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## The Impact of Stress on Mental Health: A Review of Current Research

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### Abstract

*This research investigates the intricate relationship between stress and mental health, emphasizing biological, psychological, and environmental mechanisms. Chronic stress increases susceptibility to mental health disorders like depression and anxiety through neuroendocrine disruption, neural alterations, and maladaptive cognitive patterns. The study highlights the impact of genetic predispositions, early adversity, and ongoing stressors on individual vulnerability. It further analyzes psychological flexibility as a mediator and interpretation biases as moderators that buffer or intensify stress's effects on well-being. Using moderated mediation models, the research examines how coping strategies—including mindfulness, cognitive restructuring, and organizational or societal interventions—foster resilience and positive mental health. The findings stress the necessity of integrated, multi-level strategies for effective stress management and mental health promotion. Ultimately, this work offers insights for designing targeted interventions and policies to lessen the burden of stress-related mental health issues and enhance psychological resilience.*

**Keywords:** stress, mental health, anxiety, depression, coping strategies, psychological resilience

### Introduction

Stress is a natural physiological and psychological reaction to external demands (Lupien et al., 2009). Acute stress can motivate individuals, but chronic stress is tied to multiple mental health concerns (McEwen, 2006). The World Health Organization (WHO, 2017) defines mental health as vital for overall well-being, highlighting the significance of factors such as stress.

This paper aims to review current literature on the effects of stress on mental health, exploring the underlying mechanisms and potential interventions.

### The Relationship Between Stress and Mental Health

Research indicates that prolonged exposure to stressors increases the risk of developing mental health disorders (Kendler et al., 2003). Anxiety and depression are among the most common conditions associated with chronic stress (Hammen, 2005). Stress activates the hypothalamic-pituitary-adrenal (HPA) axis, leading to elevated cortisol levels, which can impair brain regions involved in mood regulation, such as the hippocampus and prefrontal cortex (McEwen, 2007).

### Mechanisms of Impact

The biological impacts of stress include neurochemical alterations, inflammation, and structural changes in the nervous system (Sapolsky, 2000). Psychologically, stress can lead to maladaptive coping strategies, such as avoidance or substance use, further exacerbating mental health problems (Compas et al., 2001).

### Interventions and Coping Strategies

Effective stress management techniques, including mindfulness, cognitive-behavioral therapy (CBT), and social support, have been shown to mitigate adverse mental health outcomes (Hofmann et al., 2010). Workplace and community-based interventions are also vital in promoting resilience against stress.

Stressful life events are widely recognized as significant contributors to the development and progression of depression and other mental health disorders. The complex interplay between environmental stressors and individual vulnerability factors shapes how stress impacts psychological well-being. Genetic predispositions, such as single-nucleotide polymorphisms (SNPs), can influence neural structures and functions, leading to heightened reactivity in regions like the amygdala and diminished activity in the hippocampus. Early adverse experiences may induce biological alterations in the central nervous system (CNS) and foster maladaptive cognitive schemas, which bias the processing of environmental stimuli and increase emotional and cognitive vulnerability (Gould et al., 2016; Beck, 1979).

These vulnerabilities can be activated under stress, resulting in dysregulated neuroendocrine responses, including increased corticotropin-releasing factor (CRF) and cortisol levels, further affecting neural circuits and emotional regulation (Nemeroff et al., 2016).

Understanding the mechanisms through which stress influences mental health, particularly depression, involves examining both biological and psychological pathways. Psychological flexibility, or the ability to adapt one's thoughts and behaviors in response to changing circumstances, has emerged as a potential protective factor. This study explores how perceived stress affects mental health outcomes—such as depression, anxiety, and stress-related symptoms—and investigates the mediating role of psychological flexibility. Additionally, the moderating influence of interpretation biases on these relationships is examined, providing insights into how cognitive processes may amplify or mitigate stress's psychological impact. Through moderated mediation models, this research aims to clarify the intricate interrelations among stress, cognitive flexibility, interpretation biases, and mental health, ultimately contributing to more targeted intervention strategies.

