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Beyond the Binary: How Dichotomous Thinking, Media Frames, and Affective Polarization Interact with Identity

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Abstract

In contemporary American politics, affective polarization has driven a profound emotional divide between partisan groups, prompting inquiries into the psychological mechanisms behind this hostility. This study asks how individual cognitive tendencies—specifically a propensity for rigid, dichotomous thinking—interact with binary or complex media framing to shape an individual's level of affective polarization. To test these dynamics, an experimental survey was fielded to a nationally representative YouGov sample (N=175) to assess respondents' baseline cognitive styles and partisan animus. Participants were then randomly assigned to read a binary, complex, or neutral, nonpartisan text passage to determine whether situational language framing moderates the effect of dichotomous thinking tendencies on polarization. The results reveal that dichotomous thinking fails to independently predict affective polarization, and complex language framing unexpectedly slightly increased animosity, whereas the subjective importance of partisan identity and media alignment overwhelmingly drove partisan hostility. These findings suggest that depolarization efforts relying on individual cognitive interventions or nuanced language may be ineffective or even backfire, indicating that future strategies must address the broader structural media and identity environments sustaining political tribalism.

1. Introduction

In contemporary American politics, the fundamental nature of partisan division has shifted from policy-based disagreements to a profound emotional divide, a phenomenon known as affective polarization. This divide is characterized by stable warmth toward one's own political party coupled with a sharp, intensifying hostility toward the opposing party. Because this pervasive distrust actively damages interpersonal relationships and threatens foundational democratic institutions by pushing voters to view opponents as enemies, identifying its psychological drivers has become a central focus of political science. While existing literature points to the powerful effects of social sorting and perceived threats to group status, questions remain about how individual-level cognitive processing styles interact with environmental catalysts. Moreover, we do not know how cognitive styles interact with a changing media landscape that privileges algorithmically sorted short-form video, frequently shorn of nuance and complexity. Accordingly, this study poses the question: how do individual cognitive tendencies, specifically a propensity for rigid, dichotomous thinking, interact with binary or complex media framing to shape an individual's level of affective polarization?

To explore this dynamic, the research relies on an experimental survey fielded to a nationally representative sample of adults via the YouGov platform. The study measured respondents' baseline cognitive styles utilizing the Dichotomous Thinking Inventory and assessed their partisan animus via the American National Election Studies feeling thermometer. Additionally, respondents were randomly assigned to read either a binary, complex, or neutral text passage to test how situational media framing interacts with their underlying cognitive tendencies. Ultimately, the results reveal that overall dichotomous thinking fails to independently predict affective polarization; instead, Affective Polarization is overwhelmingly driven by the subjective importance of a respondent's political identity and their alignment with partisan media. Furthermore, exposure to complex language framing unexpectedly generated a large but insignificant upward shift in polarization, suggesting that nuanced information does not reliably calm partisan tensions and may even exacerbate them. The following sections will first trace the literature surrounding affective polarization, cognitive architecture, and media framing, before detailing the survey's experimental methodology and data. Finally, the paper will analyze the statistical findings and discuss their broader implications for mitigating political tribalism in an increasingly polarized information environment.

2. Literature Review

2.1 Affective Polarization

Affective polarization refers to the growing emotional divide between political groups, characterized by increasingly positive feelings toward one's own party (in-party warmth) and increasingly negative feelings toward the opposing party (out-party hostility) (Druckman and Levy 1). This concept marks a shift in political science away from a sole focus on ideological polarization and disagreement and toward examining the emotional and social dimensions of partisanship (Campos and Federico 161). Researchers typically measure this divide using the American National Election Studies (ANES) feeling thermometer, which asks respondents to rate their feelings toward the Republican and Democratic parties on a scale from 0 (very cold or unfavorable) to 100 (very warm or favorable) (Druckman and Levy 3).

In the contemporary United States, this emotional gap has widened substantially (Druckman and Levy 3). While in-party ratings have remained relatively stable—generally in the 70-degree range over recent decades—out-party ratings have declined sharply, dropping from approximately 48 degrees in the 1970s to around 20 degrees in recent years (Druckman and Levy 3). As a result, the difference between in-party and out-party evaluations has increased significantly (Druckman and Levy 3). This widening gap reflects stable attachment to one's own party, but an intensification of negative sentiment toward political opponents (Druckman and Levy 3).

Affective polarization poses a fundamental threat to social cohesion and generalized trust, which are essential components of peaceful collective action and a functioning society (Torcal, Stolle, and Thomson 372). When citizens view the political landscape strictly through an "us versus them" lens, they strip out-partisans of their legitimacy and community standing. Highly polarized individuals are more likely to attribute negative traits to political opponents and, in some cases, to endorse dehumanizing characterizations (Cassese; Martherus et al.). Behavioral studies provide further evidence of this divide. For example, in experimental "partisan trust games," participants consistently allocate fewer resources to out-partisans than to co-partisans, indicating reduced willingness to cooperate across party lines (Carlin and Love).

These patterns are also reflected in everyday social behavior. Research indicates that affective partisanship increasingly shapes personal decisions and interactions, from residential patterns to social relationships (Druckman and Levy 9-10). Affectively polarized individuals are more likely to sort into politically homogeneous environments, reducing exposure to opposing viewpoints (Brown and Enos). In interpersonal contexts,

affective polarization can influence both the formation and maintenance of relationships. For instance, individuals are more likely to initiate communication with co-partisans on dating platforms (Huber and Malhotra), and politically heterogeneous families have been shown to spend less time together during major gatherings such as Thanksgiving following highly polarized elections (Chen and Rohla). Similar patterns appear in temporary settings, such as college housing, where students demonstrate a preference for co-partisan roommates comparable to preferences based on non-political traits like cleanliness (Shafranek).

Ultimately, this pervasive emotional distrust damages interpersonal relationships, undermining foundational social structures such as neighborhood communities, marriage, and family unity (Druckman and Levy 9-10). At a structural level, affective polarization dictates living arrangements, pushing partisans into segregated areas where they have virtually no exposure to political opponents (Brown and Enos). By fracturing these communal bonds, affective polarization primes citizens to view out-partisans as enemies rather than neighbors (McCoy et al.; Reiljan). This dynamic naturally jeopardizes the structural integrity of civil discourse and community and drives the intense academic interest in mitigating its causes (Torcal, Stolle, and Thomson 374).

Beyond its effects on interpersonal relationships, affective polarization has significant implications for democratic stability. A growing body of research suggests that as affective polarization intensifies, individuals become more willing to prioritize electoral success over adherence to democratic norms (Graham and Svolik). For example, voters are more likely to support candidates who endorse practices such as gerrymandering or restricting polling access when these actions advantage their own party (Voelkel et al.). Similarly, individuals often prefer co-partisan candidates even when those candidates violate principles of electoral fairness, institutional checks and balances, or civil liberties (Graham and Svolik).

These tendencies are accompanied by declining trust in democratic institutions. In highly polarized contexts, citizens increasingly view institutions—such as courts and law enforcement—as partisan and unreliable (Brady and Kent). At the same time, affective bias can extend to evaluations of political misconduct. Research shows that individuals are more likely to support leniency for co-partisans who commit serious offenses, including violent acts, particularly when those acts are directed at political opponents (Campos and Federico 168). This pattern is consistent with broader findings that stronger partisan identity is associated with reduced condemnation of political violence against the out-party (Kalmoe and Mason).

Taken together, these dynamics suggest that affective polarization can weaken both institutional trust and commitment to democratic norms (Torcal, Stolle, and Thomson 373). As a result, citizens may become less willing to accept unfavorable but legitimate electoral outcomes, increasing the potential for democratic instability and backsliding (Campos and Federico 161).

2.2 Causes of Affective Polarization: Social Sorting and Status Threat

Identifying the psychological drivers and potential mitigations of affective polarization—the deep-seated emotional aversion, distrust, and hostility directed toward political adversaries—has become a central focus of contemporary research. Unlike ideological polarization, which centers on policy disagreements, affective polarization is fundamentally rooted in social identity and emotional bias. The urgency of addressing this specific animus is reflected in substantial, large-scale experimental investments. Most notably, the Strengthening Democracy Challenge recently brought together a massive multidisciplinary coalition to conduct a megastudy (Voelkel et al).

As for the actual, theorized mechanisms driving affective polarization, existing literature points to a combination of foundational psychological processes and contemporary social conditions. At a baseline level, Social Identity Theory and Self-Categorization Theory provide the core framework: individuals naturally divide the social world into “in-groups” and “out-groups,” generating a tendency toward in-group favoritism and feelings of connection and equally toward out-group bias—even when group distinctions are minimal or totally arbitrary (Torcal, Stolle, and Thomson 373; Iyengar et al. 130). These tendencies establish the cognitive foundation upon which more intense, affective partisan hostility can develop.

Recent scholarship emphasizes that these underlying processes have been substantially amplified by structural changes in the organization of political identity, particularly through “social sorting” (Mason, “A Cross-Cutting Calm” 351). Over time, partisan affiliation has become increasingly aligned with other salient social identities, including race, religion, geography, and gender. As a result, political identity is no longer experienced as a single dimension but as part of a broader constellation of overlapping group memberships. For instance, racial and sexual minorities disproportionately align with the Democratic Party, while White evangelical Christians align strongly with the Republican Party (Reiljan, “on Affective Polarisation”).

This alignment reduces the presence of cross-cutting social identities that historically moderated political conflict (Mason, "A Cross-Cutting Calm" 351; Iyengar et al. 130). When multiple identities converge into a single partisan category, partisanship becomes what scholars describe as a “mega-identity,” intensifying emotional attachment and increasing the likelihood that political conflict is experienced as personal and identity-relevant rather than policy-based (Mason, *Uncivil Agreement*). Under these conditions, political disagreement is more likely to be interpreted as a threat not only to policy preferences but also to an individual’s broader social identity and status (Parker and Lavine 1-2).

