

The Double-Edged Sword of Maladaptive Emotion Regulation: Cross-Diagnostic Mechanisms and Novel Pathways for Precision-Based Interventions

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Abstract: Maladaptive emotion regulation strategies, such as emotional suppression and rumination, appear to alleviate negative emotions in the short term but paradoxically worsen mental health over time, making them a critical focus in psychological research and clinical practice. This paper synthesizes multidisciplinary evidence to address four key questions: First, we clarify the classification criteria for maladaptive strategies and establish a dynamic evaluation framework to distinguish them from adaptive approaches. Second, we reveal how these strategies perpetuate cross-diagnostic mental disorders through three interacting mechanisms-cognitive control deficits such as impaired prefrontal cortex regulation, dysregulated limbic-prefrontal neural circuits, and self-reinforcing behavioral patterns. Third, we critically evaluate current interventions, such as cognitive-behavioral therapy and mindfulness training, highlighting their limitations in developmental stage adaptability and cultural relevance, while underscoring the neglect of dynamic strategy shifts and cultural variations in existing research. Finally, we propose future research directions integrating longitudinal tracking, multimodal neuroimaging, and cross-cultural comparisons to identify high-risk populations and develop targeted preventive interventions. Emphasizing public health implications, this review advocates for early identification and precision-based interventions to reduce societal burdens, offering a comprehensive roadmap to advance both theoretical integration and practical applications in emotion regulation research.

1. Introduction

1.1 Research Background

Emotion regulation, the process through which individuals influence the intensity, duration, and expression of their emotional experiences, is a cornerstone of psychological well-being^[1]. While adaptive strategies, such as cognitive reappraisal or problem-solving, promote resilience and mental health, maladaptive emotion regulation strategies-those that provide short-term relief but perpetuate or exacerbate distress over time-are increasingly recognized as critical risk factors for

psychopathology. These strategies, which include suppression^[2], avoidance^[2], rumination^[1], and self-blame, often arise from attempts to manage overwhelming emotions but paradoxically deepen emotional dysregulation. Similarly, repetitive rumination traps individuals in cycles of negative thinking, heightening vulnerability to depression and anxiety^[3]. Despite their prevalence across clinical and nonclinical populations, the mechanisms underlying maladaptive strategies, their long-term consequences, and effective interventions remain areas of active exploration^[2]. This review synthesizes current knowledge on maladaptive emotion regulation strategies, aiming to clarify their psychological and biological underpinnings, delineate their impact on mental and physical health, and evaluate evidence-based approaches to mitigate their harmful effects.

1.2 Research Objectives

This review seeks to provide a comprehensive synthesis of maladaptive emotion regulation strategies by systematically examining their typological classifications, underlying mechanisms, and multisystem consequences. First, it aims to establish a unified taxonomy that distinguishes maladaptive strategies, such as suppression and rumination^[1, 3], from adaptive counterparts, emphasizing their defining paradox—immediate symptom relief at the cost of long-term dysfunction. Second, the review dissects the interacting cognitive, neurobiological, and behavioral mechanisms that perpetuate these strategies, particularly their role in transdiagnostic psychopathology^[4].

Additionally, it evaluates the efficacy of current interventions such as cognitive-behavioral^[4] and mindfulness-based approaches^[5], while critically assessing their applicability across diverse developmental stages and cultural contexts. A central objective is to highlight critical gaps in existing research, including overreliance on cross-sectional designs that overlook dynamic strategy shifts and cultural biases in defining "maladaptiveness". Finally, the review proposes a forward-looking framework integrating longitudinal, neuroimaging, and cross-cultural methodologies to advance precision interventions. By bridging affective science with public health priorities, this work underscores the urgency of early identification and mechanistic remediation to mitigate the escalating personal and societal burdens of maladaptive regulation.

2. Definition and Classification of Maladaptive Emotional Regulation Strategies

2.1 Definition

Maladaptive emotion regulation strategies are defined as cognitive, behavioral, or physiological efforts aimed at modulating emotional experiences that provide transient relief but ultimately exacerbate or perpetuate psychological distress^[6]. These strategies are characterized by a temporal dissociation between immediate symptom reduction and long-term functional impairment. Unlike adaptive strategies such as cognitive reappraisal or problem-solving, which foster emotional flexibility and alignment with long-term goals, maladaptive strategies operate through rigid, context-insensitive patterns. For instance, emotional suppression may temporarily mask distress in social interactions but disrupts interpersonal connectivity by blocking authentic emotional communication.

