*If something went wrong, no one would come to my assistance*”, are measured on a 4-point scale (*strongly disagree, disagree, agree, strongly agree*). Items 2, 3, 6, 9, 10, 14, 15, 18, 19, 21, 22, and 24 were reverse coded.

Stress

Perceived stress was measured using the Perceived Stress Scale-10 (PSS-10; Cohen & Williamson, 1988). This scale ($\alpha_t = 0.92\text{--}0.95$) contains 10 items, with responses on a 5-point scale (*Never* to *Often*). It is a commonly used measure of perceived stress (Lee, 2012). It contains items such as “*In the last two weeks, how often have you been upset because of something that happened unexpectedly?*” And “*In the last two weeks, how often have you felt that you were unable to control the important things in your life?*”. Items 4, 5, 7, 8 were reverse coded.

Health

Health status was measured using a single item: “*Would you say that in general your health is currently poor, fair, good, very good, or excellent?*”. This item has been used widely in many different countries and languages and has been shown to be a valid indicator of general health and a good predictor of mortality (Jylhä, 2009; Sturgis et al., 2001). This

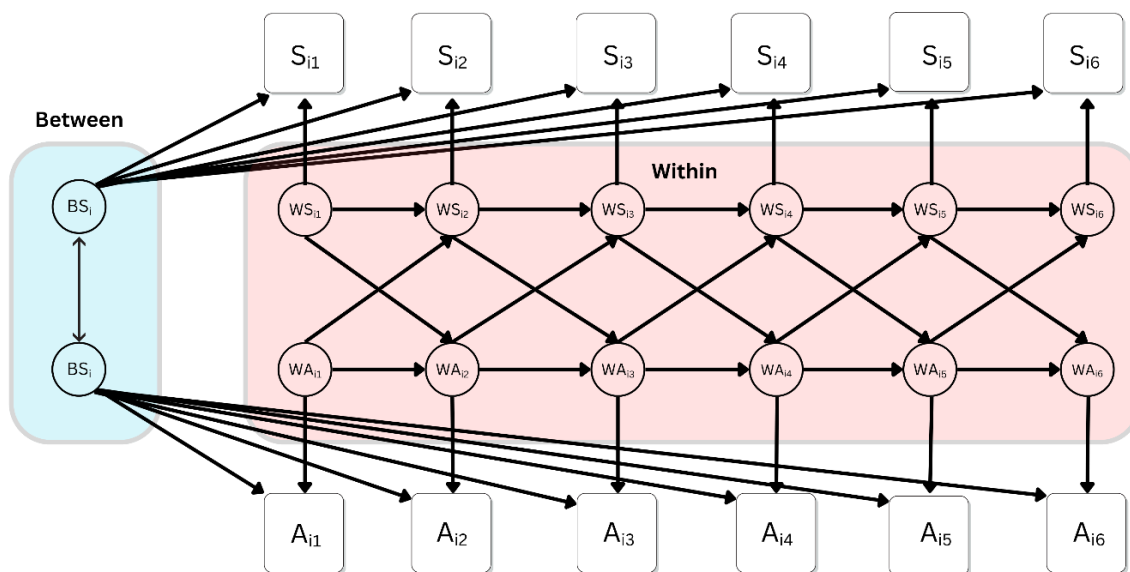
measure is ideal for the purposes of our study, as we have no hypotheses concerning what aspect of health is affected by affective polarization and are not attempting to predict or measure specific health disorders. The short, single item of general self-rated health is comprehensive and non-specific, capturing a general sense of one's current health status.

Statistical Analyses

We used single-indicator RICLPMs to investigate our hypotheses. As outlined in our pre-registration, we planned to run multiple-indicator models, if possible, but were to switch to single indicator models if the multiple-indicator models encountered errors and failures, which they did. All multiple-indicator models encountered errors such as perpetual rendering, failure to converge on a solution, and/or matrices which were not positive definite. Thus, we ran single-indicator models using the average scores at each time point, as laid out in our pre-registration. These RICLPMs followed the protocol of Mulder & Hamaker (2021), in which random intercepts were created as a latent variable of the repeated measures with factor loadings fixed to 1, and within person components at each time point were the individuals' score at that time point. The structural relations between these constructs were then laid out according to the standard RI-CLPM method as described by Mulder and Hamaker (2021). The model is visualised in figure 4.1.

Figure 4.1

The RI-CLPM model-structure used in the present study, depicting the cross-lagged relationship between constructs Stress and Affective polarization over 6 waves. S_{i1} represents the participants' stress score at time $T1$, and so on to S_{i5} at time $T5$, the same holds for variable A as affective polarization. BS_i represents the participants' random intercept, which captures their time-invariant deviation from the grand means, or the stable trait-like component. The within components (W) at each time represent the differences between participants' observed score and their expected score based on their random intercept and the grand means.



For all models, we constrained the autoregressive and cross-lagged coefficients to be constant over time. These assumptions were applied to the model for ease of interpretability, and are not themselves subject to testing, though our pre-registered model-fit criteria would indicate whether the model constraints and identification can be deemed appropriate. The full results of all unconstrained models can be seen in the results output in the OSF. Analyses

were performed in R, version 4.3.2 (R Core team, 2023). We used robust full information maximum likelihood (MLR) estimation in the R package *lavaan*.

Results

The full data cleaning, exclusions, and merging process from our 6 surveys can be seen in the Data Preparation file in our OSF. The final data set used in this study, as well as full analysis code and output can also be found there:

https://osf.io/d8sbw/?view_only=e3aa8c392ee44680ba494479ee39ea96.

Descriptive statistics, including means, standard deviations, and intraclass coefficients (ICCs) for all variables in the study can be seen in table 4.1. There is no clear overall trend in our constructs over the course of our study in the lead up to the presidential election, and sample statistics for our constructs are surprisingly stable over time. Average affective polarization was below the neutral midpoint, 4, in our sample across all waves. Average perceived stress, which asks participants to report frequency of experienced symptoms, was between a response of 2 “almost never” and 3 “sometimes”. The social support scale had no neutral midpoint, and average responses were consistently between “agree” and “strongly agree”. The average health response in our sample was slightly above 3 which indicates a response of “good” health.