When these social identities become tightly aligned, political conflict is more likely to be experienced as a conflict over group position rather than policy alone (Dias and Lelkes 775; Mason, "A Cross-Cutting Calm" 351). Within this context, the literature on “status threat” helps explain one way in which socially sorted identities can become emotionally charged. Status threat arises when historically dominant groups—such as White, Christian, and native-born individuals—perceive that demographic and cultural changes are undermining their social standing (Parker and Lavine 1–2). Because these status concerns are embedded in partisan alignments, such changes are often interpreted through a political lens, with the opposing party associated with, or seen as benefiting from, this perceived loss of esteem and respect (Parker and Lavine 1–5). In this way, status threat reinforces the broader dynamic of social sorting by intensifying the extent to which political competition is experienced as identity-relevant and consequential (Parker and Lavine 2).

Under these conditions, individuals are more likely to adopt zero-sum interpretations of political outcomes and to support actions that disadvantage out-groups aligned with the opposing party (Parker and Lavine 2; Campos and Federico 169). This includes greater openness to “outgroup punishment,” where marginalized groups are framed as illegitimate competitors for status or resources (Parker and Lavine 5). In some cases, these perceptions are further reinforced by forms of “paranoid social cognition,” in which individuals attribute their perceived status loss to intentional, coordinated efforts by out-party elites (Parker and Lavine 5). Rather than operating independently, these dynamics illustrate how status-based perceptions can amplify the effects of identity alignment, thereby intensifying affective polarization observed in contemporary political contexts.

Taken together, this body of research suggests that affective polarization is not solely a product of ideological disagreement, but rather emerges from the interaction between basic cognitive categorization processes, the structural alignment of social identities, and perceived threats to group status (Iyengar et al. 130; Mason, “A Cross-Cutting

Calm” 351; Parker and Lavine 1–2). While these frameworks provide strong explanations for why partisan hostility has intensified, they primarily operate at the level of group identity and social context. This leaves open an important question: how do individual-level cognitive tendencies interact with these broader dynamics to shape variation in affective polarization? Addressing this gap provides the foundation for introducing cognitive variables, such as dichotomous thinking.

2.3 The Cognitive Architecture: Why Dichotomous Thinking Matters

To fully understand affective polarization, it is necessary to examine an individual-level thinking style that may drive it—dichotomous thinking. Our first independent variable, dichotomous thinking, is best understood as a continuous, domain-general, cognitive spectrum characterized by rigid, binary information processing. At a baseline level, categorizing information into distinct binaries is a universal heuristic; nearly everyone relies on varying degrees of dichotomous processing to reduce cognitive strain and navigate complex realities (Bonfá-Araujo, Oshio, and Hauck-Filho). However, individuals who score on the high end of this spectrum exhibit a rigid, binary processing style. Rather than viewing the world through a spectrum of competing possibilities, these high-dichotomous thinkers tend to interpret reality in mutually exclusive categories—“black or white,” “good or bad,” “all or nothing” (Oshio 729).

While moderate dichotomous thinking functions as a standard cognitive shortcut (think “odds and evens”), its rigid, extreme manifestations border on pathology, anchoring a broader pattern of cognitive rigidities that systematically constrain how individuals gather, evaluate, and revise information (Nguyen 1). When individuals over-rely on these binary simplifications to manage uncertainty, they are more likely to exhibit belief inflexibility—resistance to updating conclusions even in the face of contradictory evidence—as well as a tendency toward “jumping to conclusions” based on limited information (van der Gaag et al. 64). This pattern extends to selective abstraction, where individuals overgeneralize from isolated details while disregarding broader context (Moss-Morris and Petrie 293). Furthermore, high levels of dichotomous thinking are positively associated with Dark Triad traits (Psychopathy, Narcissism, Machiavellianism), suggesting that the pathological end of this spectrum heavily distorts how individuals interpret social dynamics and assert group-based distinctions (Bonfá-Araujo et al. 461-472). Taken together, dichotomous thinking operates on a continuum, with higher thresholds serving as a central, dysfunctional organizing style that channels multiple forms of constrained reasoning (Nguyen 4-11).

This spectrum model is precisely why dichotomous thinking matters for the present study. Affective polarization is, at its core, a political expression of our natural, baseline tendency for dichotomous categorization taken to an extreme: the social world is aggressively divided into an “us” and a “them,” with each group treated as internally coherent and fundamentally opposed, or black and white (Ranganatha, Komáromy, and Rooduijn 284). Because everyone utilizes "us versus them" framing to some extent, individuals who habitually operate at the rigid, high end of the dichotomous thinking continuum are especially prone to interpreting political competition through a zero-sum lens, where gains for the out-party are experienced as absolute losses for the in-party (Santos, Garton, and Zaki). This expectation is consistent with evidence that lower cognitive flexibility is associated with more extreme partisan attitudes across ideological groups (Zmigrod, Rentfrow, and Robbins 407). By linking a universal cognitive continuum to a core structural feature of partisan conflict, this framework provides a clear theoretical basis for hypothesizing that higher thresholds of dichotomous thinking will predict greater affective polarization.

Beyond the foundational understanding of dichotomous thinking, a crucial feature of dichotomous thinking for this study is its strong susceptibility to environmental priming. The reliance on binary heuristics is not merely a fixed psychological trait, but a dynamic cognitive mechanism that can be rapidly activated by external conditions. While individuals possess varying baseline tendencies toward cognitive rigidity, situations characterized by high ambiguity, acute stress, or perceived threat reliably prime the brain to abandon nuanced processing. Under such pressures, individuals—particularly those experiencing high attachment anxiety—often adopt hyper-activating emotional strategies, which trigger a sudden reversion to fast, high-contrast categorizations as a defensive attempt to quickly regain a sense of security (Yang and Oshio 34). Consequently, even those who typically exhibit high cognitive flexibility can be temporarily primed into stark “us versus them” thinking when their environment signals instability or danger, a dynamic that helps explain how high-stakes, threat-oriented political campaigns can effectively activate polarized reasoning across the broader electorate.

2.4 The Environmental Catalyst: Media Framing

If dichotomous thinking reflects a stable cognitive tendency that may influence affective polarization, the next step is to identify a corresponding environmental condition that

can activate, reinforce, or disrupt that tendency. This study proposes media framing as that condition. Specifically, it tests whether exposure to different types of passage framing—binary versus nuanced—systematically shapes affective polarization, and whether this effect depends on an individual's level of dichotomous thinking.

There is solid experimental evidence that affective polarization can be reduced in the short run, even if deeper political attitudes or voting behavior do not change. Priming a shared national identity can make people view the opposing party more positively (Levendusky), and recent studies find that perspective-taking and cross-partisan conversation can reduce out-party animosity or ingroup bias, at least temporarily (Gillissen et al.; Rossiter and Carlson). This matters because it suggests that affective polarization is not fully fixed but is responsive to how political information is presented. That makes media framing a useful tool for studying it: how political information is presented shapes how divided people perceive society, and these perceptions can increase or decrease affective polarization. Research shows that emphasizing conflict can heighten partisan hostility, while more moderate or cautionary framing can dampen it (Levendusky and Malhotra; Kubin and von Sikorski).

Building on this, the present study treats dichotomous thinking as a cognitive tendency that can be activated or disrupted by framing: binary frames may reinforce or prime "us vs. them" thinking, while more complex frames may weaken it by introducing ambiguity. Although prior studies do not test this exact mechanism, they support the broader idea that affective polarization can be shifted through short-term informational interventions, thereby justifying an experimental design that manipulates media framing.

The relevance of framing emerges directly from the structure of the modern information environment. As media organizations compete for attention, there has been a documented shift toward more emotionally engaging and dramatized forms of coverage (Prior). In parallel, outlets increasingly align content with audience preferences, often adopting partisan tones that reinforce existing beliefs (Gentzkow and Shapiro; Ladd). These tendencies are amplified by digital platforms, where algorithmic curation privileges content that generates strong emotional reactions, particularly anger (Yingchun; Berger and Milkman). Together, these dynamics create an environment in which political information is not only widely available but systematically shaped in ways that may intensify or structure partisan responses.

Within this environment, conflict framing has emerged as a dominant mode of political communication. Rather than emphasizing complexity or uncertainty, conflict framing presents issues as direct contests between opposing sides, reducing multidimensional problems into simplified, zero-sum narratives (de Vreese; Patterson). This presentation

style aligns closely with the binary structure already identified in both affective polarization and dichotomous thinking. As a result, it provides a clear mechanism through which the information environment may reinforce polarized responses: by repeatedly presenting politics in “us-versus-them” terms, media framing may encourage individuals to interpret political reality through the same rigid categories.

This logic suggests that simplistic/binary media framing may exacerbate affective polarization. If binary framing mirrors the structure of partisan conflict, then exposure to such framing should increase affective polarization relative to more nuanced presentations. A zero-sum frame can function as a vicarious experience of intergroup competition, encouraging individuals to respond as group members rather than detached observers (Han II). By contrast, nuanced framing—by emphasizing trade-offs, multiple perspectives, and complexity—may interrupt this process, making it less likely that political information is interpreted through purely adversarial terms.

We might then expect individuals’ dichotomous thinking style to interact with the style of media they consume. Individuals high in dichotomous thinking tend to interpret information by sorting it into clear, opposing categories. When they are exposed to binary-framed political content—content that already presents issues in “us versus them” terms—the message's structure matches their preferred way of organizing information. Because the framing and the cognitive style align, the message can be processed quickly and with little resistance, making it more likely that group distinctions are accepted and reinforced rather than questioned (Bonfá-Araujo, Oshio, and Hauck-Filho 462).

