The Triadic Mind:
A New Lens on Mental Health

Unlocking the mind's hidden third choice

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Acknowledgments

Abstract

This report introduces the **_Triadic Mind Framework_**, an original six-stage model that explains how the human mind processes mental-health–related information under uncertainty. By integrating insights from neuroscience, Cognitive Load Theory (CLT), appraisal theory, Yao's Symbol–Meaning–Value (SMV) framework, and Three-Way Decision (3WD) theory, the model captures the full trajectory from raw mental input to behavioural output. The framework highlights how cognitive constraints, rapid emotional appraisals, meaning construction, and triadic decision strategies interact to shape mental-health outcomes.

Grounded in the multidisciplinary literature reviewed in Weeks 1–6, the _Triadic Mind Framework_ is illustrated through applications such as EEG-based depression detection, clinician diagnostic reasoning, autism detection under domain shift, and social-media risk monitoring. These examples show that although current systems operate implicitly through triadic patterns, making the defer region explicit can improve safety, interpretability, and decision quality.

The report also reflects on how this triadic pipeline can guide clearer, cognitively aligned communication practices within CS716. Limitations of the proposed framework and directions for future empirical and computational investigation are discussed.

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Chapter 1

Introduction

1.1 Background: Mental Health, Uncertainty, and Complexity

Mental health is inherently complex, shaped by dynamic interactions among cognition, emotion, meaning, and behavior. Traditional diagnostic systems often assume stable categories such as "depressed" or "not depressed," yet real mental states fluctuate between clarity and ambiguity. Individuals routinely experience mixed emotions, conflicting thoughts, and uncertain interpretations, making mental-health assessment and decision-making far from binary. Cognitive neuroscience shows that thoughts emerge from distributed neural networks rather than a single linear pathway. At the same time, working-memory limits and emotional appraisal processes introduce additional layers of uncertainty and bias into interpretation. Mental-health data—whether from clinicians, EEG signals, social media, or patient self-reports—often contain ambiguity, incomplete evidence, and overlapping patterns. To understand and model mental-health processes in a realistic way, we need frameworks that reflect the mind's nonlinear, uncertain, and *triadic* nature instead of purely binary logic.

1.2 Motivation for a Triadic Approach to the Mind

Binary reasoning—"yes or no," "healthy or unhealthy," "depressed or not depressed"—oversimplifies multidimensional mental experiences. Evidence from Cognitive Load Theory (CLT) shows that humans have limited processing capacity, typically managing only a few chunks of information at once. When mental load is high, the mind simplifies complex situations into a small number of manageable categories. Neuroscientific and psychological work suggests that experience is naturally organized into *three* broad regions, such as positive/negative/mixed emotions or safety/threat/uncertainty states. Three-Way Decision (3WD) theory, proposed by Dr. Yao, mirrors these patterns by introducing a third choice beyond acceptance and rejection: *deferment*. This "wait" or "uncertain" zone provides cognitive space to gather evidence, regulate emotion, and prevent premature judgments—crucial in mental-health contexts where errors can be harmful. Dr. Yao's Symbol–Meaning–Value (SMV) framework further shows that human experiences gain psychological weight

through a triadic construction of symbols, meanings, and values. Integrating SMV with 3WD and CLT suggests that triadic structures are not just mathematical conveniences but deeply aligned with how humans think and feel.

1.3   Aim and Contributions of the Project

After reading and synthesizing the literature from Weeks 1–6, this project makes an **original contribution**: it formalizes a unified, triadic ***Triadic Mind Framework*** that explains how the mind processes any mental-health–related input from raw experience to final behaviour.

Aim

The aim is to develop a six-stage mental-processing pipeline that explains how individuals perceive, interpret, and respond to mental-health–related information by integrating:

- neuroscience of spontaneous thought and mental input,
- CLT and working-memory constraints,
- appraisal theories of emotion,
- SMV meaning-making, and
- 3WD decision modeling.

Key Contributions

1. **Proposed framework.** A six-stage *Triadic Mind Framework* that formalizes the journey through which the mind processes any mental input–from raw sensation to behaviour–under uncertainty. This framework is the author's own synthesis and conceptual model.
2. **Literature grounding.** A systematic mapping from each stage of the framework to specific theoretical and empirical papers from cognitive science, decision theory, and mental-health research.
3. **Interpretation of existing systems.** An analysis showing that several existing mental-health systems (e.g., EEG-based depression detection, clinician diagnosis, social-media risk detection) implicitly follow this six-stage pipeline.
4. **Communication perspective.** A reflection on how this triadic pipeline can guide the design of clearer diagrams, graphs, and slides for communicating mental-health data in a cognitively aligned way.

1.4   Research Questions

The project is guided by the following research questions:

RQ1. How does the human mind form and organize thoughts in the presence of uncertainty and cognitive constraints?

