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System 3 Thinking: A Conceptual Expansion of the Dual Process Model for Complex Human Decisions

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Abstract

The classical dual-process model, distinguishing between intuitive (System 1) and analytical (System 2) modes of thought, has dominated cognitive science and behavioral economics for decades. Yet, this dichotomy fails to account for the emotionally charged, identity-relevant, and future-oriented decisions that define much of human experience. This paper introduces System 3 Thinking, a conceptual expansion that integrates features of both Systems 1 and 2 while adding a third, imaginative and emotionally grounded dimension. System 3 is defined by simulated reasoning—slow, deliberative, yet affectively rich—through which individuals mentally construct and evaluate possible futures. It operates where pure intuition or logic proves insufficient, particularly in moral reasoning, consumer choice, and therapeutic change. The paper synthesizes interdisciplinary literature from psychology, neuroeconomics, and applied behavioral sciences to delineate System 3's defining features: emotional integration, identity relevance, and narrative simulation. Examples from consumer behavior and psychotherapy illustrate how System 3 facilitates value-aligned and personally meaningful decision-making. The discussion outlines theoretical implications for dual-process theory and proposes directions for empirical research, including neurocognitive validation and cross-cultural testing. By recognizing System 3 as a distinct yet complementary mode of cognition, the paper reframes emotional simulation and self-referential reasoning not as cognitive biases but as adaptive mechanisms essential for complex human choice. This model extends our understanding of decision-making toward a more integrated, embodied, and psychologically realistic framework for human thought.

Keywords: Behavioral Economics, Decision-Making, Neuroeconomics, System 1, System 2, System 3.

Introduction

Theories of decision-making have long relied on the distinction between two types of cognitive processes: fast, automatic heuristics and slow, deliberate reasoning. This dichotomy is central to dual-process theory, which was initially introduced by Peter Wason and Jonathan Evans in the 1970s and later developed by Kahneman and Tversky into the widely recognized framework of System 1 and System 2 thinking (1-3). It gets widely popular though the international bestseller "Thinking Fast and Slow" (4). System 1 represents intuitive, efficient, and automatic processes that rely on mental shortcuts and operate with minimal conscious effort. These responses are often shaped by context and experience. In contrast, System 2 involves slower, more analytical reasoning that requires focused attention and deliberate cognitive effort to reach a rational conclusion (2-4). However, real-world decision-making requires more sophisticated considerations, as those models are based on multiple assumptions (5). The most recent reviews highlight the need to rethink dual processing model and treat both Systems as overlapping flexible modalities (6).

Over the past decades, dual-process theory has been applied across diverse domains, from explaining cognitive biases and framing effects in behavioral economics to understanding clinical reasoning, moral judgment, and everyday choices under uncertainty. In many of these contexts, researchers have noted that people often draw on rich personal narratives, identity-relevant concerns, and emotionally charged mental simulations that are not easily classified as purely intuitive or purely analytical. This growing body of work has fuelled calls for more nuanced models that can capture how meaning, emotion, and self-referential thinking interact with classical notions of heuristic and deliberative processing.

This article proposes a third system: System 3 Thinking. It is designed to model the complex decision making that does not fit the definition of both System 1 and System 2. We propose that System 3 bridges the intuitive-analytical gap by

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engaging narrative imagination, active and passive knowledge, and emotional reasoning. System 3 is essential for modeling decisions involving self-concept, future projection, and psychological meaning. Recognizing System 3 is important because it offers a more comprehensive framework for understanding how people actually make high-stakes, identity-relevant decisions in real-world contexts.

Methodology

As a conceptual analysis, this paper does not present original empirical data but instead offers a theoretical synthesis and framework for understanding complex human decision-making beyond the classical dual-process model. The methodology employed in this work consisted of a targeted, selective literature review grounded in two main goals: (i) evaluating the theoretical and empirical basis of the dual-process model (System 1 and System 2), and (ii) identifying and interpreting any conceptual expansions or challenges to this model, particularly the emergence of what some authors have referred to as "System 3."

