Article

Not peer-reviewed version

Towards Predictability of Dominant Cognitive Biases: Intersection of Cultural, Generational, and Psychological Models

Stephane Ginocchio and George Kassar *

Posted Date: 5 December 2025

doi: 10.20944/preprints202512.0458.v1

Keywords: cognitive biases; cognitive diversity; predictive framework; process communication model; cultural communication model; generational cohort theory; organizational purpose; organizational behavior; talent mapping; team building

 doi:10.20944/preprints202512.0458.v1

Article

Towards Predictability of Dominant Cognitive Biases: Intersection of Cultural, Generational, and Psychological Models

Stephane Ginocchio [1] and George Kassar [2,*]

[1] Independent Researcher, France

[2] Ascencia Business School, France

* Correspondence: gkassar@ascencia-bs.com

Abstract

Cognitive biases are evolutionarily adaptive mental shortcuts rooted in automatic processing, yet their expression varies widely across individuals due to differences in personality structure, cultural communication patterns, and generational socialization. Drawing on research in behavioral psychology, cognitive science, organizational behavior, and cross-cultural communication, this paper presents an integrated framework for predicting dominant cognitive biases by combining three complementary models: Kahler's process communication model, Lewis's cultural communication model, and Strauss and Howe' generational cohort theory. The study outlines the design of an 11-item instrument grounded in these frameworks and evaluates its preliminary validity, reliability and perceived accuracy. By identifying how psychological, cultural, and temporal factors shape bias tendencies, the model offers insight into how individuals interpret organizational purpose, challenge assumptions, and adapt their decision-making in uncertain environments. This predictive approach also supports talent mapping, and the formation of cognitively diverse teams, which strengthen strategic adaptability, and contribute to more effective and inclusive organizational practices.

Keywords: cognitive biases; cognitive diversity; predictive framework; process communication model; cultural communication model; generational cohort theory; organizational purpose; organizational behavior; talent mapping; team building

Overview

Human judgment has long been understood as deviating systematically from classical rationality assumptions. Tversky and Kahneman (1974) demonstrated this aspect and argued that individuals reliably diverge from rational judgment through predictable systematic errors. Such cognitive biases, defined as systematic patterns of deviation from normative or rational judgment (Haselton et al., 2005), represent evolutionary adaptations that enhanced survival in resource-scarce ancestral environments through rapid, heuristic-based processing (Kahneman, 2011). These automatic mental shortcuts persist in contemporary contexts, influencing decisions even where immediate survival is irrelevant (Evans, 2008).

Kahneman's (2011) distinction between System 1 (fast, automatic, intuitive) and System 2 (slow, deliberative, reflective) thinking explains cognitive bias resilience. System 1 operates automatically outside conscious awareness, relying on pattern recognition susceptible to systematic distortions. System 2 on the other hand requires cognitive effort and adequate motivation, which are conditions rarely met in real-world decision-making (Evans, 2008). Consequently, this framework reveals why biases resist debiasing interventions; overriding intuitive responses require simultaneously recognizing bias, accessing cognitive resources, and maintaining motivation.

Synaptic plasticity, defined as the ability of neurons to modify the strength and efficacy of their connections in response to experience, forms the biological basis for learning and the adaptive

 doi:10.20944/preprints202512.0458.v1

organization of brain networks (Bassi et al. (2019). Neuroplasticity is modulated by education, experience, and cultural conditioning, shaping which biases become dominant (Kahneman, 2011; Evans, 2008). Despite comprising less than 1% of human genetic variation, genetic differences substantially influence cognitive processing styles and bias susceptibility. This biological heterogeneity ensures bias susceptibility varies across populations, with significant implications for team composition and organizational innovation (Stanovich & West, 2008).

As such, cognitive bias susceptibility is neither uniformly distributed nor universally expressed. Intelligence, reflective thinking, and cognitive styles substantially predict resistance to particular biases (Stanovich & West, 2008). Some individuals demonstrate heightened susceptibility to conformity effects (Asch, 1955), others to the confirmation bias (Nickerson, 1998) or to anchoring effects (Tversky & Kahneman, 1974).

Organizational purpose is a central guide for how individuals interpret challenges, engage with others, and navigate uncertainty (McGahan, 2023). Purpose acts as a shared reference point that shapes sensemaking, decision priorities, and leadership narratives. When purpose is credible and "conversable," it encourages individuals to question established assumptions rather than rely solely on automatic cognitive shortcuts (Morrison & Mota, 2023). This reflective stance becomes especially important in environments marked by institutional volatility and competing stakeholder expectations, where unexamined biases can distort judgment (Henisz, 2023). Further, in volatile, uncertain, complex, and ambiguous environments (VUCA) identifying and understanding diverse cognitive approaches becomes essential (Bennett & Lemoine, 2014). Dominant cognitive biases influence how employees interpret organizational purpose and respond to uncertainty, making predictive identification of these tendencies increasingly relevant.