RQ2. Why do triadic structures–such as accept/reject/defer–align more closely with human cognition than binary frameworks in mental-health contexts?

RQ3. How do symbols, meanings, and values influence emotional interpretation and mental-health outcomes?

RQ4. What integrated model best captures the flow from mental input to behavioural output in real mental-health scenarios?

RQ5. How can a triadic decision-making framework improve accuracy, interpretability, and safety in mental-health assessment and communication?

Chapter 2

Literature Base and Sources

2.1 Overview of Reviewed Papers (Week 1–6)

The literature reviewed spans cognitive neuroscience, CLT, decision sciences, meaning-making frameworks, and applied mental-health research. Broadly, it includes:

- **Neuroscience and Psychology** on thought formation, mind-wandering, distributed neural assemblies, belief construction, and self-generated thought (e.g., Smallwood and colleagues; Fox and colleagues; Pulvermüller and colleagues; Connors & Halligan).
- **Cognitive Load Theory (CLT)** on intrinsic, extraneous, and germane load, and working-memory limits (Sweller; Sweller, van Merrienboer & Paas; Paas, Renkl & Sweller).
- **Three-Way Decision (3WD) Models** originating with Yao and applied in medical and AI settings (e.g., 3WD-based depression and autism models, tri-level clinical decision studies).
- **SMV and Meaning-Making** on symbols, meanings, values, meaning in life, and cultural value systems (Yao; George & Park; Patel and colleagues; Metzl & Riba; Bulgakov & Egorychev).
- **Applied Mental-Health Systems** such as EEG-based depression models, autism detection under domain shift, clinician-driven psychiatric classification, and early-risk detection on social media (e.g., Shi & Gao; Sadeque and colleagues; studies reported in *Frontiers in Psychology*).
- **Supplementary Professional Articles** on brain structure, personal values, purpose, and resilience (e.g., Armstrong; Chambers; Haseltine).

Together, these works form a multidisciplinary corpus supporting a unified model linking *mind formation → cognitive limits → triadic decisions → SMV meaning-making → behaviour.*

2.2 Criteria for Selecting Papers

This section functions as the methodological backbone of the literature base.

Conceptual Relevance to Triadic Cognition

Papers were included if they addressed topics such as:

- uncertainty in decision-making and triadic reasoning (Yao),
- multi-layered cognitive structures and grounded cognition (Barsalou),
- meaning-making and values in life and psychiatry (George & Park; Patel and colleagues; Steger),
- emotional appraisal (Lazarus),
- symbolic interpretation and cultural value systems (Metzl & Riba; Bulgakov & Egorychev).

Theoretical or Empirical Rigor

Priority was given to:

- peer-reviewed journals in psychology, neuroscience, and decision science,
- established CLT and working-memory foundations (Sweller; Cowan),
- foundational 3WD and SMV theoretical papers (Yao),
- high-quality mental-health applications (e.g., EEG, fMRI, and social-media-based systems).

Applicability to Mental-Health Contexts

Studies were selected if they contributed to understanding:

- depression and anxiety,
- decision-making under ambiguity,
- emotional fluctuation and cognitive strain,
- diagnostic uncertainty and clinician judgment.

Coverage Across Cognitive Layers

Layer	Source Type	Example Authors
Thought formation	Neuroscience	Smallwood; Fox; Pulvermüller
Cognitive limits	CLT / Psychology	Sweller; Cowan
Uncertainty handling	Decision / 3WD	Yao; Shi & Gao
Meaning making	SMV / Meaning	Yao; George & Park
Real-world systems	Mental-health applications	Sadeque et al.; EEG / fMRI systems

Table 2.1: Coverage of literature across cognitive layers.

2.3 Strategy for Linking Claims to Papers

The following strategy was used to ensure traceability from claims to sources:

1. **Theoretical Claims → Foundational Papers**
   Claims about thought formation, working-memory limits, appraisal, triadic reasoning, and meaning-making are traced to authors such as Sweller, Cowan, Yao, Barsalou, Lazarus, and George & Park.

2. **Applied Claims → Empirical Studies**
   Statements about mental-health systems (EEG, fMRI, social media, clinician decision-making) are grounded in empirical papers such as Shi & Gao, Sadeque and colleagues, and studies reported in *Frontiers in Psychology*.

3. **Integration Claims → Cross-Theme Links**
   When synthesizing the six-stage model, claims were cross-validated by combining evidence from neuroscience, CLT, appraisal theory, SMV, and 3WD.

4. **Real-World Phenomena → Case Studies**
   Interpretations of rumination, decision paralysis, cognitive overload, and social-media misinformation are linked to studies on working memory, spontaneous thought, and meaning-based resilience.