To ensure relevance and coherence, we prioritized foundational and widely cited sources in behavioral economics, cognitive psychology, and neuroeconomics that have historically defined or compared Systems 1 and 2. These included both theoretical models and empirical investigations (3, 4, 7). In addition, we conducted an interdisciplinary search for literature that explicitly introduces or discusses the notion of a third cognitive system or mode of reasoning, regardless of whether it was formally labeled "System 3." This included sources from applied psychology, coaching, neurobiology, and consumer research, some of which emerged outside academic psychology but reflect comparable conceptual themes (8, 9).

Our selection criteria focused on peer-reviewed journal articles, influential theoretical papers, and key interdisciplinary contributions published primarily between 1995 and 2023. Preference was given to sources that either laid the groundwork for dual-process theories, provided experimental challenges to the two-system typology, or explicitly proposed a third process with distinct cognitive properties including emotional layer. Blogs, and popular science writing were only included where they significantly influenced public or applied discourse on System 3 to fully cover the concept's presents in related disciplines (10, 11). The goal of this paper is to introduce the scientific definition for System 3 that can be further tested by empirical research.

Results

Theoretical Background: Limitations of the Dual-Process Model

Structural Constraints: System 1 is rapid, affective, and associative, while System 2 is deliberate, rule-based, and computationally demanding (7). While this dichotomy explains a wide range of behaviors and biases, it does not cover full variety of thoughts and decision and so remains insufficient for capturing complex decision contexts (6, 12). In many real-world situations, neither rapid, heuristic-based judgments nor abstract, rule-based analysis alone can provide adequate guidance. Decisions such as selecting a career, voting in an election, or consenting to a medical treatment often involve imaginative projections of future selves, emotional resonance, and evaluations of long-term personal meaning. These are not instances of pure intuition or logic; instead, they reflect a synthesis of cognitive and emotional processes. Furthermore, recent critiques have questioned the empirical basis of the dual-process model itself. It has been argued that the typological configuration of System 1 and System 2 has not been systematically tested (13).

The Five Dimensions of Distinction: The key contrasts between Systems 1 and 2 (7) are: a) Automatic vs. Deliberative; b) Fast vs. Slow; c) Unconscious vs. Conscious; d) Associative vs. Rule-Based; e) Affective vs. Cognitive. A bit more details on this can be found in Table 1.

System 3 emerges where none of these distinctions provide a full picture. It incorporates controlled, slow, and unconscious processes, but engages affective, associative elements as central, not peripheral components. These characteristics are crucial when simulating emotionally salient futures or projecting identity-based decisions.

Table 1: Comparison of System 1 and System 2 based on the Framework of Sanfey and Chang (7)

Feature	System 1	System 2
Automatic vs. Deliberative	Automatic	Deliberative
Fast vs. Slow	Fast	Slow
Unconscious vs. Conscious	Unconscious	Conscious
Associative vs. Rule-Based	Associative	Rule-Based
Affective vs. Cognitive	Affective	Cognitive

Introducing System 3: An Integrative Model of Simulated, Emotion-Driven Reasoning

System 3 Thinking can be conceptualized as a distinct cognitive process that integrates components of Systems 1 and 2. Unlike System 1, which is automatic, fast, unconscious, and heuristic-driven, and System 2, which is slow, rule-based, conscious, and analytical, System 3 operates through a hybrid mechanism: slow and deliberative, yet unconscious and emotionally grounded (6). It engages the mind in the simulation of possible futures, drawing on both affective cues and experiential knowledge to guide decision-making in identity-relevant, complex contexts to reach maximum efficiency, because in multiple situations and conditions intuitive decision processes were empirically supported to be more accurate than deliberate ones (14-16).

System 3 enables individuals to mentally simulate emotionally charged scenarios, integrating both passive and active knowledge, thus using affective forecasting as a core feature. Rather than relying solely on logical abstraction or intuitive heuristics, it allows for emotion-driven, value-aligned reasoning. This system is especially relevant when navigating deeply personal or morally complex decisions, such as life path planning, voting, or medical choices, where neither System 1 nor System 2 alone suffices.

The Table 3 builds on and extends earlier model, shown in Table 2, by introducing key additional features: Effort, Emotion, Knowledge Type, and Typical Contexts. These dimensions emphasize that System 3 involves high cognitive effort, high emotional involvement, and integrated knowledge processing, all within complex, uncertain environments.