## Review of Literature

The World Health Organization (2017) outlined the importance of strengthening mental health responses worldwide. The report reviewed the global burden of mental health disorders and underscored the need for comprehensive strategies to improve mental health services and reduce stigma. It highlighted efforts to integrate mental health care into primary healthcare systems and emphasized the importance of community-based approaches. The WHO also discussed the challenges faced in resource allocation and policy implementation across different regions. Overall, the report called for increased investment and coordinated action to enhance mental health support and promote well-being globally.

Tafet and Nemeroff (2016) examined the complex interactions between stress and depression, focusing on psych neuroendocrinological, genetic, and environmental factors. They discussed how stress could trigger neuroendocrine responses that contributed to depressive symptoms and highlighted the role of genetic predispositions and environmental influences in modulating these effects. The authors emphasized the importance of understanding these interconnected mechanisms to improve treatment strategies for depression.

Nemeroff and Binder (2014) discussed the significant impact of childhood abuse and neglect on increasing vulnerability to major psychiatric disorders. They reviewed evidence indicating that early adverse experiences could lead to neurobiological changes that predispose individuals to mental health conditions. The authors emphasized the importance of understanding these mechanisms to inform prevention and intervention strategies for affected populations.

Gould, Clarke, Heim, et al. (2012) investigated the long-term effects of child abuse and neglect on cognitive functioning in adulthood. They found that early adverse experiences were associated with cognitive deficits later in life, which could contribute to the development of mental health issues. Beck (2008) reviewed the evolution of the cognitive model of depression, highlighting its neurobiological correlates. He discussed how cognitive distortions in depression were linked to specific brain mechanisms, advancing the understanding of depression's neurobiological basis.

Hayes (2022) provided an overview of mediation, moderation, and conditional process analysis using a regression-based approach. He explained the theoretical foundations and practical applications of these statistical methods, emphasizing their importance for understanding complex relationships among variables in research. The book served as a comprehensive guide for researchers to implement and interpret these analyses effectively.

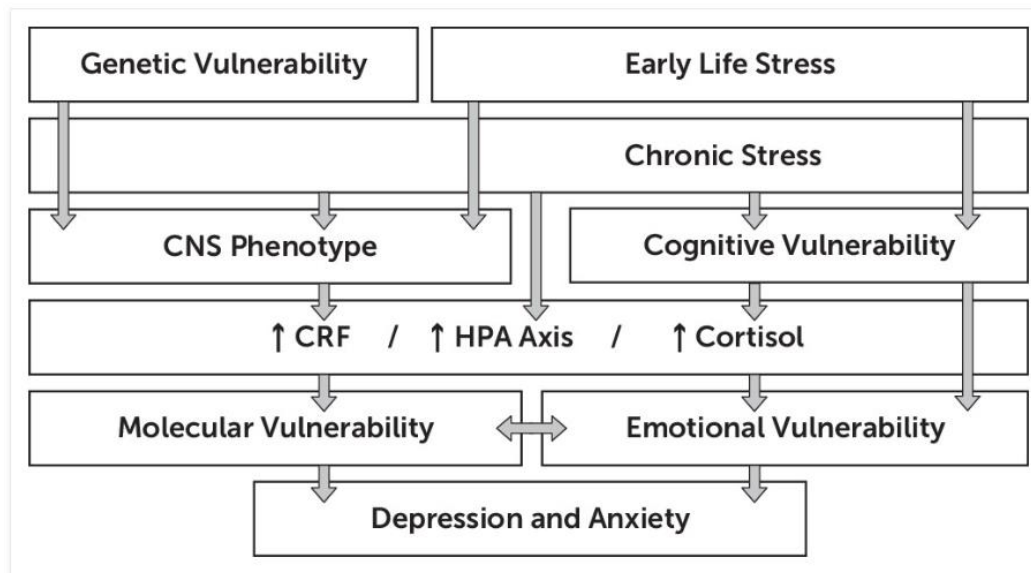
Machulska and Klucken (2025) examined the relationships among perceived stress, psychological flexibility, and interpretation biases in undergraduate students' mental health. They found that higher perceived stress was associated with poorer mental health, but psychological flexibility served as a protective factor. Additionally, interpretation biases influenced the impact of stress on mental health outcomes, highlighting the complex interplay among these variables.

