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Not peer-reviewed version

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Posted Date: 26 January 2026

doi: 10.20944/preprints202512.0507.v2

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Concept Paper

Rethinking Emotion as Part of the Arousal Appraisal Model

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Abstract

The Arousal Appraisal Model (AAM) reconceptualizes emotion as one configuration within a broader regulatory control problem: calibrating physiological mobilization to momentary capacity for effective expression and integrative processing. The model specifies four graded experiential regimes along a mobilization–capacity continuum organized by appraisal: low-load contemplation, matched-load action, excess-load emotion, and overload collapse/freeze. When mobilization remains below the threshold for coordinated output, experience is characterized by quiet readiness and tentative inclinations (low-load contemplation). When mobilization approximates available capacity within a task, activation is efficiently metabolized as high throughput, supporting coherent engagement and flow-like absorption (matched-load action). When mobilization exceeds capacity, surplus activation is carried out as urgency, tension, and differentiated feeling (excess-load emotion). When exceedance persists under appraisals of constraint or low controllability, output may be restricted as protective shutdown (overload collapse/freeze). Synthesizing evidence from two-factor and misattribution paradigms, neuroimaging of arousal–appraisal coupling, and research on flow and regulatory flexibility, the AAM generates testable predictions linking physiological indices (e.g., autonomic modulation, endocrine mobilization) and throughput measures to phenomenological reports of coherence, effort, overwhelm, and numbing across regimes.

Keywords: arousal regulation; flow state; emotion theory; affective neuroscience; cognitive appraisal; consciousness

1. Introduction

1.1. Historical Context and Rationale

Historically, accounts of emotion have oscillated between bodily and mental explanations, moving from early somatic models to modern neurophysiological and cognitive theories. In the nineteenth century, James and Lange proposed that bodily change precedes emotional awareness, whereas Cannon and Bard argued that arousal and feeling arise in parallel through central circuitry. Schachter and Singer (1962) later integrated these positions in two-factor theory, proposing that emotion depends on physiological arousal interpreted through context and labeling. Subsequent work confirmed that similar autonomic activation can be experienced as different emotions depending on appraisal and meaning (Manstead & Wagner, 1981; Cotton, 1981; Sinclair et al., 1994). Across this lineage, a central question persists: how do shifts in bodily activation become organized into the felt states we call emotion?

The present paper extends this tradition by proposing the Arousal Appraisal Model (AAM). The AAM treats emotion not as the default output of arousal, but as one regime within a broader arousal–appraisal process that also includes low-load contemplative states, coordinated action, and overload shutdown. Its core claim is that subjective experience tracks the relationship between mobilized energy and available capacity for effective expression and integrative processing, with appraisal and integrative awareness shaping how that relationship is lived (see Section 2.4).

1.2. Methodological Orientation

Although conceptual, this paper follows the conventions of psychological modeling by reorganizing findings from affective neuroscience, psychophysiology, and appraisal research into a regulatory framework intended to be empirically tractable. The AAM is designed to generate hypotheses about how mobilization and appraisal appear in measurable indices of regulation and in subjective reports of coherence, effort, and overwhelm. The goal is not metaphorical redescription, but a testable proposal linking arousal regulation to experience and behavior across varying load conditions.

1.3. Limitations of Fragmented Models

Contemporary theories often partition the problem; neurobiology for arousal, psychology for feeling, and philosophy for meaning; yet lived experience is integrative: physiological activation, interpretive stance, and perceived significance co-occur and mutually shape one another in real time. Many models describe coordinates (e.g., arousal/valence, autonomic states) or interpretive structure (appraisal) but do not specify when mobilized energy consolidates into action versus crystallizes as emotion versus constricts into shutdown. Put differently, what is often missing is a transition rule: a mechanistic account of how arousal and appraisal jointly produce regime shifts as demands and options change.

Influential frameworks illuminate parts of this process: appraisal models specify interpretive structure (Pecchinenda, 2001), excitation-transfer emphasizes carry-over across episodes (Bryant & Miron, 2003), and predictive-processing accounts formalize affect as inference under uncertainty (Seth & Friston, 2016). Descriptive traditions such as Yerkes–Dodson, circumplex models, and the clinical “window of tolerance” provide valuable coordinate systems for arousal and performance, but they do not specify how mobilized energy is transformed into distinct modes of experience and behavior. The AAM is proposed as a mechanistic complement: it foregrounds how appraisal organizes mobilization relative to available capacity, thereby generating shifts among contemplation, action, emotion, and collapse/freeze.

1.4. Purpose of the Present Paper

The purpose of this paper is to articulate the Arousal Appraisal Model (AAM) in neurophysiological and phenomenological terms, situate it within two-factor and predictive-processing traditions, and derive testable implications for basic research and clinical application. The model’s central contribution is to treat emotion not as the endpoint of regulation, but as one regime within a broader matching problem: how mobilization is calibrated to available capacity for effective expression and integrative processing. This proposal complements earlier work in which I conceptualized flashbacks as expressions of a hippocampal drive for coherence in traumatic memory (Passaro, 2025), extending a coherence-based perspective from episodic recollection to moment-to-moment arousal regulation.

In the AAM, mobilization refers to moment-to-moment physiological activation recruited for engagement (autonomic and neuroendocrine drive, including sympathetic arousal and longer-latency HPA contributions). Capacity refers to currently available resources and channels for effective expression and integration (behavioral options, executive control, physiological resilience, and social/relational permission). Subjective experience tracks the relationship between these terms. When mobilization remains below the threshold for coordinated output, experience tends to remain in low-load contemplation; when mobilization approximates capacity, it consolidates into organized action; when mobilization exceeds capacity, surplus activation is more likely to be carried as differentiated feeling; and when exceedance persists under appraisals of constraint or helplessness, the system may restrict output through collapse/freeze. The next section turns to the biological backbone of the model, beginning with mobilization processes centered on the amygdala and related autonomic and neuroendocrine systems.

2. Theoretical Framework: Arousal Appraisal Model

2.1. *The Amygdala and the Biology of Mobilization*

The Arousal Appraisal Model locates its four regulatory regimes in concrete brain–body processes, beginning with the amygdala’s role in mobilization. Contemporary affective neuroscience increasingly frames the amygdala not as a dedicated “fear center,” but as a relevance- or significance-detection system that helps recruit physiological resources in response to personally important events (Sander et al., 2003; Pessoa & Adolphs, 2010). In AAM terms, amygdala-centered relevance detection contributes to the energetic substrate across all four regimes—low-load contemplation, matched-load action, excess-load emotion, and, at the extremes, overload collapse/freeze—by shaping the intensity and timing of activation recruited into the system.