By contrast, nuanced framing introduces ambiguity, trade-offs, and multiple valid perspectives, which do not map cleanly onto a binary structure. One possibility is that this mismatch creates cognitive friction. For individuals high in dichotomous thinking, being presented with information that resists simple categorization may disrupt automatic “us-versus-them” processing and prompt at least a momentary reconsideration, potentially reducing affective polarization. At the same time, existing literature suggests an alternative response: rather than engaging with this complexity, individuals may simplify it, ignore parts of it, or revert to clearer group distinctions, limiting any depolarizing effect (Hasell and Weeks 645, 652).

A similar ambiguity applies to individuals low in dichotomous thinking. On one hand, because they are more comfortable with complexity, they may be less influenced by binary framing and more receptive to nuanced content. On the other hand, binary framing may still function as a situational prime, temporarily encouraging even low dichotomous individuals to process political information in more oppositional terms,

thereby increasing affective polarization. It is also possible that exposure to overly simplistic framing could trigger a contrasting response—such as emphasizing one's own identity as a "more complex" thinker—which itself reintroduces a form of binary distinction between self and others. Likewise, nuanced framing could either reinforce existing openness to complexity or fail to shift evaluations if individuals do not meaningfully engage with the content.

Taken together, I expect that the effect of framing will depend on the interaction between message structure and cognitive style, while recognizing multiple plausible pathways through which that interaction may unfold (Han II). Put another way, what is at issue here is whether there is an interaction effect (where the complex framing attenuates the predicted effect of dichotomous thinking on affective polarization) or whether dichotomous thinking is so strong that it dominates any mediating effect. Ultimately, we believe our hypothesis is both theoretically grounded and empirically necessary to test, as existing literature does not clearly resolve how individuals respond when cognitive tendencies and informational environments either align or conflict.

2.5 The Unresolved Question: Complexity as Remedy—or Risk?

If binary, conflict-oriented media can intensify affective polarization, a straightforward implication is that increasing exposure to nuance should reduce it. A substantial body of literature supports this expectation. Experimental work shows that emphasizing shared interests and common ground—rather than highlighting partisan divisions—can decrease affective polarization (Levendusky and Malhotra). Similarly, correcting misperceptions about opposing groups with accurate information has been found to reduce negative attitudes, particularly among individuals with the most extreme stereotypes (Ahler and Sood; Moore-Berg). At the individual level, interventions that promote intellectual humility—encouraging people to recognize the limits of their own knowledge—also increase tolerance toward political opponents (Krumrei-Mancuso and Newman). Taken together, this line of research suggests a clear mechanism: introducing complexity, accuracy, and epistemic openness can soften rigid group boundaries and reduce partisan hostility.

However, this expectation is directly challenged by a competing set of theories that question whether individuals actually process complex information in the intended way. The "Hostile Media Effect" (HME) demonstrates that highly partisan individuals often perceive even neutral or fact-based coverage as biased against their side (Vallone, Ross, and Lepper). This perception is commonly explained through

assimilation-contrast dynamics: when prior attitudes are strong, individuals interpret incoming information relative to those attitudes, expanding what they reject as unacceptable or hostile (Calvo, Chang, and Hellwig). Under these conditions, nuanced or corrective information may not reduce polarization but instead be discounted or reinterpreted in ways that preserve existing beliefs. Relatedly, theories of motivated reasoning and the “worldview backfire effect” suggest that direct challenges to core beliefs can provoke defensive responses, leading individuals to counter-argue and, in some cases, strengthen their original positions (Nyhan and Reifler; Kunda; Taber and Lodge, qtd. in Swire-Thompson, DeGutis, and Lazer 287).

At the same time, the empirical status of these defensive dynamics remains unsettled. Although the backfire effect has been widely cited, large-scale replication efforts have struggled to find consistent evidence for it. For example, a multi-study investigation spanning more than 10,000 participants across dozens of political issues failed to identify reliable backfire effects, raising questions about whether such responses are rare, context-specific, or overstated in earlier research (Wood and Porter, qtd. in Swire-Thompson, DeGutis, and Lazer 288). These findings have generated and further indicate ongoing debate about how individuals actually respond to corrective or complex information, leaving open the possibility that both depolarization and entrenchment occur under different conditions (Swire-Thompson, DeGutis, and Lazer 288–289).

This unresolved tension is precisely what motivates the present study. Existing research offers two competing expectations: nuanced information may reduce affective polarization by introducing complexity and shared understanding, or it may fail—or even backfire—when individuals resist or reinterpret it. What remains under-specified is when each outcome is more likely. By introducing dichotomous thinking as a moderating variable, this study targets that gap directly. If people respond differently to complex information depending on whether they think in rigid or flexible ways, then the mixed findings in the literature may reflect individual differences rather than a contradiction in theory. This study does not aim to settle the broader debate; instead, it tests a specific explanation for why results vary. In doing so, it provides a clearer basis for the hypotheses and helps identify when and for whom complexity reduces—or fails to reduce—affective polarization.

3. Hypotheses

We know from the literature that dichotomous thinking is a general cognitive style defined by rigid, "black-and-white" information processing. Affective polarization is essentially this exact same binary division applied specifically to the political

world—sorting people strictly into "us" versus "them" categories. Because of this structural overlap, individuals who naturally lean on a rigid cognitive style across everyday life should be more likely to view political competition through a hostile, zero-sum lens. This theoretical link between general cognitive flexibility and partisan attitudes forms the basis for the first expectation:

H1 (Trait Association): Individuals scoring higher in Dichotomous thinking will report stronger affective polarization overall, even after controls.

Beyond baseline cognitive traits, immediate situational factors play a crucial role in activating or disrupting how people process information. While people regularly encounter highly simplified messaging in daily life, this study isolates the cognitive impact of language structure itself by using a neutral, non-political topic. Exposure to a binary language frame—which reduces a situation into strict, non-overlapping categories—is expected to prime a rigid mindset that spills over into stronger partisan animosity. Conversely, exposure to a complex language frame—which highlights that situations rarely fit into a single label and emphasizes multiple, overlapping dimensions—should interrupt this rigid thinking and reduce political hostility. Therefore, this study posits the following main effects of language framing:

H2 (Main Effect of Framing): Exposure to binary framing will increase affective polarization relative to exposure to complex framing and control. Correspondingly, exposure to complex language framing will decrease affective polarization relative to exposure to binary framing and to the control condition.

Finally, this study anticipates a direct interaction between a person's underlying cognitive trait and the external language frame they encounter. When individuals who naturally think in black-and-white terms are exposed to a binary-framed passage, the message's structure perfectly matches their preferred way of organizing information. Because the situational frame and their internal cognitive style align, the binary presentation easily reinforces their existing mental habits, leading to a stronger spillover effect on political animosity. Consequently, the ultimate impact of the framing should depend on a respondent's baseline cognitive rigidity:

H3 (Trait × Framing Interaction): The polarizing effect of binary framing will be stronger among individuals high in dichotomous thinking than among those low in dichotomous thinking. (Individuals high in dichotomous thinking will report higher levels of affective polarization when exposed to the binary frame compared to the complex frame.)

4. Methods and Data

4.1 Survey Architecture and Core Measures

To test these hypotheses, I developed a survey experiment. The survey's foundational architecture was designed to capture the relationship between dichotomous thinking and affective polarization, while also testing an experimental framing treatment. To achieve this, the questionnaire was built around two primary metrics: the Dichotomous Thinking Inventory (DTI) and an affective polarization measure.

Dichotomous thinking, the primary independent variable, is conceptualized as a continuous, domain-general cognitive spectrum characterized by a respondent's degree of rigid, binary information processing. While some level of dichotomous categorization is a universal heuristic used to reduce cognitive strain and navigate complex realities (Bonfá-Araujo, Oshio, and Hauck-Filho 461), individuals scoring high on this spectrum tend to interpret reality in mutually exclusive, "all-or-nothing" categories (Oshio 729). To operationalize this, the survey utilized Oshio's Dichotomous Thinking Inventory. This 15 item inventory (see Appendix A) was selected because it is a highly standardized and robust tool within the political science literature for reliably capturing these rigid processing styles (Oshio et al; Wu et al.).)

Respondents evaluated the 15 DTI statements using a strict scale designed to force a directional cognitive choice:

- Scale Mechanics: The inventory utilized a 6-point Likert scale ranging from 1 (Strongly disagree) to 6 (Strongly agree), intentionally omitting a neutral midpoint to require a definitive stance.
- Inventory Items: The battery included statements assessing the desire for absolute clarity (e.g., "It works out best when even ambiguous things are made clear-cut," "I dislike ambiguous attitudes") and the tendency to divide the world into binaries (e.g., "There are only 'winners' and 'losers' in this world," "I think of everyone as being either my friend or my enemy").
- Scoring Configuration: None of the 15 items required reverse coding. A respondent's final, composite DTI score was calculated as the simple average of their responses across all items, yielding a continuous independent variable ranging from 1 to 6

To measure the dependent variable, affective polarization, the survey utilized the American National Election Studies (ANES) feeling thermometer. The feeling thermometer is a foundational metric in political science literature, consistently validated

as a highly reliable and direct indicator of partisan animosity (Campos and Federico; Fasching et al.; McMurtrie et al.). Given the substantial length of the 15-item DTI, the ANES thermometer was purposefully selected over more complex affective scales for its conciseness, providing a concrete metric of hostility while mitigating respondent fatigue.