Large organizations face particular challenges: intermediate managers' personal biases distort talent assessment, creating homogeneous rather than cognitively diverse teams (Westphal & Bednar, 2005). Predictively identifying dominant biases enables better talent mapping, enhances metacognitive awareness and supports strategic team composition that balances cognitive diversity with functional complementarity.

Taleb (2012) explains the concept of antifragility as systems improving when exposed to disorder and suggests that organizational success depends on cultivating cognitive diversity. High-performing teams comprise members with complementary roles including creative innovators, analytical evaluators, organizers, and implementation specialists. Such cognitive diversity enables superior problem-solving compared to homogeneous teams (Belbin, 2010). In fact, the disruptive innovation theory similarly emphasizes that successful organizations maintain flexibility to challenge existing assumptions. Cognitively homogeneous organizations systematically fail to recognize innovations contradicting collective assumptions (Christensen, 1997; Taleb, 2012).

Therefore, understanding employees' dominant cognitive biases may also strengthen an organization's capacity to challenge outdated assumptions, adapt to emerging conditions, and pursue innovation aligned with its broader societal role. As corporate purpose becomes increasingly linked to responsible leadership, sustainability, and long-term value creation, improving awareness of cognitive tendencies enhances both strategic adaptability and purpose-driven transformation (McGahan, 2023; Mahoney, 2023).

Conceptual Foundations

The preceding overview shows that cognitive biases, while a universal human phenomenon, could often manifest with considerable individual heterogeneity influenced by personality structures, cultural communication orientations, and generational socialization patterns. This aspect could be further examined to explore the potential for predicting dominant cognitive biases in individuals through an integrated approach that combines psychological, cultural, and generational perspectives. Contemporary research in behavioral psychology, cognitive science, organizational behavior, and cross-cultural communication provides conceptual foundations for this integration (Kahneman, 2011; Stanovich & West, 2008; Lewis, 1996; Strauss & Howe, 1991; Twenge, 2020).

 doi:10.20944/preprints202512.0458.v1

Thus, rather than relying on isolated theoretical frameworks, three complementary models were identified to collectively address the key dimensions shaping the manifestation of cognitive biases: the Process Communication Model, which captures personality-based vulnerability to specific biases; Richard Lewis's cultural communication framework, which predicts culture-specific bias susceptibility patterns; and generational cohort theory, which accounts for temporal socialization effects on information processing and authority orientation. These models were selected for their specific theoretical and methodological advantages over alternative frameworks. The synthesis of these models ensures theoretical coherence, justifies their selection, and enables practical operationalization for predicting individuals' dominant cognitive biases.

The Process Communication Model (PCM), by initially developed in 1988 by Taibi Kahler and then regularly revisited and revised, integrates stress responses, psychological needs, communication preferences, and cognitive distortion vulnerability, unlike atheoretical personality taxonomies. PCM's six types include: Empathic (focused on emotions and human relationships), Workaholic (structured, logical, performance-oriented), Persistent (strong values, opinions, loyalty), Promoter (action-oriented, pragmatic), Dreamer (internally-focused, calm, imaginative), and Rebel (convention-challenging, spontaneous, creative, sensitive to the environment). (Kahler, 1996; Gilbert & Donlan, 2016). Critically, automatic cognitive distortions emerge under psychological stress. Empathic individuals become hypersensitive to social affiliation cues, increasing conformity bias susceptibility. Workaholic individuals experience heightened confirmation bias, selectively processing task-consistent information. This stress-vulnerability-bias integration distinguishes PCM from purely descriptive models.

Compared to other personality frameworks, namely the Myers–Briggs Type Indicator (MBTI), the Big Five/NEO-PI-R, the DISC model, and Belbin's Team Role Theory; the PCM shows stronger conceptual integration and applied utility. The MBTI, despite widespread organizational use, has been repeatedly criticized for low construct and discriminant validity compared with empirically grounded models like the Five-Factor Model (Furnham, 1996 ; McCrae & Costa, 1989). The Big Five model offers stronger psychometric support but its 240-item NEO-PI-R format limits efficiency for rapid assessment contexts (Hahn et al., 2012). On the other hand, Belbin's theory primarily explains team dynamics rather than individual psychological processes and demonstrates weak construct validity (Broucek & Randell, 1996); (Fisher et al., 2001). Likewise, DISC has limited empirical grounding and primarily provides behavioral typologies rather than validated psychological constructs (Kim & Lee, 2025). Thus, PCM stands out for its integration of emotional, motivational, and stress-related mechanisms that shape communication and cognitive bias, offering a more dynamic and scientifically aligned framework for applied settings.