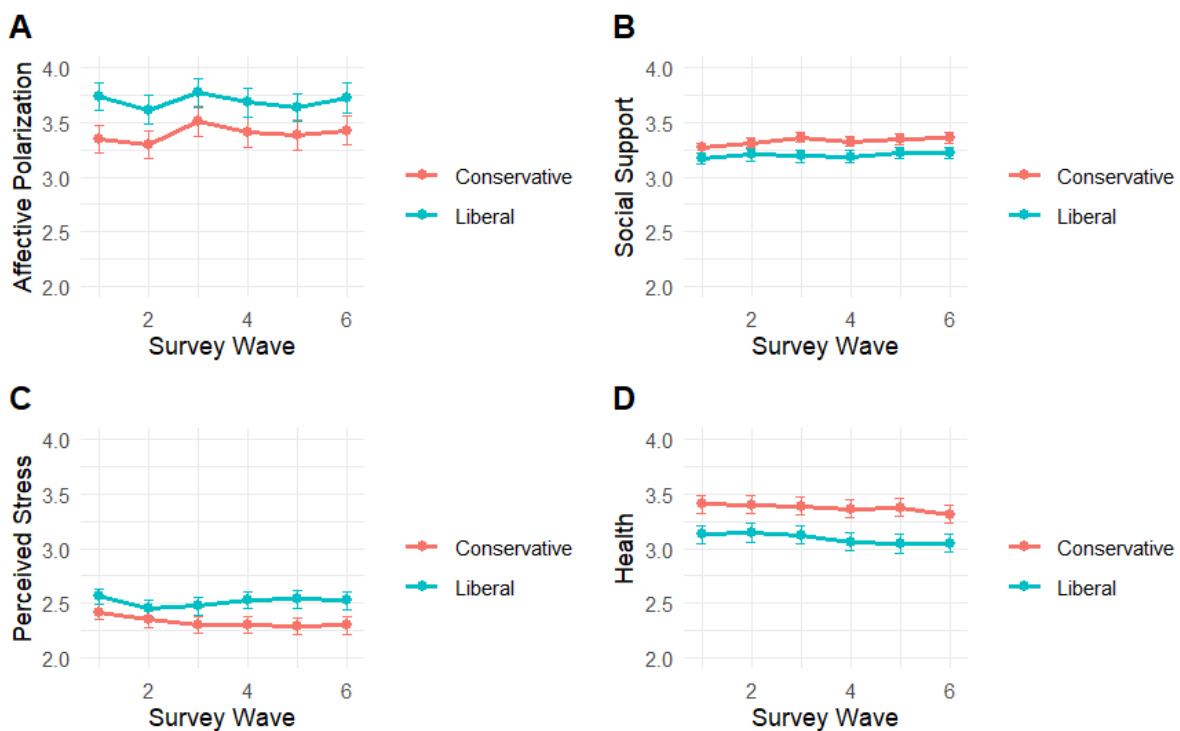
Table 4.1*Descriptive statistics for all measures in the present study across the 6 survey waves (T1-T6)*

	T1	T2	T3	T4	T5	T6	ICC
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	
Affective Polarization	3.5 (1.4)	3.4 (1.5)	3.6 (1.5)	3.5 (1.5)	3.5 (1.5)	3.6 (1.5)	0.8
Social Support	3.2 (0.5)	3.3 (0.5)	3.3 (0.6)	3.3 (0.6)	3.3 (0.5)	3.3 (0.6)	0.8
Perceived Stress	2.5 (0.8)	2.4 (0.8)	2.4 (0.8)	2.4 (0.9)	2.4 (0.9)	2.4 (0.9)	0.7
Health	3.3 (0.9)	3.3 (0.9)	3.3 (0.9)	3.2 (0.9)	3.2 (0.9)	3.2 (0.9)	0.8

Likewise, when observing trends by political orientation during our study, there is no discernible effect of the encroaching election (Figure 4.2). However, there are stable average differences between liberals and conservatives. In our sample, Liberals were consistently higher in affective polarization ($d = 0.17$ – 0.27 ; Panel A) and perceived stress ($d = 0.13$ – 0.28 ; Panel C), were lower in social support ($d = 0.18$ – 0.31 ; Panel B) and had worse self-rated health ($d = 0.27$ – 0.36 ; Panel D).

Figure 4.2

Trends in affective polarization, social support, perceived stress, and self-rated health among liberals (n = 237) and conservatives (n = 233), measured bi-weekly over the course of three months preceding the 2024 US presidential election. Scales do not begin at zero to allow for error bar visibility. Affective polarization values can range from 1-7, social support from 1-4, and perceived stress and health from 1-5. Error bars indicate 95% CI's



Pre-registered Analyses

All three of our single indicator RI-CLPMs with constrained autoregressive and cross lagged effects showed good fit according to our pre-registered criteria (Table 4.2). Likewise, the chi-square difference tests for these models and their unconstrained versions were non-significant, indicating that imposing the constraints did not result in a significantly worse fit (Table 4.2).

Table 4.2*Fit statistics for the RI-CLPM models assessing hypotheses H1-H3*

Fit statistic (pre-registered fit criteria)	H1	H2	H3
RMSEA (< .06)	0.05	0.04	0.05
SRMR (< .08)	0.04	0.04	0.03
CFI (> .95)	0.99	0.99	0.99
TLI (> .90)	0.99	0.99	0.99
X ²	93.67, <i>p</i> = .01	95.32, <i>p</i> = .008	87.43, <i>p</i> = .03
ΔX ² (28)	35.02, <i>p</i> = .17	34.66, <i>p</i> = .18	32.86, <i>p</i> = .24

Note: ΔX² (28) indicates the results of a chi-square difference test with 28 degrees of freedom, between the constrained and unconstrained models.

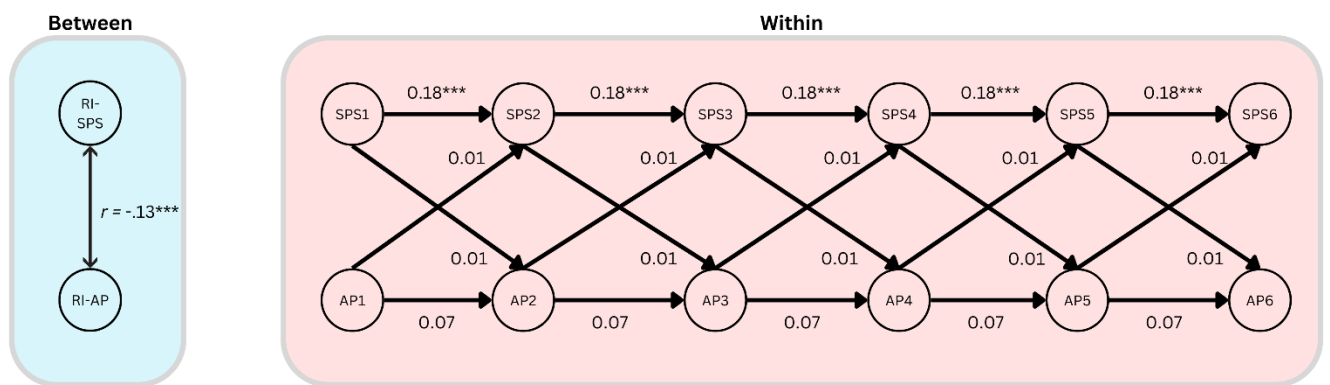
H1: Affective Polarization and Social Support