The thermometer operationalized partisan affect through a 0-100 degree scale, evaluating the Democratic and Republican parties:

- Temperature Calibration: Respondents were instructed via text and visual aids that ratings between 50 and 100 degrees indicate feeling warm and favorable toward the party, ratings between 0 and 50 degrees indicate feeling cold and unfavorable toward the party, and exactly 50 degrees represents a strictly neutral affect.
- Polarization Calculation: Respondents were first asked to identify which party they felt closer to (including Independents who were then asked which party they disliked less). Affective polarization was then calculated as the absolute difference between the warmth directed toward their preferred in-party and the rating directed toward the opposing out-party.

4.2 Experimental Treatment Design

This study also sought to discover whether simplistic media frames strengthen or weaken the effect of respondents' pre-existing level of dichotomous thinking on affective polarization. To measure the interaction of dichotomous thinking and media framing, this study implemented a framing experiment. In designing this experiment, the challenge was to select a vignette that accurately represented simplistic, black-and-white media frames without also activating sentiment to one political party vs. the other. To isolate the cognitive impact of binary vs. complex language framing without triggering pre-existing partisan biases, the survey included an experimental treatment centered on a strictly non-political issue: school attendance tracking. Respondents were randomly assigned to read one of three passages before answering a corresponding comprehension question (See Appendix B):

- Control Condition: A neutral language passage describing attendance as a routine administrative process for tracking overall data.
- Binary Condition: A passage emphasizing a strict, two-sided reality (present or absent), highlighting how sorting students into distinct, non-overlapping categories strips away ambiguity to make data "perfectly clear."
- Complex Condition: A passage emphasizing that participation does not fit into a single category, highlighting the multiple, overlapping indicators and asynchronous circumstances required to understand student attendance.

4.3 Preliminary Pilot Testing

Before commissioning a large-scale, representative sample, a preliminary pilot test was fielded to validate the survey mechanics and the viability of the experimental treatments. The pilot was programmed using QuestionPro and distributed via a convenience sampling method utilizing personal, academic, and social media networks, yielding an initial sample of 50 respondents.

Alongside the core measures and randomized experimental treatments, the pilot tested a concise battery of control variables. These controls were selected based on preliminary literature identifying them as strong correlates of affective polarization: the respondent's political ideology, general interest in politics, the personal importance of their partisan identity, and their perceived loss of societal influence and status. While the convenience sample was not demographically representative, the pilot successfully demonstrated the internal reliability of the DTI and ANES measures and confirmed the clarity of the experimental framing. The actionable data generated from this initial N=50 sample validated the structural integrity of the survey, directly justifying the subsequent investment to field the finalized, refined questionnaire to a nationally representative sample via YouGov.

4.4 Adjustments Post-Pilot

The core mechanics of the survey remained largely intact following the initial pilot test, with the foundational constructs preserved for the final fielding. The Dichotomous Thinking Inventory (DTI) and the ANES feeling thermometer were confidently retained as the primary metrics for the independent and dependent variables, respectively. The experimental treatment passages regarding school attendance also remained structurally identical, though minor lexical tweaks were applied to the text. These subtle adjustments were made to more clearly delineate the distinct linguistic frames, explicitly heightening the stark "black and white" language in the binary condition and the nuanced language in the complex condition to ensure the treatment effect was unmistakable.

The transition from the initial QuestionPro pilot to the YouGov platform necessitated several administrative and structural updates. A formal consent form was integrated into the beginning of the survey to meet UC Irvine’s IRB requirements. Furthermore, because YouGov maintains comprehensive, pre-existing demographic profiles for its panel of respondents, standard demographic questions—such as age, gender, and race—were removed from the finalized questionnaire to prevent redundancy and reduce respondent fatigue. Similarly, a measure of ideological extremity, which demonstrated a

moderate positive correlation with affective polarization in the pilot ($r=0.40, p=0.02$), was dropped from the active questionnaire solely because YouGov automatically tracks and provides this metric for all its users.

The most substantive post-pilot adjustments occurred within the battery of control variables, guided by both the initial statistical findings and a secondary literature review. The pilot data revealed that the perceived importance of partisan identity possessed the strongest correlation with affective polarization ($r=0.57, p=0.001$), ensuring its retention in the final survey. Conversely, the control measuring general "interest in politics" yielded totally insignificant results in the pilot and lacked robust support in the broader literature, leading to its removal. The measure for "status threat"—the perception that people like the respondent are losing societal influence—was retained; although it underperformed in the limited N=50 convenience sample, its strong theoretical foundation in existing literature justified retesting it with a larger, representative sample.

Finally, to construct a more rigorous set of controls, two new variables were introduced: the frequency of consuming politically aligned media, and the frequency of daily interactions with opposing partisans. These additions were incorporated after a second round of literature review identified media echo chambers and a lack of cross-partisan contact as primary drivers of affective polarization. Integrating these robust variables ensured the final analytical model could properly control for established drivers of partisan animosity and successfully isolate the cognitive effects of dichotomous thinking.

So, to sum, our controls for affective polarization were:

- **Partisan Identity Importance:** Measured on a 7-point Likert scale (ranging from Strongly disagree to Strongly agree) responding to the statement: "Being a supporter of a particular political party is a big part of who I am."
- **Status Threat:** Assessed via a 5-point Likert scale responding to the statement: "People like me are losing influence and status in society."
- **Echo Chamber Media Consumption:** Measured on a 5-point frequency scale (Never to Very Often) asking how often the respondent consumes political media strongly aligned with their own views.
- **Cross-Partisan Interaction:** Measured on an identical 5-point frequency scale assessing how often the respondent interacts with people who support the opposing political party in their daily lives.

4.5 Fielding the Survey

Following the validation of the survey instrument during the pilot phase, the finalized questionnaire was handed over to YouGov for full-scale fielding, a professional administration requiring a $2,150 funding allocation. To strictly avoid the demographic limitations of the pilot's convenience sampling, this primary data collection phase utilized YouGov's proprietary online panel to secure a nationally representative sample of adults. Rather than relying on traditional probability sampling, YouGov achieves this demographic accuracy through a methodology known as "active sampling," which involves drawing a carefully targeted sub-sample from their massive opt-in panel of registered users.

This panel-driven process relies heavily on sample matching, a multi-stage technique that selects available panel members who closely mirror the measured characteristics of a true random target sample drawn from broader population enumerations, such as census data. Once the selected respondents complete the survey, YouGov applies robust statistical weighting to adjust for any remaining differences between the collected sample and the target population, ensuring the final dataset is mathematically representative of the country across key factors like age, gender, and education. For this specific survey administration, the fielding was entirely restricted to the adult population, with the youngest respondents having a birth year of 2007. This rigorous, actively sampled administration guaranteed that the experimental treatments and cognitive metrics were evaluated against a broad, nationally representative baseline, thoroughly isolating the resulting data from the biases inherent in word-of-mouth or convenience distribution.

4.6 Sample Demographics

The final sample consisted of 175 respondents recruited through a YouGov matched-sampling design conducted between March 27 and March 30, 2026. Respondents were matched to a national sampling frame constructed from the 2023 American Community Survey and weighted on demographic and political characteristics, including gender, age, race/ethnicity, education, region, and presidential vote choice. The resulting sample was relatively balanced by gender, with 52.6% identifying as women, 45.7% as men, and a small number identifying as non-binary or another gender category.

Racially, the sample was predominantly White (64.0%), with Black and Hispanic respondents each at 12.6%, along with smaller proportions identifying as Asian, Native American, multiracial, or other racial categories. Educational attainment varied

considerably: 36.6% reported a high school degree as their highest level of education, while 21.7% held a four-year degree and 12.6% reported postgraduate education.

Geographically, respondents were distributed across all major U.S. regions, though the South constituted the largest share of the sample (39.4%), followed by the West (22.3%), the Midwest (21.1%), and the Northeast (17.1%). Participants also reflected substantial socioeconomic diversity. Approximately 36.0% reported annual household incomes below $50,000, while smaller but meaningful portions reported incomes above $100,000. Employment statuses varied widely, with 36.0% employed full-time, 25.1% retired, and additional respondents reporting unemployment, homemaking responsibilities, disability status, or student status. Home ownership was common, with roughly two-thirds of respondents reporting that they owned their homes. The sample also skewed toward adults without children under 18 in the household (80.0%).

Politically, the sample captured a broad range of partisan and ideological identities. Respondents were nearly evenly divided between Democratic and Republican partisan identification at the initial screening measure, and the three-point party identification measure showed comparable proportions of Democrats (30.9%), Republicans (31.4%), and Independents (27.4%). Ideologically, the sample centered around moderation, with 28.6% identifying as moderate, alongside substantial liberal and conservative representation. Political engagement levels were relatively high, as nearly half of respondents reported following politics “most of the time.” Although the sample was not perfectly representative of the U.S. adult population in every demographic respect—particularly given the relatively small sample size and overrepresentation of White respondents—it was designed through stratified matching and post-stratification weighting procedures intended to approximate national demographic and political distributions.

4.7 Analytical strategy

4.7.1 Descriptive statistics

The primary independent variable in this study is the Dichotomous Thinking Index (DTI), which measures a respondent's tendency toward black-and-white thinking. We conceptualize dichotomous thinking as a normal, continuous cognitive trait that varies naturally across the population. To calculate each respondent's overall DTI score, we averaged their responses across the fifteen survey items (Q9_1 through Q9_15). We used the average rather than the sum to directly replicate the scoring method established by Oshio in the original DTI framework, thereby keeping the final scores anchored to the survey's 1 to 6 scale. As expected for a general cognitive trait, the

resulting data demonstrated a normal distribution. The sample yielded a mean score of 3.84 and a nearly identical median of 3.87, confirming that the scores follow a standard bell curve rather than clustering at the extremes.