The Cultural Communication Model proposed by Richard Lewis (1996) categorizes global communication styles into three orientations: linear-active (logic-driven, task-oriented), multi-active (relationship-driven, flexible), and reactive (listening-focused, context-sensitive). These categories align emotional, cognitive, and behavioral tendencies in communication and decision-making (Lewis, 1996; 2002) (Murphy, A. (2006). It also proposes a dominant emotion for each profile, which can be considered as a modulation layer influencing bias activation and orienting cognitive reflexes depending on the situation.

Compared to major frameworks such as Hofstede (1980), Trompenaars and Hampden-Turner (1998), Hall (1976), Schwartz (1992), and Meyer (2014); Lewis's model offers greater individual-level granularity. Hofstede's cultural dimensions remain influential for national-level comparison but lack intra-national precision and individual applicability (Kirkman et al., 2006). Trompenaars' seven dimensions provide organizational insight but demonstrate limited empirical validity (Hofstede, 1996). Hall's high- and low-context theory, while conceptually rich, lacks standardized operationalization. Schwartz's cultural values theory effectively captures societal value systems but operates primarily at the collective level. Finally, Meyer's culture map remains descriptive and not psychometrically tested (Berenda & Yeromina, 2025). In fact, empirical findings further support Lewis's typology. Research confirms that linear-active individuals tend to show stronger

 doi:10.20944/preprints202512.0458.v1

confirmation and anchoring biases, multi-active individuals display higher affiliation and conformity biases, and reactive individuals exhibit lower collective bias but higher authority bias (Ngo-Le, 2025) (Ott et al., 2016). Moreover, cross-cultural field studies demonstrate that the Lewis Model effectively predicts communication behavior, leadership style, and team performance in global organizations (Gates et al., 2009) (Anand & Raghuvanshi, 2024).

Generational Cohort Theory proposed by Strauss and Howe (1991) suggests that individuals born within roughly 20-year intervals form cohorts sharing common formative experiences that crystallize into enduring values, attitudes, and behavioral orientations. Cohorts typically include Baby Boomers (1946–1964), Generation X (1965–1980), Millennials (1981–1996), and Generation Z (1997–2012), each displaying measurable differences in decision-making patterns, authority trust, and information susceptibility (Grabinski, 1998) (Persson, 2019) (Edge, 2014).

Generation Z, shaped by continuous exposure to digital and social media environments, has heightened availability, selective exposure, and biases due to algorithmic content curation and instant feedback loops (Aswani & Otiende, 2025); (Dash, 2025). Millennials, having transitioned from analog to digital life, demonstrate greater digital skepticism and diverse information-seeking behaviors than Gen Z (Darkson et al., 2020). Generation X tends to value independence and institutional stability, showing lower social media bias but relatively higher authority and organizational loyalty assumptions (Edge, 2014). Baby Boomers, influenced by hierarchical systems and traditional media, display greater authority trust but lower cognitive availability bias (Adnan & Omar, 2022). Empirical analyses confirm that generational differences extend to cognitive biases, information filtering, and decision orientation, influenced by distinct socialization environments, technology adoption patterns, and historical context (Savanevičienė & Statnickė, 2020); (Wang, 2023). Consequently, the theory is appropriate for the proposed model because it introduces the temporal-social dimension of cognition, offering explanatory power for systematic differences in bias formation that cannot be accounted for by personality or culture alone. It ensures the model captures how individuals think (PCM), how they communicate (Lewis), and when and through what social conditions they learned to think that way.

Model Design

The model was designed to operationalize the integration of the three validated conceptual frameworks into a single predictive instrument for identifying dominant cognitive biases. Each framework captures a complementary dimension of cognition: PCM explains personality-based emotional and stress responses; Lewis characterizes culturally shaped communication and decision-making patterns; and generational theory adds the temporal-social layer influencing authority perception, digital exposure, and information credibility.

Accordingly, question development followed a systematic mapping process:

- Six items were derived from PCM constructs to assess emotional needs, motivational triggers, stress reactions, and interpersonal dynamics: core determinants of bias vulnerability. Each item offered six behavioral response options corresponding to PCM types (Dreamer, Promoter, Empathic, Logical/Workaholic, Persistent, Reactive), allowing automatic scoring of dominant and secondary profiles.
- Four items were adapted from Lewis's typology, focusing on communication organization, task orientation, and relational versus procedural preferences, which shape how individuals filter and prioritize information. Responses were mapped to Lewis's linear-active, multi-active, and reactive categories, enabling identification of a dominant or hybrid cultural orientation.
- One item captured generational affiliation through birth year, serving as a proxy for socialization context and technological environment, which influence cognitive exposure and bias formation.

 doi:10.20944/preprints202512.0458.v1

Questions were phrased behaviorally rather than descriptively to encourage intuitive responses consistent with System 1 processing, aligning the instrument's design with the very cognitive mechanisms it seeks to study.