This strategy ensures that each component of the *Triadic Mind Framework* is either directly supported by prior work or logically synthesized from multiple peer-reviewed sources.

Chapter 3

Conceptual Foundations

This chapter briefly introduces the core theories that are later integrated into the *Triadic Mind Framework*. It focuses on what each theory contributes, not on detailed reviews, to avoid redundancy.

3.1   Mind, Brain, and Mental Input

Contemporary cognitive neuroscience views the mind as a *dynamic networked system.* Work on the Default Mode Network (Smallwood; Fox) shows that self-generated thought, mind-wandering, and internally directed cognition recruit distributed brain systems. Pulvermüller and colleagues propose that "distributed neuronal assemblies" integrate sensory and conceptual information, suggesting that mental content arrives as overlapping, partly formed patterns rather than neat categories. Mental input, therefore, includes raw sensory data, internal bodily states, memories, and social cues. Authors like Armstrong have argued that the brain evolved primarily for bodily regulation, so interoceptive sensations often shape emotion and thought before conscious interpretation.

3.2   Cognitive Load Theory and Working Memory

Cognitive Load Theory (Sweller) explains how *limited working-memory capacity* constrains reasoning and learning. CLT distinguishes between intrinsic, extraneous, and germane load. Paas, Renkl, and Sweller emphasize that element interactivity influences how demanding a task is, while Cowan's work on working memory suggests humans can hold only a small number of chunks at once. In mental-health contexts, high emotional load further reduces cognitive capacity. CLT thus provides a rationale for why the mind often relies on simple, triadic structures and why overload can lead to misinterpretation, rigidity, or rumination.

3.3   Appraisal Theories of Emotion

Appraisal theory, developed by Lazarus, argues that emotions arise from cognitive evaluation. Primary appraisal assesses relevance and threat; secondary appraisal evaluates coping ability

and control. Empirical work shows that value-based appraisals predict mental-health outcomes and that meaning-based appraisals are linked to resilience and lower depression (e.g., Steger; Watanabe and colleagues). Appraisal theory provides the *emotional bridge* between raw mental input, cognitive limitations, and later meaning construction: people often feel before they fully understand, and these early emotional tags guide subsequent interpretation.

3.4   Symbol–Meaning–Value (SMV) Model

The SMV framework, proposed by Yao, conceptualizes interpretation as a triadic process:

- **Symbols (S):** labels or representations assigned to events (e.g., "failure," "threat," "support"),
- **Meanings (M):** narratives or interpretations of those symbols (e.g., "failure means I am incompetent" vs. "failure means I learned something"),
- **Values (V):** personal or cultural importance attached to meanings (e.g., perfectionism, fear of judgment, growth orientation).

Evidence from psychiatry and positive psychology shows that values and meaning strongly influence recovery, resilience, and distress (Patel and colleagues; George & Park; Steger; Metzl & Riba; Bulgakov & Egorychev).

3.5   Three-Way Decision (3WD) Theory

3WD theory, developed by Yao, extends classical binary decisions by introducing a *third region* for deferment or suspension of judgment. Instead of only "accept" or "reject," 3WD explicitly models:

- **Accept region:** evidence clearly supports a classification,
- **Reject region:** evidence clearly supports non-membership,
- **Defer region:** evidence is insufficient, ambiguous, or conflicting.

3WD has been applied to medical diagnosis, risk detection, and classification under uncertainty (e.g., Shi & Gao; early depression detection systems; EEG-based models). The defer region allows systems—and clinicians—to pause rather than force a potentially unsafe decision.

3.6   Why These Theories Can Be Combined

These theories align both *sequentially* and *structurally.*

Sequential Alignment

- Mental input formation → neuroscience (Smallwood; Fox; Pulvermüller),
- Cognitive filtering → CLT and working memory (Sweller; Cowan),
- Emotional tagging → appraisal theory (Lazarus),
- Meaning construction → SMV and meaning-in-life research (Yao; George & Park),

- Decision outcomes $\rightarrow$ 3WD (Yao).

Triadic Convergence

Many components are triadic:

- CLT: intrinsic / extraneous / germane load,
- SMV: symbol / meaning / value,
- 3WD: accept / reject / defer.

Complementary Strengths

Each theory focuses on a different layer (neural, cognitive, emotional, interpretive, decisional). When combined, they naturally form a *pipeline* that mirrors how mental-health information is processed. The ***Triadic Mind Framework*** is built by explicitly stitching these layers into a coherent six-stage model.