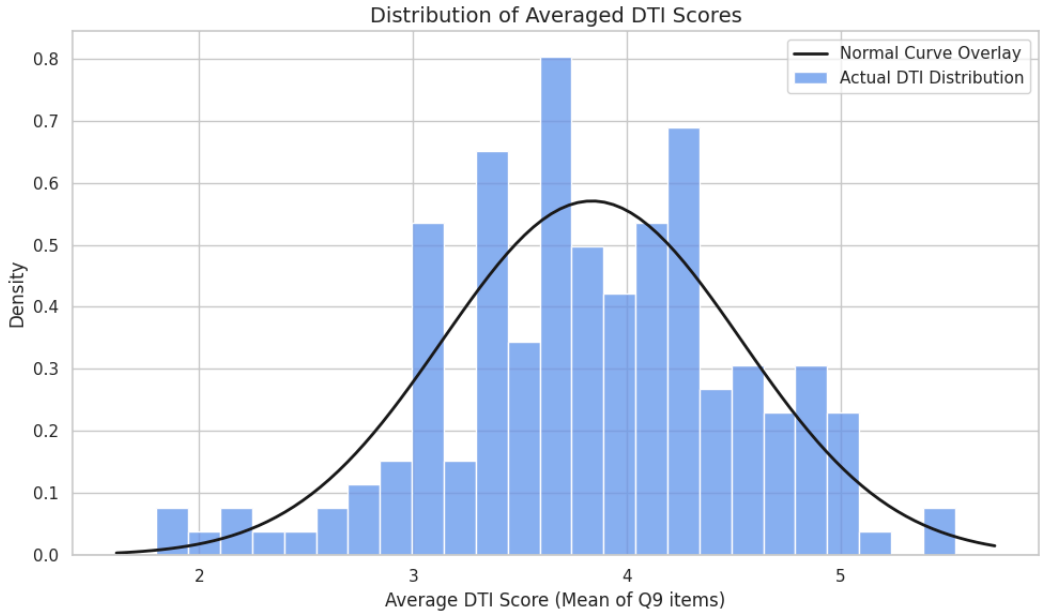

Figure 1: Distribution of average DTI scores

To test the experimental interaction effects proposed in Hypothesis 3, we needed to transform this continuous measure into categorical groups. We split the sample into "High DTI" and "Low DTI" cohorts using the sample mean as the dividing line. While some psychological literature restricts analysis to individuals with extreme cognitive rigidity, splitting at the mean is both theoretically and methodologically sound for this study. Because dichotomous thinking is normally distributed, dividing at the average accurately captures the relative, everyday differences in cognitive style present within the electorate. Furthermore, this approach allows the analysis to maintain a substantially larger sample size (N), preserving the statistical power necessary to rigorously evaluate the experimental treatments.

4.7.2 Analytical Strategy for Hypothesis 1

To evaluate Hypothesis 1, which posited a direct relationship between dichotomous thinking and affective polarization, the analysis began by testing for simple, uncontrolled correlations. We first used Pearson's correlation coefficient to measure the raw relationship between the overall Dichotomous Thinking Index (DTI) and affective polarization. Because this aggregate test yielded a weak and statistically insignificant result ($r = 0.0604$, $p = 0.4268$), we adopted a more granular analytical approach. We tested the individual survey items to determine if specific facets of dichotomous thinking

behaved differently from the overarching scale. This item-by-item analysis revealed that isolated statements—specifically Q9_3, Q9_6, and Q9_15 (see Appendix A for question wording) —demonstrated weak-to-modest positive correlations that achieved or approached statistical significance.

While these individual correlations were notable, relying strictly on uncontrolled pairwise models in political survey data risks ignoring the heavy influence of established partisan habits. To rigorously test the hypothesis and isolate the true effect of a respondent's cognitive style, we transitioned to a simultaneous multiple linear regression model. This model incorporated the overall DTI index alongside five demographic and behavioral covariates.

By utilizing this controlled approach, we could calculate accurate p-values and coefficients by holding the following systemic noise constant:

- Partisan Identity (Q1 & Q2): Controlling for what party a respondent belongs to and, crucially, the subjective importance they place on that political identity.
- Social Context (Q3 & Q5): Accounting for external tribal factors, such as a respondent's perceived status threat and their frequency of interaction with members of the opposite party.
- Media Habits (Q4): Holding a respondent's alignment with partisan media constant, which is often a major driver of political animosity.

Constructing the regression model this way allowed us to verify whether a dichotomous cognitive style genuinely drives affective polarization, or whether background variables like media alignment and party identity importance are actually responsible for the observed animosity.

4.7.3 Analytical Strategy for Hypothesis 2

To evaluate the direct impact of the experimental framing treatments (Binary, Complex, and Control), we used an Analysis of Covariance (ANCOVA) framework across two stages. This approach allowed us to calculate the Estimated Marginal Means (referred to as adjusted means) for each experimental group by mathematically holding specific background variables constant, thereby isolating the effect of the reading passages.

First, we ran Model 1 to test the treatments while holding only the continuous Dichotomous Thinking Index (DTI) constant at its sample average. Limiting this initial ANCOVA to the DTI covariate ensured that variations in individual cognitive styles did not confound the group comparisons. By leveling the playing field regarding cognitive

style, we calculated the adjusted mean polarization scores for each group and tested the treatment differences for statistical significance to see how the frames directly moved the baseline.

Second, we ran Model 2, expanding the regression to include the full suite of background controls (Q1 through Q5) as covariates. This step was methodologically necessary to account for the heavy influence of preexisting social identities and media habits on political animosity. The model calculated new adjusted means by holding variables like party identity importance (Q2) and partisan media alignment (Q4) constant, effectively stripping away the surrounding systemic noise. Controlling for these powerful background factors reduced variance within the control group baseline, allowing the model to capture the localized shifts in affective polarization directly caused by the experimental treatments with much greater precision.

4.7.4 Analytical Strategy for Hypothesis 3

Hypothesis 3 posited that a respondent's cognitive style would moderate the effect of the experimental treatments—specifically, that binary framing would trigger a stronger polarizing response among highly dichotomous thinkers. To test this trait-by-framing interaction, we utilized multiple linear regression models. This approach allowed us to directly measure whether the reading passages impacted the High DTI and Low DTI cohorts differently.

We executed this analysis in three phases to ensure our findings were robust:

- Uncontrolled Interaction Model: We began by running a baseline Analysis of Variance (ANOVA). This model tested the raw interaction between the treatment conditions (Binary, Complex, Control) and the cognitive grouping (High DTI vs. Low DTI). This initial step simply established whether the reading passages produced different shifts in affective polarization for the two cognitive groups before accounting for any background noise.
- Controlled Interaction Model: Next, we expanded the model to an Analysis of Covariance (ANCOVA) by including the demographic and behavioral variables (Q1 through Q5) as covariates. Running the exact same interaction test while holding these background factors constant ensured that preexisting habits—such as party identity importance or media alignment—did not falsely drive or mask how cognitive style interacted with the experimental frames.
- Robustness Check (Isolated Q9_3 Split): Finally, we ran an alternate version of the controlled ANCOVA to verify our findings. Instead of grouping respondents by the broad DTI index, we split the sample into "High" and "Low" cohorts based

entirely on the mean of Question 9_3 ("I want to clearly distinguish what is safe and what is dangerous"). Because our foundational analysis revealed this specific item was the only one significantly correlated with baseline polarization, it warranted an isolated interaction test to see if it moderated the treatments more effectively than the overall aggregate index.

4.7.5 Exploratory Analysis of DTI Predictors

Beyond the primary hypothesis testing, an exploratory analysis was conducted to determine which underlying demographic and behavioral traits best predict a respondent's baseline propensity for dichotomous thinking. We structured this analysis in two stages:

- Initial Pairwise Correlations: First, we utilized simple Pearson correlation coefficients to test for direct, unadjusted relationships between the averaged DTI scale and individual background traits, such as gender, religious affinity, and partisan identity.
- Simultaneous Multiple Regression: Because demographic traits often share substantial underlying variance, we transitioned to a simultaneous multiple linear regression to isolate the unique predictive power of each factor. In this comprehensive model, all 16 background survey variables were entered into the regression concurrently to predict the overall DTI score.

We used this multiple regression approach because it is the standard statistical method for controlling for shared variance. By holding all demographic markers constant simultaneously, the model filters out overlapping identities. This allows us to determine which specific traits are independent, statistically significant predictors of a dichotomous cognitive style when adjusting for the respondent's broader demographic profile.

5. Results

5.1 Hypothesis 1: Relationship between dichotomous thinking and affective polarization

Hypothesis 1 posited that individuals scoring higher in dichotomous thinking would report stronger affective polarization overall, even after accounting for control variables. The initial, uncontrolled analysis does not support this expectation. When evaluating the overall Dichotomous Thinking Index (DTI) against affective polarization, the relationship is exceptionally weak and not statistically significant ($r=0.0604$, $p=0.4268$). In practical

terms, before any controls are applied, an individual's overall tendency toward binary thinking has no reliable statistical bearing on their level of partisan animosity. While the aggregate scale yielded null results, a granular look at the individual dichotomous thinking questions reveals a notable exception. Question 9_3 ("*I want to clearly distinguish what is safe and what is dangerous*") demonstrates a statistically significant, albeit weak to modest positive correlation with affective polarization ($r = 0.1807$, $p = 0.0167$) , while Questions 9_6 ($r = 0.1278$, $p = 0.0919$, "*Information should be defined as either true or false*") and 9_15 ($r = 0.1323$, $p = 0.0808$, "*it is best when competitions have clear outcomes*") demonstrate marginally significant, weakly positive relationships.