In essence, System 3 represents a third mode of cognition that is not merely a blend of Systems 1 and 2 but a qualitatively different form of reasoning. It retains the associative and unconscious structure of System 1, incorporates the effortful, deliberative qualities of System 2, and uniquely combines these with emotional depth and identity relevance, allowing for more authentic and situated decision-making.

Table 2: System 3 in framework of Sanfey and Chang (7)

Feature	System 1	System 2	System 3
Automatic vs. Deliberative	Automatic	Deliberative	Deliberative
Fast vs. Slow	Fast	Slow	Slow
Unconscious vs. Conscious	Unconscious	Conscious	Unconscious
Associative vs. Rule-Based	Associative	Rule-Based	Associative
Affective vs. Cognitive	Affective	Cognitive	Mixed

Table 3: Distinctive Features of System 3

Feature	System 1	System 2	System 3
Automatic vs. Deliberative	Automatic	Deliberative	Deliberative
Fast vs. Slow	Fast	Slow	Slow
Unconscious vs. Conscious	Unconscious	Conscious	Unconscious
Associative vs. Rule-Based	Associative	Rule-Based	Associative
Affective vs. Cognitive	Affective	Cognitive	Mixed
Emotion	High	Low	High
Effort	Low	High	High
Knowledge Type	Passive	Active	Integrated
Typical Contexts	Snap judgments	Formal logic	Complex, identity-relevant choices

System 3 in Practice: Domains and Examples

System 3 Thinking finds expression across a range of domains in which emotionally grounded simulation is essential for guiding action. In these contexts, individuals rely not on pure intuition or analytic reasoning, but rather on rich mental models informed by memory, emotion, and identity. This section reviews several representative areas where System 3 cognition is both observable and explanatory.

Consumer Behavior: Contemporary consumer behavior illustrates the limits of utilitarian or rational choice models and underscores the value of System 3 Thinking. Consumers do not merely optimize based on product specifications or price comparisons. Rather, they simulate future selves engaging with products, imagining how those choices reflect their identity and how others will perceive them. This phenomenon is well-documented in experiential marketing and behavioral economics, where anticipated emotions and imagined lifestyles frequently guide purchasing decisions (11). For example, the appeal of a luxury car may stem less from its technical specifications and more from the imagined feeling of confidence or social recognition it will bring. These are not trivial influences; they reflect simulations constructed through emotionally meaningful, identity-linked cognition that exemplifies System 3 processing.

The emerging idea of System 3 Thinking has also gained traction in popular science and professional coaching literature. For example, in the Peter J. Webb's book System 3 Thinking: How to Choose Wisely When Facing Doubt, Dilemma, or Disruption a "considerative" decision-making mode designed to handle complexity and ambiguity has been outlined (17). Webb's work is noteworthy for capturing many of the features emphasized in our formalization of System 3 cognition, namely, the integration of emotion, foresight, and moral discernment. Webb defines System 3 as a set of reflective capacities such as emotional regulation, discernment, incremental action, and tolerance for divergent values, aimed at enabling wiser decisions in real-world dilemmas. In consumer contexts, this aligns with observed patterns where individuals engage in emotionally saturated simulations to imagine how a product will feel, how it reflects their identity, and how it will be perceived by others, far beyond the utility-maximization frameworks of classical economics. While some critics argue that Webb's formulation blends traits and outcomes rather than delineating a distinct cognitive system (10), its resonance in marketing and coaching points to a broader recognition of the psychological space that System 3 aims to occupy. Formalizing this space within a scientifically testable model not only sharpens conceptual clarity but also expands the reach of behavioral economics into domains where narrative, self-image, and emotional resonance

shape consumer behavior more than logic or habit alone.