Chapter 4

The Triadic Mind Framework (Original Contribution)

4.1 Overview of the Framework

The **_Triadic Mind Framework_** is the original contribution of this project. It formalizes the _journey through which the mind processes any mental input_, especially in mental-health contexts, as a six-stage pipeline:

1. Mental Input
2. Cognitive Load Filter
3. Emotional Appraisal
4. SMV Meaning Construction
5. 3WD Decision Zone
6. Behaviour Output

Rather than treating the mind as a binary classifier, this framework portrays it as a _triadic, layered, and dynamic decision system_. The stages are grounded in existing theories but the specific combination and pipeline structure are proposed by the author.
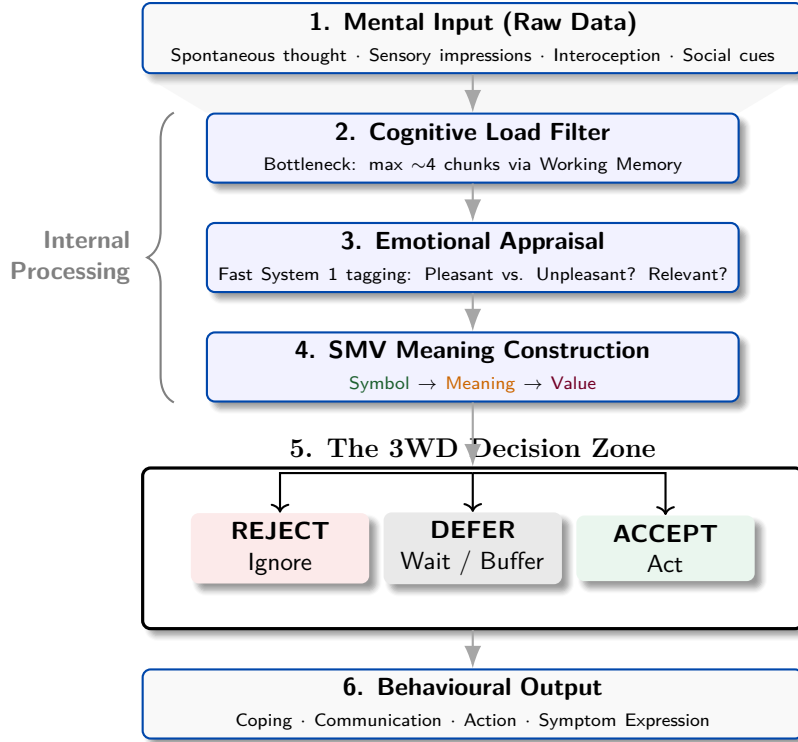
Figure 4.1: The Triadic Mind Framework Pipeline. The "Funnel" represents the reduction of raw input into processed meaning, which then enters the triadic decision engine before manifesting as behaviour.

4.2   Stage 1: Mental Input

Definition. Mental input is the raw experiential material that enters the mind before interpretation. It includes:

- sensory impressions (visual, auditory, interoceptive),
- spontaneous thoughts and imagery,
- autobiographical memories,
- bodily sensations (fatigue, tension),
- environmental and social cues.
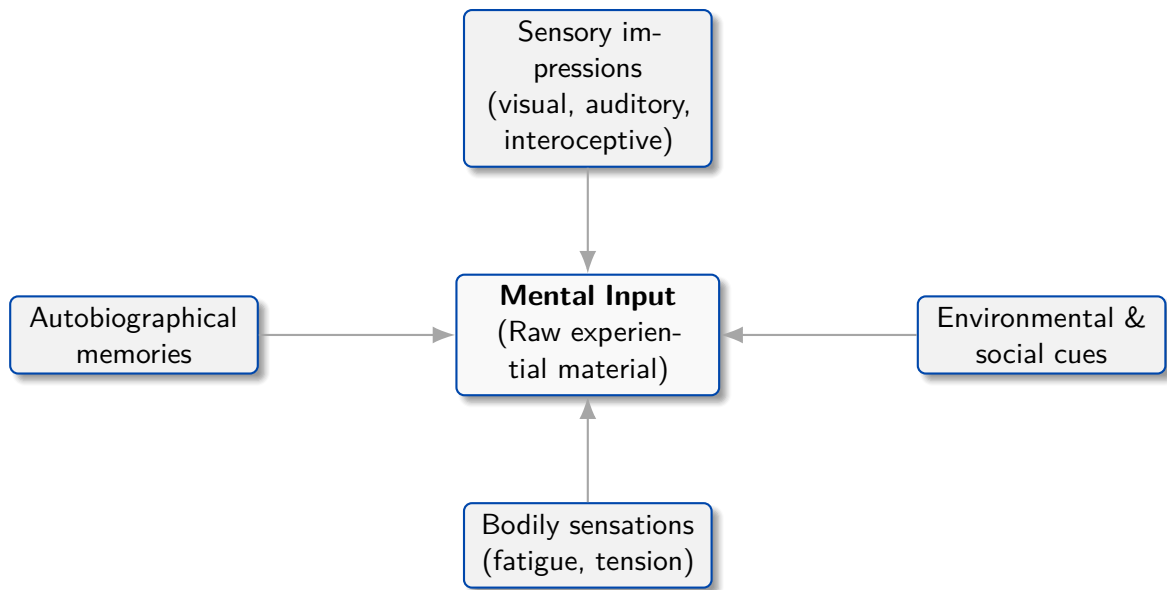
Figure 4.2: Schematic view of mental input as converging streams of sensory, bodily, memory, and social information.