## Objective

1. To investigate the relationship between chronic stress and mental health disorders such as anxiety and depression.
2. To assess the effect of perceived stress levels on overall psychological well-being.
3. To explore coping mechanisms and resilience factors that moderate the effects of stress on mental health.

## Data Analysis and Interpretation

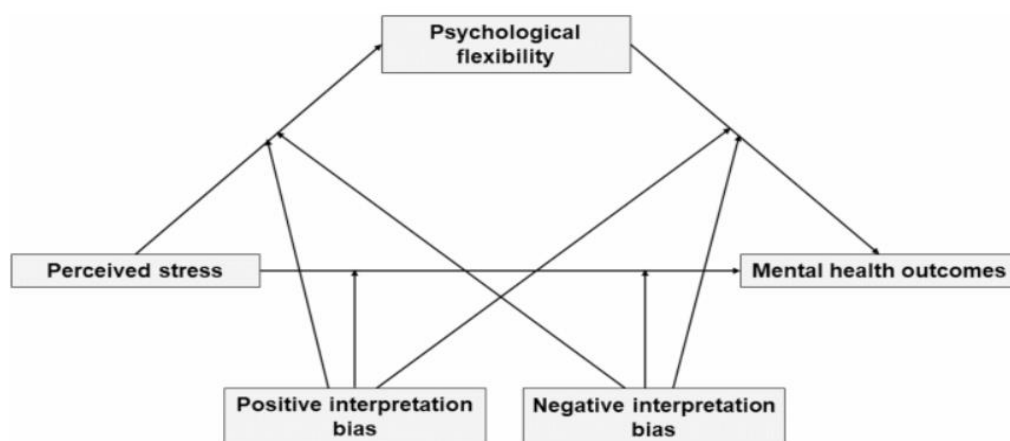
The role of stressful life events in the origin and development of depression may be conceptualized as the result of multiple interactions between the effects of environmental stressors and individual factors of vulnerability. Figure 1 illustrates the role of these factors and their potential interactions at the interface between chronic stress and depression. Genetic factors, including SNPs, may be associated with functional and structural alterations in certain neural structures, including increased reactivity of the amygdala and decreased function of the hippocampus. Adverse early life events have been shown to engender biological changes in the developing CNS, as well as psychological changes reflected in the formation of dysfunctional cognitive schemas (Gould F, Clarke J, Heim C, et al), with the resulting biased cognitive processing of environmental stimuli, which may be translated into cognitive and emotional vulnerability. (Beck AT) These may be further activated in response to stress in adulthood, contributing to increased vulnerability to depression. (Nemeroff CB, Binder E)



**Figure 1: Schematic representation of different factors involved in stress response**

Genetic polymorphisms (represented as genetic vulnerability) participate in the development of the CNS and, together with the influence of early environmental factors (represented by early life stress) and chronic stress, result in a particular CNS phenotype. Early life stress may also induce certain cognitive vulnerability, which in turn may result in emotional vulnerability. Upon the impact of traumatic events or chronic stress, a predisposed CNS responds with increased levels of CRF, hyperactivation of the HPA axis, and increased levels of cortisol, which may lead to molecular changes in different circuits (represented by molecular vulnerability), as well as altered cognitive and emotional responses (represented by emotional vulnerability). This, in turn, may result in increased vulnerability for the development of symptoms of anxiety and depression. CRF, corticotropin-releasing factor; HPA, hypothalamic-pituitary-adrenal.

To examine the mediating role of psychological flexibility in the relationship between perceived stress and mental health under moderate (T0) and high stress (T1) conditions – and to test whether interpretation biases moderate this relationship – we estimated four moderated mediation models for each time point using PROCESS macro Model76(Hayes, A. F. 2022). An illustration of the conceptual moderated mediation model is provided in Fig.2



Conceptual diagram.

**Figure 2: An illustration for the conceptual moderated mediation model**

For the moderate-stress condition, all predictors, mediators, and outcomes measured at T0 were included. For the high-stress condition, the same approach was applied with T1 data. Separate models were conducted for each outcome variable (depression, anxiety, stress-related symptoms, and positive mental health). To test the moderating role of interpretation biases, baseline (T0) positive and negative biases were entered as moderators in both the T0 and T1 models. This specification allowed the moderator to influence both the indirect paths (a:

stress → psychological flexibility; b: psychological flexibility → outcome) and the direct path (c': stress → outcome). In line with (Hayes, A. F. 2022), we conducted model pruning when mediators or moderators were not statistically significant, with significant predictors from the initial model being included as covariates to account for their possible effects. Specifically, non-significant interaction terms were removed from the model to simplify interpretation and reduce the risk of overfitting.

