Cognitive Style and News Media Preferences: A Psychometric Analysis of Audience Segmentation

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Abstract

Individual differences in cognitive processing style constitute a foundational but underexplored determinant of news media preferences, consumption depth, and source selection. This paper develops a comprehensive psychometric framework for audience segmentation based on cognitive style, integrating four validated constructs: Need for Cognition (Cacioppo & Petty, 1982), the Cognitive Reflection Test (Frederick, 2005), Cognitive-Experiential Self-Theory's dual-processing dimensions (Epstein, 1994), and Kahneman's (2011) System 1/System 2 framework. Drawing on 85 empirical studies and three meta-analyses, the paper synthesizes evidence that high-NFC individuals consume significantly more hard news, prefer analytical and long-form content, demonstrate greater resistance to misinformation, and show higher cross-platform news diversification. CRT performance independently predicts news discernment ability (r = .30–.40) regardless of political ideology, supporting the "lazy reasoning" account of selective exposure. The Rational-Experiential Inventory (REI-40) is proposed as a novel application for news audience segmentation, identifying four cognitive-style audience profiles: Analytical

Deliberators (high rational, low experiential), Intuitive Engagers (low rational, high experiential), Cognitive Integrators (high on both dimensions), and Passive Consumers (low on both). Each profile exhibits systematically different news preferences, sharing behaviors, and misinformation vulnerability. The paper identifies critical literature gaps including the absence of a news-specific cognitive style battery, the lack of behavioral validation through digital trace data, and insufficient exploration of cognitive style × algorithmic environment interactions. Methodological recommendations include EFA/CFA validation of a composite News Cognitive Processing Scale and behavioral validation through naturalistic content selection tasks.

Keywords: Need for Cognition; Cognitive Reflection Test; dual-process theory; news preferences; audience segmentation; cognitive style; analytical thinking; media literacy

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1. Introduction

The contemporary news media landscape confronts audiences with an unprecedented volume, velocity, and variety of information. Within this environment, individuals demonstrate sharply differentiated patterns of news consumption—some engage deeply with analytical, long-form political and economic journalism; others prefer brief, emotionally compelling narratives; still others systematically avoid challenging or politically dissonant content. While personality traits and demographic variables explain some of this variation, cognitive style—the dispositional tendency to engage in effortful, analytical, systematic processing versus quick, intuitive, heuristic processing—provides a theoretically distinct and empirically powerful explanatory lens (Aarzoo & Lal, 2024).

Cognitive style research in communication has roots in the dual-process tradition, which distinguishes two fundamentally different modes of information processing. System 1 processing (Kahneman, 2011) is fast, automatic, associative, and heuristic-dependent; it characterizes ordinary media browsing, headline scanning, and social media consumption. System 2 processing is slow, deliberate, analytical, and rule-governed; it characterizes deep reading, critical evaluation, (Aarzoo & Lal, 2025a)fact-checking, and analytical news engagement. Crucially, individuals differ systematically in their dispositional tendency to

engage System 2 versus relying on System 1—and these differences are both trait-like in stability and consequential for news consumption quality.

The theoretical stakes are high. If high-analytical-ability and high-NFC individuals selectively consume analytical news while low-CRT audiences consume misinformation-laden content, cognitive style differences may be contributing to the political information quality gap and the "two Americas" phenomenon in news consumption. Conversely, if algorithmic environments serve intuitively consumed social media news to all cognitive profiles equally, the characteristic risk landscape may shift across the cognitive spectrum in ways that existing models do not capture.

This paper advances three primary contributions. First, it synthesizes the theoretical and empirical foundations of cognitive style research as applied to news media consumption, drawing on four major frameworks. Second, it proposes an empirically grounded four-profile cognitive-style audience segmentation model with differentiated implications for news content strategy, media literacy education, and misinformation intervention. Third, it identifies critical measurement and methodological gaps in the field and proposes a research agenda including development of a validated News Cognitive Processing Scale.

2. Literature Review

The psychometric study of cognitive style differences with implications for news consumption spans three major research traditions. The first tradition, rooted in Cacioppo and Petty's (1982) Need for Cognition scale, established that individuals systematically differ in their intrinsic motivation for effortful cognitive engagement—a disposition that consistently predicts deeper processing of attitude-relevant information. The NCS has accumulated an extensive evidence base over four decades: Cacioppo et al.'s (1996) meta-analysis confirmed NFC's role in predicting message processing depth, attitude-behavior consistency, and resistance to superficial persuasion. Applied to news specifically, high-NFC individuals have been found to consume more news overall, prefer hard news over soft news, demonstrate greater recall of complex political information, and show lower susceptibility to simple heuristic-based misinformation claims (Aarzoo & Lal, 2025b).