Our first hypothesis, H1, was not supported (Figure 4.3). There was no significant cross-lagged effect of affective polarization on social support ($\beta = 0.01, p = .34, 95\% \text{ CI } [-0.02, 0.04]$). Nor was there evidence of a significant effect of social support on affective polarization ($\beta = 0.01, p = .96, 95\% \text{ CI } [-0.24, 0.26]$). There was a significant autoregressive effect for social support over time ($\beta = 0.18, p = .001, 95\% \text{ CI } [0.07, 0.28]$), but this was not the case for affective polarization ($\beta = 0.07, p = .28, 95\% \text{ CI } [-0.06, 0.20]$). However, a significant negative correlation between the random intercepts ($r = -.13, p < .001, 95\% \text{ CI } [-0.20, -0.06]$) was found, which is akin to a cross sectional correlation. This suggests that, at least in the course of our study, there was no evidence of affective polarization negatively

impacting social support. However, those who tend to report higher levels of affective polarization do tend to also report lower levels of social support.

Figure 4.3

A simplified diagram of the RI-CLPM assessing relationships between affective polarization (AP) and social support (SPS), showing the within person dynamics over time, and the stable between person correlation



Note: *** = $p < .001$

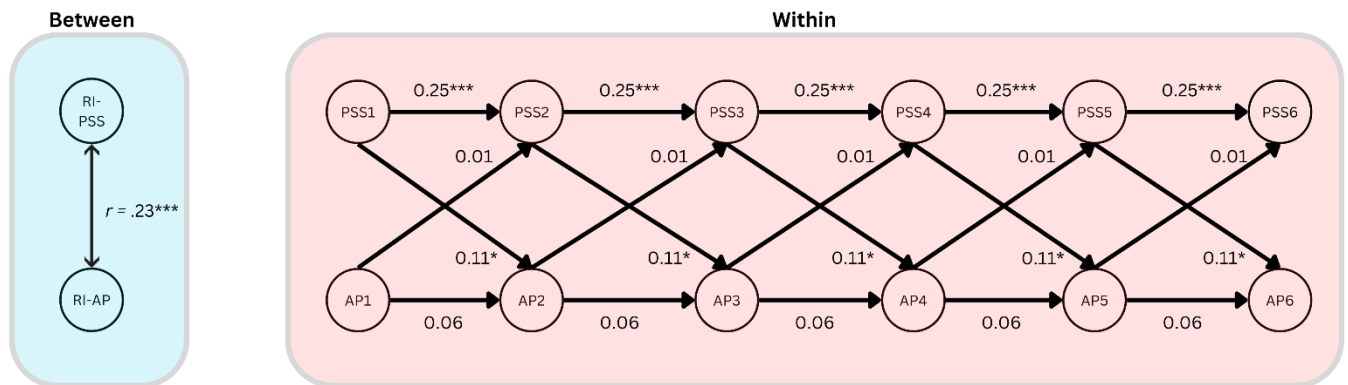
H2: Affective Polarization and Perceived Stress

Our second hypothesis, H2, was also not supported (Figure 4.4). There was no significant positive cross lagged effect of affective polarization on perceived stress ($\beta = 0.01$, $p = .74$, 95%CI [-0.05, 0.07]). There was, however, a small and just significant positive cross-lagged effect of perceived stress on affective polarization ($\beta = 0.11$, $p = .04$, 95%CI [0.05, 0.21]), perhaps indicating a medium-sized ($\beta_{\text{standardised}} = 0.08$) causal effect runs in the opposite direction. There was a significant autoregressive effect of perceived stress over time ($\beta = 0.25$, $p < .001$, 95% CI [0.13, 0.36]), but this was not so for affective polarization ($\beta = 0.07$, $p = .36$, 95% CI [-0.07, 0.20]). There was also a significant between-person correlation of the random intercepts ($r = .23$, $p < .001$, 95% CI [0.13, 0.33]). The results therefore

indicate that those who report higher levels of affective polarization also tend to report higher levels of perceived stress, and that increases in perceived stress are associated with moderate increases in affective polarization over time.

Figure 4.4

A simplified diagram of the RI-CLPM assessing relationships between affective polarization (AP) and perceived stress (PSS), showing the within person dynamics over time, and the stable between person correlation



Note: *** = $p < .001$, * = $p < .05$

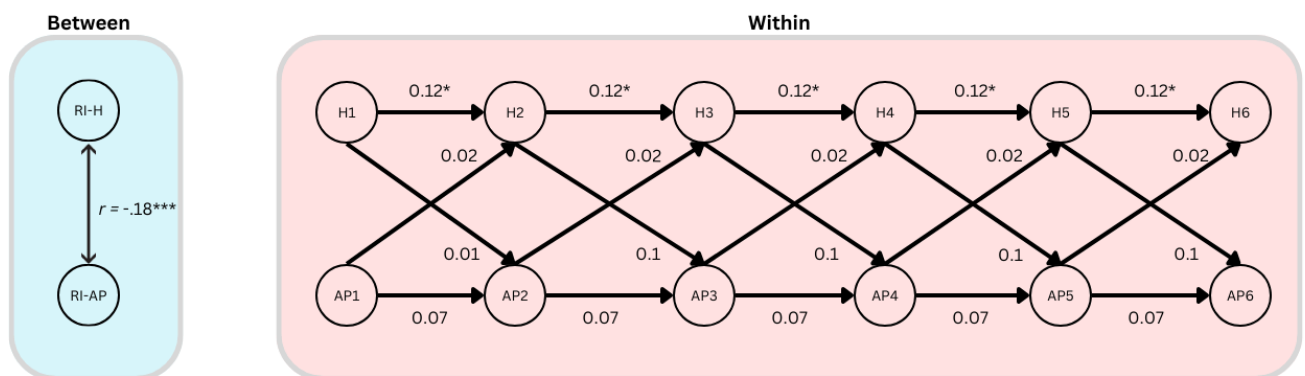
H3: Affective Polarization and Health

Our third hypothesis, H3, was also not supported (figure 4.5). There was no significant cross lagged effect of affective polarization on health ($\beta = 0.02$, $p = .32$, 95% CI [-0.02, 0.06]). There was also no significant cross lagged effect of health on affective polarization ($\beta = 0.01$, $p = .85$, 95% CI [-0.11, 0.13]). There was a just significant autoregressive effect of health over time ($\beta = 0.12$, $p = 0.04$, 95% CI [0.01, 0.23]), this was not so for affective polarization ($\beta = 0.07$, $p = .27$, 95% CI [-0.06, 0.20]). There was also a significant negative between-person correlation of the random intercepts ($r = -.18$, $p = .002$,

95% CI [-0.29, -0.07]). This indicates that those who tend to report higher affective polarization also tend to report worse health.