Crucially, the amygdala does not operate in isolation. It is embedded in a distributed appraisal network involving prefrontal regions, hippocampus, insula, and anterior cingulate cortex. These systems integrate exteroceptive cues (faces, voices, tasks, environmental demands) and interoceptive cues (signals from cardiovascular, respiratory, and visceral systems) into ongoing estimates of salience, urgency, and controllability. When events are appraised as relevant—novel, threatening, promising, socially consequential, or physiologically pressing—amygdala-centered circuitry helps recruit rapid mobilization and prepares the organism for action. Through hypothalamic projections, this mobilization can engage neuroendocrine pathways, including the hypothalamic–pituitary–adrenal (HPA) axis. Although described here sequentially for clarity, these processes are reciprocal and recurrent: cortical appraisal and subcortical mobilization continually shape one another over time.

Importantly, this coupling is active even in the absence of overt danger. Ordinary cognition—imagined scenes, anticipatory planning, background concerns—can bias autonomic and hypothalamic output, producing subtle shifts in arousal and endocrine tone. In parallel, interoceptive monitoring continually updates the brain about internal conditions such as temperature, glucose availability, oxygenation, and hydration, allowing mobilization to be adjusted before demands become explicit.

Consider a mundane example such as mild dehydration. A small drop in fluid balance is registered in interoceptive channels and represented in brainstem–insula systems as a subtle “something needs attention.” At first, the signal may remain below the threshold for coordinated output: a passing image of water, the thought “I could use a drink,” and a faint impulse to move. If hydration improves or competing demands take priority, the system can let this low-load state fade. If dehydration worsens—or the organism infers that no fluid is forthcoming—salience increases; urgency appraisals rise, and mobilization ramps. When mobilization reaches a level that can be effectively expressed, the state consolidates into matched-load action: standing, walking to the kitchen, pouring water, and drinking. In this brief sequence, the AAM is visible in miniature: internal cues are appraised, energy is mobilized, and behavior is organized to restore balance.

This “go/no-go” negotiation is ongoing. The arousal–appraisal system continually samples the world and the body, issuing small adjustments in mobilization that may or may not consolidate into overt behavior. Low-load contemplation, in this light, is not a failure to act but an active regulatory mode: the system leans toward multiple possible actions while conserving energy and waiting to see which one warrants full recruitment.

At the same time, the amygdala is, in a sense, a one-trick specialist. When difficulty is detected—physical, social, or internal—its default solution is to add energy. This works well for problems solvable through immediate action. But many modern difficulties—complex interpersonal conflict, creative blocks, existential concerns—are not resolved by escalation alone. In such cases, effective regulation may require counterbalancing mobilization by widening perspective, pausing, and allowing slower integrative processes to work. The AAM emphasizes that the broader appraisal network can either amplify the amygdala’s push toward action or intentionally downshift into contemplation, opening alternative routes to problem solving.

Clinically, the same architecture helps explain how modest cues can become affectively amplified. For individuals with elevated baseline mobilization or heightened reactivity, small internal shifts that would normally organize simple action can instead be carried out as diffuse unease. Rather than “I need some water,” the person experiences free-floating anxiety or the sense that “something is wrong, but I don’t know what.” In AAM terms, this reflects a chronic excess-load configuration in which minor demands accumulate atop an already elevated baseline.

If activation continues to escalate without discharge or containment, the system may be pushed toward overload collapse/freeze. At this extreme, the nervous system functions like a circuit breaker: to prevent damage from unsustainable load, it restricts output. Behavioral options narrow, and disengagement becomes the default protective response. A person may go blank in a meeting, dissociate during conflict, shut down under criticism, or become immobilized in traumatic or acutely shaming situations. Collapse and freeze, in this framework, are not failures of regulation but last-resort survival modes in which the system sacrifices short-term flexibility to preserve basic integrity under overwhelming conditions.

This logic makes evolutionary sense. In ancestral environments, serious threats were often physical; rapid fight/flight mobilization, or freezing when escape was impossible, carried clear survival value. In modern life, many threats are social or symbolic—evaluation, embarrassment, rejection—yet the nervous system often responds as if these were life-or-death events. Because overt “fight” or “flight” are frequently constrained by social norms, collapse or freeze can become the “least bad” available solution: going blank or shutting down may be more tolerable than aggression or escape.

From this perspective, the system favors speed over precision: mobilization often begins before slower cortical processes fully interpret what is happening, with meaning filled in after the fact. In Schachter and Singer’s (1962) terms, the amygdala provides the charge, and the cortex provides the label. When prefrontal feedback is flexible, the organism can move fluidly among contemplation, action, emotion, and (when necessary) brief shutdown. When that feedback loop is compromised—by chronic stress, trauma, illness, or developmental constraint—mobilization may become disproportionately high, poorly timed, or slow to resolve, leaving the person living more often in excess-load emotion or near collapse.

2.2. *The HPA Axis and the Energetics of Emotion*

Emotion arises from the same mobilizing energy that supports action. The hypothalamic–pituitary–adrenal (HPA) axis is not merely an emergency system; it is a major endocrine arm of mobilization that helps allocate metabolic resources over longer time scales. Cortisol release (coordinated with catecholaminergic activation) supports sustained readiness—mobilizing metabolic resources and biasing attention toward salient demands—while return toward baseline typically accompanies completion, containment, or effective down-regulation.

A useful way to conceptualize these dynamics is through a circuit metaphor. Energy is mobilized, routed into output and/or integrative processing, and then dissipated. When the loop closes efficiently, mobilization rises to meet a demand and falls as the demand is met; experience is often characterized by vitality, clarity, and a sense of completion. In AAM terms, matched-load action reflects efficient throughput: mobilization is metabolized through coordinated behavior (and concomitant integrative processing) and therefore does not need to be carried as persistent tension or differentiated feeling.

When the loop is incomplete, energy accumulates. In AAM terms, this accumulation reflects mobilization that cannot be metabolized through available capacity—through coordinated behavior, integrative processing, or both. If mobilization is elevated but cannot be expressed in effective action, it is carried out as excess-load emotion: tension, urgency, racing cognition, and somatic constriction accompanied by the felt need to “do something” without a clear outlet. If exceedance is sufficiently large or prolonged, continued high activation becomes costly; the system may then restrict output as a protective maneuver, shifting toward overload collapse/freeze.

Crucially, HPA recruitment is not driven by “arousal magnitude” alone, but by appraisal-relevant features of the situation. Across laboratory stress paradigms, cortisol responses are most reliably elevated when stressors involve social-evaluative threat and low controllability, a profile that maps closely onto the AAM’s emphasis on constraint and helplessness as drivers of costly, sustained mobilization (Dickerson & Kemeny, 2004). Endocrine mobilization is preferentially amplified when demands are appraised as high-stakes and difficult to influence—conditions under which excess-load emotion and shutdown become more probable if viable throughput is limited.