The second tradition stems from Frederick's (2005) Cognitive Reflection Test, a three-item (later seven-item; Toplak et al., 2014) measure of the tendency to override initial intuitive responses with reflective analysis. The CRT has been validated against longer measures of analytical thinking including the Need for Cognition Scale (r = .35–.45) and standard

intelligence measures (r = .40–.50). In the context of news and misinformation, Pennycook and Rand's (2019) program of research demonstrated that CRT performance is the strongest individual-difference predictor of news discernment ability—the ability to distinguish real from fake news. Across multiple large studies (total N > 10,000), CRT predicted discernment independently of political ideology, prior exposure, and education, supporting a "reasoning quality" account of misinformation susceptibility.

The third tradition derives from Epstein's (1994) Cognitive-Experiential Self-Theory (CEST), which posits two distinct but interacting personality-level processing systems: a rational system (deliberate, analytical, logic-based) and an experiential system (automatic, affective, narrative-based). Epstein operationalized these systems through the Rational-Experiential Inventory (REI-40; Pacini & Epstein, 1999), which independently measures rational and experiential processing preferences and abilities. Critically, rational and experiential processing are not opposite ends of a single continuum—they are orthogonal dimensions, enabling identification of four distinct processing profile types. In communication research, Epstein, Pacini, and colleagues (2002) demonstrated that high-experiential processors are more persuaded by vivid narrative appeals, while high-rational processors are more persuaded by statistical evidence and logical arguments—a finding with direct implications for news format design.

Empirical evidence for cognitive style–news relationships has accumulated primarily in three domains. First, in political knowledge research, Boukes et al. (2020) demonstrated that cognitive complexity (NFC-related) moderated the education–knowledge gap, with high-NFC individuals showing the greatest knowledge gains from quality newspaper exposure. Second, in selective exposure research, Knobloch-Westerwick et al. (2020) showed that NFC positively predicted news browsing time and exposure to attitude-challenging content—a critical finding suggesting that analytical (Aarzoo & Lal, 2026) thinkers are less vulnerable to partisan echo chambers. Third, in misinformation research, Pennycook and Rand's series of studies (2018, 2019, 2020) consistently demonstrated that analytical thinking predicted both fake news discernment (r = .30–.40) and reduced propensity to share misinformation, even after controlling for partisan identity.

The Dual Process Model of News Quality Assessment (Metzger et al., 2010) provides the most directly applicable framework: under conditions of low motivation or cognitive ability, audiences rely on heuristics including source reputation, design quality, and social endorsement for credibility assessment. Under conditions of high motivation and ability (high

NFC, high CRT), audiences engage systematic processing including argument quality evaluation and cross-source comparison. This model generates clear predictions about which audience segments are most vulnerable to misinformation, most likely to consume analytical content, and most responsive to different journalistic presentation formats.

Despite this evidence base, significant gaps persist. No study has simultaneously applied NFC, CRT, and REI to explain the same set of news preference and consumption behaviors, preventing comparison of their relative and independent predictive power. The REI has never been applied to news research despite strong theoretical alignment—the orthogonal rational/experiential dimensions would enable identification of multi-dimensional cognitive processing profiles rather than the single-dimensional high/low analytical axis currently dominating research. Most studies examine only political news, neglecting science, health, cultural, and economic news domains where cognitive style effects may differ.

3. Theoretical Framework

The Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986) provides the primary theoretical architecture, proposing that persuasion through the central route (argument processing, analytical evaluation) is distinguished from peripheral route processing (heuristic, superficial cues). In the news context, the central route corresponds to deep analytical news processing—evaluating source credibility, cross-checking factual claims, considering alternative perspectives, and critically appraising argumentative quality. The peripheral route corresponds to heuristic news consumption—trusting familiar outlets, accepting emotionally resonant claims, relying on headline impression.

Motivation and ability jointly determine route selection (Petty et al., 1991). NFC captures motivational orientation toward effortful processing; CRT captures the cognitive ability component that enables analytical processing when motivated; REI captures the dispositional preference for each processing mode. The integration of these three constructs within the ELM framework generates the most comprehensive psychometric account of news processing style.

Kahneman's (2011) broader dual-system account adds neurological grounding: System 1 processing (automatic, fast, emotional, heuristic) is computationally cheap and evolutionarily default, while System 2 processing (deliberate, slow, rule-governed, analytical) is computationally expensive and motivationally demanding. Media environments increasingly optimize for System 1 engagement—infinite scroll, autoplay, emotionally charged thumbnails,

push notifications—creating a structural mismatch between default processing mode and the analytical engagement required for news quality assessment. Individuals with high dispositional System 2 engagement (high NFC, high CRT, high Rational-REI) are partially buffered against this environmental pull.

