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MILKEN INSTITUTE

Anxiety

A Giving Smarter Guide

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About the Milken Institute

The Milken Institute is a nonprofit, nonpartisan think tank focused on accelerating measurable progress on the path to a meaningful life. With a focus on financial, physical, mental, and environmental health, we bring together the best ideas and innovative resourcing to develop blueprints for tackling some of our most critical global issues through the lens of what's pressing now and what's coming next.

About Milken Institute Strategic Philanthropy

Milken Institute Strategic Philanthropy tackles persistent societal challenges by guiding individuals and foundations with the insights and tools to develop strategies, implement giving programs, and foster collaboration to create a better, more equitable world.

About the Science Philanthropy Accelerator for Research and Collaboration

Milken Institute Strategic Philanthropy's Science Philanthropy Accelerator for Research and Collaboration (SPARC) works to develop, launch, and lead initiatives that fund medical research and invest to accelerate the development of tools and treatments that will bring better health to millions of people. Our expertise lies within several medical research fields, including neuroscience, mental health, oncology, rare diseases, and immunology. We partner with philanthropists, leading them through complex medical research and clinical systems and guiding pathways for philanthropy to create a healthy, equitable world.

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Foreword

There seems to be no better time than the present—when it can feel as though the world is on fire—to talk about anxiety. More individuals than ever are seeking anxiety disorder treatment in the form of medication and talk therapy. Schools are embracing social and emotional learning as part of their curricula. And today's parenting guidance is incomplete without addressing the effects of technology and social media on our children's well-being.

And yet there seems to be a disconnect between the level of societal interest in anxiety and the level of support for people who experience it. Financial investment in anxiety research and care is significantly lacking, despite the urgent need to continue attracting doctors, scientists, and researchers to the field. As a family foundation primarily focused on mental health initiatives, the Dauten Family Foundation has learned the importance of investing in sound medical and scientific research.

So, in October 2025, we held a conference in Chicago in partnership with Milken Institute Strategic Philanthropy's SPARC that convened some of the best and the brightest in the field of anxiety. This conference proved to be eye-opening in many ways, but we left with two major impressions: 1) So much exciting work is being done in the field of anxiety right now, and 2) so much more essential work could be done if only more resources could support that work.

Anxiety has directly affected our family and most likely affects someone you know and love as well. We are committed to supporting advances in the understanding and treatment of anxiety as a stand-alone condition and in combination with other mental and physical health conditions. One of this report's aims is to drive more strategic resource allocation to this field by identifying where philanthropic funders can invest to make progress in scientific understanding and treatment. We implore you to join us in this important quest.

The Dauten Family Foundation

Executive Summary

Anxiety is a natural human emotion that promotes vigilance in the face of potential threats. However, when anxiety is persistent and disproportionate to actual risk, it becomes maladaptive and can significantly impair daily functioning. Clinically, the term *anxiety disorders* refers to conditions (such as generalized anxiety disorder, panic disorder, and specific phobias) for which maladaptive anxiety is the central and defining feature.

One in five adults experiences symptoms of anxiety. Biologically, the underlying mechanisms of anxiety involve multiple processes across the brain and body. However, mechanistic research is often conducted in disciplinary silos, resulting in less integrated research and fewer cross-sector collaborations. This separation represents a key research ecosystem challenge in anxiety. Limited infrastructure for cross-sector collaboration can also lead to fragmented translation between basic and clinical science, slowing scientific discovery and the development of more effective clinical treatments.

The origins of anxiety risk are complex, arising from the dynamic interplay across biological, psychological, social, and environmental factors. Key risk factors include genetics, exposure to traumatic events (particularly during sensitive developmental periods), and certain personality characteristics. Traits such as resilience can serve as protective factors, but more advanced understanding of these traits is needed.

Individuals most at risk for anxiety (including vulnerable populations such as children, adolescents, and older adults) are often underrepresented in anxiety research. While these populations may benefit the most from early prevention and treatment, less is known about how anxiety manifests for them and how treatment may be personalized for the greatest effect.

Depending on the specific anxiety disorder and individual patient characteristics, first-line interventions for anxiety can include pharmacologic treatments and psychotherapy. Yet approximately 50 percent of patients do not respond to these treatments and require more personalized approaches. Accelerating the research and discovery of more precise treatments can reduce the need for time-consuming trial-and-error approaches and improve mental health outcomes more efficiently. Systemic barriers to mental health care further underscore research ecosystem challenges involving the availability of and access to anxiety treatment, particularly for underserved populations.

The largest public funder of anxiety research in the United States is the National Institute of Mental Health (NIMH). Over the past decade, NIMH has allocated $2.1 billion toward anxiety disorders; however, funding for anxiety has declined over the past five years. NIMH has directed limited funding to populations (e.g., child, adolescent, and geriatric populations) where key developmental and transitional periods can lead to higher vulnerability for anxiety.

Private funding has supported anxiety research, but few private funders focus specifically on anxiety, as these disorders are often studied alongside other mental health symptoms. The field of anxiety research needs focused support and coordinated efforts across private and public funding to accelerate biomedical advances in research and treatment.

In 2025, the Dauten Family Foundation partnered with Milken Institute Strategic Philanthropy's SPARC to analyze the state of the anxiety research ecosystem and identify opportunities for philanthropic investments to support scientific and clinical progress. This *Giving Smarter Guide* presents the results of this partnership and outlines five philanthropic opportunities that private funders can use to achieve maximum impact for individuals living with anxiety.

Philanthropic Opportunities in Anxiety Research

The opportunities presented in this report were informed by an extensive review of the scientific literature, an analysis of public and private funding patterns in the anxiety field, and conversations with over 70 key experts and invested parties. **Table 1** presents five philanthropic opportunities, the research ecosystem challenges these opportunities address, and the associated impact of philanthropic investment.