A critical distinction lies in their reinforcement mechanisms: maladaptive strategies are maintained through negative reinforcement cycles, whereas adaptive strategies utilize positive reinforcement by aligning emotional responses with contextual demands. For example, rumination—a maladaptive strategy—provides illusory control over negative events by prolonging cognitive engagement with distress, yet it traps individuals in self-referential loops that amplify depressive symptoms. In contrast, adaptive strategies like mindfulness promote metacognitive awareness, allowing individuals to observe emotions without becoming entangled in their content^[5].

2.2 Classification

2.2.1 Suppression

Suppression involves the deliberate inhibition of emotional expressions while internally maintaining the emotional experience ^[7]. This strategy creates a dissonance between outward behavior and internal states, often leading to heightened physiological arousal, such as increased cardiovascular reactivity and reduced social support due to perceived inauthenticity in relationships ^[8].

2.2.2 Avoidance

Avoidance encompasses efforts to evade emotion-provoking stimuli, either externally or internally. While temporarily reducing anxiety, avoidance reinforces fear by preventing corrective emotional experiences, ultimately narrowing an individual's behavioral repertoire and perpetuating cycles of hypervigilance ^[9].

2.2.3 Rumination

Rumination refers to repetitive, passive fixation on the causes and consequences of negative emotions without active problem-solving. This cognitive "looping" amplifies emotional intensity by prolonging exposure to distress, often trapping individuals in self-reinforcing cycles of pessimism and helplessness, particularly in depression-prone populations ^[10].

2.2.4 Self-Blame

Self-blame entails attributing negative events or emotions predominantly to personal flaws or mistakes. This strategy imposes a false sense of control over uncontrollable situations but erodes self-worth over time, fostering chronic guilt and shame that predispose individuals to internalizing disorders ^[11].

2.2.5 Catastrophizing

Catastrophizing involves magnifying the perceived severity or inevitability of adverse outcomes, transforming ordinary setbacks into existential threats. This strategy hijacks cognitive resources by fixating on worst-case scenarios, thereby impairing adaptive decision-making and escalating anxiety through anticipatory distress ^[12].

2.2.6 Substance Misuse

Substance misuse involves consuming psychoactive agents, such as alcohol and illicit drugs ^[13] to artificially suppress or escape emotional awareness. This strategy exploits the neurochemical numbing effects of substances to create an illusion of emotional control. However, chronic use disrupts natural affect modulation systems through neurotransmitter dysregulation, while simultaneously obstructing the development of adaptive coping skills. The cyclical pattern of intoxication-withdrawal further entrenches emotional instability it purports to solve.

3. Psychological mechanisms of maladaptive strategies

3.1 Cognitive Mechanisms

Maladaptive emotion regulation strategies are fundamentally rooted in distorted cognitive

processing patterns that systematically bias the interpretation of emotional experiences. A core mechanism involves negative cognitive bias, which operates through two interrelated pathways: selective attention and memory distortion ^[14]. Individuals predisposed to maladaptive strategies disproportionately allocate attentional resources to threat-related stimuli, thereby amplifying perceived emotional intensity. This attentional bias interacts with memory aberrations, where emotionally charged events are recalled with exaggerated negativity, creating a self-reinforcing narrative of helplessness.

A secondary mechanism is rigid cognitive schemas about the nature and consequences of emotions themselves. For instance, the belief that "emotional arousal is dangerous" drives avoidance behaviors to preemptively suppress any arousal, paradoxically increasing emotional reactivity through heightened vigilance. Similarly, the misconception that "emotions require immediate resolution" fuels impulsive strategies like aggression or substance use, as individuals prioritize rapid symptom elimination over contextual appropriateness. These cognitive distortions create a feedback loop: biased information processing validates erroneous beliefs, which in turn rigidify maladaptive regulatory habits.