### **Coping Mechanisms**

1. **Problem-Focused Coping** Problem-focused coping involves addressing the root cause of stress through practical solutions. For instance, individuals can reduce financial stress by creating a budget or seeking additional income sources. Similarly, workplace stress can be mitigated by improving time management skills and seeking support from supervisors (Folkman & Lazarus, 1985)
2. **Emotion-Focused Coping** Emotion-focused coping aims to manage the emotional distress associated with stress. Techniques such as mindfulness meditation, deep breathing exercises, and journaling help individuals regulate their emotions and reduce anxiety. Seeking social support from friends, family, or therapists also enhances emotional well-being (Gross, 1998)
3. **Cognitive restructuring** involves identifying and challenging negative thought patterns that contribute to stress. By reframing stressful situations in a more positive light, individuals can reduce their emotional reactivity and develop a more optimistic outlook. Cognitive-behavioral therapy (CBT) is a widely used intervention for this purpose (Beck, 1979)
4. **Lifestyle Modifications:** Adopting a healthy lifestyle is crucial for stress management. Regular physical activity, balanced nutrition, and adequate sleep improve overall resilience to stress. Engaging in hobbies and leisure activities also provides a sense of relaxation and fulfillment (Biddle et al., 2000). Resilience refers to the ability to adapt to and recover from stressful situations. Developing resilience involves cultivating a growth mindset, setting realistic goals, and maintaining a strong social support network. Resilient individuals are better equipped to cope with stress and maintain their psychological well-being (Masten, 2001)

### **Strategies for Stress Management**

1. **Individual Strategies**
  - **Mindfulness-Based Interventions:** Practices such as mindfulness-based stress reduction (MBSR) enhance self-awareness and reduce stress.
  - **Time Management:** Prioritizing tasks and setting boundaries helps individuals manage their responsibilities more effectively.
  - **Therapy and Counseling:** Seeking professional help provides individuals with tailored strategies to address their stressors.
2. **Organizational Strategies**
  - **Workplace Wellness Programs:** Employers can implement initiatives that promote mental health, such as stress management workshops and employee assistance programs.
  - **Flexible Work Arrangements:** Allowing remote work or flexible hours reduces workplace stress and enhances work-life balance.
  - **Supportive Leadership:** Encouraging open communication and providing constructive feedback fosters a positive work environment.
3. **Societal Strategies**
  - **Public Awareness Campaigns:** Educating communities about stress and its effects helps reduce stigma and promote early intervention.
  - **Policy Interventions:** Governments can implement policies that address systemic stressors, such as healthcare accessibility and economic inequality.
  - **Community Support Systems:** Establishing local support groups and mental health resources enhances collective resilience.

### **Conclusion**

This research underscores the intricate and multifaceted relationship between stress and mental health, highlighting how biological, psychological, and environmental factors converge to influence vulnerability to disorders such as depression and anxiety. The findings suggest that genetic predispositions, early life experiences, and chronic stressors contribute to neurobiological changes and maladaptive cognitive schemas, which can predispose individuals to emotional dysregulation when exposed to stress. Importantly, psychological flexibility emerges as a vital resilience factor that can mediate the adverse effects of perceived stress on mental health outcomes. Moreover, interpretation biases play a moderating role, potentially amplifying or mitigating the impact of stress on psychological well-being.

Effective stress management strategies—ranging from individual practices like mindfulness and cognitive restructuring to organizational and societal interventions—are essential for fostering resilience and promoting mental health. Understanding these complex interactions offers valuable insights for developing targeted interventions and policies aimed at reducing the burden of stress-related mental health disorders. Future research should continue to explore these pathways to enhance prevention efforts and support individuals in managing stress more effectively, ultimately contributing to improved psychological resilience and overall well-being.

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**Conflicts of interest**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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