Moral and Ethical Decisions: Moral reasoning often transcends strict adherence to normative ethical theories or heuristics. Instead, individuals simulate outcomes, assess empathic responses, and draw on narratives to evaluate ethical dilemmas. System 3 Thinking captures how people process emotionally rich moral scenarios by integrating affective insight with reflective judgment. For example, a person deciding whether to report a colleague's misconduct may not simply follow a rule or gut feeling. Instead, they may mentally simulate the consequences for their colleague, their team, and their own sense of moral integrity. This type of reasoning involves future projection, role-taking, and emotional forecasting, all of which are similar to System 3 cognition (18). Moreover, the distinctive features of System 3, such as high emotional involvement, and integrated knowledge processing, make it particularly relevant for understanding and designing nudges. Whereas traditional nudge theory has largely emphasized the exploitation of System 1 heuristics to steer behavior without restricting choice, a System 3 perspective highlights how nudges can also engage identity, narrative, and emotionally grounded reasoning (19). This suggests that effective nudge design in moral and ethical domains may require not only leveraging automatic tendencies but also facilitating authentic reflection and emotionally resonant choice.

Therapeutic Applications: Therapeutic interventions increasingly draw upon the interplay of cognition, emotion, and imagination to facilitate sustained behavior change and psychological insight. Traditional approaches such as Cognitive Behavioral Therapy (CBT) and Rational Emotive Behavior Therapy (REBT) aim to identify and restructure maladaptive beliefs and cognitive distortions through deliberate, effortful reasoning are all characteristic of System 2 thinking (20, 21). These approaches train individuals to challenge automatic thoughts, overcome biases such as catastrophizing or dichotomous thinking, and replace them with rational alternatives. However, sustained change often requires more than logical restructuring. It depends on internalizing new beliefs emotionally and envisioning oneself acting on them in meaningful, identity-congruent ways, which are hallmarks of System 3 Thinking.

System 3, as proposed in this paper, may offer a complementary framework to explain how therapies move beyond abstract rationality. For example, in Acceptance and Commitment Therapy (ACT), clients clarify their core values and simulate future selves living in alignment with those values, even in the face of discomfort (22-24). This process of imaginative self-projection blends logical analysis with emotional and narrative coherence, fostering motivation through value congruence and identity integration.

Similarly, mindfulness-based interventions and contemplative practices such as loving-kindness meditation emphasize the intentional regulation of attention, emotion, and self-representation. Through open monitoring and compassion-focused visualization, individuals engage in emotionally laden simulations that foster acceptance, empathy, and altered self-concept (25, 26). These practices do not fit neatly into System 1 or System 2. Instead, they exemplify System 3's integrative function: combining introspective awareness, imagined alternatives, and emotional processing to reorient behavior toward personal meaning and psychological flexibility.

In all these modalities, therapeutic success is not just a function of belief correction or bias reduction. It rests on emotionally resonant mental simulations that integrate memory, values, and narrative self-construction, which are the core components of the proposed System 3. This perspective may offer a unifying cognitive-emotional mechanism underlying a wide spectrum of evidence-based therapies.

Discussion

Theoretical Implications and Future Directions

The proposal of System 3 Thinking offers significant theoretical and empirical contributions to the cognitive sciences. By expanding the established dual-process framework (2–4, 7), it brings much-needed conceptual clarity to decision-making phenomena that have long been difficult to categorize, particularly those that fall between or cut across the traditional System 1/System 2 divide (6, 12, 13). In doing so, the model responds directly to concerns that the "mythical number two" is too coarse to capture the

diversity of higher cognition and aligns with multiple-systems perspectives emerging in neuroeconomics and social decision-making (7, 12, 13). In this section, we elaborate on the broader implications of the System 3 model, propose research directions, and reflect on how the model reshapes ongoing debates in behavioral economics, psychology, and related fields.

Theoretical Contributions: System 3 provides a structured vocabulary for understanding simulated, emotionally informed, and identity-driven forms of cognition. Unlike the reactive heuristics of System 1 or the abstract computation of System 2, System 3 represents a form of reasoning that is both reflective and experiential. It integrates components of narrative construction, imaginative projection, affective regulation, and self-consistency assessment, thereby capturing processes that have been described in work on unconscious thought, narrative self, and embodied emotion but not previously organized into a single cognitive system (9). The theoretical utility of this model lies in its capacity to account for decisions that are deliberate but not dispassionate, emotionally vivid but not automatic—such as complex moral choices, life planning, and identity-defining commitments—areas where dual-process models alone have struggled to provide a complete account (5, 18). This has profound implications for disciplines that investigate moral reasoning, future planning, and adaptive behavior under conditions of ambiguity or identity salience.