To rigorously test Hypothesis 1 and ensure our initial null findings were not simply masking a more complex relationship, we introduced a series of background controls (Q1–Q5) alongside the overall DTI score. By holding these contextual factors constant—such as party importance, perceived status threat, and media alignment—we can better isolate the independent effect of dichotomous thinking on partisan animosity. The results of this multiple regression analysis are presented in Table 1 below. As a whole, the inclusion of these covariates produces a highly significant model ($F = 9.044$, $p < 0.001$). Together, this set of predictors explains approximately 24.4% of the total variance in affective polarization (Adjusted $R^2 = 0.217$). This robust overall significance confirms that our combined set of variables predicts affective polarization substantially better than random chance, providing a strong statistical foundation for evaluating the impact of the individual predictors.

Table 1: Multiple Linear Regression Predicting Affective Polarization

Variable	Coefficient	Standard Error	p-value
Average DTI (Q9_1 – Q9_15)	-0.3204	3.500	0.927
Q1 (Party)	-2.6883	4.819	0.578
Q2 (Party Identity Importance)	6.5507	1.410	< 0.001**
Q3 (Status Threat)	3.2990	2.208	0.137
Q4 (Media Alignment)	7.1674	2.370	0.003**
Q5 (Opposite Party Interaction)	1.6380	2.477	0.509
Constant (Intercept)	-11.3935	17.565	0.517

** P value < .05

As demonstrated in Table 1, the lack of support for Hypothesis 1 is solidified when observing the controlled parameters. Within this highly significant model, the isolated effect of dichotomous thinking remains statistically indistinguishable from zero. Holding all other factors constant, a one-unit increase in an individual's average DTI score is associated with a negligible 0.32-point decrease in affective polarization ($p=0.927$).

Instead, affective polarization in this model is overwhelmingly driven by partisan identity and media habits. Specifically, a one-unit increase in the perceived importance of a

respondent's party identity (Q2) drives affective polarization up by 6.55 points ($p<0.001$). Similarly, a one-unit increase in partisan media alignment (Q4) increases polarization by 7.17 points ($p=0.003$). This suggests that the identity and social elements of political tribalism—how closely individuals tie their identity to a party and how deeply they immerse themselves in aligned media—are far more potent engines of animosity than their general cognitive tendency toward dichotomous thinking.

To sum, the first hypothesis anticipated that higher levels of dichotomous thinking, or higher average scores on the Dichotomous Thinking Inventory, would correlate with stronger affective polarization overall. However, the initial, uncontrolled relationship between the overall Dichotomous Thinking Index (DTI) and affective polarization was exceptionally weak and not statistically significant ($r=0.0604$, $p=0.4268$). This lack of association held firm even after applying multiple background controls, where the isolated effect of the DTI remained statistically indistinguishable from zero ($p=0.927$). Ultimately, both the bivariate and controlled analyses show that overall dichotomous thinking has no independent effect on affective polarization once other factors are accounted for.

5.2 Hypothesis 2: Effect of framing experiment

Having established the baseline predictors of affective polarization, the analysis now turns to the study's experimental component. Hypothesis 2 posited a main effect of framing: exposure to binary political framing will increase affective polarization relative to exposure to complex framing and control; exposure to complex political framing will decrease affective polarization relative to exposure to binary framing and control.

To test this expectation, we analyzed the treatment effects in two stages. Model 1 isolated the impact of the reading passages while controlling only for a respondent's baseline dichotomous cognitive style, holding the Dichotomous Thinking Index (DTI) constant at its average. Model 2 then introduced the full suite of demographic and behavioral covariates (Q1–Q5) to account for preexisting systemic noise, such as media habits and partisan strength. The consolidated results of these two models are presented in Table 2 below.

Table 2: Experimental Treatment Effects on Affective Polarization

Metric	**Model 1: DTI Only**	p-value	**Model 2: Full Controls**	p-value
Adjusted Baseline Means				

Control Group	43.00	--	41.21	--
Binary Group	45.27	--	46.65	--
Complex Group	50.24	--	50.59	--
Estimated Treatment Effects				
Binary vs. Control	+2.27 points	0.736	+5.44 points	0.376
Complex vs. Control	+7.24 points	0.257	+9.37 points	0.105
Complex vs. Binary	+4.97 points	0.437	--	--
Covariate Impacts				
DTI (per 1-point increase)	+2.58 points	0.495	-0.73 points	0.836
Q2 (Party Identity Importance)	--	--	+6.50 points	< 0.001**
Q4 (Media Alignment)	--	--	+7.38 points	0.002**

** p values <.05

Higher values indicate higher affective polarization scores on a 0-100 point scale.

In the first model, we evaluated the treatment impacts while holding DTI constant at its average to ensure cognitive style did not skew the group comparisons. Under these baseline conditions, the Control group demonstrated an adjusted mean affective polarization score of 43.00. Contrary to Hypothesis 2, the Binary treatment generated only a minor, statistically insignificant increase, raising the adjusted mean to 45.27 (a 2.27-point shift; p = 0.736). Surprisingly, the Complex treatment produced a larger upward shift, elevating affective polarization to an adjusted mean of 50.24. This represented a 7.24-point increase over the Control group (p = 0.257) and a 4.97-point increase over the Binary group (p = 0.437). Independent of the passages, every 1-point increase in a respondent's DTI score in this initial model was associated with a statistically insignificant 2.58-point increase in affective polarization (p = 0.495). None of the initial treatment differences in Model 1 were statistically significant.

To account for the powerful influence of preexisting social and media habits on political animosity, Model 2 incorporates the background variables (Q1–Q5) as covariates. Adjusting for these factors yielded noticeable shifts in the estimated baseline levels of affective polarization. Specifically, the adjusted mean for the Control group lowered to 41.21, whereas the adjusted means for the Binary and Complex treatment groups increased to 46.65 and 50.59, respectively. Because the control baseline dropped while the treatment means rose, the estimated treatment effects became more pronounced.

The Binary group's gap expanded to 5.44 points higher than the Control group (p=0.376). Notably, the Complex group's difference expanded substantially to 9.37 points higher than the Control group, approaching marginal statistical significance (p=0.105). Consistent with the foundational analysis, the demographic covariates remained the dominant forces in the dataset; partisan identity importance (Q2) and media alignment (Q4) drove up polarization by 6.50 points (p<0.001) and 7.38 points (p=0.002), respectively.

The data ultimately fails to support Hypothesis 2, as the Binary treatment did not produce the largest or most significant increases in polarization. Instead, the most striking shift emerged from the Complex treatment condition. While one might intuitively expect nuanced, complex arguments to reduce black-and-white partisan animosity, the data suggests the opposite may be occurring in this sample.

5.3 Hypothesis 3: Interaction of DTI and Experimental Treatments

To test Hypothesis 3, which posited that the polarizing effect of binary framing would be stronger among individuals high in dichotomous thinking (DTI) than among those low in DTI, an interaction model was analyzed to compare the effects of the treatment passages across the full DTI index.

Table 3: Uncontrolled Interaction Effects of Framing and DTI on Affective Polarization

Treatment Passage	**Shift for Low DTI**	**Shift for High DTI**	**The Difference (Interaction)**
Binary	+10.71 (p=0.259)	-6.24 (p=0.514)	-16.95 (p=0.209)
Complex	+12.93 (p=0.155)	+1.55 (p=0.862)	-11.38 (p=0.371)

The results from the uncontrolled model fail to support Hypothesis 3; indeed, the observed statistical trends point in the opposite direction. Reading the binary passage was associated with a 10.71-point increase in affective polarization for individuals with low DTI scores (p=0.259), but it was associated with a 6.24-point *decrease* for those with high DTI scores (p=0.514). The calculated interaction effect indicates that the binary passage's impact on high DTI individuals was 16.95 points lower than its impact on low DTI individuals, though this difference did not achieve statistical significance

(p=0.209). A similar dynamic emerged in the complex treatment, yielding a 12.93-point increase for low DTI thinkers (p=0.155) and only a 1.55-point increase for high DTI thinkers (p=0.862), resulting in a non-significant interaction difference of -11.38 points (p=0.371).

Table 4: Controlled Interaction Effects of Framing and split DTI on Affective Polarization (Controlling for Q1-Q5)

Treatment Passage	**Shift for Low DTI**	**Shift for High DTI**	**The Difference (Interaction)**
Binary	+12.55 (p=0.141)	-2.26 (p=0.793)	-14.82 (p=0.216)
Complex	+12.14 (p=0.134)	+6.12 (p=0.448)	-6.02 (p=0.595)

When controlling for background variables (Q1-Q5), the interaction effects remained non-significant and contrary to the hypothesized direction. Rather than catalyzing further animosity among high-DTI individuals, the controlled model demonstrated that binary framing produced a non-significant 2.26-point decrease in their affective polarization (p=0.793) compared to a 12.55-point increase among low-DTI individuals (p=0.141). Although this interaction difference shifted to -14.82 points, it remained statistically insignificant (p=0.216). Substantively, this suggests that highly dichotomous thinkers may already operate at a polarization ceiling, leaving only the more cognitively flexible voters vulnerable to divisive political messaging.

Furthermore, the assumption that exposing respondents to a complex political frame would attenuate polarization was equally unsupported by the data. In the controlled model, the complex treatment increased affective polarization across both groups, shifting low-DTI individuals by +12.14 points (p=0.134) and high-DTI individuals by +6.12 points (p=0.448), yielding a non-significant interaction difference of -6.02 points (p=0.595). This indicates that, rather than mitigating partisan animosity, presenting nuanced political information may still activate defensive tribalism, spiking polarization among cognitively flexible respondents to levels nearly identical to the binary condition. Ultimately, consistent with earlier analyses, the controlled model revealed that specific background variables act as the primary, statistically significant drivers of affective polarization independent of these treatment effects. Specifically, a one-unit increase in the perceived importance of a respondent's party identity (Q2) drove affective polarization up by 6.22 points (p<0.001), and a one-unit increase in partisan media alignment (Q4) increased it by 7.52 points (p=0.002).