Figure 4.5

A simplified diagram of the RI-CLPM assessing relationships between affective polarization (AP) and self-reported health (H), showing the within person dynamics over time, and the stable between person correlation



Note: *** = $p < .001$, * = $p < .05$

Discussion

The goal of this study was to investigate potential intrapersonal harms of affective polarization. Specifically, we investigated whether affective polarization negatively impacts one’s social relationships and social support (Chen & Rohla, 2018; Lee, 2021; Smith et al., 2019), whether affective polarization causes psychological stress (Fraser, et al., 2022; Smith, 2022; Smith et al., 2019), and whether experiencing affective polarization is “like drinking poison” (Nelson, 2022, p. 01). Our study measured relevant constructs fortnightly over a contentious three-month pre-election period, leading up to the 2024 US presidential election, at a time reasonably expected to be characterised by heightened emotions relating to politics.

Contrary to our hypotheses, none of our analyses found evidence suggesting that affective polarization is causally related to the social, mental, and physical harms often ascribed to it. Fluctuations in affective polarization did not predict changes in social support, stress, or self-rated health over time. However, the cross-sectional correlations between our constructs showed the expected relationships based on past observational studies. Higher affective polarization was significantly negatively associated with social support and self-rated health, and significantly positively associated with perceived stress. Therefore, people who, on average, report higher affective polarization tend to also report higher stress, lower social support, and worse health. These associations were small to moderate according to the updated effect size guidelines for the social sciences (Gignac & Szodorai, 2016). We did, however, find tentative evidence that perceived stress is causally related to increased affective polarization.

Not only did we not find sufficient evidence to suggest that one's own level of affective polarization causes one harm, we also did not see any evidence in trends which would suggest that the election and its attendant ambient polarization had an effect on the constructs of interest. Based on the literature reviewed in this study, one would expect to see a clear increase in affective polarization and stress leading up to the election, and a decrease in social support and health. None of these changes were observed, although there was a stable difference in these constructs by political orientation.

There are multiple potential explanations for our results. When one's hypotheses are falsified, it is ambiguous whether it is the main "target" hypothesis which has been falsified, or any one of the many auxiliary assumptions (Stanford, 2023). It may simply be that affective polarization does not exert the harmful effects suggested by prior observational research, and that our research correctly identified this fact.

Alternatively, it may be that the effects we aimed to quantify exert themselves on a different timescale and that the length of our time lags were incorrect, causing the effects to be lost in noise. However, according to Dormann & Griffin (2015) longitudinal studies in the social sciences typically use time lags that are far too long, and that “shortitudinal” studies with shorter time lags such as ours are more appropriate. The question of whether our time lags were optimal or not remains open.

Implications

The present study may have provided evidence that affective polarization is being overly pathologized by researchers spuriously extrapolating to causal conclusions based on cross-sectional associations. These findings represent a significant contribution to the literature on affective polarization and its putative consequences. While the cross-sectional associations between affective polarization and wellbeing, highlighted in past research, were replicated here, the RI-CLPM showed that these may be caused by other confounding variables, as changes in affective polarization did not reflect changes in our wellbeing indicators. This may indicate that the intrapersonal harms associated with affective polarization are exaggerated and adds to a growing literature which questions other harms frequently ascribed to affective polarization (Brookman et al., 2022).

Affective polarization’s effects are increasingly ambiguous in many areas and there may even be *benefits* to affective polarization. From a social identity and intergroup threat theory perspective, affective polarization may reflect a strengthened ingroup identification, which may have benefits in that it can enhance self-esteem, provide existential and epistemic security, and foster solidarity among group members (Stephan et al., 2009). Thus, while affective polarization may be somewhat socially alienating and stressful in some ways, which may impact health, it may also fulfil other important psychological needs by offering

stability, identity, and meaning in opposition to perceived outgroup threats. Indeed, some studies have asserted that affective polarization may have other positive outcomes, such as driving political and civic engagement (Iyengar & Krupenkin, 2018) which others have claimed may even improve wellbeing (Nelson, 2022; Wray-Lake et al., 2019). Additionally, some political theorists assert that a certain level of affective polarization, as part of political *agonism*, may be good for democracy and should not necessarily be discouraged (Mouffe, 2000). Thus, uncritically pathologizing affective polarization may have unexpected negative consequences, and affective polarization may be a more complex phenomena than previously thought.

Despite our inability to test the potentially heterogeneous causal relationships among liberals and conservatives, we did replicate here the finding that liberals tend to report being slightly more affectively polarized than conservatives. This may have been due to an anticipated electoral victory for conservatives, though similar findings, largely driven by an asymmetry in desire for social distance among liberals, have also been seen at other times and during other election periods (Casey et al., 2023; Cox, 2021; McMurtrie, 2024; Mitchel et al., 2014; Ridge, et al., 2025). However, the differences seen in our results were small, and questions around the presence of asymmetries in political prejudice, polarization, and related constructs such as authoritarianism remain open and contested (Brandt & Crawford, 2020; Ditto et al., 2019; Gidron et al., 2023).

Limitations

A significant limitation to the present study was the potential lack of statistical power to estimate effects. Our power analysis found that a sample of 500 participants would give 70% power to detect cross-lagged effects of 0.15, or over 80% to detect effect sizes of 0.2. In the context of RI-CLPMs these are considered relatively large effect sizes (Orth et al., 2022).

Because of exclusions and dropouts, we ended up with a final sample of 470 participants. As per our pre-registration we had hoped to increase that statistical power for H1 and H2 through the use of multiple indicators which facilitates the estimation of measurement error (Mulder, 2023), however the complexity of the models made them unfeasible. Additionally, beyond the issue of power, our inability to use multiple indicators to model measurement error could have introduced uncertainty into our estimates of causal effects. Therefore, it is possible that the true effects went undetected in our models.

The generalizability of our findings is also limited by the specific research context, both in regard to research timing and cultural context. While the US presents a compelling case for studying affective polarization due to its strong two-party system, its high level of ideological and social sorting, and its extensive partisan media ecosystems, this does mean that our findings may not generalize to other cultures or other political contexts, such as multiparty political systems (Knudsen, 2021; Wagner, 2021). Likewise, while we ran our study in the pre-election period due the well-established fact that election periods are associated with greater affective polarization (Hernandez et al., 2021), the proximity of the data collection period to the election may have meant that changes in affective polarization stabilized at the maximum among those participants who are prone to polarization. This may be why our constructs showed a surprising stability over time, and our analysis method designed to track associated *changes* in the constructs found no significant results.