Neuroscience (Smallwood; Fox; Pulvermüller) suggests this input arises from distributed networks (e.g., Default Mode Network, sensory and associative cortices) and is heterogeneous, overlapping, and pre-structured but not yet clearly categorized. **Key idea:** Mental input is the "unprocessed clay" of experience—rich, messy, and pre-judgment.

4.3 Stage 2: Cognitive Load Filter

Definition. The cognitive load filter determines how much and which parts of mental input can be processed at once, given working-memory limits and current cognitive resources.
Mechanisms:

- *Capacity constraint:* Only a few chunks can be maintained simultaneously (Cowan; CLT).
- *Prioritization by:*
  - relevance (emotionally or personally important cues),
  - complexity (simple cues are easier to process),
  - resource availability (fatigue, stress, anxiety shrink capacity).

When overloaded, the filter lets through only a subset of cues, often biased toward emotionally charged or highly salient information. This explains experiences like "too many thoughts," fixation on a single negative comment, or cognitive paralysis.
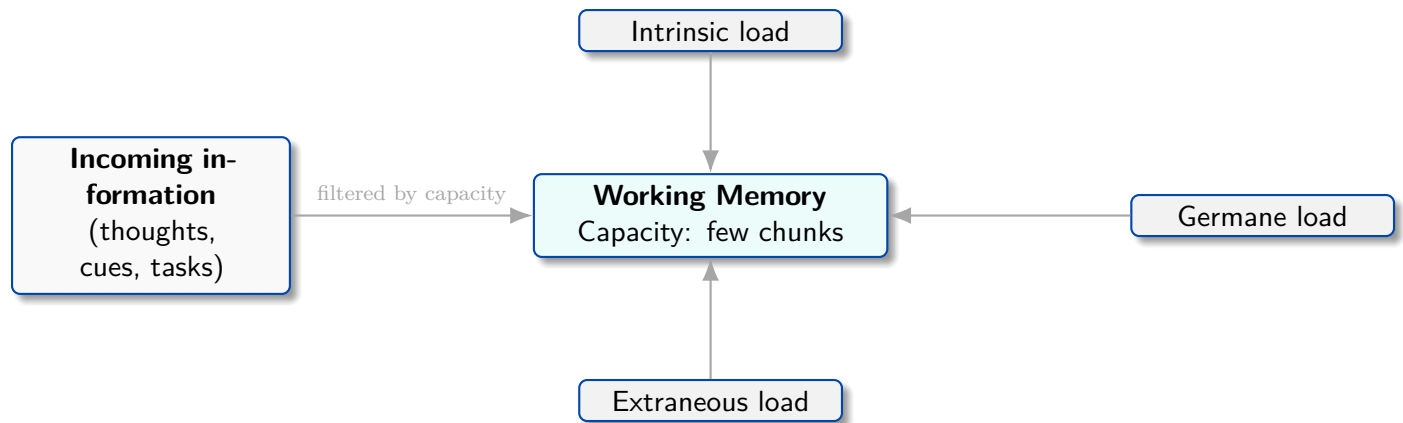
Figure 4.3: Cognitive Load Theory perspective: limited working-memory capacity shaped by intrinsic, extraneous, and germane load.

Key idea: The cognitive load filter is a *gatekeeper* that decides what becomes psychologically "real" enough to be appraised and interpreted.

4.4 Stage 3: Emotional Appraisal

Definition. Emotional appraisal is a rapid evaluation of filtered input, drawing on appraisal theory (Lazarus).
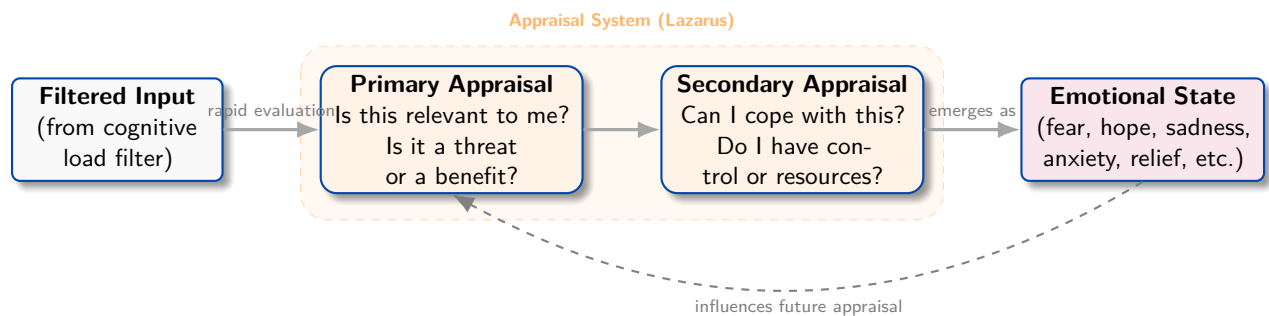
Figure 4.4: Emotional appraisal as a rapid, two-step evaluation system. The emergent emotional state then feeds back to influence subsequent appraisals.