Furthermore, System 3 refines our understanding of affective forecasting and projection bias by offering a unifying model through which to conceptualize emotional simulation (23, 27, 28). Rather than treating such processes as biases or failures of rationality, System 3 situates them within a functional cognitive mechanism with evolutionary, social, and psychological relevance (18, 27). Evidence from the Iowa Gambling Task suggests that individuals can "decide advantageously before knowing the advantageous strategy," indicating that explicit, declarative knowledge alone may not be sufficient for adaptive choice (29, 30). Related work on reverse biases and the costs of "thinking too much" shows that overreliance on deliberative analysis can sometimes degrade performance relative to more intuitive or emotionally grounded modes of thought (14–16, 24). Taken together, these outcomes support the claim that emotional and embodied signals can serve as necessary complements to rational thought, and System 3 provides a locus where such scaffolding can be constructed and integrated.

The model also serves as a conceptual bridge between deliberative reasoning and embodied cognition. Unlike traditional dual-process frameworks, which often conceptualize cognition as disembodied or strictly rule-based (3, 30), System 3 Thinking illustrates the mind's ability to simulate and assess affect-laden scenarios through embodied metaphors and affective impressions (31, 32). This perspective is consistent with research in grounded cognition showing that abstract concepts are partially constituted by sensorimotor and affective states, and with narrative identity theory, which emphasizes the role of autobiographical stories in organizing long-term goals and values (31-33). It further complements contemporary approaches within developmental psychology, clinical science, and social cognition (34–36), where mental imagery, affective framing, and self-referential processing have been identified as mechanisms of change and adaptation (37).

Future Research Agenda: To empirically validate System 3 Thinking, several methodological avenues should be pursued. First, neuroscientific investigations can explore whether System 3 reasoning activates brain regions distinct from those typically associated with Systems 1 and 2. Functional imaging studies might focus on networks implicated in self-referential thought, affective regulation, and simulation-based decision-making—such as the medial prefrontal cortex, posterior cingulate cortex, and temporoparietal junction—which are already known to be engaged during meditation, mental imagery, and reflective self-processing (25, 26, 35). Demonstrating partially distinct yet overlapping neural signatures for System 3 would bring the proposal into closer dialogue with existing multiple-systems models in decision neuroscience (7, 29).

Second, experimental paradigms should be developed to isolate System 3 reasoning from other forms of cognition. Tasks might involve narrative-driven simulations or value-based scenario evaluations that explicitly require participants to project themselves into

emotionally rich, identity-relevant futures, extending earlier work on unconscious thought and complex decision-making (9, 14–16). These tasks could be contrasted with control conditions that rely primarily on intuition (System 1) or explicit rule-based analysis (System 2). Measurement techniques such as response time, affective priming, psychophysiological indices, and eye-tracking could offer additional insight into the distinctiveness and temporal dynamics of System 3 processes (7, 29, 35).

Third, longitudinal research could investigate how the use of System 3 strategies influences outcomes over time. For instance, studies could examine whether individuals who engage in values-based simulation and emotionally grounded forecasting make more consistent, satisfying, or health-promoting decisions, extending prior work on affective forecasting and projection bias (23, 27, 28). Additionally, interventions that encourage System 3 use—such as guided visualization, structured journaling, or therapeutic role-playing—could be tested for their impact on mental health, decision confidence, and behavioral follow-through, building on existing evidence from ACT, mindfulness-based interventions, and imagery-focused therapies (22, 25, 26, 35).

Finally, cross-cultural studies may reveal variation in the development and expression of System 3 Thinking. Cultures that emphasize collectivist values or long-term future orientation may rely more heavily on simulation-based reasoning than those that valorize rapid decision-making or present orientation (5, 18). Such comparisons could further contextualize System 3 within broader socio-cultural and developmental frameworks and clarify how identity, emotion, and narrative are differently organized across societies (33, 34, 36).