Table 1: Philanthropic Opportunities in Anxiety Research

PHILANTHROPIC OPPORTUNITY	RESEARCH ECOSYSTEM CHALLENGE	IMPACT IF REALIZED
Opportunity 1: Bridge Bench and Bedside to Advance Translational Medicine	Basic research discoveries often stall in the lab and are not translated to meaningful clinical treatment. Likewise, clinical observations that could guide basic research often fail to reach laboratory scientists. Infrastructure supporting cross-disciplinary collaboration is limited.	Integrating discoveries from basic and clinical science enables a more comprehensive understanding of anxiety disorders that can translate to more effective clinical treatments.
Opportunity 2: Study Brain-Body Connections in Anxiety	Anxiety manifests across both the brain and body, but the mechanisms for how these multiple physiological systems interact in anxiety are unclear. Studies assessing multiple body systems are technically challenging and require strong, interdisciplinary collaboration.	Interdisciplinary research that integrates brain and body mechanisms could reveal new therapeutic targets, identify biomarkers that predict treatment response, and lead to interventions that address the full biological complexity of anxiety.
Opportunity 3: Characterize Anxiety Across Diverse Populations and Strengthen Research on Risk and Resilience Across the Lifespan	Developmental transitions are key periods with higher anxiety vulnerability, but few quality data exist that capture a life-course perspective of anxiety. Research is also limited on how anxiety manifests in vulnerable populations, as well as which factors affect risk and resilience.	Research across the lifespan can identify age-specific risk and resilience factors and critical risk windows and improve understanding of how anxiety changes over time. Improved understanding of anxiety in vulnerable populations can reduce health disparities through improved diagnosis and treatment.
Opportunity 4: Disseminate and Implement Existing Treatments for Anxiety	Effective anxiety treatments exist, but they often fail to reach the patients who need them most. Further, lack of awareness of symptoms and available treatments can discourage individual help-seeking.	Improving dissemination and implementation of existing evidence-based treatments can reduce unmet need and lower the burden of anxiety.
Opportunity 5: Support Research and Implementation of Personalized Approaches to Anxiety Treatment	There is insufficient research on how to appropriately tailor anxiety treatments to individuals' unique biological, psychological, and social profiles. About half of patients do not respond to first-line treatment options and require more personalized treatment approaches.	More accurate diagnoses and increased precision of predicted treatment response can support a more personalized and effective standard of care.

Source: Milken Institute analysis (2026)

Introduction to Anxiety and Anxiety Disorders

Anxiety is a fundamental and natural human emotion that arises in anticipation of danger or threat. Symptoms vary and can manifest physically, mentally, and behaviorally (**Table 2**).[1] While anxiety is an evolutionary adaptation that can serve a critical protective function, it can become pathological.[2]

Distinct from fear, which is an alarm reaction to an immediate threat, anxiety is associated with a state of preparedness in anticipation of future threats. Anxiety can be both adaptive and maladaptive (**Box 1**).[3]

Adaptive anxiety is a proportionate and temporary response to stress or a perceived future challenge.[4] Mild levels of anxiety can be beneficial, enhancing performance by increasing alertness, focusing attention on potential dangers, and motivating preparatory behaviors and problem-solving.[5]

However, anxiety becomes maladaptive when the response becomes excessive, persistent, and out of proportion to the actual risk posed by the situation, and it can substantially interfere with day-to-day function.[6] Maladaptive anxiety is a symptom of many psychiatric and medical conditions. When it is a predominant feature, it is characterized by the class of disorders known as anxiety disorders.

In this document, the term *anxiety* by itself should be understood as a maladaptive symptom. This use is not intended to overlook the important role of adaptive anxiety, but rather to match how *anxiety* is typically used in mental health and clinical settings. When an anxiety disorder is mentioned, it should be understood as maladaptive anxiety that reaches the level of a clinical condition.

Box 1: Fear and Anxiety

Fear is an emotional and physiological alarm reaction to a present and identifiable threat.

Anxiety is a state of apprehension and vigilance in response to a potential, distant, or ambiguous threat.

- Adaptive anxiety is proportionate and temporary. Mild levels of anxiety are healthy and beneficial.
- Maladaptive anxiety is persistent and disproportionate. Maladaptive anxiety is a symptom of many psychiatric conditions.

Anxiety disorders are mental health conditions in which maladaptive anxiety is a defining, central feature.

Table 2: Symptoms of Anxiety

PHYSICAL SYMPTOMS	MENTAL SYMPTOMS	BEHAVIORAL CHANGES
Faster, irregular, or more noticeable heartbeat	Feeling tense or anxious	Not being able to enjoy leisure time
Feeling lightheaded or dizzy	Being unable to relax	Difficulty looking after oneself
Headaches	Worrying about the past or future	Struggling to form or maintain relationships
Chest pains	Feeling tearful	Worrying about trying new things
Loss of appetite	Difficulty sleeping	Avoiding places and situations that create anxiety
Sweating	Difficulty concentrating	Compulsive behavior, such as constantly checking things
Breathlessness	Fear of the worst happening	
Feeling hot	Intrusive traumatic memories	
Shaking	Obsessive thoughts	

Source: Milken Institute (2026)

Anxiety Disorders

Anxiety is a central symptom of several mental health conditions that are collectively referred to as anxiety disorders. The *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (*DSM-5*), published by the American Psychiatric Association, and the *International Statistical Classification of Diseases and Related Health Problems (ICD)*, published by the World Health Organization (WHO), both organize anxiety and related conditions into several distinct categories.[7] **Table 3** gives an overview of anxiety disorders, their defining characteristics, and their prevalence in the US.[8]

Table 3: Overview of Anxiety Disorders

ANXIETY DISORDER	PAST-YEAR PREVALENCE (PERCENTAGE)	LIFETIME PREVALENCE (PERCENTAGE)	OVERVIEW OF CHARACTERISTICS
Agoraphobia	0.9	2.4	Intense fear of situations where escape or help may be difficult—not just fear of open spaces
Generalized Anxiety Disorder	2.7	2.2	Excessive, uncontrollable worry across multiple life domains, such as work, health, or finances
Obsessive-Compulsive Disorder (OCD)	1.2	2.3	Recurrent obsessions (intrusive thoughts/impulses) and compulsions (repetitive behaviors/mental acts)

ANXIETY DISORDER	PAST-YEAR PREVALENCE (PERCENTAGE)	LIFETIME PREVALENCE (PERCENTAGE)	OVERVIEW OF CHARACTERISTICS
Panic Disorder	2.7	2.3	Recurrent, unexpected panic attacks with abrupt surges of intense fear peaking within minutes
Post-Traumatic Stress Disorder (PTSD)	3.6	5.0	Flashbacks, nightmares, hypervigilance, or avoidance following trauma exposure
Selective Mutism	0.7*	0.9*	Consistent failure to speak in specific situations despite normal speech in others
Separation Anxiety Disorder	1.0	4.8	Excessive, developmentally inappropriate fear of separation from attachment figures or familiar places
Social Anxiety Disorder	7.1	9.1	Intense fear of social situations involving scrutiny, rejection, or embarrassment
Specific Phobia	9.1	19.3	Intense, persistent, disproportionate fear of a specific object or situation

Note: Past-year prevalence refers to the percentage of the population that has experienced anxiety in the previous year, whereas lifetime prevalence refers to the percentage of the population that has experienced anxiety at any point in their life. While PTSD and OCD were moved to new chapters in the latest editions of the DSM and the ICD, they are included here due to their strong historical and clinical links to anxiety.

**assessed only in children*

Source: Milken Institute (2026)

Comorbidity with Other Mental and Physical Illnesses

Anxiety disorders frequently intersect with other psychiatric conditions, shaping the clinical presentation and treatment course of anxiety. It is important to note that anxiety disorders tend to have earlier onset than the potentially co-occurring mental health conditions discussed in the following list. This time-related characteristic of anxiety underscores that research targeting early intervention may have implications across mental health conditions, improving outcomes for co-occurring conditions as well as anxiety.