This cross-referenced design enables the intersection of psychological, cultural, and generational factors in predicting bias patterns while remaining concise and interpretable for practical application in organizational and research settings.

Gender was intentionally excluded as a variable, since empirical evidence shows only small, test-dependent differences between men and women in cognitive reflection, insufficient to indicate systematic variation in bias susceptibility (Otero et al, 2024).

The questionnaire was purposefully condensed to 11 items to balance validity, reliability, and feasibility. Empirical evidence shows survey completion declines sharply beyond 6–7 minutes or 10–12 items (Revilla & Ochoa, 2017), with longer forms reducing response rates by up to 60% (Galesic & Bosnjak, 2009). According to the Spearman–Brown prophecy formula, doubling items increases reliability by only ~0.20 (Smith et al., 2000; Kline, 2015), a modest gain often offset by fatigue and data loss. Psychometric research supports concise yet targeted instruments that preserve construct validity while improving practical deployability (DeVellis & Thorpe, 2021). This 11-item design thus reflects a deliberate trade-off between psychometric rigor and real-world usability. It also makes repeated assessment possible, and even necessary, when we consider neuroplasticity. This allows for systematic monitoring over time, which is essential for maintaining efficiency in organizational contexts.

Problem Statement and Hypothesis

While cognitive biases are universally recognized and variably expressed across individuals, existing assessment tools often lack integration of psychological, cultural, and generational factors in a concise manner. This limits their predictive accuracy and practical utility across diverse populations. This gap raises an important question with both theoretical and applied significance:

Can dominant cognitive biases be reliably predicted through concise, multidimensional assessment tools that incorporate psychological personality dimensions, culture-specific communication styles, and generational cognitive differences?

To address this, the study proposes an integrative approach combining three complementary frameworks: Kahler's Process Communication Model (PCM), explaining personality-based bias vulnerability; Lewis's cultural communication model, predicting culture-influenced bias patterns; and Strauss and Howe's generational cohort theory, accounting for age-related cognitive and authority perception differences. Together, these frameworks may enable the development of concise, behaviorally anchored instruments capable of predicting dominant cognitive biases.

It is hypothesized that:

- An integrated model combining psychological, cultural, and generational dimensions can predict dominant cognitive biases tendencies.
- These tendencies can be effectively captured through a concise, multidimensional questionnaire designed to reflect the integrated theoretical framework, with appropriate reliability and validity metrics suitable for categorical data.

Objectives

The study aims to develop and preliminarily validate an 11-item instrument that predicts dominant cognitive biases by integrating Kahler's PCM (6 items), Lewis's communication model (4 items), and Strauss and Howe's generational affiliation (1 item).

Specific objectives are to:

- Confirm the theoretical rationale for combining the three models based on existing literature.

 doi:10.20944/preprints202512.0458.v1

- Verify the statistical reliability of the instrument using appropriate methods for categorical data.
- Assess face validity by measuring participants perceived accuracy, personal relevance, and willingness to recommend the questionnaire.

By meeting these objectives, the study seeks to demonstrate the feasibility of capturing individual cognitive bias through a concise, multidimensional instrument grounded in psychological, cultural, and generational theory.

Data Collection and Methodology

The prototype instrument was administered to a random sample of 807 participants.

Eleven core items based on Kahler's Process Communication Model, Richard Lewis's cultural communication framework, and Strauss and Howe's generational cohort theory formed the instrument. An additional twelfth item was included to capture participants' self-reflection and perceived accuracy.

A follow-up survey conducted 2–3 weeks later (n=242) to reassess perceived accuracy, practical utility for self-understanding, and willingness to recommend the instrument.

Basic demographic and sample characteristic data were summarized through descriptive statistics. Profile distributions were calculated for dominant and secondary PCM profiles as well as Lewis cultural orientations to document internal representation across target constructs. Instrument stability and reliability were evaluated through classification consistency, a psychometric approach suited to categorical diagnostic data as per Cui et al. (2012). Face validity was assessed via self-reported accuracy ratings, and practical utility was measured through Net Promoter Score (NPS).

This design balanced methodological rigor and applied relevance, providing a stable foundation for preliminary validation of the proposed multidimensional instrument.

Limitations

This study recognizes inherent challenges that affect the scope and interpretation of its findings. The profiling of cognitive biases, while grounded in robust theoretical frameworks, inherently risks oversimplifying individual cognitive complexity and variability. Ethical and privacy considerations remain critical, necessitating rigorous protocols to prevent potential misuse or discriminatory applications of bias profiles. Furthermore, cognitive patterns are not static; individuals' biases may evolve over time, highlighting the need for periodic reassessment to maintain predictive accuracy.