Primary appraisal:
- Is this relevant to me?
- Is it beneficial, threatening, or a loss?

Secondary appraisal:
- Can I cope with this?
- Do I have control or resources?

Under high cognitive load, ambiguous stimuli are often appraised as negative by default. Emotional reactions can arise before full meaning is consciously articulated, shaping attention and memory.

Key idea: Emotion is the mind's *first draft*—fast, approximate, and highly influential on later stages.

4.5   Stage 4: SMV Meaning Construction

Definition. In this stage, the mind uses the SMV structure to construct meaning:

- **Symbol:** a label or representation (e.g., "failure," "threat," "support").
- **Meaning:** the narrative or interpretation (e.g., "failure means I'm incompetent"; "failure means I learned").
- **Value:** importance or priority attached to that meaning (e.g., perfectionism, fear of shame, growth orientation).

Meaning depends on:

- prior experiences,
- cultural background,
- current emotional state and cognitive load,
- personal goals and values.

Research on meaning in life and values (George & Park; Patel and colleagues; Steger) shows that these constructions shape resilience, depression, and engagement.
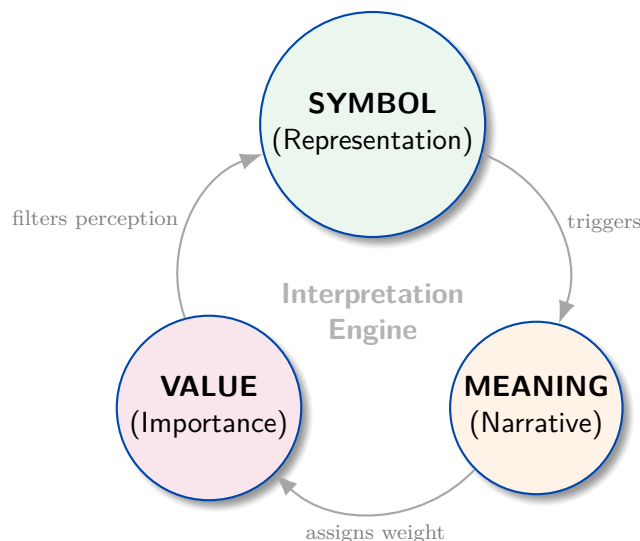
Figure 4.5: The SMV Cycle: A continuous feedback loop where values dictate which symbols are noticed, and symbols drive the construction of meaning.

Key idea: SMV is the *interpretive engine* where perception becomes personal reality.

4.6 Stage 5: 3WD Decision Zone

Definition. Once symbols, meanings, and values are formed, the mind must decide how to classify the situation and what stance to take. Here, 3WD becomes central:

- **Accept region:** "This is real / true / important enough to act on now."
- **Reject region:** "This is not true / not relevant / not worth acting on."
- **Defer region:** "I am unsure; I need more information, time, or emotional regulation."

In mental health, deferment might involve monitoring symptoms, asking for more assessments, or postponing a major life decision instead of forcing a yes/no conclusion.

ACCEPT	DEFER	REJECT
evidence	evidence	evidence
strong for	unclear	strong against

Evidence / confidence continuum
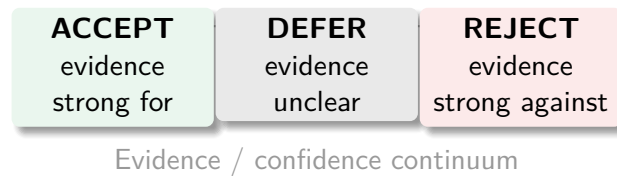
Figure 4.6: Three-Way Decision theory: explicit accept, defer, and reject regions along an evidence continuum.

Key idea: The *defer region* is not a weakness but a *protective buffer* that allows safe handling of uncertainty.

4.7 Stage 6: Behaviour Output

Definition. Behaviour output is the visible expression of the entire pipeline. It includes:

- emotional displays (crying, irritability, withdrawal),
- coping strategies (problem-solving, avoidance, substance use),
- decision-making patterns (impulsive choices, procrastination),
- verbal communication (self-talk, conversations),
- long-term habits (rumination, avoidance, help-seeking).