- **Depression:** The overlap between anxiety and depression is so profound that they are often considered different manifestations of a single underlying "internalizing" dimension of psychopathology.[9] Research suggests that 50–60 percent of individuals experience comorbid anxiety and depression.[10]
- **Substance use disorders (SUDs):** There is a strong relationship between anxiety and substance use. Approximately 18 percent of individuals with a current SUD also meet criteria for an anxiety disorder.[11] Conversely, in individuals diagnosed with an anxiety disorder, the 12-month prevalence of a comorbid SUD is reported to range between 33 percent and 45 percent.[12]

- **Serious mental illness (SMI):** Anxiety is a common and impairing feature of SMIs, including schizophrenia and bipolar disorder, and negatively influences the course of disease.[13] Certain anxiety disorders can be considered SMIs in and of themselves, depending on their severity and subtype. Examples include post-traumatic stress disorder (PTSD) and obsessive-compulsive disorder (OCD).

The high comorbidity between anxiety and chronic medical conditions starkly illustrates the connection between mental and physical health. In meta-analyses of anxiety in adults who experienced heart failure, approximately 13 percent of patients with heart failure had an anxiety disorder and 32 percent experienced elevated anxiety levels.[14] In addition, anxiety is independently associated with increased risk for stroke, even after controlling for cardiovascular and behavioral risk factors. Each standard deviation increase in anxiety raises stroke risk by about 17 percent.[15] Moreover, people with diabetes are 20 percent more likely than those without diabetes to have anxiety.[16]

Anxiety disorders rarely occur in isolation. Their high rate of comorbidity with other psychiatric and physical conditions is a defining feature.

Epidemiology of Anxiety

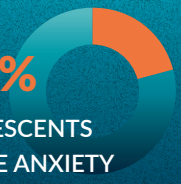
Epidemiological studies of anxiety investigate how often anxiety occurs in the population, for whom anxiety may be more common, and why. Understanding these factors can lead to the identification of novel strategies for anxiety prevention and intervention. **Boxes 2 and 3** summarize several key statistics relevant to the prevalence and economic burden of anxiety.[17]

Prevalence of Anxiety in the United States

In 2022, according to the National Health Interview Survey, almost one in five adults age 18 and older experienced symptoms of anxiety in the preceding two weeks.[18] Among adults over 65, prevalence was lower, at a little over one in 10 (11 percent). In 2023, the National Health Interview Survey-Teen showed that adolescents (ages 12–17) experienced anxiety at a similar rate as adults, with 21 percent having anxiety symptoms in the preceding two weeks.[19]

Box 2: Anxiety by the Numbers

1 in 5
US ADULTS EXPERIENCE ANXIETY SYMPTOMS



21%
OF ADOLESCENTS EXPERIENCE ANXIETY SYMPTOMS

11%
OF OLDER ADULTS EXPERIENCE ANXIETY SYMPTOMS

The prevalence of anxiety differs by age, sex, and other demographic characteristics. While anxiety prevalence is similar in boys and girls, lifetime prevalence of anxiety is higher in women (33 percent) compared with men (22 percent).[20] Further, Black, Hispanic, and Asian adults report overall lower rates of anxiety than white adults, a phenomenon often described as the "mental health paradox," as Black, Hispanic, and Asian populations may disproportionately experience social and economic stressors linked to increased anxiety.[21] Strong resilience factors (e.g., community and religion) may balance exposure to known stressors. Methods of measuring anxiety across populations—including biases in self-reports of anxiety, differences in how anxiety is diagnosed, and differences in health and mental health–care utilization—may also contribute to observed disparities.

Box 3: Economic Burden of Anxiety

Anxiety disorders present an economic burden of direct costs associated with health-care utilization and indirect costs stemming from lost productivity and mortality. Health-care costs among patients with anxiety disorders are more than two times the costs incurred by patients without anxiety.

Recent meta-analyses estimate the economic impact of anxiety disorders in the US ranges from

$42 billion to $46 billion annually.

Causes and Risk Factors of Anxiety Disorders

The etiology of anxiety disorders is complex, arising from the dynamic interplay across biological, psychological, social, and environmental factors. Many factors influence one's risk of developing an anxiety disorder: the interactive effects of genetic vulnerability, comorbid health conditions, personality traits, exposure to social and environmental stressors across the lifespan, and many other unknown factors that scientists continue to uncover. **Figure 1** provides a simple overview of the risk factors, while the following sections examine key factors in greater detail.

Biological

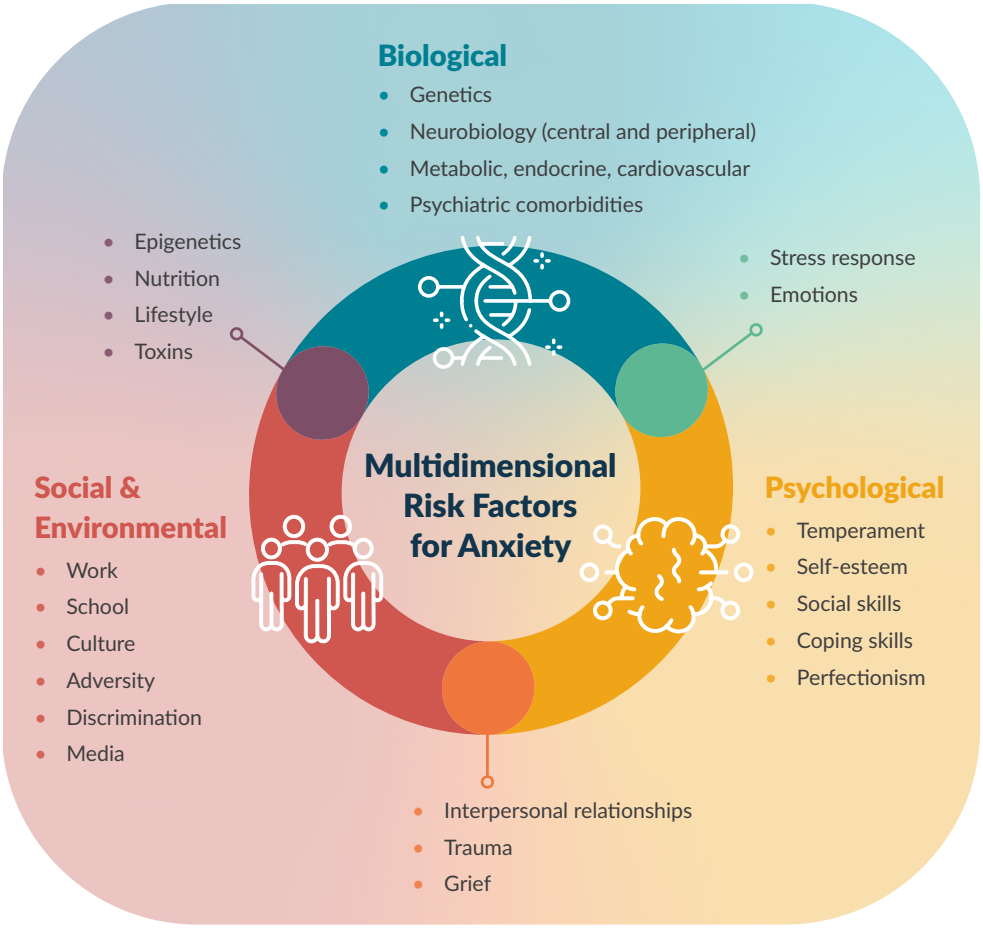
Research suggests that 30–70 percent of a person's risk of developing anxiety may be inherited.[22] This risk is likely attributable to the combined effect of many genes, each contributing only a small part.[23] Heritable genes are not the only way that genetics influence the risk of developing anxiety. Environmental factors, including stressful early-life experiences, can impact the way our genes are expressed, even without changing DNA sequences, a process known as epigenetics.[24] Other biological risk factors are presented in **Figure 1.**