Despite these considerations, the framework was deemed appropriate as it offers a robust and pragmatic foundation for advancing understanding and application of cognitive bias prediction with meaningful benefits for education, management, and organizational development.

Results

The study collected responses from 806 participants drawn from five main entities. This sample included 519 employees and managers from business organizations and a smaller subset of 288 students and faculty from higher education institutions. This ensured representation from both professional and academic environments.

The sample included representation from four generational cohorts: Gen X comprised 43.6% of respondents, Gen Y 34.1%, Gen Z 13.9%, and Baby Boomers 8.5%. The mean reported age was 45 (SD = 12.2), ranging from 20 to 83. This reflects a broad generational spread.

Among the Process Communication Model (PCM) profiles, the most frequent dominant types were 'Logical' (28.7%) and 'Dreamer' (24.6%), followed by 'Promoter' (16.1%), 'Empathic' (12.8%), 'Reactive' (9.2%), and 'Persistent' (8.7%). The Lewis cultural model showed a majority oriented towards 'multi-active' profile (49.5%), followed by 'Linear-active' profile (36.7%) and 'Reactive'

 doi:10.20944/preprints202512.0458.v1

profile (13.8%). These distributions indicate good representation across psychological and cultural typologies.

The stability and reliability of the instrument were estimated using classification consistency for cognitive diagnostic assessments, following Cui et al. (2012). For the PCM section, classification consistency was estimated at 0.66, signifying moderate reliability in profile assignment based on six items. The Lewis cultural communication section exhibited higher classification consistency at 0.72, reflecting stronger internal agreement in categorizing respondents across four items.

Participants rated the instrument's output on a scale from 1 (least inspiring) to 5 (most inspiring). Ratings showed that 65.3% of participants were inspired by the result, giving ratings of 4 or 5. Only 7.1% gave low inspiring ratings of 1 or 2. This indicates a high participant approval and suggests that the instrument's output was perceived as personally meaningful.

The follow-up survey was completed by 242 participants. The average rating for the usability of the instrument was high, with a mean score of 4.84 out of 5 (SD = 0.38), indicating that participants found the test easy and engaging to complete. Participants rated the correspondence of the results with their self-perception at an average of 4.62 (SD = 0.56), reflecting strong perceived accuracy of the cognitive bias profiles produced. The perceived usefulness of the results for better self-understanding was similarly favorable, with a mean score of 4.63 (SD = 0.59).

Approximately 76.1% of participants reported that they had recommended or shared the instrument results with others, highlighting good practical acceptance.

Discussion

This study presents a novel integrative approach to predicting dominant cognitive biases by combining psychological, cultural, and generational frameworks into a concise, multidimensional instrument.

The findings affirm the feasibility of such integration. Overall, the prototype multidimensional instrument demonstrated solid psychometric properties, including moderate to good stability and reliability in classifying cognitive bias profiles across psychological and cultural dimensions.

The broad generational and occupational representation supports the instrument's applicability across diverse populations. The distribution of PCM profiles and Lewis cultural orientations reflect theoretically meaningful heterogeneity in cognitive bias proneness, consistent with extant literature on personality and cultural influences on decision-making.

Moreover, participant feedback reveals high perceived accuracy, usability, and practical relevance, highlighting the instrument's potential for enhancing cognitive bias awareness and metacognitive reflection in professional and educational settings. The strong Net Promoter Score and high recommendation rates further demonstrate user acceptance.

These results provide preliminary evidence that the integrated framework can effectively capture dominant cognitive biases, offering promising implications for both research and applied organizational contexts. These results align with prior research emphasizing the multifactorial nature of cognitive biases and the importance of considering multiple dimensions together. Unlike traditional, unidimensional instruments, this integrative framework offers enhanced predictive power by contextualizing individual differences in bias sensitivity within these intersecting domains.

Limitations include the cross-sectional design, potentially limiting inference on stability over time, despite promising short-term follow-up. The random sample, while broad, may not fully capture all cultural or organizational subgroups, inviting further validation across diverse contexts. Additionally, the relatively brief instrument, while practical and relevant, may sacrifice some nuance and granularity achievable in longer assessments.

Future research should explore longitudinal validation, refine item wording to further improve classification consistency, and evaluate the instrument's predictive validity for behavioral outcomes in organizational decision-making.

 doi:10.20944/preprints202512.0458.v1

Conclusions

This study provides preliminary evidence that an 11-item, multidimensional instrument grounded in the Process Communication Model, Lewis's cultural communication framework, and generational cohort theory can reliably predict dominant cognitive biases across diverse populations. The successful integration of psychological, cultural, and generational perspectives offers a theoretically strong and practically feasible tool with considerable potential for advancing cognitive bias research and supporting more cognitively diverse and effective organizational practices.