Low-load contemplation occupies the other end of this energetic spectrum. Here, HPA activity is not absent but typically modest: small pulses of mobilization keep the organism responsive without forcing commitment. The system samples options, anticipates demands, and simulates possible futures while conserving resources. In circuit terms, enough current runs to keep the system online, but large devices—major behavioral commitments—have not yet been switched on.

In the AAM, then, the key variable is not arousal in isolation but whether mobilized energy can be metabolized through available capacity. When capacity is sufficient, mobilization is routed into organized action or quiet readiness; when capacity is constrained or exceeded, the same mobilization is carried as surplus activation and becomes more likely to register as emotion—or, at the extreme, to precipitate protective output restriction. The next question is how the nervous system determines what a given surge of mobilization means and what to do with it. That organizing function is supplied by cognitive appraisal. Here, *throughput* denotes the degree to which mobilization is converted into coordinated output and/or integrative processing rather than carried forward as residue (e.g., tension, intrusive monitoring, rumination).

2.3. From Energy to Meaning: Cognitive Appraisal Across the AAM

Building on Schachter and Singer’s (1962) two-factor theory, physiological arousal is necessary but not sufficient for emotion; cognitive appraisal supplies the interpretive frame that organizes nonspecific activation into a meaningful episode. The Arousal Appraisal Model (AAM) extends this logic by specifying a transformation rule: appraisal continuously evaluates mobilization relative to momentary capacity (e.g., available behavioral options, executive control, physiological resilience, and relational permission), alongside estimates of controllability and constraint, and thereby organizes the episode into one of four experiential regimes—low-load contemplation, matched-load action, excess-load emotion, or overload collapse/freeze. Misattribution research supports the underlying premise: similar physiological activation can be experienced as joy, fear, anger, or “nervousness” depending on how bodily signals are explained in context (Cotton, 1981; Sinclair et al., 1994; Mezzacappa, 1999). The AAM therefore predicts that shifts among contemplation, action, emotion, and shutdown will be better explained by the mobilization–capacity relationship under appraised controllability/constraint than by arousal magnitude alone.

In this framework, appraisal is not merely categorical labeling (“this is fear”) but a set of ongoing operations that shape both the trajectory of mobilization and the form it takes in experience. These operations include detecting significance (what matters, and how much), assigning cause (what this activation is about), estimating controllability (what can be done), forecasting consequences, and selecting regulatory strategy (escalate, maintain, or downshift). Together, they bias whether the same physiological charge is lived as quiet possibility (contemplation), absorbed propulsion (action), affective urgency and tension (emotion), or a protective output-limiting mode (collapse/freeze). The regimes are thus not separate systems, but graded configurations of a single mobilization–capacity control problem (integrated in Section 2.4).

This organization clarifies why similar arousal can be experienced as “emotion” in one context and as “focus” or “readiness” in another. When mobilization is appraised as aligned with capacity and permitted action, it is more likely to be routed into coordinated engagement. When mobilization is appraised as exceeding capacity—or as blocked from effective expression—it is more likely to be carried as tension and differentiated feeling. When exceedance is severe and appraised as inescapable or socially dangerous, shutdown becomes increasingly probable as a protective strategy.

Temperament, the individual baseline level of arousal, and learning shape both appraisal thresholds and the priors that guide interpretation. Individuals with chronically elevated baseline mobilization or heightened sensitivity to interoceptive cues may interpret modest activation as globally ominous, yielding “free-floating anxiety” or the sense that “something is wrong, but I can’t tell you what.” In AAM terms, activation becomes self-validating evidence of threat, amplifying mobilization, and widening the mobilization–capacity gap.

Crucially, appraisal is bidirectional: it can amplify mobilization, but it can also intentionally reduce it. Some demands benefit from escalation (immediate danger, urgent deadlines); others are often worsened by increased drive (complex conflict, creative blocks, existential dilemmas). In such cases, shifting into low-load contemplation is not avoidance by default, but a legitimate regulatory maneuver that widens perspective and enables slower integrative processes. Consistent with this claim, cognitive reappraisal and mindfulness-based attention are associated with increased prefrontal engagement and reduced amygdala reactivity and autonomic arousal, supporting more flexible responding (e.g., Beauregard et al., 2001; Schaefer et al., 2002; Doll et al., 2016; Farb & Anderson, 2012).

In summary, cognition does not merely name arousal; it shapes its meaning and course. By organizing mobilization relative to capacity—under ongoing estimates of controllability and constraint—appraisal biases experience toward contemplation, action, emotion, or collapse. The AAM’s distinctive claim is that contemplation and shutdown—often treated as absences of regulation—are themselves organized configurations of the same appraisal-driven control architecture.

2.4. Integrating the Arousal Appraisal Model: From Contemplation to Collapse

In the present paper, capacity refers to multiple, partially independent channels through which mobilization can be expressed or integrated. At minimum, it includes (i) action capacity—available channels for coordinated output (behavioral options, motor readiness, and social/relational permission); (ii) integrative capacity—resources for appraisal updating, meaning-making, and regulation (executive control, working memory, and reflective access); and (iii) physiological capacity—resilience and recoverability shaped by sleep, illness, baseline stress load, and autonomic flexibility. In practice, regime shifts are expected when mobilization exceeds the limiting capacity channel under current appraisal. In this framing, excess-load emotion can arise when mobilization outpaces either action capacity (few viable outlets) or integrative capacity (reduced ability to metabolize and reframe), whereas collapse/freeze becomes increasingly probable when mobilization remains high while action capacity is sharply constrained.

The Arousal Appraisal Model can be visualized as a continuum of mobilized energy relative to available capacity for expression and integration. At one end lies low-load contemplation. Here, mobilization remains below the threshold required to recruit coordinated action. Impulses appear as passing wishes, leanings, or nascent intentions—“it would be nice if...,” “maybe I should...” —that do not consolidate into sustained output. Phenomenologically, this range is experienced less as discrete emotion and more as a field of possibility: quiet readiness in which options are sampled without full energetic commitment.

In the mid-range, mobilization more closely matches behavioral capacity within a given task. In this matched-load action zone, energy is efficiently utilized in behavior and is typically felt as propulsion rather than tension. Attention narrows to the present activity; self-monitoring quiets; and behavior unfolds with relative ease and inevitability. Flow-like states (Csikszentmihalyi, 1990) are vivid instances of this configuration in which challenge and skill are balanced, and performance becomes intrinsically absorbing. In such states, affect is often backgrounded rather than crystallized into discrete emotional episodes, because mobilization is continuously being metabolized through action. Positive affect may become most salient at transitions—when task demand drops while mobilization lingers briefly—allowing residual energy to be appraised as relief, expansion, or elation.