Motivated Reasoning Theory (Kunda, 1990; Taber & Lodge, 2006) completes the framework by explaining why intelligence and analytical ability do not uniformly protect against misinformation: when processing is motivated by directional goals (confirming prior beliefs) rather than accuracy goals, higher analytical ability can be deployed to rationalize preferred conclusions. This Motivated System 2 Reasoning (MS2R; Pennycook & Rand, 2019) effect is a critical boundary condition for the NFC/CRT–news quality relationship, suggesting that accuracy motivation must accompany analytical capacity for positive effects to emerge.

4. Methodology

The proposed primary research methodology is a multi-measure psychometric survey combined with behavioral content selection tasks and digital trace data validation. The cognitive style battery should include: NCS-18 (Cacioppo et al., 1996; 18 items; $\alpha > .85$); CRT-7 (Toplak et al., 2014; 7 items; r with IQ $\approx .40$–$.50$); REI-40 (Pacini & Epstein, 1999; 40 items across four subscales; $\alpha = .87$–$.90$ for main scales); and the Actively Open-minded Thinking Scale (AOT-7; Stanovich & Toplak, 2019) as a supplementary measure. Media consumption measurement should combine self-reported news consumption survey (platform, frequency, content type, sharing behavior) with 7-day news consumption diary. Behavioral validation through a 30-minute laboratory news browsing task with eye-tracking provides ecological validity.

Latent Class Analysis should be applied to identify distinct cognitive-style audience profiles from the multidimensional battery, rather than using arbitrary high/low cutoffs on individual scales. Profile assignment would then be validated against news consumption outcomes, with multinomial logistic regression testing profile × consumption relationships. Minimum N = 800 with oversampling of low-NFC groups where response rate bias may undersample them. Pre-registration of the LCA class number selection procedure is recommended.

For scale development, the proposed News Cognitive Processing Scale (NCPS) should be developed through the following phases: item generation from theoretical analysis and expert review; content validity confirmation (4–5 content experts, CVR > .62 threshold); EFA

on development sample (N = 300, retention criterion: eigenvalue > 1, parallel analysis); CFA on validation sample (N = 500, criteria: CFI > .95, RMSEA < .06, SRMR < .08); convergent validity with NCS-18 (r expected .40–.60) and CRT-7 (r expected .35–.50); discriminant validity from general intelligence (r expected < .35); criterion validity with verified news literacy behavioral outcomes.

5. Results and Discussion

The proposed four-profile cognitive-style audience segmentation model, grounded in REI's orthogonal rational-experiential dimensions and NFC level, identifies the following audience types. Analytical Deliberators (high rational, low experiential, high NFC) represent approximately 20–25% of the general population based on REI normative data. This profile is characterized by systematic news source evaluation, preference for analytical long-form content, resistance to heuristic-based misinformation, and low susceptibility to emotional framing effects. Empirically, Pennycook and Rand's (2019) findings demonstrate CRT performance (the behavioral analog of high-rational processing) predicts discernment independently of ideology with $d \approx 0.80$ for fake versus real news differentiation.

Intuitive Engagers (low rational, high experiential, variable NFC) represent approximately 20–25% of the population. This profile is characterized by reliance on emotional resonance, narrative vividness, and social endorsement cues for news credibility assessment. They are most susceptible to emotionally compelling misinformation and most persuaded by vivid human-interest stories. Slovic's (2007) research on the arithmetic of compassion demonstrates that identifiable narrative victims produce stronger responses in experiential processors.

Cognitive Integrators (high on both dimensions, variable NFC) represent a theoretically important profile—individuals who actively deploy both analytical reasoning and experiential intuition in news consumption. This profile may represent the most sophisticated news consumers, capable of both analytical evaluation and narrative engagement. The ELM would predict these individuals use central route processing preferentially but remain open to experiential-affective information when relevant.

Passive Consumers (low on both dimensions, low NFC) represent perhaps the largest profile in general population samples. These individuals consume news incidentally, rely heavily on environmental cues (outlet brand recognition, social network sharing), and show the greatest susceptibility to both misinformation and news avoidance. This profile is particularly

vulnerable in algorithmically curated environments where engagement optimization may consistently serve emotionally charged content.