By identifying how these intersecting factors influence cognitive tendencies, the model can offer valuable insight into better understanding how individuals interpret organizational purpose, challenge assumptions, and adjust their decision-making in uncertain environments. Further, this approach supports more effective talent mapping and the formation of cognitively diverse teams, which are crucial for strengthening strategic adaptability and inclusive organizational practices.

Continued refinement and validation will enhance its utility as a standard assessment for cognitive diversity and bias mitigation in complex environments.

References

1. Adnan, S., & Omar, S. (2022). Generational Cohort Analysis Of Malaysian Domestic Tourists. BIMP-EAGA Journal for Sustainable Tourism Development. https://doi.org/10.51200/bimpeagajtsd.v11i1.3921.
2. Anand, N., Raghuvanshi, R., Singh, A., & Srivastava, A. (2024). A Study on the Cross-Cultural Behavior of Employees at Workplace: Lewis Model Approach. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4795862.
3. Asch, S. E. (1955). Opinions and social pressure. Scientific American, 193(5), 31–35. https://www.jstor.org/stable/24943779
4. Aswani, D., & Otiende, J. (2025). Effective Workplace Communication: Organizational Subcultures and Communication Preferences for Gen Z's. Journal of the Kenya National Commission for UNESCO. https://doi.org/10.62049/jkncu.v5i1.234.
5. Belbin, R.M. (2010). Management Teams (3rd ed.). Routledge. https://doi.org/10.4324/9780080963594
6. Berenda, S., & Yeromina, M. (2025). Cultural Models Of Risk Perception: A Conceptual Analysis With Application To The Ukrainian Context. Market Infrastructure. https://doi.org/10.32782/infrastruct84-29.
7. Broucek, W., & Randell, G. (1996). An assessment of the construct validity of the Belbin Self-Perception Inventory and Observer's Assessment from the perspective of the five-factor model. Journal of Occupational and Organizational Psychology, 69, 389-405. https://doi.org/10.1111/j.2044-8325.1996.tb00625.x.
8. Christensen, C. M.,(1997). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business School Press. https://www.hbs.edu/faculty/Pages/item.aspx?num=46
9. Cui, Y., Gierl, M. J., & Chang, H.-H. (2012). Estimating classification consistency and accuracy for cognitive diagnostic assessment. Journal of Educational Measurement, 49(1), 19–38. https://doi.org/10.1111/j.1745-3984.2011.00158.x
10. Darkson, C., Campbell, M., & Rockloff, S. (2020). Fostering Marine Environmental Stewardship: New Tactics Needed to Engage Millennials. Conservation and Society, 18, 405 - 411. https://doi.org/10.4103/cs.cs_19_76.
11. Dash, S. (2025). A Conceptual Analysis of Technology Usage and Work–Family Interface Among Millennials in India. Vikalpa, 50, 69 – 81. https://doi.org/10.1177/02560909251314252.
12. Déjoux, C. ; Wechtler, H. (2011). Diversité générationnelle : implications, principes et outils de management. Management & Avenir, 43(3), p. 227-238. https://doi.org/10.3917/mav.043.0227
13. DeVellis, R. F., & Thorpe, C. (2021). Scale Development: Theory and Applications (5th ed.). SAGE Publications. https://uk.sagepub.com/en-gb/eur/scale-development/book269114
14. Edge, K. (2014). A review of the empirical generations at work research: implications for school leaders and future research. School Leadership & Management, 34, 136 - 155. https://doi.org/10.1080/13632434.2013.869206.