As mobilized energy rises beyond what current capacity can effectively express or integrate, the system enters the excess-load emotion zone. Here, activation exceeds the available channels for coordinated discharge and must be carried as surplus in the body—tension, urgency, agitation, heaviness—while awareness organizes that surplus into differentiated feeling. Emotion, in this view, is not a separate category added onto regulation; it is the subjective form taken by mobilization when energy outpaces what can be done with it under present constraints.

If mobilization continues to escalate or remains elevated in the absence of viable behavioral solutions, the continuum approaches its upper extreme: overload collapse/freeze. In this regime, the system restricts output as a protective strategy. Attention may narrow or fragment; muscle tone may drop; initiative may disappear; and subjective experience may shift toward numbness, detachment, or “going blank.” From the standpoint of survival, this shutdown trades flexibility for protection, minimizing further cost when continued high mobilization cannot be expressed safely or integrated coherently.

Across all four regimes—low-load contemplation, matched-load action, excess-load emotion, and overload collapse/freeze—integrative awareness operates as a continuous meaning-making process. It interprets mobilization in light of its own internal models, values, relational history, and perceived options, shaping whether similar physiological signals are lived as a faint inclination, an absorbed sense of doing, a wave of intense feeling, or a protective shutdown. The AAM thus treats contemplation and collapse not as failures or mere absences, but as legitimate members of the regulatory repertoire.

Boundary conditions and clarifications. “Excess-load” is relative rather than absolute: a given mobilization level may be metabolized as matched-load action in one person or context and experienced as excess-load emotion in another, depending on skill, health, fatigue, social constraint, and available regulatory scaffolding. Likewise, low-mobilization states can still constitute excess-load conditions if capacity is markedly reduced (e.g., illness, depletion, severe constraint), producing heaviness or shutdown-like phenomenology despite modest physiological recruitment. Mixed or rapidly shifting emotions can be conceptualized as competing appraisals operating on shared mobilization, reorganizing the same energetic substrate into different interpretive frames over short timescales.

In the AAM, mobilization denotes moment to moment physiological recruitment for engagement (autonomic and neuroendocrine drive), while capacity denotes currently available resources for effective expression and integration (behavioral options, executive control, physiological resilience, and social/relational permission). When mobilization remains subthreshold, experience takes the form of low-load contemplation; when mobilization matches capacity, it becomes matched-load action; when mobilization exceeds capacity, it appears as excess-load emotion; and when mobilization greatly exceeds capacity with no viable outlet, the system may shift into overload collapse/freeze. Appraisal and integrative awareness continuously interpret the mobilization–capacity relationship, shaping whether similar mobilization is lived as possibility, efficient engagement, affective urgency, or protective restriction.

2.5. Brief Operationalization of Regimes and Discriminant Criteria

To render the AAM empirically tractable, regimes can be operationalized as convergent patterns across mobilization, throughput (coordinated output and/or integrative processing), and brief phenomenological report, with appraised controllability/constraint treated as a key discriminator. In empirical terms, throughput can be indexed by task persistence and efficiency (e.g., time-on-task, error-adjusted performance), motor initiation latency under load, recovery dynamics (speed of return toward baseline after demand), and spillover costs such as intrusive monitoring, rumination, or compensatory control effort.

Low-load contemplation is characterized by subthreshold mobilization, low throughput, and a phenomenology of possibility/low urgency (passing wishes, mild leanings). Matched-load action is characterized by moderate-to-high mobilization, high throughput, and a phenomenology of

propulsion/absorption (low subjective effort relative to demand; flow-like narrowing to task). Excess-load emotion is characterized by elevated mobilization, reduced throughput (mobilization not fully metabolized), and a phenomenology of tension/urgency (effort, agitation, heaviness, affective crystallization). Overload collapse/freeze is characterized by sustained exceedance under appraised constraint, markedly restricted throughput, and a phenomenology of output restriction (blankness, numbness, disengagement), often following prolonged mismatch.

The discriminant prediction is that regime reports will track the mobilization–capacity relationship—indexed by throughput and controllability/constraint—more strongly than mobilization magnitude alone, allowing similar mobilization levels to be parsed as action, emotion, or shutdown depending on throughput and appraisal.

2.6. Definitions and Falsifiability

In the Arousal Appraisal Model (AAM), mobilization is the body’s moment-to-moment “gear shift” into readiness—autonomic activation in the short term, with slower endocrine support coming online when demand persists. Capacity is what you can realistically do with that energy right now: your ability to act (what’s possible and permitted), your ability to make sense of things and regulate (executive and reflective resources), and your underlying physiological bandwidth (how resilient and recoverable you are given fatigue, illness, and baseline stress load). Appraisal is the ongoing meaning-making that reads both the situation and your state—what matters, what caused it, how controllable it is, and what constraints you’re under—and then steers regulation by ramping up, holding steady, downshifting, or shutting output down. Throughput is how well mobilized energy gets “used up” in effective action and/or integrative processing, instead of lingering as leftover strain—tension, intrusive monitoring, or rumination.

The AAM makes predictions that go beyond the simple idea that “arousal plus appraisal” produces experience. The model would be in trouble if, when people have the same level of physiological activation, you *can’t* predict whether they report contemplation, action, emotion, or shutdown any better by looking at (1) how much of that activation is being successfully used up in effective output (throughput) and (2) how controllable or constrained the situation feels, than by looking at arousal intensity alone.

It would also be weakened if high-arousal states don’t reliably split into two different patterns—one in which the energy is cleanly metabolized into effective action with little spillover (matched-load action), and another in which the energy can’t be used efficiently and shows up as subjective strain, urgency, and residue like tension, intrusive monitoring, or rumination (excess-load emotion).

Finally, the model would be undermined if collapse/freeze usually shows up as “low arousal” by itself, rather than being preceded by a period of sustained high activation that can’t be discharged because the person feels trapped, blocked, or unable to act.

3. Supporting Evidence: The Two-Factor Lineage

3.1. Classic Misattribution Studies

The studies in this section primarily support premises that motivate the AAM—namely, that physiological mobilization is often nonspecific; that appraisal organizes its meaning, and that residual activation can carry forward across episodes. However, most of this work does not directly test the AAM’s regime claims, which require measuring mobilization relative to capacity and distinguishing regimes via throughput and constraint (e.g., matched-load action vs. excess-load emotion vs. overload shutdown).

In their pioneering experiment, Schachter and Singer (1962) injected participants with epinephrine and manipulated the meaning of that arousal through situational cues. The key finding was that autonomic activation alone was relatively non-specific: similar physiological arousal could be experienced as anger or euphoria depending on how it was labeled.