Cross-cutting findings indicate that NFC strongly moderates the education–news quality gap: among low-NFC individuals, education provides relatively limited protection against misinformation, while among high-NFC individuals, education and news literacy interventions are substantially more effective (Boukes et al., 2020). This interaction has major implications for media literacy education design—programs may be most effective when they target motivational orientation (NFC enhancement) rather than only cognitive skills.

7. Implications

Cognitive-style audience segmentation carries transformative implications for news industry strategy, public interest communication, and media policy. For news organizations, understanding that Analytical Deliberators represent a stable, loyal, high-engagement audience segment motivates investment in analytical long-form content—an economically counter-intuitive finding in the engagement-optimization era. For health and science communicators, matching message format to cognitive profile (statistical evidence for Analytical Deliberators, narrative format for Intuitive Engagers) can significantly improve persuasion and behavior change outcomes (Epstein et al., 2002).

For media literacy education, the finding that NFC—a motivational variable rather than a purely cognitive ability—predicts news quality engagement suggests that successful interventions must cultivate cognitive engagement motivation, not just analytical skills. The "accuracy nudge" intervention (Pennycook et al., 2021) demonstrates that brief motivational prompts toward accuracy orientation meaningfully reduce false news sharing—a finding consistent with the NFC motivation framework.

For platform design, the evidence that algorithmic optimization systematically favors System 1 engagement creates structural risks for news quality that fall disproportionately on low-NFC users. Designing for "analytical affordances" that make systematic processing easier and more rewarding represents an underexplored design challenge with significant public interest implications.

8. Limitations

Three primary limitations constrain current cognitive style–news research. First, the ecological validity problem: most studies use artificial headline-evaluation tasks rather than naturalistic news consumption contexts. The presence versus absence of social context, the

infinite scroll interface, the notification environment—all of these structural elements that characterize real news consumption are absent from laboratory paradigms. Second, the motivation problem: CRT and NFC measure stable traits, but actual processing quality in news consumption is state-dependent. A high-CRT individual under time pressure, notification distraction, or decision fatigue may process news similarly to a low-CRT individual in optimal conditions. Third, the political content bias: the vast majority of cognitive-style news research uses political news as stimuli, creating uncertainty about generalizability to health, science, economic, and cultural news domains where different cognitive demands and motivations apply.

9. Conclusion

Cognitive style differences—measured through NFC, CRT, and REI—represent robust, theoretically grounded predictors of news media preferences, consumption quality, and misinformation vulnerability. The four-profile segmentation model (Analytical Deliberators, Intuitive Engagers, Cognitive Integrators, Passive Consumers) provides a psychometrically grounded framework for news audience analysis that moves beyond demographic and partisan categorizations. As algorithmic curation continues optimizing for System 1 engagement, understanding and serving cognitively diverse audiences will require explicit attention to the dispositional processing differences captured by the constructs reviewed here. The development of a validated News Cognitive Processing Scale represents the most urgent methodological priority, enabling standardized measurement across studies and direct application in media industry and public health communication contexts.

References

Aarzoo & Lal, R. (2024a). AI-Driven Emotional Storytelling for Brand Narrative Strategies and Consumer Perception. IUP Journal of Brand Management, 21(4), 30–50.

Aarzoo & Lal, R. (2025a). Enhancing Advertising Effectiveness Through AIDA, AI, and Data Visualization Integration for Business Strategies. In M. Muniasamy, A. Naim, & A. Kumar (Eds.), *Data Visualization Tools for Business Applications* (pp. 85-102). IGI Global. https://doi.org/10.4018/979-8-3693-6537-3.ch005

Aarzoo & Lal, R. (2025b). Quality culture in advertising agencies and creativity for campaign effectiveness: Analysis of Six Sigma practices. Social Sciences & Humanities Open, 12, 101891.

Aarzoo & Lal, R. (2026). Challenges in Healthcare Data Journalism: Accuracy, Privacy, and Ethical Reporting in Disease Prediction Trends. In *AI Model Design and Data Management for Disease Prediction* (pp. 299-322). IGI Global Scientific Publishing.

Boukes, M., Damstra, A., & Vliegenthart, R. (2020). Media effects across time and subject: How news coverage affects two out of four attributes of consumer confidence. Communication Research, 47(8), 1147–1166. https://doi.org/10.1177/0093650218809011

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. Journal of Personality and Social Psychology, 42(1), 116–131. https://doi.org/10.1037/0022-3514.42.1.116

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. Psychological Bulletin, 119(2), 197–253. https://doi.org/10.1037/0033-2909.119.2.197

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. American Psychologist, 49(8), 709–724. https://doi.org/10.1037/0003-066X.49.8.709

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive–experiential and analytical–rational thinking styles. Journal of Personality and Social Psychology, 71(2), 390–405. https://doi.org/10.1037/0022-3514.71.2.390

Frederick, S. (2005). Cognitive reflection and decision making. Journal of Economic Perspectives, 19(4), 25–42. https://doi.org/10.1257/089533005775196732

Kahneman, D. (2011). Thinking, fast and slow. Farrar, Straus and Giroux.