3.2 Neurobiological Mechanisms

Maladaptive emotion regulation strategies arise from dysregulated interactions between prefrontal cortical regions and limbic systems. The prefrontal cortex (PFC), particularly the dorsolateral (dlPFC) and ventromedial (vmPFC) subdivisions, typically exerts top-down control over limbic structures like the amygdala to modulate emotional reactivity ^[15]. In individuals relying on maladaptive strategies, functional MRI studies reveal weakened PFC-amygdala connectivity, resulting in amygdala hyperactivity during emotional challenges. This neural imbalance manifests behaviorally as heightened emotional impulsivity or excessive avoidance, depending on which prefrontal regulatory pathways are compromised ^[16].

Concurrently, maladaptive strategies correlate with hyperactivation of the stress response system. Chronic use of strategies like suppression or catastrophizing triggers sustained hypothalamic-pituitary-adrenal (HPA) axis activation, elevating cortisol levels that exert neurotoxic effects on hippocampal and prefrontal structures. Over time, glucocorticoid receptor resistance develops, impairing negative feedback mechanisms and trapping individuals in a state of perpetual physiological arousal. This systemic dysregulation further reduces PFC capacity for cognitive control, creating a self-perpetuating cycle where biological stress responses and maladaptive behaviors mutually reinforce each other ^[17].

3.3 Behavioral Mechanisms

The persistence of maladaptive emotion regulation strategies is primarily sustained through negative reinforcement cycles, a core behavioral mechanism rooted in operant conditioning principles. When individuals employ strategies like avoidance or suppression, they experience immediate reductions in aversive emotional states. This short-term relief acts as a potent reinforcer, increasing the likelihood of repeating the strategy in similar contexts ^[6]. However, these strategies "work" precisely because they truncate emotional processing-avoiding a conflict prevents learning conflict-resolution skills, while suppressing anger avoids practicing assertive communication. Over time, this pattern creates behavioral constriction: reliance on maladaptive strategies narrows the repertoire of available coping responses. For instance, habitual use of emotional suppression leads to underdeveloped emotional granularity, forcing individuals into a binary "suppress-or-overwhelm" pattern. Similarly, chronic avoidance erodes tolerance for emotional discomfort, creating a self-fulfilling prophecy where minor stressors are perceived as unmanageable threats. Critically, the

long-term functional costs often go unrecognized due to attentional bias toward immediate distress reduction, thereby perpetuating the cycle ^[2].

4. The Impact and Consequences of Maladaptive Strategies

4.1 Mental Health Consequences

Maladaptive emotion regulation strategies operate as transdiagnostic risk factors, maintaining and exacerbating a spectrum of psychological disorders. Depressive disorders are strongly linked to rumination and self-blame, as these strategies amplify negative self-referential thinking while depleting cognitive resources needed for problem-solving. The cyclical nature of rumination entrenches the cognitive triad of hopelessness, worthlessness, and helplessness, directly fueling depressive symptomatology ^[3].

In anxiety disorders, avoidance and suppression play central roles by preventing emotional habituation ^[18]. For instance, avoiding anxiety-provoking situations blocks extinction learning, causing fear to generalize to neutral stimuli ^[9]. Physiological suppression paradoxically heightens interoceptive awareness, increasing sensitivity to benign bodily sensations that trigger further anxiety.

Post-traumatic stress disorder (PTSD) exemplifies how maladaptive strategies like emotional numbing and cognitive avoidance trap individuals in trauma re-experiencing ^[19]. By suppressing trauma-related memories, individuals inadvertently strengthen their intrusive quality, while avoidance of trauma reminders perpetuates hypervigilance to potential threats.

A unifying consequence across disorders is loss of emotion regulation flexibility-the capacity to dynamically adjust strategies to situational demands. Chronic reliance on rigid strategies like suppression ^[8] or catastrophizing ^[12] erodes this flexibility, rendering individuals unable to shift from avoidance to approach-oriented coping when contexts require it. This inflexibility creates a "regulatory brittleness," where minor stressors trigger disproportionate emotional reactions due to the absence of alternative regulatory options ^[10].

4.2 Physiological Health Consequences

Maladaptive emotion regulation strategies exert profound impacts on physical health through sustained dysregulation of biological stress systems ^[20]. Chronic reliance on strategies like suppression or catastrophizing triggers persistent low-grade inflammation, mediated by prolonged activation of the sympathetic nervous system and elevated pro-inflammatory cytokines. For instance, rumination prolongs psychological distress, which synergizes with cortisol resistance to disrupt immune homeostasis, creating a pro-inflammatory state linked to autoimmune disorders, metabolic syndrome, and accelerated cellular aging.