Social and Environmental

Social and environmental exposures are strong risk factors for anxiety disorders. Exposure to traumatic events caused by human behaviors (e.g., abuse, injury, rape), as well as by nature (e.g., earthquakes)—particularly during sensitive developmental periods in childhood and adolescence (e.g., adverse childhood experiences)—is linked to increased risk of PTSD and other anxiety disorders.[25]

Further, socioeconomic factors (including being unemployed, experiencing financial hardship, and living below the poverty line) are highly correlated with anxiety.[26] Other societal factors that can increase anxiety risk include challenging economic and political environments and shared societal experiences, such as the COVID-19 global pandemic. For example, WHO reported that the global prevalence of anxiety and depression increased by 25 percent in the first year of the pandemic.[27] More social and environmental risk factors are presented in **Figure 1**.

Figure 1: Simplified View of Multidimensional Risk Factors for Anxiety



Source: Milken Institute (2026)

Psychological

Personality traits and emotional regulation can moderate anxiety risk and individual-level responses to anxiety symptoms. For example, neuroticism, a personality trait characterized by a predisposition to negative emotions and difficulty adapting to stressful life events, is consistently recognized as a major risk factor for anxiety disorders.[28] Higher levels of neuroticism are linked to excessive worry, irritability, and increased sensitivity to stress.[29]

In contrast, resilience is a protective, largely underresearched psychological trait. Resilience is a quality that governs the ability to adapt and cope in light of adversity. Resilience may explain why some people at risk for anxiety never develop a disorder. Understanding resilience factors can help determine protective mechanisms regarding anxiety.[30] Other psychological risk factors are presented in **Figure 1.**

Key Populations of Focus in Anxiety Research

Childhood and adolescence are sensitive developmental periods for brain and psychosocial plasticity. Certain disorders, such as social anxiety disorder, often originate during this vulnerable period. Behavioral inhibition (a temperament profile characterized by consistent patterns of avoidant behavioral and emotional responses to unfamiliar people, objects, and situations) is a key marker of social anxiety and other anxiety disorders in early life.[31] Longitudinal research has shown that in children under the age of five, behavioral inhibition is associated with a three to four times greater risk of developing anxiety disorders later in childhood or adolescence.[32] Early-life social relationship factors (e.g., friendship quality, peer rejection, and victimization) are also potentially bidirectionally related to social anxiety, as social anxiety has been shown to be associated with poor peer relationships.[33] Social media use is strongly linked to youth mental health; adolescents with anxiety spend, on average, 50 more minutes per day on social media than their peers without anxiety.[34]

Late life also represents a vulnerable period marked by social and economic shifts such as loss, role transitions, and economic and health-related changes that can increase anxiety risk.[35] Anxiety disorders are among the most common mental health conditions in older adults, with prevalence ranging from 1.2 percent to 15 percent.[36]

Anxiety can present differently in older adults, with key defining symptoms, such as fatigue, often confused for symptoms of other age-related conditions and/or normal aging processes. Consequently, late-life anxiety is often mis- and underdiagnosed, particularly in primary care settings, and undertreated in this population.[37] Strong stigmas and shortages of geriatric psychiatrists are also contributing factors.

Other populations with high risk for anxiety disorders are often underrepresented in mental health research. For example, individuals who are experiencing homelessness, living in correctional facilities, or staying in hospitals or other health

Box 4: Strengthening Research on Anxiety Risk and Protective Factors Through Secondary Analyses and New Cohort Studies

Research on anxiety risk and protective factors across the lifespan may be strengthened by supporting secondary data analyses of existing longitudinal cohorts and establishing new cohort studies designed specifically to investigate anxiety. Conducting secondary analyses of existing longitudinal cohorts is a cost-effective way to discover novel insights without requiring new data collection. Additionally, adding anxiety measures to existing cohort studies allows new investigations, particularly in populations with limited data on anxiety. While existing cohorts provide useful data, prevalence of anxiety in these cohorts may be low and variation in indications limited, which restricts the types of research questions that can be asked. Establishing new cohort studies opens opportunities to enrich for populations with elevated risk for anxiety, to prioritize enrollment of underrepresented populations in anxiety research, and to employ longitudinal designs that enable observation through key developmental transitions across the lifespan.

facilities have high vulnerability to anxiety. These individuals may have more complex mental health–care needs and comorbidities yet are excluded from nearly all nationally representative, population-based studies of mental health.[38]

Additionally, undocumented individuals and individuals living in rural areas face higher vulnerability to anxiety and often have poor access to care, yet they are frequently underrepresented in mental health research. Further, exclusion of individuals living in residential care facilities and individuals with cognitive impairment contributes to the persistent underrepresentation of older adults in mental health research.[39]

Epidemiological and economic data underscore that anxiety disorders are not only a leading cause of individual suffering, but also a major public health and economic challenge.

Biology of Anxiety

The biology of anxiety can be understood across multiple levels, including genetics, neural circuits, neurotransmitter systems, and broader physiological processes. Each of these domains affects how anxiety arises, how it is sustained, and how it responds to treatment.

Genetics and Epigenetics

Studies of twins consistently demonstrate that anxiety disorders are moderately to highly heritable, with estimates ranging from 30 percent to 60 percent, depending on the subtype and population studied.[40] Measures of higher genetic predisposition are associated with a greater likelihood of comorbidity (e.g., anxiety with depression) and more severe symptoms. Genome-wide association studies demonstrate that anxiety disorders are highly polygenic, meaning that thousands of genetic variants each contribute a tiny fraction of risk, with no single gene exerting a large effect.[41]

Despite the condition's polygenicity, several gene classes have been repeatedly studied in anxiety disorders. Genes involved in neurotransmitter regulation, stress response, and neuroplasticity are most commonly linked to anxiety pathophysiology.[42] In addition, environmental factors, such as early-life stress, can modify gene expression and contribute to the regulation of anxiety without directly altering gene sequences, a phenomenon called epigenetics. **Box 5** highlights a few case studies of large-scale genomics studies in anxiety that are investigating the genetic underpinnings of anxiety disorders.[43]

Box 5: Case Studies of Large-Scale Genomics Studies in Anxiety

Several large studies are collecting or have collected genomic data alongside psychological and biological measurements, though many are not focused solely on anxiety.