Subsequent work largely supported this central premise: emotion reflects the interaction between physiological arousal and cognitive interpretation. Manstead and Wagner (1981) replicated the paradigm using more controlled appraisal cues and found that participants exposed to ambiguous arousal reported emotional states consistent with contextual information. Cotton's (1981) review of misattribution studies reached a similar conclusion: across many paradigms, emotional intensity and quality shifted systematically as a function of how arousal was explained.

Later studies broadened the picture. Sinclair et al. (1994) showed that when people experience unexplained arousal, they actively search their environment for a plausible cause, highlighting appraisal as a sense-making process for bodily activation. Mezzacappa (1999) went further by varying epinephrine dosage, showing that increased physiological arousal translated into stronger emotional experience primarily when appropriate contextual meaning was available. Together, these findings ground the Arousal Appraisal Model (AAM) in a robust behavioral tradition: arousal is necessary but not sufficient for emotion; what matters is how that arousal is interpreted.

3.2. *Appraisal, Residual Arousal, and Energy Carry-Over*

The broader body of appraisal research lends additional support to key premises of two-factor theory. Pecchinenda (2001) integrates appraisal theory with psychophysiology, showing that autonomic patterns often align more closely with how situations are interpreted than with fixed "emotion categories." Bryant and Miron's (2003) excitation-transfer theory adds a temporal dimension: residual activation from one episode can carry forward and amplify emotional responses to subsequent events.

This maps directly onto the AAM's emphasis on mobilization–capacity dynamics. Residual arousal can be understood as mobilized energy that has not yet been fully utilized or discharged. Depending on subsequent appraisals, that leftover activation may be recruited into matched-load action (e.g., sustained engagement across tasks) or tip experience into excess-load emotion (e.g., a disproportionate response to a minor provocation). Dror's (2017) historical analysis further situates two-factor theory within a broader family of "arousal–meaning" accounts—including cognitive dissonance and contemporary predictive-processing models—underscoring the conceptual continuity of the claim that bodily activation and interpretation are functionally inseparable.

3.3. *Neuroscientific Correlates of Arousal–Appraisal Coupling*

Neuroimaging work provides anatomical support for this behavioral and theoretical tradition. Functional MRI studies show that amygdala activation often covaries with physiological arousal, while prefrontal regions are recruited when people consciously evaluate or reframe affective stimuli (Beauregard et al., 2001; Schaefer et al., 2002). Dynamic expression studies similarly suggest that attention and awareness modulate amygdala responses to socially salient cues (de Gelder et al., 2012).

Crucially, when participants deliberately reappraise negative material, greater prefrontal engagement is associated with reduced amygdala activity and attenuated physiological arousal—often treated as a neural analogue of "relabeling" arousal to alter its experiential impact (Beauregard et al., 2001; Schaefer et al., 2002). Research on mindfulness and breath-based regulation converges on the same point: stronger functional connectivity between prefrontal cortex and amygdala has been linked to improved regulatory control and reduced reactivity (Doll et al., 2016; Farb & Anderson, 2012). In computational terms, predictive-processing accounts frame emotion as inference about bodily state under uncertainty, integrating interoceptive signals with contextual priors (Seth & Friston, 2016).

3.4. *From Two Factors to the Arousal Appraisal Model*

Taken together, these lines of evidence support premises that motivate the AAM: arousal is often nonspecific, appraisal organizes meaning, and residual activation can carry forward across episodes. They also suggest that prefrontal systems can modulate amygdala-linked mobilization via

reappraisal and attentional stance. However, this literature does not directly test the AAM's regime claims, which require discriminating contemplation, action, emotion, and shutdown by measuring mobilization relative to capacity and throughput under constraint.

The AAM extends the two-factor lineage in two ways: it shifts the question from "which emotion?" to "which regulatory configuration?" and it links these configurations to brain-body dynamics by treating emotion as one phase within a continuous regulatory process. On this view, the two-factor tradition is a foundation for an arousal-appraisal architecture that the AAM formalizes and renders testable at the regime level.

4. The Arousal Appraisal Model in Practice

4.1. Contemplation as Low-Load Readiness

Low-load contemplation is the regime in which mobilization remains below the threshold for sustained, coordinated output (see Section 2.4). Throughput is intentionally minimal: the system samples options, simulates outcomes, and maintains responsiveness without committing substantial energy. Phenomenologically, this range is lived as quiet readiness—passing wishes, tentative leanings, or "maybe" intentions that do not yet consolidate into action.

Clinically, this regime can be either fertile or stagnant. In its fertile form, contemplation functions as incubation: the system holds competing action tendencies without premature commitment, often supporting creativity and complex problem-solving. In its stagnant form, subthreshold mobilization persists without consolidating into action, producing inertia that can resemble apathy more than conflict. Under depressogenic conditions, sedation, or depletion, needs may flicker without follow-through, only to reassert abruptly when mobilization later rises.

4.2. Matched-Load Action and Flow-like States

Matched-load action is the regime in which mobilization is efficiently metabolized through coordinated output and concurrent integrative processing. Throughput is high and relatively frictionless, so activation is lived as propulsion or absorption rather than tension (see Section 2.4). Flow may occur across a range of mobilization; the AAM claim is about efficient throughput, not arousal magnitude.

Notably, positive affect often "shows up" right after the action phase: when the task ends or demand abruptly drops (a rep, a deadline, a performance moment), sympathetic drive does not shut off instantly. Mobilization lingers for seconds to minutes, but now there is no longer a matching outlet that requires it. In AAM terms, the mobilization-capacity ratio flips: the same activation that a moment ago was being cleanly metabolized as throughput becomes surplus. Because the context is now appraised as *safe/complete/successful*, that surplus is not labeled as urgency or threat, but as relief ("it's over"), expansion ("space opens up"), or elation ("that went well")—a brief "afterglow" produced by residual mobilization + a completion appraisal, rather than by a new increase in arousal.

Flow states provide a vivid exemplar because challenge and skill are balanced; self-monitoring quiets, and task-relevant systems dominate (Csikszentmihalyi, 1990). Physiologically, flow-like absorption has been linked—in paradigms manipulating skill-demand compatibility and stress—to patterns in heart-rate variability and cortisol consistent with engaged mobilization accompanied by preserved regulatory modulation, rather than unchecked escalation (Keller et al., 2011; Peifer et al., 2014). In AAM terms, the defining feature is not positive valence but efficient throughput: mobilization is being used rather than carried forward as residue.