To ensure robustness, the interaction was rerun by splitting the sample at the mean of an isolated scale item—Question 9_3 ("I want to clearly distinguish what is safe and what is dangerous")—which correlated better with affective polarization in Hypothesis 1 testing than the full DTI index. Under these controlled parameters, the binary treatment was associated with a 8.49-point larger increase in affective polarization for those high in Q9_3 (+9.64, p=0.241) compared to those low in it (+1.15, p=0.900), but this interaction was not statistically significant (p=0.490). Adding the complex treatment to this model further undermined Hypothesis 3: exposure to nuanced framing increased polarization by 10.22 points for high Q9_3 respondents (p=0.161) and 7.70 points for low Q9_3 respondents (p=0.402), yielding a negligible, statistically insignificant interaction difference of 2.52 points (p=0.828).

Although isolating this specific variable produced point shifts in the predicted direction, the results remained statistically insignificant across both treatments. This matches the findings from the full index model. Brief framing interventions do not meaningfully alter polarization, whether by shifting the baseline of rigid thinkers or mitigating the reactions of flexible ones. Instead, this alternate model confirms that established partisan habits are much stronger predictors of polarization than cognitive style. The main effects of party identity importance (Q2, +6.32 points per unit increase, p<0.001) and media alignment (Q4, +7.19 points per unit increase, p=0.003) persist as the primary drivers.

5.4 Additional results

Beyond the primary hypothesis testing, an exploratory analysis was conducted to identify which underlying demographic and behavioral traits naturally correlate with a respondent's baseline propensity for dichotomous thinking (DTI). Initial, uncontrolled pairwise correlations revealed five variables with a statistically significant, independent relationship (p<0.05) to the averaged DTI scale:

- Partisan Identity Importance (Q2): Displayed the strongest positive correlation (r=0.243, p=0.004).
- Born-Again Status: Demonstrated a significant negative correlation (r=−0.233, p=0.006). As the numeric code increases (moving from 1/Yes to 2/No), the DTI score decreases. Therefore, answering "Yes" (1) is associated with higher baseline dichotomous thinking than answering "No" (2).
- Importance of Religion: Yielded a negative correlation (r=−0.210, p=0.014). Respondents who place the highest importance on religion exhibit higher dichotomous thinking.

- Gender: Displayed a negative correlation ($r=-0.209$, $p=0.015$). This statistically translates to the claim that men tend to exhibit higher baseline dichotomous thinking than women.
- 7-Point Party Identification: Showed a modest positive correlation ($r=0.197$, $p=0.021$).

However, to isolate the unique predictive power of these factors, a simultaneous multiple linear regression was conducted, entering all 16 background variables into the model. When controlling for the shared variance among these metrics, the religious, gender, and demographic indicators entirely lost their statistical significance. Only the perceived importance of partisan identity (Q2) remained a robust, statistically significant predictor of dichotomous thinking. Specifically, for every one-unit increase in the subjective importance a respondent places on their party identity, their average DTI score increases by 0.107 units ($p = 0.008$, Standardized Beta = 0.263).

Substantively, this exploratory analysis indicates that dichotomous thinking within this sample is strongly linked to partisan identity. While religious affinity and gender show initial correlations with cognitive style, these relationships disappear when controlling for other variables. The subjective importance an individual places on their political identity is the only significant predictor of a dichotomous worldview in this model. This aligns with the broader findings of the analysis: established political identity is the strongest and most consistent predictor in the dataset, accounting for both affective polarization and cognitive rigidity better than standard demographic markers.

6. Discussion

The data reveals that overall cognitive rigidity fails to predict affective polarization, pointing to a crucial distinction between how people process information and how they engage in political tribalism. While it might seem intuitive that an individual who prefers clear-cut, black-and-white boundaries would naturally gravitate toward extreme, partisan, black-and-white animus, this assumes that general cognitive style automatically and cleanly dictates social behavior. In reality, dichotomous thinking is a domain-general trait; it dictates how someone organizes everyday reality. Affective polarization, however, is more domain-specific—an intergroup political sentiment. As outlined by Social Identity Theory, political tribalism requires the active engagement of a strong social identity, a phenomenon often amplified when political affiliations fuse with other demographic markers through social sorting (Iyengar et al. 129-146; Konicki). A rigid thinker may neatly categorize their daily life into distinct boxes without ever projecting that binary framework onto politics, simply because their partisan identity has

not been adequately activated. Conversely, someone who is highly affectively polarized might not exhibit binary thinking anywhere else, cleanly compartmentalizing their tribal animosity away from an otherwise nuanced and adaptable worldview.

Furthermore, raw cognitive categorization inherently lacks the emotional volatility required for true animosity. Dividing the world into rigid categories could be merely a sorting mechanism, no more inherently hostile than separating numbers into odd and even. For a baseline cognitive trait to escalate into active tribalism, it requires a catalyst—typically a perceived threat or high-arousal negative emotion like anger. Intergroup and status threat theories suggest that reactionary politics and affective polarization are primarily driven by the fear of losing social prestige or anxiety over rapid social change, rather than just a preference for binary choices (Renström, Bäck, and Carroll; Parker and Lavine). Without that emotional spark or an active threat to their status, rigid thinkers may simply be quietly sorting information rather than actively polarizing.

The data explicitly captures exactly what it takes to cross that threshold through a notable exception in the cognitive metrics. While a general tendency toward binary thinking failed to predict partisan animosity, the specific desire to distinguish between "what is safe and what is dangerous" (Question 9_3) demonstrated a statistically significant positive correlation with affective polarization. Logically, this makes sense when we separate how people organize information from how they perceive survival. Simply putting concepts into black-and-white, odd-or-even boxes is a neutral, organizational task. However, actively scanning the environment for "danger" and “safe” shifts the brain into a hyper-defensive, self-protective mode. If and when this specific survival mechanism is applied to politics, opponents are no longer viewed simply as people with incorrect ideas; they are processed as literal, existential threats to the voter's well-being. The literature on intergroup dynamics supports this logic, demonstrating that merely recognizing differences between groups does not cause hostility; those differences must trigger high-arousal negative emotions—like fear of a genuine threat—to ignite active animus (Renström, Bäck, and Carroll).

Another unexpected finding is the overwhelming dominance of social and behavioral habits over cognitive style. Across all models, the subjective importance of partisan identity and felt political alignment with one’s media consistently emerged as the strongest predictors of affective polarization, while dichotomous thinking failed to exert a meaningful independent effect. This suggests that baseline cognitive frameworks—while relevant to how individuals organize information—do not directly or decisively drive political hostility. Instead, polarization appears to be rooted in how individuals live and reinforce their political identities over time.

The most direct explanation is that social reinforcement and media immersion operate at a different level than cognitive style: they supply continuous, emotionally charged input that overrides abstract or more neutral processing tendencies. When individuals are embedded in partisan media ecosystems and socially insulated networks, they are not merely categorizing political information—they are repeatedly experiencing anger, threat, validation, and pleasure tied to their group identity. Over time, this transforms partisanship into a core element of the self, one that demands loyalty and punishes deviation. In this environment, even individuals who are not strongly predisposed toward binary thinking can become highly polarized, because their daily informational and social context consistently rewards in-group attachment and out-group hostility.

This interpretation of affective polarization as driven by social identity and media is strongly supported by existing literature on partisanship as a “mega-identity,” where processes of social sorting align political affiliation with other social identities, amplifying intergroup conflict and eliminating moderating cross-pressures (Mason). The more important this mega-identity is to an individual, the more likely they are to feel the need to defend it with hostility towards “others.” Research on partisan media further demonstrates that these environments are not neutral sources of information but are structured to provoke discrete emotional responses—particularly anger toward political opponents—which in turn drive engagement and reinforce existing attitudes (Hasell and Weeks; Kleinnijenhuis et al.). When the media becomes increasingly attuned to political identity, it creates a feedback loop where emotional resonance is mistaken for accuracy, effectively sealing the individual within a self-reinforcing reality that views the opposing side as a threat to identity and self. Together, this body of work situates affective polarization not as a byproduct of dichotomous thinking but as the outcome of sustained social conditioning and emotionally targeted media exposure that effectively eclipses individual differences in cognitive style.

Another anomaly is the failure of binary experimental framing to increase polarization. Contrary to expectations, exposure to explicitly dichotomous political rhetoric did not produce a measurable surge in affective polarization and, among highly dichotomous thinkers, even corresponded with a slight (though non-significant) decrease in animosity. This finding challenges the assumption that reinforcing the black-and-white language logic underlying “us-versus-them” narratives will reliably intensify Affective Polarization, particularly among individuals already inclined toward binary thinking.

A plausible explanation is that highly dichotomized individuals are already operating at their “polarization ceiling” or "dichotomous ceiling.” In a media environment saturated with conflict-driven, binary messaging, highly dichotomous thinkers are continuously

exposed to the very framing used in the experimental condition, like the conflict framing discussed before. As a result, an additional instance of such rhetoric offers little novelty or emotional escalation. Instead of amplifying hostility, it may register as redundant or even overly explicit, producing a mild form of reactance in which respondents temper their expressed attitudes rather than intensify them. In this sense, the lack of effect is not a failure of the mechanism, but evidence that it is already fully saturated in the broader political environment.

This explanation aligns with a growing body of research questioning the effectiveness of media-induced attitude shifts at high levels of polarization. Studies investigating the "backfire effect" find limited evidence that individuals reliably become more extreme when exposed to provocative or corrective information, instead highlighting the relative stability and bounded nature of political attitudes (Swire-Thompson et al). At the same time, longitudinal data show that affective polarization in the United States has already reached historically elevated levels, with out-party evaluations declining to a point that suggests limited room for further deterioration (Druckman and Levy). As Finkel et al. argue, contemporary politics is defined by entrenched sectarianism that resists marginal rhetorical influence. Perhaps within this context, the null effect of binary framing reflects not its weakness, but its ubiquity—standard political rhetoric simply lacks the leverage to push attitudes beyond an already established ceiling.