Future Directions

Future studies should aim to replicate the present investigation with a much larger sample size, and/or by increasing the number of survey periods in the study which increases power by reducing measurement error in the random intercepts, and thus allows for greater sensitivity in estimating within person effects (Orth et al., 2022).

Future studies could also perform a multiple groups analysis in left- and right-wing participants separately. An *a priori* data simulation and comprehensive model testing should also be performed to ensure multiple indicator RI-CLPMs could be run. This would allow researchers to model measurement error and test measurement invariance, which may improve measurement validity and increase statistical power.

Lastly, in the present study, we opted to use complex non-experimental longitudinal analyses which are capable of tentatively making causal claims. This was because, in our view, the pre-election period presented a data collection context in which affective polarization was predicted to be in a state of flux. However, our constructs were relatively stable over the course of our study, so future studies could investigate these findings further by extending the data collection period to continue after an election in order to potentially capture greater variation. This would result in a design closer to an interrupted time series design, which may better allow researchers to quantify the effect of changes in affective polarization on the outcome variables, as affective polarization has shown to peak immediately after an election before declining quickly (Hernandez et al., 2021). Likewise, experimental designs could be used to investigate these effects with a higher degree of internal validity. However, in the context of affective polarization research these usually rely on vignette experiments (Huddy & Yair, 2021) or manipulations using trust games (Brookman et al., 2022), both of which are subject to some controversy and questions of validity (Collett & Childs, 2011; Hughes & Huby, 2004; Koppel et al., 2022).

Chapter 5: General Discussion

In this thesis, we aimed to advance the study of affective polarization, first by developing and validating a new measure of affective polarization, and then by capitalizing on the opportunity that the 2024 US presidential election presented to track measures of affective polarization, identity threat, and wellbeing. This longitudinal survey project, which ran over a three-month period, allowed me to investigate two main questions:

1. Whether changes in negative meta-perceptions and social identity threat, cumulatively defined as the concern that one is or will be devalued or discriminated against based on political orientation, drives affective polarization over time.
2. Whether political social identity threat or affective polarization can be thought of as “socio-political stressors” which exert negative effects on social, mental, or physical wellbeing.

In this final discussion chapter, we present a summary of the research and the results and a discussion of each study and their practical implications, followed by a discussion of the Limitations of this research.

Measuring Affective Polarization

In study 1 we designed a new measure of affective polarization. This was in response to calls for a clarification and refinement of affective polarization measurement (Kubin & von Sikorski, 2021, 2023; Carlin & Love, 2025), and was intended to prevent the proliferation of scales and measurement fragmentation which can hinder the generation of cumulative knowledge by causing confusion, preventing replication, and exacerbating jingle-jangle fallacies (Anvari et al., 2024; Bruner, 2003; Elson et al., 2023, Hanfstingl, et al., 2024).

Affective polarization has been studied using a wide range of measurement devices. These ranged from feeling thermometers to very short scales of social distance, trust, trait ratings, incivility, and schadenfreude, to longer scales composed of multiple types of indicators which were used in varying combinations in an ad hoc manner between studies. This new measure of affective polarization incorporates these disparate affective polarization indicators used throughout the literature. It measures three aspects of affective polarization: appraisals of the outgroup via trait ratings, a desire for social distance from the outgroup, and expressed incivility toward the outgroup, such callousness and schadenfreude. Most of these items, or similar versions of these items, have been used in other studies and in other combinations.

Using these three content dimensions to inform item development, we created an item pool approximately twice as large as the intended length of our scale and had a group of social psychologists rate the item appropriateness to refine the scale. We then administered the scale to two samples of online participants and performed exploratory and confirmatory tests of dimensionality, which supported a three-factor structure. All three of these subscales, and the full scale, showed good alpha and omega total reliability (α 's and ω 's > .90). Total and subdimension scores on our scale replicated past research and indicated good construct validity in correlations with the feeling thermometer ($r = -.47$ to $-.61$), intellectual humility ($r = -.22$ to $-.33$), need for closure ($r = .16$ to $.21$), RWA ($r = .25$ to $.44$), LWA ($.57$ to $.67$), and identity strength ($r = .19$ to $.25$).

Unfortunately, while we were creating this affective polarization scale, multiple other research teams had their own affective polarization or partisan antipathy scales in development (Campos & Federico, 2025; Flores, 2023; Landry et al., 2024), so the problem of scale proliferation may continue in this domain.

However, there are reasons why we would argue for the use of our scale over the others. Flores (2023) proposed two novel measures of affective polarization, the affective partisan trust scale (APT), and the political person perception scale (PPP). In contrast with our scale, the APT is designed to explicitly measure “vertical” affective polarization— affective polarization towards elites—by asking participants the degree to which they think Democrats or Republicans “perform their duties well”, “do their best to help U.S. citizens”, and so on. This is almost entirely a measure of trust in elites/politicians and appraisals of their performance. The APT does also ask three explicitly affective items, about the degree to which democrats or republicans have made participants “angry”, “grateful”, or “fearful”. While the angry and fearful items are likely relevant to affective polarization, the validity of the “grateful” may be questionable, and indeed this affect dimension of the APT had relatively low reliability ($\alpha = .67$). Overall, the APT is a measure of trust in out-party elites via appraisals of the traits competence, benevolence, and integrity, with three additional, very broad affective items. While the trait and trust ratings have been used to measure affective polarization before (indeed we use trait ratings in our scale) the APT items pertain to political performance and political trust specifically. Given people’s general distaste for party elites, such a scale is bound to overestimate affective polarization in society at large if it is used unthinkingly as a measure of horizontal affective polarization among the wider populace (Druckman & Levendusky, 2019; Druckman et al., 2019).

Flores’ (2023) political person perception scale (PPP) on the other hand is a simple 9-item trait rating scale, akin to the Aversion (the trait ratings) dimension of our affective polarization scale. While our 5-item dimension asks about explicitly moral-emotional appraisals of the outgroup (their meanness, hypocrisy, dangerousness), the PPP asks about out-party members intelligence, competence, and skills, as well as their warmth, likeableness,

etc. Overall, the trait-rating scale one chooses will depend on their research aims. However, as a measure of intergroup polarization, we feel that our measures of moral-emotional appraisals as opposed to the PPP's more competence-appraisal based scale is a better measure of *affective* polarization—and trait ratings are only one aspect of affective polarization that our scale measures. Neither scale has a substantive advantage over the other in terms of reliability ($\alpha_{PPP} = .96$, $\alpha_A = .93$, Flores did not investigate α_t reliability, but our Aversion scale had $\alpha_t = .93$). While Flores showed that the PPP scale demonstrated convergent validity with a partisan animus scale it failed to show the predicted relationship with support for democratic norms, though it did predict support for bipartisanship. In contrast, our affective polarization scale, including the trait ratings dimension, showed predicted correlations with a wider range of constructs, such as authoritarianism, identity strength, intellectual humility, and need for closure. Thus our scale likely provides a more comprehensive, equally reliable, but more valid measure of affective polarization than that proposed by Flores (2023), at least based on the evidence currently available.