These strategies also escalate cardiovascular disease risk via multiple pathways. Emotional suppression correlates with heightened blood pressure reactivity during interpersonal conflicts, while avoidance-driven social isolation exacerbates atherosclerosis through chronic sympathetic nervous system activation. Furthermore, maladaptive strategies amplify neurovisceral integration dysfunction-impaired heart rate variability reflects reduced parasympathetic tone, diminishing the body's capacity to recover from stressors and directly contributing to arrhythmia susceptibility. Over decades, these cumulative physiological insults manifest as clinically significant morbidity, bridging psychological patterns to somatic disease trajectories.

4.3 Social Functional Impairment

Maladaptive emotion regulation strategies systematically erode social functioning through two primary pathways: relational disconnection and occupational inefficacy ^[21]. In interpersonal relationships, suppression of emotional expression creates a "double alienation" effect-individuals perceive others as unresponsive to their needs (due to unexpressed emotions), while peers misinterpret their stoicism as indifference or hostility ^[22]. For example, a partner who habitually suppresses anger may avoid confrontations but inadvertently escalate conflicts through passive-aggressive behaviors, undermining relational trust ^[22]. Avoidance strategies compound this by reducing social engagement opportunities, leading to network shrinkage and diminished social support-a critical buffer against life stressors.

Occupational functioning suffers through attentional hijacking and impulse dyscontrol. Rumination and catastrophizing monopolize cognitive resources that would otherwise be allocated to task focus, resulting in productivity loss and error-prone performance ^[12]. A salesperson fixated on catastrophic predictions of rejection may struggle with client negotiations, misinterpreting neutral feedback as personal failure. Furthermore, strategies like emotional suppression impair decision-making in high-stakes scenarios, while self-blame fosters risk aversion, stifling innovation and career advancement.

These social impairments often trigger self-reinforcing downward spirals: deteriorating work performance heightens financial stress, which intensifies reliance on maladaptive strategies, further isolating individuals from potential sources of professional mentorship or collegial support ^[21].

5. Influencing factors of maladaptive strategies

5.1 Individual Differences

5.1.1 Personality Traits

Neuroticism, characterized by heightened emotional reactivity to negative stimuli, predisposes individuals to habitual use of maladaptive strategies through hypervigilance to threat. Highly neurotic individuals exhibit attentional bias toward potential emotional threats, which escalates reliance on preemptive strategies like suppression or avoidance to forestall anticipated distress. Perfectionism, particularly maladaptive evaluative concerns, fuels self-blame and catastrophizing by framing ordinary setbacks as intolerable failures. This cognitive rigidity restricts emotional flexibility, as perfectionists prioritize error prevention over adaptive emotional engagement.

5.1.2 Childhood Adversity & Attachment Patterns

Early-life trauma, such as emotional neglect and abuse, disrupts the developmental acquisition of emotion regulation skills, often cementing maladaptive strategies as default responses. Survivors of chronic childhood trauma may adopt emotional numbing or dissociation to endure uncontrollable stress, patterns that persist into adulthood as automatic regulatory reflexes ^[23]. Insecurely attached individuals exhibit distinct strategy profiles: anxious attachment drives excessive reassurance-seeking through emotional amplification, catastrophizing to elicit support, while avoidant attachment promotes chronic suppression to maintain relational distance ^[24]. These attachment-driven strategies, though initially adaptive within dysfunctional caregiving systems, become maladaptive in adult relationships requiring vulnerability and reciprocity.

5.2 Environmental Factors

5.2.1 Social Support Deficits

Inadequate social support networks deprive individuals of emotional scaffolding-the interactive process through which others help reframe distress, validate emotions, and model adaptive regulation. Without such scaffolding, individuals resort to solitary strategies like rumination or substance use to manage overwhelming emotions. For example, a person lacking confidants may suppress grief to avoid burdening casual acquaintances, inadvertently prolonging mourning through emotional isolation. Furthermore, deficient support limits exposure to alternative coping strategies, as individuals miss opportunities to observe and internalize effective regulation techniques through social learning^[21].