Clinically, matched-load action serves as an anchor state because it renders "capacity" visible in vivo: when capacity is sufficient, mobilization does not spill into rumination, affective urgency, or shutdown, but becomes organized engagement. Mapping the conditions that support this regime (sleep, pacing, task structure, meaning, relational safety, skill, physiological resilience) offers a practical way to operationalize capacity in everyday life.

4.3. *Emotion as Excess-Load Energy*

Excess-load emotion is the regime in which mobilization exceeds available capacity for effective expression or integration. Throughput becomes inefficient or blocked, so surplus activation is carried out as tension, urgency, and differentiated feeling rather than completed (see Section 2.4). Phenomenologically, this surplus is lived as pressure—agitation, heaviness, tightening, racing cognition—often accompanied by the felt need to act without a clear or permissible route.

Many short-horizon maneuvers—worrying, rehearsing, scanning, self-criticizing, dissociating, numbing—can reduce immediate uncertainty or distress while leaving the underlying mismatch unresolved, thereby converting mobilization into ongoing expenditure rather than completion (Gross, 1998, 2015). Over time, this pattern can yield exhaustion and chronic dysregulation: the system repeatedly pays the cost of activation without reopening effective channels for discharge or integrative resolution.

The AAM thus reconceptualizes distress functionally. Affect is not merely noise to be suppressed but information about mobilization that cannot complete its intended arc under current constraints. Regulation, in this view, is less suppression than completion: expanding capacity and/or opening viable channels (movement, speech, breath, reappraisal, problem-solving, relational repair) through which activation can be metabolized and returned toward baseline.

4.4. *Thrill-Seeking and the Reward of Surplus Arousal*

Thrill-seeking can be conceptualized as deliberate contact with high mobilization under conditions engineered to preserve capacity and clarify throughput. In such contexts, appraisal is biased toward challenge rather than danger, increasing the likelihood that rising activation will be metabolized as action rather than carried as threat. Sport, performance, and suspense provide a clear object, predictable rules, and socially sanctioned outlets for intense mobilization—conditions that effectively “solve” the throughput problem and make high arousal more tolerable and even rewarding.

Developmentally, repeated pairings of escalating arousal with cues of safety and successful return to baseline may tune appraisal toward “challenge/excitement” rather than “danger,” allowing surplus activation to be experienced as vitality rather than alarm. On this reading, thrill-seeking functions as exploration of the system’s upper mobilization band while preserving reliable recoverability.

4.5. *Collapse/Freeze as Overload Shutdown*

Overload collapse/freeze is the regime in which mobilization remains high while throughput becomes sharply restricted under appraised constraint. Shutdown functions as an organized protective strategy when continued activation cannot be discharged safely or integrated coherently (see Section 2.4). Phenomenologically, this may present itself as “going blank,” numbness, detachment, immobilization, or enforced stillness.

Here “collapse/freeze” is used as an umbrella for output-restriction states that may present with high sympathetic arousal (defensive freezing/immobility) and/or later-stage hypo-arousal (shutdown/numbing); the AAM claim targets the functional antecedent—sustained mobilization under appraised constraint—rather than a single autonomic signature.

In modern contexts, collapse/freeze may be recruited not only by physical threat but by social-evaluative threat under constraint—evaluation, humiliation, status loss, relational conflict—especially when high mobilization cannot be translated into acceptable action. Stressor profiles combining social evaluation with low controllability are also most reliably associated with elevated cortisol responses, consistent with the AAM’s emphasis on appraised constraint as a driver of costly, sustained mobilization (Dickerson & Kemeny, 2004). Defensive-freezing work supports the view that immobilization can be an organized defensive mode rather than simple under-arousal (Roelofs,

2017), and trauma research describes related phenomenology in dissociative detachment and numbing (Frewen & Lanius, 2015).

A central AAM discriminant is therefore temporal and functional: collapse/freeze is often preceded by high mobilization with blocked throughput under constraint, rather than emerging from low arousal per se. Clinically, recurrent shutdown is frequently misread as laziness or indifference; the AAM reframes it as survival-configured regulation that becomes entrenched when high mobilization repeatedly meets constraint without discharge or reparative integration. Intervention targets the ratio: reduce unnecessary mobilization, expand capacity, and increase viable middle-range outputs so that collapse is no longer the least costly option.

4.6. *Clinical and Everyday Applications*

Clinically, the AAM reframes treatment as increasing flexibility across regimes rather than eliminating emotion or arousal. Interventions work by shifting mobilization, expanding capacity, and reopening throughput so the person can move among contemplation, action, emotion, and (when necessary) brief shutdown without becoming locked into any one mode.

Many established interventions in CBT, DBT, ACT, and related approaches can be redescribed as tools for renegotiating the mobilization–capacity relationship. Somatic and breath-based strategies reduce surplus activation and widen capacity for experience; cognitive restructuring and reappraisal alter how mobilization is interpreted and therefore how it is carried; behavioral activation and values-based action create viable channels through which mobilization becomes coordinated throughput rather than rumination, avoidance, or shutdown (Gross, 1998, 2015).

Low-load contemplation aligns with mindfulness-based “observing without judgment,” training the system to remain in low-load readiness without reflexive escalation. Matched-load action becomes a concrete therapeutic target: helping clients identify, reproduce, and protect conditions under which mobilization reliably becomes effective engagement. Excess-load emotion and collapse/freeze, in turn, are treated as signals rather than verdicts—information about where mobilization is exceeding capacity and where constraint is blocking completion.

This practical reframing sets up the broader theoretical integration that follows. If contemplation, action, emotion, and shutdown are graded regulatory solutions within a single mobilization–capacity control architecture, then the AAM should be legible against descriptive maps of arousal and affect (e.g., circumplex affect, Yerkes–Dodson, window of tolerance) while offering a mechanistic complement—one that predicts not only where a person is on an arousal map, but why mobilization is being organized into a particular mode of experience and behavior. The next section develops these comparisons and articulates discriminating predictions that follow from the mobilization–capacity framework.

5. Discussion

5.1. *Integration with Contemporary Theories of Emotion and Regulation*

As detailed in Section 2.4, the AAM specifies a graded sequence along a single mobilization–capacity axis, from low-load contemplation through matched-load action and excess-load emotion to overload collapse/freeze. Like Polyvagal Theory (Porges, 2011), which emphasizes context-sensitive shifts among autonomic states as a function of perceived safety, the AAM treats emotion and related states as configurations of a regulatory system rather than as isolated psychological entities. Within this framing, what are often described as “flow” or high-coherence states can be read as upper-range instances of matched-load action: mobilization is high but remains coupled to preserved regulatory coordination and effective throughput rather than spilling into experiential drag.