The scales developed by Landry et al. (2024) and Campos and Federico (2025) showed surprising convergent evolution in that both scales used three dimensions labelled Othering, Aversion, and Moralization. Both scales are not “pure” measures of affective polarization, however. The Othering dimension of the Campos and Federico scale is a scale tapping perceived difference between one's ingroup and outgroup, and contains no explicitly negatively valenced items (“I feel as though [in-party] are very different from [out-party]. [Out-party] live in a different world from us [in-party]. [Out-party] act in ways that us [in-party] could never understand.”). Likewise, the Moralization dimensions measures the degree to which one's ingroup identification is rooted in a particular moral-political worldview (which is the definition of political orientation)—it again contains no negative

outgroup attitudes reflective of affective polarization (“My identity as a [in-party] is connected to my core moral beliefs. My identity as a [in-party] reflects my beliefs about the difference between right and wrong. My identity as a [in-party] is rooted in moral principles.”). This means that only the Aversion scale is doing any work in actually measuring affective polarization as such (“As a [in-party], I would not want to be friends with someone who was a [out-party]. If I found out a friend of mine was a [out-party], I would want to stop spending time with them. Although I do not agree with their political views, there are people I like who are [out-party].”). This scale therefore confounds identification with a particular worldview, perceived difference between groups, and affective polarization all under the same construct which they called affective polarization. As we have discussed in our review of affective polarization in this thesis, while identification with a particular worldview or group identity, and perceived differences between groups, are related to affective polarization, they are not necessarily so entangled with it as to constitute a single construct. One can ascribe to a moral-political worldview, can perceive themselves to be different from others, and not be affectively polarized towards the out-group. Confounding measures of identification and perceptions of difference with measures of affective polarization is likely to overestimate affective polarization.

The scale developed by Landry et al. (2024) is more explicitly designed to measure negative attitudes towards the outgroup. The Othering dimension measures perceived difference with the outgroup in a very similar manner to Campos and Federico (2025), but the aversion scale is explicitly affectively negative (“My feelings towards [Outgroup] are negative]. I hate [Outgroup]”), and the Moralization dimension is also explicitly negative (“[Outgroup] are immoral. [Outgroup] are evil.”). It must be noted that Landry et al. actually describe their scale as a scale of “political sectarianism”, not affective polarization. They

make this distinction based on a somewhat simplistic characterization of affective polarization as merely scores on feeling thermometer, though as mentioned in our study, there is reason to be skeptical about the validity of feeling thermometers for nuanced affective polarization research, and affective polarization is often measured using scales very similar to theirs. The political sectarianism scale is very close in form and content to the affective polarization scale created by Campos and Federico, and indeed, its Moralization and Aversion subdimensions, are measures of outgroup antipathy, with the Othering dimension being the only one unique to their construct of ‘political sectarianism’ (though, again, this dimension is also included in the Campos and Federico scale, which they *did* conceptualize as measuring affective polarization). We therefore assert that Landry et al. essentially created another affective polarization scale which is why we included it for discussion here—though they may take issue with this. This highlights the conceptual messiness in this domain of research, and how scale proliferation and fragmentation, in domains of conceptual ambiguity, lead to nominal fallacies and jingle-jangle issues of construct definition.

While all of these scales, and the other affective polarization measures discussed in Study 1, have strengths and weaknesses, we believe the scale developed in this thesis is ideal for measuring affective polarization among the general population. It is negatively valenced, measuring negative appraisals, attitudes, and reactions to the outgroup, and it does so using items that have been used in many studies throughout the affective polarization literature. It measures negative appraisals of the outgroup in the Aversion (trait ratings) dimension, by capturing perceptions of trust, immorality, threat, and warmth. It measures a desire for social distance and avoidant prejudice in the Social Distance dimension. And it measures everyday callousness and incivility in the Incivility dimension. If researchers wish to measure

identification with a particular worldview, or perceived difference between two groups, they should do so in scales specifically designed for that purpose.

Thus, in Study 1, we developed a valid, reliable, multidimensional affective polarization scale. The adoption of this scale by research teams interested in affective polarization could address the major issue of scale proliferation in the study of affective polarization, which is also a problem throughout many areas of social science more generally (Anvari et al., 2024; Bruner, 2003; Elson et al., 2023). This scale can be used by research teams to facilitate the cumulative study of affective polarization, while still affording researchers the ability to home in on subdimensions, or specific kinds of indicators, such as social distance or incivility.

Social Identity Threat, Affective Polarization, and Wellbeing

In studies 2 and 3, we investigated longitudinal relationships between a host of constructs, utilizing a type of structural equation model that is suited for tentatively investigating causal relationships over time, known as a random intercepts cross-lagged panel model (RICLPM). We tracked these constructs in American participants, bi-weekly, over a three-month pre-election period, with the survey ending approximately two weeks before the presidential election night.

First, in study 2, we investigated whether changes in perceived social identity threat—the concern that one will be denigrated, devalued, or experience prejudice due to a self-relevant identity; in this case political ideology—predicted changes in affective polarization. In this view, social identity threat functions as an aggravating condition, a symbolic threat, which turns one’s positive identification with an ingroup into a defensive and antagonistic attitude towards the threatening outgroup. Past vignette studies, survey experiments, and panel surveys have supported the notion that affective polarization is in part

an expressive, identity based phenomenon—that what drives affective polarization is the nature of cross-group social contact, or expectations about the nature of such interactions (Amira et al., 2021; Huddy & Yair, 2021; Huddy et al., 2015; Lees & Cikara, 2019). However, given the inherently social-emotional nature of the phenomenon of affective polarization, there is good reason to think that vignette manipulations may misestimate the effects, and that such attitudes are more responsive to real-world events, messaging, and interactions. Likewise, the few panel studies investigating the effects of metaperceptions on affective polarization involved few waves of measurement with long time lags (Moore Berg, Ankori-Kalinsky, et al., 2020), which is unlikely to properly estimate the spillover effect of one construct onto the other, as it is unlikely that effects take months to manifest in affective research (Dormann & Griffin, 2015). Thus we tracked social identity threats/meta-perceptions bi-weekly, using the stigma consciousness questionnaire to investigate whether increases in identity threats during the election period lead to increases in affective polarization.