 doi:10.20944/preprints202512.0458.v1

15. Edge, K. (2014). A review of the empirical generations at work research: implications for school leaders and future research. School Leadership & Management, 34, 136 - 155. https://doi.org/10.1080/13632434.2013.869206.
16. Evans, J. S. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. Annual Review of Psychology, 59, 255–278. https://doi.org/10.1146/annurev.psych.59.103006.093629
17. Fisher, S., Hunter, T., & Macrosson, W. (2001). A validation study of Belbin's team roles. European Journal of Work and Organizational Psychology, 10, 121 - 144. https://doi.org/10.1080/13594320143000591.
18. Furnham, A. (1996). The big five versus the big four: The relationship between the Myers-Briggs Type Indicator (MBTI) and NEO-PI five factor model of personality. Personality and Individual Differences, 21(2), 303–307. https://doi.org/10.1016/0191-8869(96)00033-5
19. Galesic, M., & Bosnjak, M. (2009). Effects of Questionnaire Length on Participation and Indicators of Response Quality in a Web Survey. The Public Opinion Quarterly, 73(2), 349–360. http://www.jstor.org/stable/25548084
20. Gao X., Wang L., Lu L., Wu W. (2024). The influence of bootleg innovation on individual innovation performance: The mediating effect of cognitive flexibility and the moderating effect of leadership's emotional intelligence. PLOS One, 19(2). https://doi.org/10.1371/journal.pone.0296782
21. Gates, M., Bairatchnyi, I., Brown, M., & Lewis, R. (2009). Use of the Lewis Model to Analyse Multicultural Teams and Improve Performance by the World Bank: A Case Study. The International Journal of Knowledge, Culture, and Change Management: Annual Review, 8, 53-60. https://doi.org/10.18848/1447-9524/cgp/v08i12/50711.
22. Gilbert, M.B., Donlan, R.A. (2016). Personality Pattern Inventory. In: Zeigler-Hill, V., Shackelford, T. (eds) Encyclopedia of Personality and Individual Differences. Springer, Cham. https://doi.org/10.1007/978-3-319-28099-8_60-1
23. Grabinski, C. (1998). Cohorts of the Future. New Directions for Adult and Continuing Education, 1998, 73-84. https://doi.org/10.1002/ace.7707.
24. Hahn, E., Gottschling, J., & Spinath, F. (2012). Short measurements of personality—Validity and reliability of the GSOEP Big Five Inventory (BFI-S).. Journal of Research in Personality, 46, 355-359. https://doi.org/10.1016/j.jrp.2012.03.008.
25. Haselton, M.G., Nettle, D. and Murray, D.R. (2015). The Evolution of Cognitive Bias. In The Handbook of Evolutionary Psychology, D.M. Buss (Ed.). https://doi.org/10.1002/9781119125563.evpsych241
26. Henisz, W. J. (2023). The value of organizational purpose. Strategy Science, 8(2), 159–169. https://doi.org/10.1287/stsc.2023.0195
27. Hofstede, G. (1996). Riding the waves of commerce: A test of trompenaars' "model" of national culture differences. International Journal of Intercultural Relations, 20, 189-198. https://doi.org/10.1016/0147-1767(96)00003-x.
28. Kahler, T. (1996). Personality pattern inventory (revised). Little Rock: Kahler Communications, Inc. https://www.kcf.fr/validite-scientifique-de-pcm/
29. Kirkman, B., Lowe, K., & Gibson, C. (2006). A quarter century of Culture's Consequences: a review of empirical research incorporating Hofstede's cultural values framework. Journal of International Business Studies, 37, 285-320. https://doi.org/10.1057/palgrave.jibs.8400202.
30. Kline, P. (2015). A Handbook of Test Construction: Introduction to Psychometric Design. Routledge. https://www.routledge.com/A-Handbook-of-Test-Construction-Introduction-to-Psychometric-Design/Kline/p/book/9781138905122
31. Kline, R. B. (1999). Book Review: Psychometric theory (3rd ed.). Journal of Psychoeducational Assessment, 17(3), 275-280. https://doi.org/10.1177/073428299901700307
32. Krämer, W. Kahneman, D. (2011): Thinking, Fast and Slow. Stat Papers 55, 915 (2014). https://doi.org/10.1007/s00362-013-0533-y
33. Lefebvre, S., & Beaucousin, V. (2025). Emotional responses during communicational comfort: the effect of personality through the prism of process communication model.. Cognition & emotion, 1-15 . https://doi.org/10.1080/02699931.2025.2487521.