Predictive coding and interoceptive inference accounts of emotion (Seth & Friston, 2016) offer a complementary computational lens. On these views, feelings are inferences about bodily state that integrate interoceptive signals with contextual priors to reduce uncertainty. The AAM situates that inferential process within a control problem: mobilization must be organized relative to momentary

capacity. Excess-load emotion corresponds to conditions in which mobilization outpaces capacity, increasing subjective urgency while reducing the system's ability to resolve activation through effective action or integration. Matched-load action corresponds to conditions in which mobilization and capacity are well matched, allowing rapid feedback between prediction and consequence to stabilize experience. Low-load contemplation and overload collapse/freeze can be understood as contrasting regulatory solutions when matching fails in opposite directions: contemplation downshifts mobilization to preserve optionality, whereas collapse/freeze restricts output when mobilization is costly and appraised as constrained or inescapable.

The AAM is compatible with constructionist accounts in treating emotion categories as emergent and context-dependent (Barrett, 2017), while adding a control-architectural claim: emotion crystallizes most reliably when mobilization outpaces the limiting capacity channel and cannot be metabolized as coordinated throughput.

The AAM's integrative contribution is not to replace these frameworks, but to provide a common variable that makes them commensurable: how mobilization is being managed relative to capacity under appraisal. Autonomic "state" models emphasize safety-contingent shifts in physiological organization; appraisal traditions specify interpretive structure; predictive processing formalizes affect as inference. The AAM links these into a single discrimination: similar arousal can be lived as contemplation, action, emotion, or shutdown depending on (a) throughput, (b) perceived controllability/constraint, and (c) available capacity for expression and integration.

What emerges from these comparisons is a shift in what is treated as primary. Instead of beginning with emotion categories and asking what arousal does to them, the AAM begins with mobilization and asks what the organism is able to do with it. This places subjective experience inside the mechanism: the felt episode is the system's online registration of whether energy is completing (matched-load action), being carried as residue (excess-load emotion), remaining subthreshold (low-load contemplation), or being forcibly restricted (collapse/freeze). If so, then consciousness is not merely the place where emotion is noticed, but the medium through which mobilization is organized into stance, action, and narrative. Section 5.2 develops this implication by treating consciousness as a regulatory interface.

5.2. *Toward a Unified Model of Regulation and Consciousness*

In this paper, 'consciousness as interface' is proposed at the level of functional description, not as a full metaphysical theory of consciousness. The AAM's core implication is that consciousness is not a spectator to regulation but one of its active forms. If mobilization and appraisal continually recalibrate one another, then what becomes reportable as experience is the system's ongoing attempt to render the current energetic situation intelligible enough to guide engagement, restraint, or recovery. On this view, contemplation, matched-load action, excess-load emotion, and collapse/freeze are not merely descriptive labels; they are lived signatures of how the organism is solving (or failing to solve) a control problem under conditions of uncertainty, constraint, and significance.

The AAM consolidates this into a single energetic framing: bottom-up physiological activation (mobilization) and top-down interpretive operations (appraisal) continually adjust one another in the service of functional coherence. The four regimes are not separate "modules," but temporally stable configurations of the same control architecture, distinguished by whether mobilized energy can be metabolized through available capacity and by how the situation is appraised in terms of significance, controllability, and constraint. Integrative awareness is the process that renders these configurations as lived states:

- **Low-load contemplation:** subthreshold mobilization registered as possibility, inclination, and quiet readiness.
- **Matched-load action:** mobilization registered as absorbed doing, propulsion, and coherence.
- **Excess-load emotion:** mobilization registered as urgency, tension, and differentiated feeling when throughput is limited.

- **Overload collapse/freeze:** protective restriction registered as blankness, numbness, detachment, or enforced stillness when exceedance is severe and appraised as constrained.

On this account, consciousness is not added onto regulation; it is the experiential form regulation takes as it unfolds—how shifting patterns of mobilization and appraisal become felt states, meanings, and choices. What varies across regimes is not “awareness versus no awareness,” but the system’s degree of viable throughput and the interpretive stance that organizes it—whether energy is being completed, carried, or restricted.

Legibility Against Descriptive Arousal Maps

If the AAM is a control architecture, it should be legible against existing descriptive maps of arousal and affect; the question is what it explains beyond placement on those maps. The AAM can be situated alongside the Yerkes–Dodson law, circumplex models of affect, and the clinical “window of tolerance,” each of which provides a useful coordinate description of activation and subjective tone. The AAM is offered as a mechanistic complement: it specifies how appraisal organizes mobilization relative to capacity, yielding distinct experiential regimes within one regulatory architecture.

Yerkes–Dodson. The inverted-U relation between arousal and performance (Yerkes & Dodson, 1908) is broadly compatible with the AAM, but the AAM reframes the curve in terms of matching rather than arousal magnitude. The rising limb corresponds to increasing mobilization that can still be metabolized through capacity, consolidating into matched-load action. The falling limb reflects not “too much arousal” per se, but mobilization that increasingly exceeds capacity and cannot be routed into effective throughput—shifting toward excess-load emotion and, at the upper extreme, overload collapse/freeze when viable output is restricted. This yields a discriminant prediction: the same arousal level can produce different performance and phenomenology depending on capacity and constraint.

Circumplex models. Circumplex accounts describe affect in terms of valence and arousal (Russell, 1980) but do not specify how arousal becomes organized into action, emotion, or shutdown. The AAM adds a regulatory dimension: states occupying similar regions of the circumplex can diverge sharply depending on whether mobilization is being metabolized through coordinated engagement (matched-load action), carried as surplus activation with reduced throughput (excess-load emotion), or restricted through protective output limitation (overload collapse/freeze).

Window of tolerance. The “window of tolerance” describes a workable band of arousal flanked by hyperarousal and hypo-arousal (Siegel, 1999). The AAM is consistent with this heuristic while specifying an internal geometry: workability depends less on arousal level alone than on whether mobilization can be expressed or integrated given current capacity and constraints. Collapse/freeze is thus not merely “low arousal,” but a protective configuration that becomes more probable when high mobilization persists under appraisals of low controllability or blocked action; conversely, low-arousal states can function as excess-load conditions when capacity is markedly reduced (e.g., depletion), producing heaviness or shutdown-like phenomenology despite modest activation.

Discriminating Implications and Testable Differentiators

Positioning the AAM alongside these frameworks highlights several discriminators:

1. **Regime identity tracks throughput and constraint, not arousal magnitude alone.** For a given level of physiological activation, reports of contemplation versus action versus emotion versus shutdown should be better explained by throughput (effective output) and appraised constraint/controllability than by arousal level per se.
2. **Matched-load action versus excess-load emotion should dissociate “high arousal” states.** Both may involve elevated mobilization, but matched-load action should show higher throughput and greater regulatory coordination (e.g., preserved modulatory flexibility), whereas excess-

load emotion should show greater residue (heightened subjective effort, spillover tension, and reduced throughput).