Genetic Links to Anxiety and Depression (GLAD) is led by the National Institute for Health and Care Research Mental Health BioResource, aiming to include 40,000 individuals in the United Kingdom with past or present experience with anxiety and/or depressive disorders.

Psychiatric Genomics Consortium (PGC) is a worldwide study with 1,700+ investigators from 66 countries and over 400,000 participants across psychiatric conditions. It has several working groups for PTSD, OCD, and other anxiety disorders to lead efforts to analyze and publish data for specific disorders.

Million Veteran Program (MVP) is a program by the US Department of Veterans Affairs specifically designed for individuals with military experience. The study has met its goal of one million participants and continues to enroll new participants. MVP has published data from approximately 200,000 veterans on the relationship between genetics and anxiety.

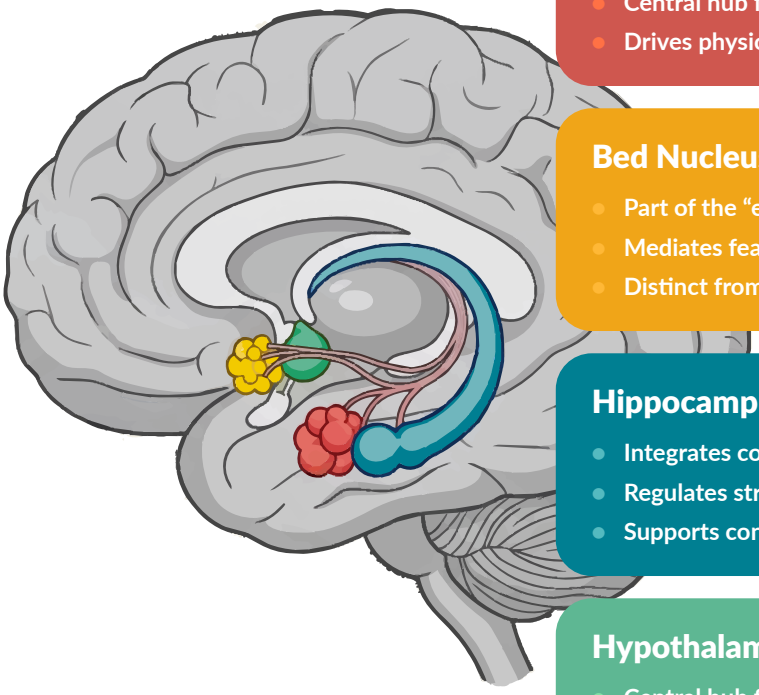
Neuroscience of Anxiety

Anxiety is governed through the complex interplay of brain networks, chemical neurotransmitters, hormones, and neuropeptides. These systems work together to regulate anxiety behaviors, but in individuals with anxiety disorders, they demonstrate atypical activity and disrupted communication. Understanding activity and communication among the core brain regions involved in anxiety can help uncover underlying mechanisms and enable the development of new methods to detect, treat, and manage anxiety disorders.

Brain Circuitry

Figure 2 highlights the primary regions most consistently implicated in anxiety. The following overview outlines the functions of relevant brain regions and general patterns of hyperactivity or hypoactivity observed in anxiety disorders. Anxiety disorders involve dysregulation across the brain regions and circuits described in the following paragraphs, although each disorder involves unique circuit components that are beyond the scope of this report.

Figure 2: Core Brain Regions Involved in Anxiety and Their Functions



Amygdala

- Central hub for threat detection & fear processing
- Drives physiological & behavioral anxiety responses

Bed Nucleus of the Stria Terminalis

- Part of the "extended amygdala"
- Mediates fear of unpredictable/ambiguous threats
- Distinct from amygdala's immediate fear response

Hippocampus

- Integrates context and memory with emotional processing
- Regulates stress hormone responses
- Supports contextual learning & memory formation

Hypothalamus

- Central hub for stress regulation
- Master regulator of hypothalamic-pituitary-adrenal (HPA) axis
- Activates sympathetic nervous system (fight-or-flight)

Sources: Milken Institute analysis (2026), BioRender

The **amygdala**, an almond-shaped structure in the temporal lobe, serves as the central hub for threat detection and fear processing.[44] The amygdala orchestrates physiological and behavioral responses to anxiety. Studies consistently report heightened amygdala activation in response to stimuli relevant to anxiety disorders.[45]

The **hippocampus** integrates contextual information, regulates stress hormone responses, and supports memory processing and contextual learning, thus playing a multifaceted role in anxiety.[46] Anxiety disorders are associated with reduced hippocampal volume and impaired hippocampal-dependent learning, affecting threat processing and contextual memory of fearful stimuli.[47]

The **bed nucleus of the stria terminalis (BNST)** acts as a key relay in a set of circuits involved in persistent fear and anticipation of threat. The BNST specifically mediates fear responses to unpredictable or ambiguous threats.[48] Additionally, unlike the amygdala's involvement in immediate fear responses, the BNST regulates longer-duration anxiety states.[49] BNST dysfunction is related to the recurrence and chronicity of anxiety symptoms.[50]

The **hypothalamus** is a central hub for regulating stress and anxiety, coordinating neuroendocrine, emotional, and autonomic responses to threat.[51] This area of the brain is the master regulator of the hypothalamic-pituitary-

adrenal (HPA) axis, which comprises the hypothalamus, pituitary, and adrenal glands. It is centrally involved in a multistep hormonal cascade that ultimately results in cortisol release to mobilize energy for stress adaptation.[52] Dysregulation of this cascade and hormonal balance contributes to heightened anxiety states.[53]

Several key secondary brain regions (not shown in **Figure 2**) are involved in emotional regulation and support the expression of anxiety. These include the **prefrontal cortex (PFC), anterior cingulate cortex (ACC), and insular cortex**. The PFC reduces amygdala activation, damping excessive emotional and physiological reactions to anxiety.[54] The ACC monitors conflict (i.e., the brain's ability to detect situations with competing or conflicting choices) and regulates emotion in anxiety.[55] The insular cortex is densely interconnected with the amygdala, integrating sensory, affective, and bodily signals critical to anxious states and their conscious appraisal.[56] The PFC and ACC generally show lower activity in individuals with anxiety disorders, whereas the insular cortex shows higher activity.