Behaviour is shaped by:

1. which inputs were noticed (Stages 1–2),
2. how they were emotionally tagged (Stage 3),
3. what meanings and values were assigned (Stage 4),
4. how they were classified (Stage 5).

Key idea: Behaviour is the *output layer* of a deeply triadic, multi-stage mental process.

4.8 Summary of the Full Pipeline

The *Triadic Mind Framework* shows that human cognition is:

- **Limited** by working-memory and cognitive load,

- **Emotional** through rapid appraisals,
- **Interpretive** via SMV meaning construction,
- **Triadic and uncertainty-aware** via 3WD decisions,
- **Behaviourally expressive** through coping and action.

This six-stage pipeline is proposed as a unified model answering RQ4 and forming the basis for analyzing empirical mental-health systems.

Chapter 5

Empirical Support and Applications

5.1 Mapping Framework Stages to Reviewed Papers

To avoid redundancy, this mapping is presented in a compact form:

Stage	Concept Focus	Example Supporting Work
1	Mental input & spontaneous thought	Smallwood; Fox; Pulvermüller; Armstrong
2	Cognitive load & capacity limits	Sweller; Paas, Renkl & Sweller; Cowan
3	Emotional appraisal	Lazarus; Steger; Watanabe et al.
4	SMV meaning-making	Yao; George & Park; Patel et al.; Metzl & Riba; Bulgakov & Egorychev
5	3WD and uncertain decisions	Yao; Shi & Gao; Sadeque et al.; clinical 3WD
6	Behaviour, rumination, values in action	Bruning; George & Park; ACT-inspired literature

Table 5.1: Mapping of *Triadic Mind Framework* stages to example supporting literature.

Each stage is thus anchored in at least one branch of existing literature, giving empirical and theoretical support to the proposed framework.

5.2 Examples from Mental-Health Systems

Several reviewed systems illustrate parts of the framework in practice.

EEG-Based Depression Detection (3WD-Style Models)

- **Input:** EEG signals (Stage 1).
- **Load & Feature Selection:** reduction and feature extraction (Stage 2).
- **Implicit "emotional" tagging:** patterns linked to depressive vs. non-depressive states (Stages 3–4, interpreted computationally).

- **Classification into three regions:** clear depressed, clear healthy, ambiguous (Stage 5).
- **Output:** model decisions guiding clinical follow-up (Stage 6).

Clinician-Based Psychiatric Diagnosis

- **Input:** patient narratives, symptoms, cultural context (Stage 1).
- **Cognitive load:** many factors; clinicians simplify and prioritize (Stage 2).
- **Appraisal:** rapid sense of risk, severity, and urgency (Stage 3).
- **Meaning and values:** interpretation shaped by clinician training and cultural understanding (Stage 4).
- **Implicit accept/reject/defer patterns** in diagnosis and follow-up planning (Stage 5).
- **Behaviour:** treatment decisions, referrals, monitoring plans (Stage 6).

Autism Detection Across Sites (Shi & Gao)

- **Input:** multisite fMRI data (Stage 1).
- **Load:** feature selection and domain adaptation (Stage 2).
- **Uncertainty estimation:** pseudolabel confidence (Stages 3–4, interpreted computationally).
- **3WD-inspired selection:** accept high-confidence labels, reject noise, defer ambiguous cases (Stage 5).
- **Output:** final classification and potential clinical insight (Stage 6).

Early Depression Detection on Social Media (Sadeque et al.)

- **Input:** streaming social-media posts (Stage 1).
- **Load:** text preprocessing and feature extraction (Stage 2).
- **Affective signals:** sentiment, linguistic markers of mood (Stage 3).
- **Meaning/value:** patterns that represent risk, hopelessness, or resilience (Stage 4).
- **Decision:** depressed / not depressed / need more posts (Stage 5).
- **Output:** risk alerts or continued monitoring (Stage 6).

5.3 How Applications Illustrate the Framework in Action

These systems collectively demonstrate:

- **Ambiguous data → heightened appraisal:** Unclear EEG, fMRI, or textual signals increase perceived risk or uncertainty, mirroring emotional appraisal dynamics.

- **Cognitive load → simplification:** Clinicians and algorithms both reduce complexity via feature selection, heuristics, and triadic thresholds, reflecting Stage 2.
- **Meaning and values → interpretive direction:** Patient values (e.g., perfectionism), clinician cultural awareness, and design goals for AI systems shape which patterns are seen as dangerous or safe (Stage 4).
- **3WD → safer decisions:** The explicit or implicit defer region prevents rushed judgments, reduces false positives/negatives, and supports ethical decision-making in sensitive contexts (Stage 5).
- **Behavioural outcomes → final expression:** Clinical actions, system alerts, and patient responses are the visible outcome of the entire pipeline (Stage 6).