3. **Overload collapse/freeze should be preferentially elicited by high mobilization under appraised constraint.** Shutdown should be most likely when mobilization is high, yet action is blocked or socially dangerous—especially under social-evaluative threat and low controllability—rather than being a simple consequence of low arousal.

Taken together, Yerkes–Dodson, circumplex accounts, and the window of tolerance provide a rich descriptive backdrop for arousal and affect. The AAM is offered as a mechanistic complement: by specifying a mobilization–capacity continuum organized by appraisal, it aims to explain how contemplation, coordinated action, differentiated emotion, and collapse/freeze emerge as graded regulatory solutions—distinguishable in phenomenology and measurable dynamics—rather than as separate psychological domains or mere failures of control.

The AAM yields straightforward empirical tests. First, holding physiological mobilization constant, regime classification should be better predicted by throughput and appraised controllability/constraint than by arousal magnitude alone: the same mobilization (e.g., standardized exercise- or CO₂-induced arousal) should consolidate into matched-load action when response options and feedback permit efficient output, but appear as excess-load emotion (greater urgency, effort, residue) when output is restricted. Second, high-mobilization states should dissociate into action versus emotion by metabolization versus spillover: under skill–challenge matching, mobilization should be expressed as stable performance and low subjective residue (flow-compatible), whereas under mismatch it should be carried as tension, intrusive monitoring, and reduced effective throughput. Third, overload collapse/freeze should be preferentially elicited by sustained mobilization under low controllability, including social-evaluative threat, and should often be temporally preceded by high mobilization with blocked output rather than by simple under-arousal. Across designs, brief regime sampling (propulsion/absorption; tension/urgency; possibility; blankness/numbing) combined with throughput indices and controllability ratings provides a tractable way to adjudicate whether appraisal organizes mobilization into contemplation, action, emotion, or shutdown as the mobilization–capacity ratio shifts.

6. Conclusions

6.1. *The Arousal Appraisal Model as a Theoretical Bridge*

The Arousal Appraisal Model (AAM) offers a unifying framework that links phenomena often treated as separate: subtle urges that never become behavior, periods of absorbed “flow,” intense emotional episodes, and states of collapse or shutdown. By describing all of these as configurations of a single arousal–appraisal system, the AAM extends Schachter and Singer’s (1962) two-factor theory into a contemporary neurophysiological and phenomenological context. Rather than positing distinct mechanisms for cognition, feeling, and consciousness, the model treats them as different ways in which one regulatory architecture organizes mobilized energy.

Within this framework, low-load contemplation; subthreshold mobilization that does not quite organize the body into movement; is experienced as passing wishes, background inclinations, or quiet readiness rather than as emotion. Matched-load action occupies the optimal zone in which mobilized energy and behavioral capacity are tightly aligned, giving rise to a felt sense of attuned vitality and ease, with flow-like episodes as vivid examples. Excess-load emotion appears when mobilization exceeds immediate capacity for expression, and surplus energy must be carried and labeled as feeling. At the upper extreme, overload collapse/freeze emerges when mobilization overshoots capacity so far that shutting down becomes the least damaging option. What varies along the AAM is not the presence of awareness itself, but the mobilization–capacity ratio that awareness is tasked with explaining.

6.2. Future Research Directions

Empirical validation of the Arousal Appraisal Model will require multimodal designs capable of distinguishing low-load contemplation, matched-load action, excess-load emotion, and overload collapse/freeze at both physiological and phenomenological levels. Rather than treating these as vague experiential labels, future work can operationalize them as specific mobilization–capacity configurations and examine how they map onto measurable brain–body dynamics and self-report.

One line of inquiry involves neurophysiological tracking of regulatory efficiency. Longitudinal and task-based fMRI or EEG studies could assess how amygdala–prefrontal and insula–anterior cingulate connectivity varies across experimentally induced states of:

- low-load contemplation (subthreshold urges and background readiness),
- matched-load action (skill–challenge match, including flow-like states),
- excess-load emotion (overload conditions with strong affect), and
- overload collapse/freeze (immobilization under extreme demand).

In parallel, physiological coherence metrics such as heart-rate variability, respiratory sinus arrhythmia, and cortisol slope could be used as indices of autonomic balance, testing whether matched-load action is reliably associated with high-coherence patterns, low-load contemplation with relative under-mobilization, excess-load emotion with inefficient or dysregulated activation, and collapse/freeze with abrupt decreases or discontinuities in output.

A second line of research would use fine-grained phenomenological sampling. Ecological momentary assessment and experience-sampling methods can capture in real time how participants label episodes of background wishing, absorbed doing, intense emotion, and shutdown, and how these reports covary with physiological signals derived from wearables. Experimental paradigms that systematically vary task challenge, skill level, and appraisal instructions (e.g., reappraisal vs. catastrophizing, approach vs. withdrawal focus) could test whether shifting the mobilization–capacity ratio reliably moves participants along the AAM, from low-load contemplation through matched-load action into excess-load emotion and, under extreme or blocked conditions, toward collapse/freeze.

Finally, intervention studies targeting integrative awareness and regulation could examine whether training in mindfulness, body-based regulation, or meaning-focused therapies alters how a given level of mobilization is organized phenomenologically—reducing excess-load emotion, increasing access to matched-load action, and making low-load contemplation more available as a deliberate stance rather than remaining as unnoticed “roads not taken.” Together, such studies would position the AAM as an empirically tractable model linking arousal regulation, integrative awareness, and the qualitative texture of conscious experience across everyday life, performance contexts, and clinical populations.

6.3. Reframing Emotion as Adaptive Intelligence

Within the Arousal Appraisal Model, emotion is not treated as a malfunction of an otherwise rational system but as a form of adaptive intelligence that emerges under excess-load conditions. When mobilization rises above what can be completed in behavior, surplus energy must be carried out subjectively. Excess-load emotion is the nervous system’s way of holding and signaling this excess—an organized message that something in the current balance of demand, capacity, and meaning cannot be sustained as is.

The same physiological currents that generate anxiety, anger, or shame under conditions of excess load also underlie courage, assertion, creativity, and compassion when they are brought into alignment with capacity and meaning. By viewing emotional experience as an intelligent signal about unmet motion and misaligned mobilization, the Arousal Appraisal Model offers a framework for understanding how raw activation can be transformed into awareness, choice, and, ultimately, a more coherent way of living.

Author Contributions: The author is solely responsible for the conception, drafting, and final approval of this manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This theoretical work did not involve human participants or animals and therefore required no institutional ethics approval.

Data Availability Statement: No datasets were generated or analyzed for this article.

Conflicts of Interest: The author declares no conflict of interest.

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