Communication Within Brain Circuits

Several neurotransmitter systems and their receptors regulate anxiety. **Gamma-aminobutyric acid (GABA), serotonin**, and **norepinephrine** are among the most prominent.[57] These neurotransmitters interact with specific receptor subtypes in various brain regions to modulate anxiety responses. For example, GABA is the main inhibitory neurotransmitter in the brain, and reduced GABA signaling and receptor function are implicated in the development and expression of anxiety.[58] Several therapeutic options for anxiety are designed to mimic GABA and other receptors.

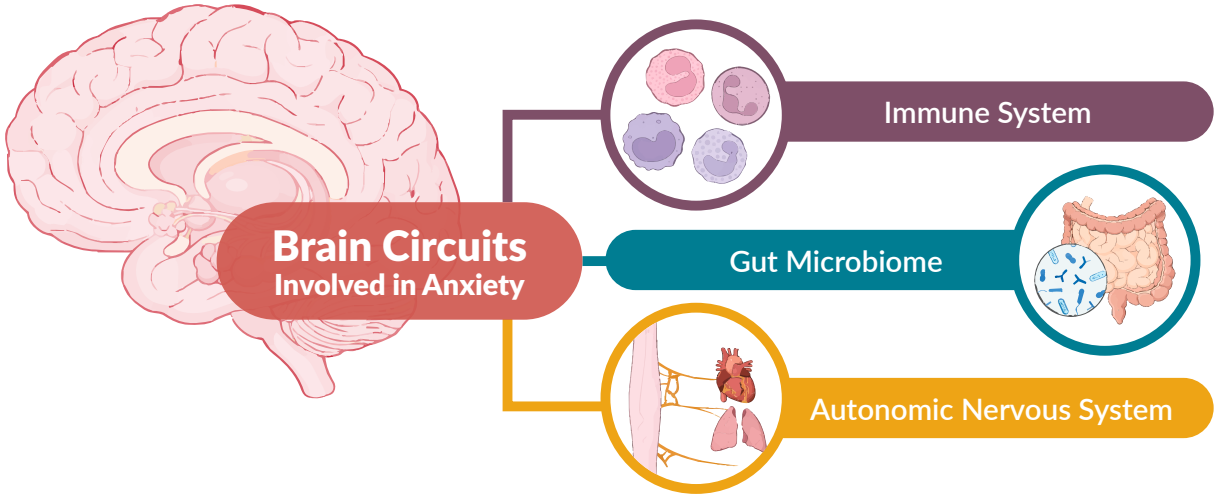
Neuropeptides—animo acid chemical messengers released by neurons—also play a significant but complex role in anxiety. For example, **oxytocin** is mostly anxiolytic (i.e., it relieves anxiety), normalizing amygdala activity, decreasing cortisol, and suppressing stress-induced HPA activity.[59] Meanwhile, **vasopressin** is primarily anxiogenic (i.e., it induces anxiety) and rises with increased avoidance and heightened responses to social and physical stress.[60]

However, emerging research shows that oxytocin and vasopressin may have more nuanced roles in anxiety: The impact of these neuropeptides is highly dependent on where in the brain they are active, as well as other contextual factors.[61] Rather than working in opposition, these neuropeptides might work in tandem to fine-tune anxiety and fear responses. The interplay between neurotransmitter and neuropeptide signaling and their multifaceted roles in anxiety and anxiety disorders remain areas of active scientific study.

Brain-Body Science in Anxiety

The brain does not act alone in anxiety and is closely connected to other body systems, including the immune system, the gut microbiome, and the autonomic nervous system (ANS) (**Figure 3**). These systems can both influence anxiety and be affected by it. Dysregulation across these systems is commonly seen in anxiety disorders.

Figure 3: Connection Between Brain and Body Systems in Anxiety



Sources: Milken Institute analysis (2026), BioRender

Neuroimmune dysregulation and cytokines: Chronic stress can provoke activation of the peripheral innate immune system, triggering the release of inflammatory cells such as monocytes and cytokines that may infiltrate nervous system tissue.[62] Once inside, these immune components can disrupt neuronal environments, potentially leading to anxiety pathology.[63]

The gut-brain axis and microbiome: Gut bacteria are necessary for generating anxiety (as shown by years of animal research). For example, they create metabolites that interact with the immune system to directly affect brain activity.[64] In addition, stress itself reshapes the composition of gut microbes and the permeability of the gut, which in turn modulates HPA axis activity and anxiety behavior.[65] Further, high-fat diets or antibiotic disruption of microbiota are linked to increased anxiety-like and depressive-like behaviors. Importantly, specific bacterial strains and probiotics have been shown in both animal models and early human trials to reduce anxiety symptoms.[66]

ANS dysregulation: Anxiety disorders are frequently marked by chronic dysregulation of the ANS, typically featuring heightened sympathetic ("fight or flight") activity and reduced parasympathetic ("rest and digest") activity.[67] This imbalance exacerbates arousal, stress reactivity, and physical symptoms of anxiety, while affecting cardiovascular, digestive, and respiratory systems. Persistent ANS dysregulation is linked to increased stress hormone production and worsened mental and physical health.[68]

Research Methods for Studying Anxiety

Table 4 introduces methods commonly used to research anxiety.

Table 4: Research Methods for Studying Anxiety

Animal Models	Rodent models, particularly rats and mice, are widely used in preclinical anxiety research because they exhibit conserved anxiety-related behaviors, share relevant neural circuits with humans, and can be genetically manipulated to reliably produce anxiety-like phenotypes.[69] While rodents cannot be said to experience anxiety as a conscious, multidimensional state, researchers infer anxiety-like states from observable behaviors. Importantly, animal models also allow scientists to manipulate neural circuitry directly and collect multidimensional data, linking behavior to underlying molecular, cellular, and circuit-level mechanisms in ways that are not feasible in humans. Despite their utility, animal models do not capture the full complexity of human anxiety disorders. Many behavioral tests rely on human-centric interpretations of animal behavior that may not map cleanly onto human psychological constructs, contributing to poor translational success, as evidenced by the frequent failures of anxiolytic compounds in clinical trials. To enhance translational relevance, the field is increasingly shifting away from attempts to model the subjective experience of anxiety and toward the study of specific behavioral subcomponents, such as exaggerated threat detection or avoidance of ambiguous cues. Additionally, multiple complementary animal models can be used to validate and cross-check biological findings. Together, these changes to research practices are driven by growing recognition that psychiatric diagnoses are highly heterogeneous and that focusing on discrete, quantifiable behavioral units can more rigorously link behavior to neural circuits and molecular mechanisms.
Computational Models and Artificial Intelligence (AI)	Computational models of anxiety are theoretical frameworks that use mathematical and algorithmic principles to explain how anxious states arise from altered learning, decision-making, and neural processes.[70] Within computational psychiatry, two broad approaches are commonly distinguished: theory-driven and data-driven models.[71] Theory-driven approaches begin with a clear explanation of how a cognitive or neural process is expected to work and are typically applied to behavioral, physiological, or neural data from humans or animal models to test those expectations. Computational studies using this framework indicate that people with anxiety tend to focus more on threats, overestimate the likelihood or severity of bad outcomes, and engage in excessive avoidance behaviors, reinforcing maladaptive behavioral patterns that contribute to the persistence of anxiety disorders.[72] Data-driven approaches begin with empirical patient data (large, high-dimensional datasets spanning clinical, behavioral, genetic, and neuroimaging domains) and analyze it with machine learning and AI to find meaningful patterns.[73] Researchers use these methods to identify features that can subdivide patients into biologically or clinically meaningful subgroups that are potentially linked to distinct symptom profiles or treatment responses. Large language models (LLMs), a class of generative AI, can be used in anxiety research to analyze clinical narratives, generate hypotheses, and predict patient outcomes.[74] They can also be used in clinical care to support diagnoses, treatment planning, and administrative workflows. Although data-driven models offer high statistical power and can integrate multiple data modalities, they can suffer from challenges in interpretability and require careful attention to replicability, the latter of which is especially important to establish.[75] Moreover, reliance on resource-intensive measures, such as functional magnetic resonance imaging, may constrain scalability and translation into clinical practice. The use of LLMs to interpret complex clinical phenomena or deliver therapy remains controversial and requires careful validation.[76]