5.4 Strengths and Gaps in the Evidence

Strengths

1. **Multi-disciplinary support.**
   The framework is supported by neuroscience, cognitive psychology, CLT, decision science, computational psychiatry, and clinical research.
2. **Alignment with real-world systems.**
   The accept/reject/defer triad appears repeatedly in independent domains, from EEG classification to clinician judgment, reinforcing the centrality of 3WD patterns.
3. **Stage-by-stage grounding.**
   Each stage can be justified by at least one theory and one or more empirical studies, increasing theoretical robustness.

Gaps

1. **No single study tests the full pipeline.**
   Existing work covers individual stages or pairs of stages. The complete six-stage journey from input to behaviour remains a conceptual integration proposed here.
2. **SMV underused in computational models.**
   Meaning and value are rich in clinical and psychological theory but rarely operationalized in machine-learning systems.
3. **Limited longitudinal evidence.**
   Many studies focus on short-term classification. The evolution of meaning, appraisal, and decision zones over time is less explored.
4. **Deferment protocols in practice.**
   Clinicians often act as if they use defer regions (e.g., "watchful waiting"), but formal triadic protocols are still rare.

Chapter 6

Discussion and Conclusion

6.1   How the Triadic Mind Reframes Mental Health

With respect to RQ1 and RQ4, the *Triadic Mind Framework* reframes mental health as a *multi-stage, triadic process* rather than a static label. Instead of asking, "Is this person depressed or not?", the framework asks:

- What inputs are being noticed?
- How is load affecting what gets through?
- How are situations emotionally appraised?
- What meanings and values are being constructed?
- Where does the case fall in accept/reject/defer space?
- What behaviours emerge from this chain?

6.2   The Role of the Defer Option and Uncertainty

Addressing RQ2 and RQ5, the *defer option* emerges as a central feature of psychologically safe mental-health practice. It:

- gives time for more data and reflection,
- reduces pressure to force binary decisions under uncertainty,
- aligns with real clinician behaviour (e.g., watchful waiting, requesting more tests),
- can be built into AI systems to avoid overconfident predictions on ambiguous cases.

6.3   Theoretical and Practical Implications

In relation to RQ3 and RQ4:

Theoretical Implications

- The framework integrates previously separate theories into one pipeline, suggesting that mental-health processes can be systematically modeled as a combination of input,

load, emotion, meaning, decision, and behaviour.

- It emphasizes SMV and values as central to mental-health outcomes, not just as side factors.

Practical Implications

- Designers of mental-health tools can explicitly include a defer region, confidence scores, and options for human-in-the-loop review.
- Clinicians and therapists can structure interventions around different stages (e.g., training attention to input, managing load, reappraising meanings, or working with values).
- Communicators can design graphs and slides that make triadic outcomes and uncertainty visible, rather than hiding them.

6.4 Limitations of the Project

This project has several limitations:

- The *Triadic Mind Framework* is primarily conceptual, built from literature synthesis rather than direct experiments.
- Some cited work (especially SMV and newer AI applications) is emerging and not yet widely replicated.
- Cultural differences in meaning and values may require modifications of the framework for different populations.
- The mapping from computational metrics (e.g., EEG features) to psychological constructs (e.g., appraisal, value) is still approximate.

6.5 Directions for Future Work

Future work could:

1. **Empirically test the pipeline.**
   Design studies where mental input, load, appraisal, meaning, 3WD decisions, and behaviour are measured sequentially to test how well the six stages predict outcomes.
2. **Operationalize SMV in models.**
   Develop computational features that approximate symbols, meanings, and values in text or sensor data, and evaluate whether including them improves prediction and interpretability.
3. **Formalize deferment protocols.**
   Create clinical guidelines and AI decision policies that explicitly use accept/reject/defer zones, with clear criteria and escalation paths.
4. **Extend to longitudinal trajectories.**
   Study how repeated passes through the pipeline (over weeks or months) shape long-term mental-health trajectories, resilience, or chronic distress.

6.6 Final Remarks

This report proposes the ***Triadic Mind Framework*** as a unified, triadic model of mental processing in mental-health contexts. By integrating neuroscience, CLT, appraisal theory, SMV, and 3WD into a single six-stage pipeline, it offers a way to think about mental health that respects uncertainty, honours meaning, and foregrounds the crucial role of the defer region. For communication in data science, the framework also provides a blueprint for designing visuals and narratives that align with how the mind naturally processes information. Ultimately, it suggests that moving beyond binary thinking toward triadic, meaning-aware models may lead to more accurate, humane, and interpretable mental-health systems.

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