We also investigated two exploratory hypotheses: that social identity threat has negative effects on stress and physical wellbeing. It has been theorised that social identity threats can be perceived as, and cause the same physiological changes as, genuine threats, and that this stress response has a negative effect on health (Gallo & Matthews, 2003; Major & Schmader, 2017; Mefford et al., 2020; Rosman et al., 2021; Slavich, 2016). Indeed, in the realm of identity threat related to politics, some evidence has been found for such an effect (Fraser et al., 2022; Garrison et al., 2018; Gemmill et al., 2019, 2020; Krieger et al., 2018). However, much of this research is cross sectional, doesn't explicitly measure perceived social identity threat, or is more indicative of the negative health effect of minority identity stress rather than political identity stress. Thus, in Study 2, we took the opportunity to explicitly

measure the threat to a political identity, and to investigate its relationship to self reported stress and overall health.

We found that social identity threat was indeed related to affective polarization over time, and the effect size was moderate by RICLPM standards (Orth et al., 2022). This suggests that affective polarization is partly a *defensive* phenomenon; driven, in part, by expectations of prejudice, social judgement, or mistreatment from members of the political outgroup. However, it appears that this identity threat of anticipated stigma did not drive increases in perceived stress, nor declines in physical health over our three-month survey period, though social identity threat was cross-sectionally associated with higher stress and worse health.

While in study 2 we investigated whether expecting oneself to be on the receiving end of political prejudice and affective polarization drove declines in wellbeing, in Study 3 we investigated whether actually being affectively polarized was experienced as a sociopolitical stressor and was related to declines in wellbeing. That is to say, we investigated whether “resentment is like drinking poison” (Nelson, 2022, p. 508), or in the words of the popular Buddhist maxim, that holding on to anger is like grasping a hot coal with the intention of burning another.

Affective polarization likely exacerbates the desire for political homophily (Arora et al., 2022; Goldenberg et al., 2022). During times of heightened polarization people may travel to visit family less (Chen & Rohla, 2018) especially if family members are travelling from regions associated with the political outgroup (Lee, 2021). People report losing family members to political disagreements (Smith et al., 2019), and highly polarized people may drive away their more moderate associates (Klar et al., 2018). Thus, we hypothesised that affective polarization would negatively impact social support over time. Likewise, given that

affective polarization is characterised by emotions such as anger and anxiety (Hackett et al., 2018; Shah, 2025), and is in part driven by a perception of intergroup threat (Renstrom et al., 2021), we hypothesised that affective polarization would lead to higher levels of stress. We also hypothesised that affective polarization therefore acts as a sociopolitical stressor, in the same manner as our hypothesis about social identity threat, and therefore exert a negative effect on health (Nelson, 2022; Slavich, 2016; Fraser et al., 2022).

We did not find support for any of these hypotheses in our study. Affective polarization was not seen to be associated with lower social support, higher stress, or lower self-rated health over time. However, all of these hypothesised patterns were found only in the cross-sectional correlations between the variables, which aligns with past research but undermines the causal claims therein. Interestingly, perceived stress was associated with higher affective polarization over time, which aligns with the only other significant cross-lagged coefficient from this project—that of social identity threat on affective polarization. These two findings suggest that affective polarization is indeed driven by ambient threats and other aspects of the socio-political environment which cause stress. Affective polarization may therefore in part be a *defensive* phenomenon, which as other studies have shown (Amira et al., 2021; Huddy et al., 2015; Lees & Cikara, 2019; Moore-Berg, 2023), can potentially be mitigated by encouraging citizens and/or elites to monitor and moderate their own behaviour towards outgroup members; to, in the words of another pop-Buddhist maxim, ‘be the change that you wish to see in the world’.

Surprisingly, our survey, which ran for three months preceding the US presidential election, showed no steady or pronounced trend in any of the measured constructs over that time period. Despite the claims and findings seen throughout the literature, for example, that “people were 50–150% more affectively polarized by election day than they were a year

earlier” (Iyengar et al., 2019, p. 135), we found no evidence of increasing affective polarization, nor did we find evidence of increasing social identity threat, increasing stress, decreasing social support, or decreasing health during the election period.

Limitations

Although the research contained in this thesis has made meaningful contributions to the study of affective polarization, there are several limitations that must be considered. The broadest limitation—or ambiguity in this case—is what to make of our unsupported hypotheses. In our longitudinal survey project, five of the six hypotheses were not supported. While the actual epistemological debate is beyond the scope of the present research, and the complexities of which lie outside of this researcher’s expertise, many philosophers of science assert that when hypotheses are falsified, especially in social science, the cause of this falsification is ambiguous:

[one] can never subject an isolated hypothesis to experimental test, but only a whole group of hypotheses; when the experiment is in disagreement with his predictions, what he learns is that at least one of the hypotheses constituting this group is unacceptable and ought to be modified; but the experiment does not designate which one should be changed (Duhem, P., 1914, as cited in Stanford, 2023).

Therefore, when a hypothesis is falsified, it is unclear whether it was one’s “core” hypothesis (say, that affective polarization causes stress) which was falsified, or any number of “auxiliary assumptions” which caused the falsification. In the case of our studies, the unsupported hypotheses may simply suggest that social identity threat and affective polarization just don’t have the hypothesised effect on the indicators of wellbeing measured—that is, that our core hypotheses were false. However, it is also possible that any of the auxiliary assumptions underpinning this research, which were not explicitly tested,

could have been the cause of the falsifications. For example, while we provided justification for opting for shorter time-lags than those usually seen in the social-psychological literature, the specific time-lags and study duration (bi-weekly measurements for three months) were chosen for convenience and to meet the financial and practical constraints of the project. It may be that the time-course of the hypothesised effects were such that the duration of our time lags were not optimal, and that this may have obscured any significant causal effects.

Importantly, the RI-CLPM represents just one of several competing approaches for estimating associations or effects in longitudinal data. Alternative within-person models reviewed by Orth et al. (2020) include the autoregressive latent trajectory model (ALT), latent curve model with structured residuals (LCM-SR), latent change score models (LCS and LCS-CC), and the stable trait, autoregressive, trait-like state (STARTS) model. These also aim to isolate within-person processes, but they differ in complex ways. Growth-based models such as the ALT and LCM-SR explicitly focus on long-term trajectories and slope factors, with cross-lagged effects interpreted relative to either accumulating growth components or deviations from individual trajectories. The STARTS model is perhaps the closest conceptual competitor to the RI-CLPM, as both model within-person deviations from trait-like levels. However, the STARTS model imposes strong stationarity constraints and explicitly models measurement error, resulting in substantial convergence difficulties in applied research. Indeed, Orth et al. (2020) found that, across 10 real-world longitudinal datasets, the RI-CLPM converged reliably, whereas these more complex alternatives frequently failed to converge or produced improper solutions.