Translational Approaches

Translational approaches aim to bridge basic science discoveries with clinical applications. Translational science integrates insights from genetics, neurocircuitry, and animal models to inform clinical diagnoses, treatment, and prevention strategies for anxiety disorders. Longitudinal and mechanistic studies are also central to this effort, as they help characterize illness trajectories and identify when intervention may be most effective.

Biomarkers are a cornerstone of translational research, serving as measurable biological indicators of anxiety-related processes and treatment response. They can highlight modifiable mechanisms underlying anxiety, support the identification and validation of therapeutic targets, and provide evidence that pharmacologic interventions are engaging intended biological pathways. Biomarkers can also be used to identify biologically relevant patient subgroups, advancing precision psychiatry that personalizes interventions based on biological and clinical profiles. Finally, biomarkers can be used to monitor treatment response over time, supporting more informed clinical decision-making.

Source: Milken Institute (2026)

Treatments for Anxiety

Anxiety can be treated with pharmacologic and/or non-pharmacologic approaches. Treatment strategies often differ depending on the specific disorder, the severity of symptoms, and individual patient characteristics. Each treatment targets specific aspects of the disorder, from microscale neurotransmitter imbalances to broad, maladaptive thought patterns and dysregulated brain circuits. Treatments may be prescribed independently or in combination with other therapies.

While many patients experience meaningful improvement with existing treatment options, a substantial proportion does not, underscoring the need for new and more personalized approaches. This section outlines current therapies, emerging strategies, and the challenges of access, scalability, and innovation.

Pharmacologic Treatments

Pharmacologic treatments for anxiety primarily target neurotransmitter systems to alleviate symptoms. Selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) are first-line treatments. SSRIs (e.g., fluoxetine, sertraline) and SNRIs (e.g., venlafaxine, duloxetine) increase synaptic serotonin or norepinephrine, alleviating anxiety symptoms with generally minimal side effects.[77] Benzodiazepines (e.g., diazepam, lorazepam) enhance GABA inhibitory neurotransmission, providing rapid anxiety relief. Their use is limited because of risks of dependence, tolerance, and sedation, and thus they are recommended only for short-term therapy or adjunctive use.[78]

Emerging experimental treatments for anxiety involve psychedelics, such as psilocybin and MDMA. These drugs activate serotonin receptors, leading to profound changes in perception, mood, and cognition.[79]

Clinical trials have demonstrated that psilocybin-assisted therapy can produce rapid and sustained reductions in several anxiety disorders.[80] Similarly, MDMA-assisted psychotherapy shows significant efficacy in PTSD, with sustained symptom remission reported months after treatment.[81]

Psychotherapy

Psychotherapy is an effective first-line treatment for anxiety disorders, with several evidence-based techniques available. Cognitive-behavioral therapy (CBT) is a structured, time-limited therapy combining cognitive restructuring and behavioral techniques to reshape thoughts and behaviors that contribute to anxiety symptoms.[82] Exposure therapy—another effective psychotherapy technique typically used to treat phobias, PTSD, and OCD—repeatedly confronts patients with feared stimuli or situations to reduce avoidance and anxiety.[83] Further, Mindfulness-Based Stress Reduction techniques focus on nonjudgmental, present-moment awareness to reduce rumination and emotional reactivity.

Though psychotherapy is a valuable treatment option for anxiety, only about 50 percent of patients experience substantial improvement in symptoms.[84] Scalable digital adaptations of psychotherapy, such as app-based CBT and virtual interventions, have emerged as promising tools to expand access, though their long-term efficacy and implementation are uncertain.

Neuromodulation

Neuromodulation alters neural activity through targeted stimulation of specific areas of the nervous system using electrical, magnetic, or acoustic energy. **Table 5** outlines key neuromodulation approaches that are relevant to anxiety and aim to normalize dysregulated brain circuits.

Table 5: Overview of Neuromodulation Techniques

NEUROMODULATION TECHNIQUE	OVERVIEW
Repetitive Transcranial Magnetic Stimulation (rTMS)	A noninvasive technique that applies magnetic fields to select cortical regions of the brain, attempting to normalize dysregulated circuits. rTMS has been shown to be moderately effective for generalized anxiety disorder and PTSD.
Transcranial Direct Current Stimulation (tDCS)	A noninvasive technique that uses low-intensity electrical currents to modulate excitability.
Focused Ultrasound (FUS)	A noninvasive technique that uses targeted ultrasound to modulate deeper brain regions, such as the amygdala.
Deep-Brain Stimulation (DBS)	An invasive technique that requires a surgical procedure to implant electrodes in specific areas of the brain to deliver electrical stimulation. DBS is approved by the United States Food and Drug Administration for OCD only in severe, intractable cases. Adaptive "closed loop" DBS (automatically adjusting stimulation parameters in real time) is under active investigation to improve efficacy.

Source: Milken Institute analysis (2026)

Funding Landscape of Anxiety

This section reviews funding trends for anxiety disorders, examining investments across public and private funders. While the largest funder of anxiety research in the United States is NIMH, funding for anxiety has declined over the past five years. In addition to federal funding sources, many private foundations and organizations fund biomedical and psychiatric research. However, relatively few private funders focus specifically on anxiety. The field of anxiety would benefit from focused support and coordinated efforts across private and public funding.

Public Funding in Anxiety

NIMH, one of the 27 institutes and centers that make up the National Institutes of Health (NIH), is the largest governmental agency funding psychiatric and mental health research in the United States. NIMH explicitly lists anxiety disorders as part of its research portfolio, supporting a range of work from basic research, such as molecular and circuit-level studies, to clinical trials and implementation science in anxiety.