Perhaps the most unusual pattern found is a "complexity backfire" effect. After measuring respondents' baseline dichotomous thinking, exposure to more complex language was followed by higher levels of affective polarization—particularly among those low in dichotomous thinking. This is notable given that the passage itself was politically neutral (school attendance), suggesting that the shift is not driven by explicit partisan content but by how individuals engage with the message before reporting their political attitudes.

A plausible explanation is that cognitive flexibility shapes the process of engagement rather than its outcome. Low-DTI individuals, having already been identified as more comfortable with nuance, may approach a complex passage in a more effortful and analytical way. Instead of passively receiving the information, they actively interrogate it—identifying ambiguities, testing assumptions, and generating counterpoints. That kind of engagement does not occur in a vacuum: even when the content is neutral, sustained evaluation can spill over into how respondents subsequently assess political groups. In effect, the passage may prime a more effortful, evaluative mindset that carries forward into the polarization measure, amplifying rather than dampening partisan judgments. This aligns with research on motivated reasoning, which shows that individuals often

expend cognitive effort to reinforce rather than revise their prior attitudes when evaluating information (Swire-Thompson et al.; Druckman and Levy).

A second possibility is perceptual. Complex language, even in a neutral context, can signal indirectness or rhetorical intent. For analytically engaged respondents, this may be read as unnecessarily complicated or even subtly manipulative, prompting resistance. That reaction need not be tied to the specific topic; it can generalize, shaping the evaluative lens respondents bring to the subsequent polarization measure. At the same time, this effect should be treated cautiously. The broader literature shows that backfire-like responses are inconsistent and highly context-dependent rather than stable psychological patterns (Swire-Thompson et al.). As such, the result is best interpreted as a conditional dynamic: under certain conditions, the cognitive effort triggered by complex language may heighten, rather than reduce, downstream expressions of polarization.

6.1 Limitations

Several methodological trade-offs restrict the scope of its conclusions. Assessing the goodness of fit between the theoretical concepts, their operationalization, and the real world reveals limitations inherent to this survey, and survey-based experimental environments in general, particularly regarding external validity and statistical power.

First, the experimental prime—a short passage about school attendance—is a highly controlled, subtle intervention. In the real world, media framing is a cumulative, high-dosage experience (e.g., hours of cable news, continuous social media scrolling). While the survey failed to find a strong effect for Hypotheses 2 or 3, it is highly likely that this brief, single-exposure "dosage" was simply too light to substantially move the needle on deeply entrenched partisan feelings measured by the ANES thermometer, not that the cognitive mechanism itself is absent in reality.

Second, while an N of 190 is normally enough for testing main effects across the three conditions (yielding roughly 63 respondents per cell), Hypothesis 3 relies on detecting an interaction effect (dichotomous thinking scores × treatment condition) on affective polarization. Because interaction effects require much larger samples to be reliably identified, the current study may lack sufficient statistical power—the ability to detect a true relationship if there is one—to determine whether the impact of framing on affective polarization is moderated by an individual’s level of dichotomous thinking. A null or weak finding for H3 could easily be a Type II error (a false negative due to sample size

constraints) rather than proof that high dichotomous thinkers aren't more susceptible to binary language.

Third, surveys are contrived environments. By randomly assigning the media frame, our design utilizes "forced exposure" to guarantee internal validity. However, this limits real-world goodness of fit because, outside the survey environment, individuals engage in selective exposure. High dichotomous thinkers likely self-select into highly binary media environments naturally. The survey forces them into a specific frame, stripping away the natural selection mechanism that might normally amplify the correlation between their cognitive style and their affective polarization.

Finally, because respondents take the 15-item Oshio Dichotomous Thinking Inventory immediately before encountering the media frame treatment, the survey design itself might induce a temporary state of cognitive self-awareness. Forcing respondents to reflect on their own black-and-white thinking right before reading the school attendance passage could inadvertently dampen or increase the prime's subconscious effect. The measurement of the independent variable might have altered how they processed the experimental treatment.

Ultimately, while survey experiments are invaluable for isolating specific cognitive mechanisms, they remain highly controlled approximations of how people actually encounter information. Human cognition and political polarization do not operate in a vacuum; they interact dynamically over time with social networks, algorithmic feeds, and lived experiences. If the hypothesized effects are not fully observed in this study, it may not reflect a failure of the theory, but rather the inherent limitations of expecting a brief, artificial survey environment to perfectly capture the cumulative weight of modern media exposure.

7. Conclusion

This study initially set out to explore the cognitive micro-foundations of political hostility, proposing that a baseline tendency toward dichotomous, black-and-white thinking naturally drives affective polarization. At the outset of this research, the underlying expectation was that rigid cognitive boundaries would inherently make interpersonal interactions more hostile and life fundamentally less enjoyable, suggesting that simply learning to drop these absolute beliefs could serve as a powerful remedy for partisan animus. However, the empirical evidence presents a decidedly different reality. The data reveals that a general cognitive preference for binary categories does not independently

predict affective polarization. Instead, the results demonstrate that partisan animosity is overwhelmingly dictated by entrenched social habits, specifically the subjective importance an individual places on their political identity and their continuous immersion in aligned partisan media.

Perhaps the most striking departure from those initial expectations involves the role of nuanced information. Rather than mitigating hostility, exposure to complex language frames actually increased affective polarization within the sample, particularly among those who are more cognitively flexible. This suggests that complexity and the analytical overthinking it often triggers may inadvertently act as major catalysts for political division. When presented with nuanced information, individuals may actively interrogate it in ways that prompt them to defend their tribal boundaries rather than reconsider them.

One important implication of these findings is that affective polarization cannot be treated merely as a failure of individual reasoning or intellectual flexibility. Because political hostility is fundamentally sustained by deeply rooted identity and media ecosystems, depolarization efforts that rely strictly on cognitive interventions—such as introducing nuanced language or correcting misperceptions—are likely to fall short if they ignore the broader structural environment. When individuals are firmly embedded in self-reinforcing partisan media networks, their political affiliation functions as an unyielding social mega-identity. The critical takeaway of this research is that society cannot simply logic its way out of a structural and emotional crisis; an individual's media diet and tribal attachments will consistently override their baseline cognitive processing style.

Consequently, future research must pivot its focus from individual cognitive adjustments toward structural and social interventions. Scholars should thoroughly investigate how to disrupt partisan media feedback loops, as well as explore mechanisms that can effectively decouple overlapping social identities to reduce the perceived existential threat posed by political out-groups. Moving forward, if researchers and policymakers hope to meaningfully restore social cohesion and democratic trust, the focus must decisively shift away from how voters think and toward the media and identity environments in which they live.

Appendix A: Dichtomous Thinking Inventory

"The DTI was scored on a 6-point scale (ranging from 1 = disagree strongly to 6 = agree strongly)" (Oshio, 733).

- All things work out better when likes and dislikes are clear.
- It works out best when even ambiguous things are made clear-cut.
- I dislike ambiguous attitudes.
- I want to clarify whether things are "good" or "bad."
  I prefer it when boundaries are clear for all things.
- There are only "winners" and "losers" in this world.
- I think all people can be divided into "winners" or "losers."
- People can clearly be distinguished as being "good" or "bad."
- All questions have either a right answer or a wrong answer.
- I think of everyone as being either my friend or my enemy.
- **I want to clearly distinguish what is safe and what is dangerous. 9_3**
- **Information should be defined as either true or false. 9_6**
- I want to clarify whether things are beneficial to me or not.
- I prefer to classify information as being useful or useless for me.
- **It is best when competitions have clear outcomes. 9_15**

Appendix B: Experiment Vignettes

PASSAGE INFORMATION:
This is the experimental treatment. 10 is “control,” 11 is “binary” and 12 is "complex.” .

10. Please read the following short passage carefully.
Passage: Recent reporting on student attendance explains how schools keep basic records of who attends class. Teachers mark attendance during class sessions, and the information is stored in school databases. Schools review these records over time to track overall attendance levels. The data is used for routine administrative purposes.

Question: Based on the passage, which of the following best describes the primary purpose of the school attendance databases mentioned?

- To evaluate individual teacher performance.
- To store and review information for routine administrative use.
- To provide a public record for parents to view daily.

11. Please read the following short passage carefully.
Passage: Recent reporting on student attendance emphasizes that participation is defined by a strict, two-sided reality: a student is either entirely present or entirely absent. There is no middle ground in this record-keeping. If a student is in the classroom, they are marked present; if they are not, they are marked absent. This binary system strips away ambiguity and makes data perfectly clear and easy to track. Ultimately, a student’s status is always reduced to one of two boxes, ensuring the complexity of school life is simplified into a final, either-or determination.

Question: In your opinion, which aspect of the system contributes most to making attendance data "perfectly clear"?

- The speed at which teachers can record the information.
- The reduction of student status into two distinct, non-overlapping categories.
- The use of digital databases to store the records.

12. Please read the following short passage carefully.
Passage: Recent reporting on student attendance shows that participation does not always fit into a single category. Students may attend part of a class, arrive late, leave early, participate remotely, or complete work asynchronously. Attendance can also vary by subject, day, or circumstance. Because of this, schools often track attendance using multiple overlapping indicators rather than a single label, and understanding student participation requires attention to how these different factors
combine.
Question: Based on the passage, why do schools often use "multiple overlapping indicators" to track participation?

- Because participation varies and doesn't always fit into a single label.
- To make it more difficult for students to skip classes.
- Because school databases are required to only grade homework.

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