Orth et al. (2020) emphasize that few psychological theories provide sufficient precision to uniquely justify one within-person cross-lagged model over another, and this is likely true in the case of our hypothesised effects of interest. The RI-CLPM should therefore

not necessarily be considered the uniquely “correct” model. However, it may be considered a reasonable and defensible approximation to the underlying data-generating process. In light of these considerations, the present findings should be interpreted as model dependent estimates of within-person associations. Different modeling choices, particularly those emphasizing growth processes, could yield different results. Future work could strengthen inference by triangulating results across multiple alternative longitudinal models, as in Sorjonen et al., (2025), though the question of interpretability remains in situations where model appropriateness is difficult to ascertain.

Another limitation of the present research is the reliance on self-report data. When relying on self report data, one assumes that participants have sufficient self-insight into their own feelings or symptoms as to be able—and willing—to report them accurately, that they are able to quantify their feelings in a reliable manner, and that at each measurement point they are interpreting the items in the same manner, thinking of the same targets, and using the same reference points across measurement occasions, such that we are able to meaningfully model temporal trends and relationships. Likewise, while we performed a power analysis for our models, our statistical power was lower than we would have preferred due to financial constraints, and thus smaller effects may have escaped detection.

While we opted to use the target terms “liberal” and “conservative” for our affective polarization and stigma consciousness measures in an attempt to measure horizontal affective polarization and to avoid cuing participants to conjure images of party elites, we did not include a measure of this; the actual targets that participants imagined when responding to our measures may have varied by measurement occasion and varied between individuals. This may have affected the validity of our affective polarization measurements, as participants in our study may have been imagining and rating different targets (party elites,

extreme partisans, or everyday outgroup members), meaning it is somewhat ambiguous whether we were accurately measuring horizontal affective polarization or anti-elite sentiment, and so on. This potentially undermines the validity of our analysis as it would mean that we were not subjecting our targeted hypothesis to a valid test. It may also have lowered the reliability of our measures, which could inflate the probability of type II error, which could have been the cause of our failed hypotheses. Unfortunately, until the issue is clarified in further research, we can only speculate here.

Another limitation of the present research is the reliance on convenience samples of participants. This not only undermines the generalizability of our results, but also provides potential explanations for our unsupported hypotheses. As an example, it may be that the negative stress and health effects of social identity threat is limited to people who are in precarious positions and lower on the socioeconomic ladder, or who are in the political minority in their area; it is these people for whom political prejudices of various kinds are likely to be more consequential and therefore more stressful and impactful. If our sample was composed of people of moderate or higher socioeconomic status, or who live in an area dominated by their political in-group, then the results of the present study may be somewhat misleading. This is but one example of how the convenience sample presents a threat to the external validity of our results, and how the results may differ by sub-groups which were obscured in our sample.

Future Directions

There are many ways the present research could be expanded on or improved in the future. Most simply, studies 2 and 3 should be replicated in a larger, more representative sample to increase statistical power and external validity. Alternatively, research into the effects of affective polarization, especially those concerning stress and threat perceptions,

may benefit from focussing on samples from specific subgroups as opposed to representative samples—such as strongly identified or extreme group members—for whom threats to a group’s identity or status is likely more distressing and for whom politics is likely to be experienced more viscerally. Likewise, the potential effects of affective polarization on social support may need to be tested specifically using participants who are in the political minority geographically (e.g., liberals who live in conservative areas). Likewise, investigating specifically which causes of stress increase affective polarization would be an important extension of the present research: is it material stress which drives affective polarization (à la realistic conflict theory), or is it symbolic threats driving the stress and affective polarization relationship?

It may also be fruitful to investigate whether the effects of affective polarization and identity threat on wellbeing differ by sociopolitical group, as there may be substantial personality and lifestyle differences between members of these groups that may influence the effects of interest. There may be reason to believe that the relationship between affective polarization or identity threat is stronger and more negative for liberals, as they are higher in neuroticism, generally have worse mental health and are more likely to strongly moralize politics and view their outgroup as harmful or dangerous (Burton et al., 2015; Casey et al., 2023; Panish & Delton, 2025; Schlenker et al., 2012). Liberals are also more likely to “break up” with friends and family over political-ideological differences (McCaffree & Saide, 2025). However, there is also potentially an argument for the effect on stress and health being stronger for conservatives, as they may be more cognitively rigid and sensitive to threats (Jost et al., 2003; Jost & Kende, 2020). However, in recent years this idea has been the subject of debate, with studies identifying a host of common issues in the literature (Malka et al., 2017), and with large meta-analyses and an adversarial collaboration being somewhat inconclusive

(Bowes et al., 2023; Costello et al., 2023; Van Hiel et al., 2016). Thus the “rigidity of the right” hypothesis is perhaps being replaced by a “rigidity of the extreme” hypothesis (Luttig, 2017, 2018; Zmigrod, 2020; Zmigrod et al., 2020). This all makes group-specific hypotheses somewhat difficult to make, and the field may benefit from large exploratory studies to shed light on any differences between liberals and conservatives in harm resulting from affective polarization and identity threat.

Future research should also take care to specify the target which the researchers want the participants to be appraising (group elites, everyday outgroup members, etc.). Adding a cue to the affective polarization scale should achieve this quite easily. Additionally, using an expanded scale of health status would likely increase reliability and validity of health measurements, and should a significant result be found this would allow further investigation into which aspects of health are affected by social identity threat and affective polarization.

Conclusion

The studies contained in this thesis have made substantive contributions to the study of affective polarization. In Chapter 2 we created an expanded, valid, and reliable measure of affective polarization. In the project which produced the studies in Chapters 3 and 4, we used this new measure to track affective polarization alongside social identity threat, stress, social support, and self-rated health during the 2024 US presidential election period. We found no evidence that social identity threat nor affective polarization exert negative effects on social support, stress, or health. This suggests that past findings asserting that “resentment is like drinking poison” and that affective polarization exerts a negative effect on health, may be exaggerated or spurious effects arising from the cross sectional design of those studies—though limitations of the present research are likewise acknowledged. We did find evidence that stress and social identity threat potentially drive affective polarization,

suggesting that affective polarization is a defensive or protective phenomenon and that the anticipation of being marginalized or discriminated against based on political-ideological orientation exacerbates affective polarization.

These studies suggest that past research on affective polarization needs to be replicated and investigated with appropriate methods, especially where causal claims are being made. These studies also support the findings of past research which suggests that one way to lower affective polarization, and potentially moderate our opponents whom we find to be extreme or angry, is to be aware that they may be stressed, anticipating our own hostility. Therefore, encouraging empathy, treating outgroup members kindly, and facilitating congenial cross-group interactions and dialogue may be the most feasible way we can contribute to depolarization.

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