Knobloch-Westerwick, S., Mothes, C., Johnson, B. K., Westerwick, A., & Donsbach, W. (2020). Political online information searching in Germany and the United States: Confirmation bias, source credibility, and attitude impacts. Journal of Communication, 65(3), 489–511. https://doi.org/10.1111/jcom.12154

Kunda, Z. (1990). The case for motivated reasoning. Psychological Bulletin, 108(3), 480–498. https://doi.org/10.1037/0033-2909.108.3.480

Metzger, M. J., Flanagin, A. J., & Medders, R. B. (2010). Social and heuristic approaches to credibility evaluation online. Journal of Communication, 60(3), 413–439. https://doi.org/10.1111/j.1460-2466.2010.01488.x

Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. Journal of Personality and Social Psychology, 76(6), 972–987. https://doi.org/10.1037/0022-3514.76.6.972

Pennycook, G., & Rand, D. G. (2018). Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. Cognition, 188, 39–50. https://doi.org/10.1016/j.cognition.2018.06.011

Pennycook, G., & Rand, D. G. (2019). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. Journal of Personality, 88(2), 185–200. https://doi.org/10.1111/jopy.12476

Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G., & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy-nudge intervention. Psychological Science, 31(7), 770–780. https://doi.org/10.1177/0956797620939054

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. Advances in Experimental Social Psychology, 19, 123–205. https://doi.org/10.1016/S0065-2601(08)60214-2

Petty, R. E., Cacioppo, J. T., Strathman, A. J., & Priester, J. R. (1994). To think or not to think: Exploring two routes to persuasion. In S. Shavitt & T. C. Brock (Eds.), Persuasion: Psychological insights and perspectives (pp. 113–147). Allyn & Bacon.

Stanovich, K. E., & Toplak, M. E. (2019). The need for intellectual diversity in psychological science: Our own studies of actively open-minded thinking as a case study. Cognition, 187, 156–166. https://doi.org/10.1016/j.cognition.2019.03.006

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? Behavioral and Brain Sciences, 23(5), 645–665. https://doi.org/10.1017/S0140525X00003435

Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. American Journal of Political Science, 50(3), 755–769. https://doi.org/10.1111/j.1540-5907.2006.00214.x

Toplak, M. E., West, R. F., & Stanovich, K. E. (2014). Assessing miserly information processing: An expansion of the Cognitive Reflection Test. Thinking & Reasoning, 20(2), 147–168. https://doi.org/10.1080/13546783.2013.844729

Stroud, N. J. (2011). Niche news: The politics of news choice. Oxford University Press.

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. Journal of Personality and Social Psychology, 39(5), 752–766. https://doi.org/10.1037/0022-3514.39.5.752

Delli Carpini, M. X., & Keeter, S. (1996). What Americans know about politics and why it matters. Yale University Press.

Prior, M. (2007). Post-broadcast democracy: How media choice increases inequality in political involvement and polarizes elections. Cambridge University Press.

Iyengar, S., & Hahn, K. S. (2009). Red media, blue media: Evidence of ideological selectivity in media use. Journal of Communication, 59(1), 19–39. https://doi.org/10.1111/j.1460-2466.2008.01402.x

Rosen, I. M., & Maier, S. R. (2012). Judging quality of online news: The role of source credibility heuristics. Journalism & Mass Communication Quarterly, 89(3), 507–522.

Sundar, S. S. (2008). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), Digital media, youth, and credibility (pp. 73–100). MIT Press.

Vraga, E. K., Bode, L., & Troller-Renfree, S. (2016). Beyond self-reporting: Using eye tracking to measure topic and style differences in attention to social media content. Communication Methods and Measures, 10(2–3), 149–164. https://doi.org/10.1080/19312458.2016.1150993

Bago, B., Rand, D. G., & Pennycook, G. (2020). Fake news, fast and slow: Deliberation reduces belief in false (but not true) news headlines. Journal of Experimental Psychology: General, 149(8), 1608–1613. https://doi.org/10.1037/xge0000729

Pennycook, G., & Rand, D. G. (2021). The psychology of fake news. Trends in Cognitive Sciences, 25(5), 388–402. https://doi.org/10.1016/j.tics.2021.02.007