Implications for Behavioral Economics and Psychology

The implications of System 3 extend well beyond cognitive theory. In behavioral economics, recognizing System 3 helps explain phenomena such as preference construction, identity signaling, and the role of emotion in valuation that have proven difficult to reconcile with stable utility-based models (5, 19, 28). Traditional frameworks that assume fixed preferences and purely rational agents have struggled to account for dynamic, narrative, or context-sensitive choices, including those influenced by social projection and anticipated emotions (18, 23). System 3 provides a conceptual anchor for these behaviors, emphasizing that many choices reflect imagined futures and personal stories rather than fixed utility calculations, and thereby complementing recent critiques of overly simplistic dual-process typologies (6, 12, 13).

In applied psychology, the model offers a more accurate account of how people change, grow, and sustain new behaviors. Behavioral interventions that appeal to identity, simulate future outcomes, or cultivate emotional resonance—such as motivational interviewing, values clarification, and narrative restructuring—are already central to evidence-based clinical practice (20–22, 35). Framing these methods as deliberate attempts to engage System 3 highlights their reliance on emotionally grounded simulation rather than pure cognitive restructuring alone and helps explain why purely informational or incentive-based interventions often show weaker or less durable effects (19, 24, 27). This perspective is consistent with research in health behavior change and psychotherapy, where emotionally resonant mental imagery and future self-projection have been shown to support adherence and long-term transformation (22, 25, 26, 35).

System 3 Thinking also has practical relevance for education, political communication, and technology design. In educational settings, encouraging students to reflect on future selves, simulate role outcomes, or engage in values-based planning may enhance learning, motivation, and self-regulation, building on findings from developmental and social psychology about the role of affect and mental imagery in cognition (34, 36). In civic contexts, political campaigns and public health messages may become more persuasive when they target the simulated futures and emotional identities of their audiences, complementing but going beyond traditional “nudge” strategies that primarily leverage System 1 heuristics (19). In human-centered technology design, interfaces and experiences that evoke narrative simulation and identity expression could foster more meaningful and ethical user engagement, while designs that ignore these processes risk unintended consequences for well-being and autonomy (31, 32).

In summary, System 3 Thinking represents a critical expansion of current cognitive models. By capturing the richness of emotionally grounded, future-oriented, and identity-consistent decision-making, it integrates and extends prior work on dual-process theories, affective forecasting, embodied cognition, and narrative identity (3, 7, 23, 31–33). This synthesis not only helps to organize existing empirical outcomes under a common framework but also opens new avenues for theoretical inquiry and practical intervention across behavioral economics, psychology, and related fields. Future work should continue refining the conceptual boundaries of System 3, testing its neural and behavioral signatures, and exploring its application across diverse domains of human behavior.

Conclusions

In conclusion, this paper has argued that the classical dual-process distinction between intuitive, heuristic-based System 1 and analytical, rule-based System 2 is insufficient for capturing the emotionally charged, identity-relevant, and future-oriented decisions that pervade human life. By introducing System 3 Thinking as a distinct yet integrative mode of cognition, the paper highlights a form of simulated, emotionally grounded reasoning that draws on narrative imagination, embodied affect, and integrated knowledge. System 3 helps explain how individuals mentally construct and evaluate possible futures, align choices with deeply held values, and navigate complex dilemmas in domains such as consumer behavior, moral judgment, and psychotherapy. Rather than treating these processes as noisy deviations from rationality, the System 3 framework reframes them as adaptive mechanisms for making sense of uncertainty, meaning, and selfhood.

At the same time, System 3 Thinking remains a conceptual proposal that invites further empirical validation and theoretical refinement. Future research should investigate its neural correlates, delineate it experimentally from Systems 1 and 2, and examine how cultural, developmental, and contextual factors shape its expression. Applied work in behavioral economics, clinical and counselling psychology, education, and public policy can test whether interventions explicitly designed to engage System 3—through guided simulation, narrative tools, and identity-based framing—lead to more consistent, satisfying, and value-congruent decisions over time. By situating emotional simulation and self-referential reasoning at the center of complex decision-making, the System 3 model moves cognitive science toward a more psychologically realistic account of how people choose, change, and construct the paths of their lives.

Abbreviations

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Author has no conflict of interest to declare.

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No AI was used in any substantial amount. All conclusions and reasoning are authentic and original.

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