 doi:10.20944/preprints202512.0458.v1

34. Lewis, D. (1996). When cultures collide: Leading across cultures (3rd ed.). Nicholas Brealey Publishing. https://openlibrary.org/books/OL15475169M/When_cultures_collide
35. Lewis, R. (2002). The cultural imperative: Global trends in the 21st century. Training Language and Culture. https://doi.org/10.29366/2019tlc.3.3.1.
36. Mahoney, J. T. (2023). Corporate personhood and fiduciary duties as critical constructs in developing stakeholder management theory and corporate purpose. Strategy Science, 8(2), 212–220. https://doi.org/10.1287/stsc.2023.0191
37. McCrae, R., & Costa, P. (1989). Reinterpreting the Myers-Briggs Type Indicator from the perspective of the five-factor model of personality.. Journal of personality, 57 1, 17-40 . https://doi.org/10.1111/j.1467-6494.1989.tb00759.x.
38. McGahan, A. M. (2023). The new stakeholder theory on organizational purpose. Strategy Science, 8(2), 245–255. https://doi.org/10.1287/stsc.2023.0184
39. Morrison, A. D., & Mota, R. (2023). A theory of organizational purpose. Academy of Management Review, 48(2), 179–202. https://doi.org/10.5465/amr.2019.0307
40. Murphy, A. (2006). Book Review : When Cultures Collide: Leading Across Cultures, Richard D. Lewi. Leadership & Organization Development Journal , 27 (8). 710-720. https://doi.org/10.1108/01437730610709336
41. Ngo, Q., & Le, H. (2025). Cultural Behavioral Patterns And Entrepreneurial Orientation: A Socio-Cognitive Approach To International Integration In Developing Economies. Journal of Developmental Entrepreneurship. https://doi.org/10.1142/s1084946725500098.
42. Nickerson, R. S. (1998). Confirmation Bias: A Ubiquitous Phenomenon in Many Guises. Review of General Psychology, 2(2), 175-220. https://doi.org/10.1037/1089-2680.2.2.175
43. Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). McGraw-Hill.
44. Otero, I., Martínez, A., Cuadrado, D., Lado, M., Moscoso, S., & Salgado, J. F. (2024). Sex Differences in Cognitive Reflection: A Meta-Analysis. Journal of Intelligence, 12(4), 39. https://doi.org/10.3390/jintelligence12040039
45. Ott, U., Gates, M., Lei, L., & Lewis, R. (2016). A configurational and experimental approach to compare British and Chinese cultural profiles of generation Y. Journal of Business Research, 69, 5500-5506. https://doi.org/10.1016/j.jbusres.2016.04.161.
46. Persson, K. (2019). Confident millennials: Differences in consumer confidence across five generations. Economics & Sociology, 12, 243-263. https://doi.org/10.14254/2071-789x.2019/12-4/16.
47. Pittenger, D. J. (2005). Cautionary comments regarding the Myers-Briggs Type Indicator. Consulting Psychology Journal: Practice and Research, 57(3), 210–221. https://doi.org/10.1037/1065-9293.57.3.210
48. Reichheld, F. F. (2003). The one number you need to grow: net promoter score. Harvard Business Review, 81(12), 46–54. https://hbr.org/2003/12/the-one-number-you-need-to-grow
49. Revilla, M., & Ochoa, C. (2017). Ideal and Maximum Length for a Web Survey. International Journal of Market Research, 59(5), 557-565. https://doi.org/10.2501/IJMR-2017-039
50. Savanevičienė, A., & Statnickė, G. (2020). The relationship between individual innovativeness and belonging to different generations. Global Journal of Information Technology: Emerging Technologies. https://doi.org/10.18844/gjit.v10i2.4708.
51. Smith, G. T., McCarthy, D. M., & Anderson, K. G. (2000). On the sins of short-form development. Psychological assessment, 12(1), 102–111. https://doi.org/10.1037//1040-3590.12.1.102
52. Spisak, B. R., Dekker, P. H., Krüger, M., & van Vugt, M. (2014). Leadership in organizations: An evolutionary perspective. Business Horizons, 57(4), 481–489. https://doi.org/10.1016/j.bushor.2014.02.002
53. Stampanoni Bassi, M., Iezzi, E., Gilio, L., Centonze, D., & Buttari, F. (2019). Synaptic Plasticity Shapes Brain Connectivity: Implications for Network Topology. International journal of molecular sciences, 20(24), 6193. https://doi.org/10.3390/ijms20246193
54. Stanovich, K. E., & West, R. F. (2008). On the relative independence of thinking biases and cognitive ability. Journal of Personality and Social Psychology, 94(4), 672–695. https://doi.org/10.1037/0022-3514.94.4.672

 doi:10.20944/preprints202512.0458.v1

55. Strauss, W., & Howe, N. (1991). Generations: The history of America's future, 1584 to 2069. William Morrow. https://openlibrary.org/books/OL1884734M/Generations
56. Taleb, N. N. (2012). Antifragile: Things That Gain from Disorder. Penguin Random House. https://www.penguinrandomhouse.com/books/176227/antifragile-by-nassim-nicholas-taleb/
57. Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. PubMed. Science, 185(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124
58. Twenge J. M. (2020). Increases in Depression, Self-Harm, and Suicide Among U.S. Adolescents After 2012 and Links to Technology Use: Possible Mechanisms. Psychiatric research and clinical practice, 2(1), 19–25. https://doi.org/10.1176/appi.prcp.20190015
59. Twenge, J. M. (2017). IGen: Why Todays Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy, Completely Unprepared for Adulthood, and What That Means for the Rest of Us. Atria Books. https://dl.acm.org/doi/book/10.5555/3169223
60. Wang, L. (2023). Generational Dynamics of Innovation Adoption in Chinese Consumer Markets: A Comprehensive Analysis. Proceedings of Business and Economic Studies. https://doi.org/10.26689/pbes.v6i6.5693.
61. Westphal, J. D., & Bednar, M. K. (2005). Pluralistic Ignorance in Corporate Boards and Firms' Strategic Persistence in Response to Low Firm Performance. Administrative Science Quarterly, 50(2), 262-298. https://doi.org/10.2189/asqu.2005.50.2.262