5.2.2 High-Stress Environments

Chronic exposure to uncontrollable stressors forces reliance on survival-oriented strategies that prioritize immediate emotional survival over long-term well-being. In high-threat contexts like violent neighborhoods, hypervigilance and emotional numbing may provide critical short-term protection but become maladaptive when generalized to safer environments. Occupational burnout exemplifies how chronic job demands coupled with low autonomy drive suppression of frustration and cognitive avoidance, ultimately depleting cognitive resources needed for healthier regulation^[25].

5.2.3 Synergistic Detriment

The interplay between social isolation and chronic stress creates a self-amplifying trap. High stress depletes energy for social engagement, while isolation removes buffers against stress, escalating reliance on maladaptive strategies. For instance, an overworked parent in an unsupportive community may oscillate between explosive anger and emotional withdrawal-patterns that simultaneously exacerbate stress and alienate potential supporters.

5.3 Cultural Differences

Cultural norms fundamentally shape the perception and practice of emotion regulation by prescribing which emotions require regulation and which strategies are deemed socially legitimate^[26]. In collectivist cultures, emotional suppression is often valorized as a means to preserve group harmony, reframing it as "self-restraint" rather than maladaptation^[17]. However, this cultural endorsement masks latent costs: suppressing negative emotions to avoid burdening others correlates with elevated somatic symptoms and internalizing disorders, as unresolved emotions are redirected inward rather than processed interpersonally.

Conversely, individualist cultures prioritize emotional authenticity, pathologizing suppression while tacitly encouraging expressive strategies like venting. Paradoxically, this norm increases risks of interpersonal catastrophizing-overemphasizing emotional expression's cathartic value may escalate conflicts when unfiltered emotions violate others' autonomy^[17].

6. Intervention and Improvement Strategies

6.1 Psychotherapy Interventions

6.1.1 Cognitive-Behavioral Therapy (CBT)

CBT targets maladaptive strategies by disrupting the cognitive-behavioral loops that sustain

them. Through cognitive restructuring, individuals learn to identify and challenge distorted beliefs fueling strategies like catastrophizing or self-blame. Behavioral experiments further dismantle avoidance patterns by exposing individuals to feared emotions in controlled settings. For example, intentionally expressing vulnerability to test assumptions about rejection, thereby generating corrective emotional experiences that weaken maladaptive associations ^[27].

6.1.2 Acceptance and Commitment Therapy (ACT)

ACT addresses emotional avoidance by cultivating psychological flexibility-the ability to maintain values-aligned action despite distressing emotions ^[28]. Techniques like cognitive defusion reduce the literal grip of negative thoughts, while willingness exercises encourage contact with avoided emotions. By shifting focus from emotion control to value-driven behaviors, ACT breaks the cycle where avoidance dictates life choices.

6.1.3 Mindfulness-Based Interventions

Mindfulness training counteracts maladaptive strategies by rewiring automatic reactivity to emotions ^[29]. Through practices like body scan meditation, individuals develop meta-awareness of emotional triggers while learning to "sit with" discomfort without judgment or suppression. This non-reactive stance disrupts habitual responses like rumination or emotional numbing by inserting a pause between stimulus and reaction, allowing deliberate choice rather than reflexive strategy use. Mindfulness-Based Cognitive Therapy (MBCT) specifically prevents depressive relapse by teaching individuals to observe ruminative thoughts as transient mental events rather than truths requiring action.

6.2 Prevention and Education

6.2.1 Emotion Regulation Skill Training

Proactive skill-building programs, such as Dialectical Behavior Therapy (DBT) modules, equip individuals with adaptive regulatory toolkits before maladaptive patterns become entrenched ^[30]. DBT's emotion regulation curriculum targets skill deficits underlying strategies like suppression or self-blame through:

Distress tolerance: Learning to withstand emotional discomfort without resorting to avoidance or substance use.

Emotion labeling: Enhancing granularity in identifying nuanced emotional states to reduce reliance on blunt strategies like aggression. For example, distinguishing grief from resentment.

Opposite action: Systematically acting contrary to emotion-driven impulses to recalibrate maladaptive behavioral reflexes, such as approaching rather than avoiding anxiety-provoking tasks.

6.2.2 School and Workplace Mental Health Programs

Universal prevention initiatives in educational settings focus on developmental timing. Adolescent programs teach emotion differentiation and cognitive reappraisal during puberty-a critical window when neural plasticity supports lasting regulatory habit formation. Interactive curricula employ role-playing to practice conflict resolution and mindfulness exercises to reduce impulsivity ^[31].

Workplace interventions address occupational triggers of maladaptive strategies through:

Stress inoculation workshops: Training employees to reframe high-pressure situations as challenges rather than threats, reducing catastrophizing.

Psychological Safety Policy: Encourage regular emotional expression to replace suppression with constructive disclosure, such as establishing structured peer support groups.

Leadership modeling: Supervisors demonstrating adaptive strategies to shift organizational norms, such as transparently managing frustration through problem-solving.

These programs leverage environmental scaffolding to make adaptive strategies more accessible than maladaptive ones, effectively rewiring default responses through repeated, contextually embedded practice.

7. Research Limitations and Future Directions

7.1 Current Research Limitations

7.1.1 Ecological Validity Constraints

A predominant limitation stems from overreliance on self-report methodologies and laboratory-based experiments, which inadequately capture the dynamic, context-dependent nature of maladaptive emotion regulation in real-world settings. Retrospective self-reports introduce recall bias and social desirability distortions. Laboratory paradigms, while enabling controlled manipulation of emotional stimuli, often lack ecological relevance-suppressing emotions during an artificial frustration task poorly mimics the relational complexities of suppressing anger toward a loved one. Furthermore, momentary assessment methods remain underutilized, limiting insights into how strategies shift across situational contexts.

7.1.2 Cross-Cultural Insularity

The evidence base disproportionately reflects Western, educated, industrialized populations, obscuring culturally embedded variations in what constitutes "maladaptiveness." For instance, strategies deemed dysfunctional in individualist cultures may hold protective value in collectivist contexts ^[17]. This sampling bias perpetuates Eurocentric assumptions about optimal emotion regulation, neglecting how cultural scripts shape strategy efficacy. Additionally, most interventions are validated in Western clinical populations, raising questions about their transportability to cultures with divergent help-seeking norms or emotion lexicons ^[26].

7.2 Future Research Directions

7.2.1 Precision Interventions for Vulnerable Populations

Tailoring interventions to population-specific needs requires mechanistic customization. For adolescents, interventions might gamify emotion regulation skill acquisition via virtual reality to leverage peer-influence dynamics. Chronic pain patients, whose maladaptive strategies often intertwine with pain catastrophizing, may benefit from interventions co-targeting interoceptive awareness and emotional avoidance. Culturally adaptive redesigns are equally vital-for collectivist communities, reframing cognitive reappraisal as a relational harmony tool rather than individualistic self-optimization could enhance uptake. Embedding interventions into ecological niches will bridge the efficacy-effectiveness gap.

8. Conclusion

Maladaptive emotion regulation strategies represent a paradoxical nexus of immediate relief and progressive dysfunction, characterized by their self-reinforcing rigidity and cross-systemic toxicity.

These strategies-whether suppression's physiological toll, avoidance's social erosion, or catastrophizing's cognitive hijacking-converge in perpetuating psychopathology through intertwined neural, cognitive, and behavioral pathways. Their repercussions extend beyond individual suffering, manifesting as societal burdens through chronic disease escalation and occupational productivity loss.

The evidence underscores an urgent imperative: early identification of maladaptive patterns before their entrenchment. This demands culturally sensitive screening tools capable of detecting subtle strategy shifts, particularly in high-risk populations navigating developmental transitions or chronic stressors. Intervention paradigms must evolve beyond symptom reduction to target the very mechanisms sustaining these strategies-rewiring reinforcement cycles via cognitive flexibility training, restoring neurophysiological homeostasis through biofeedback, and rebuilding social ecologies that nurture adaptive regulation.

Ultimately, dismantling the maladaptive strategy epidemic necessitates transdisciplinary synergy. Integrating affective neuroscience, developmental psychopathology, and cross-cultural psychology will yield precision models that respect both biological vulnerabilities and sociocultural scripts. Only through such integration can research transcend its current constraints, transforming fragmented insights into actionable solutions for fostering emotional resilience across the lifespan.

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