Consequential Changes to the Availability and Administration of Public Funding

In 2025, major changes occurred in the mental health funding landscape. For instance, the federal government canceled many NIH-sponsored grants, which affected institutions in 90 percent of US states. NIMH administered the largest number of terminated grants (128 grants), and the effect amounted to the termination of $172 million in active grants (6.3 percent of NIMH active funding).[85] Other changes included mass reductions-in-force of NIH staff and elimination of diversity, equity, and inclusion initiatives.

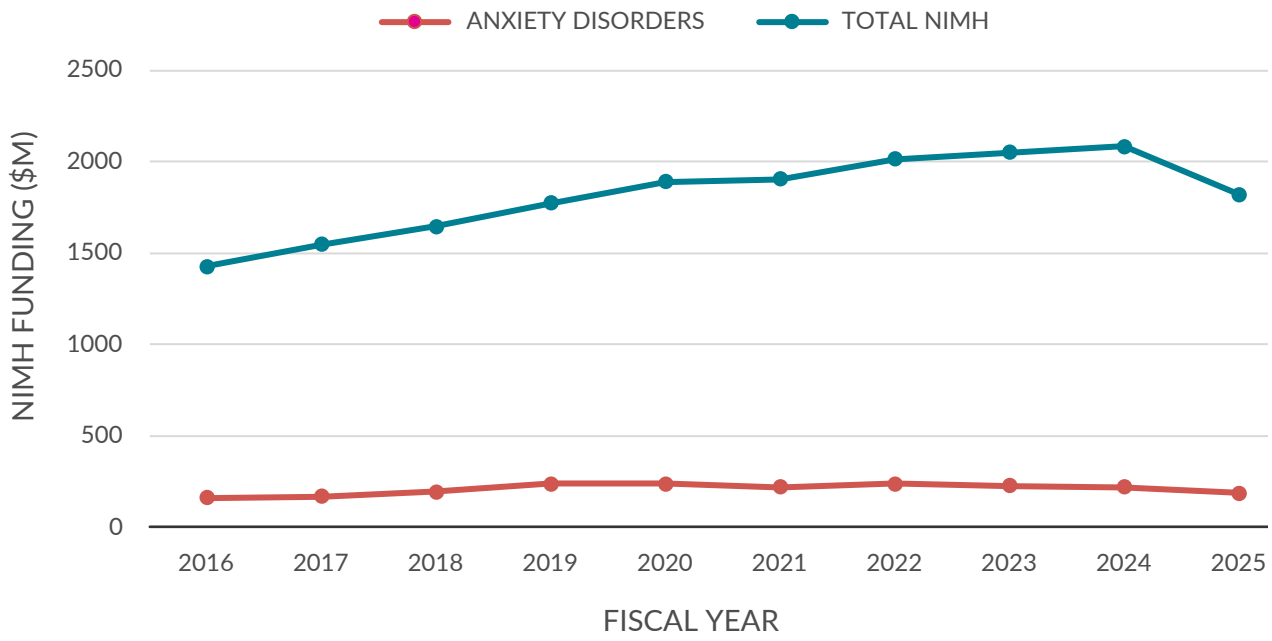
Cuts to NIH funding slow scientific progress by reducing support for fundamental research, training opportunities, and public health initiatives, and decreased funding jeopardizes population health.[86] Many of the downstream effects of these federal changes on anxiety research funding are still unknown, but reductions in funding will only exacerbate existing concerns about the long-standing decline in prioritization of anxiety disorders.

NIMH Funding for Anxiety Disorders Is Low and Has Been Declining

For 10 years (2016–2025), NIMH allotted approximately $18.2 billion for nearly 35,000 research projects covering psychiatric and mental health conditions. Of that, $2.1 billion across approximately 4,000 projects has been allocated to anxiety disorders, which include PTSD and OCD. This $2.1 billion represents about 9 percent of NIMH research funding.

Between 2016 and 2024, NIMH funding increased steadily (**Figure 4**). For anxiety disorder funding, the overall growth rate during this period was slower and less consistent. Despite growth from 2016 to 2019, funding for anxiety began declining in 2019, indicating that anxiety research had been de-emphasized. From 2024 to 2025, funding for mental health research declined significantly. Overall NIMH funding fell 13 percent, and NIMH funding for anxiety disorders fell 16 percent.

Figure 4: Overall NIMH Funding Compared to NIMH Funding for Anxiety Disorders, 2016–2025



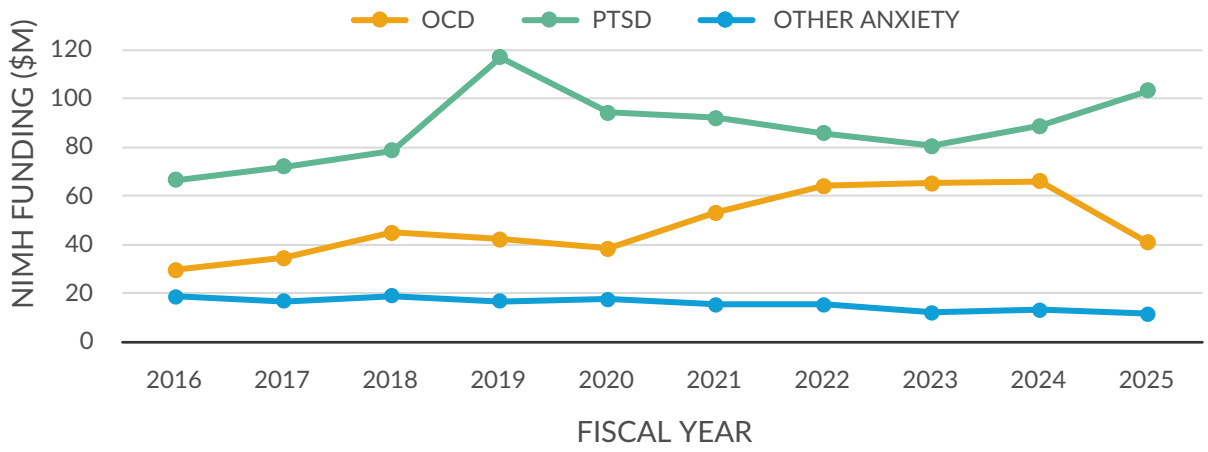
Source: Milken Institute analysis of funding from NIH RePORTER (2026)

Funding Allocation Across Anxiety Disorders Varies

We further analyzed NIMH funding trends by type of anxiety disorder. PTSD and OCD were separated, as they have significantly higher funding rates. Our analysis combined the remaining anxiety disorders (generalized anxiety, social anxiety, separation anxiety, specific phobias, panic disorder, agoraphobia, and selective mutism), as they receive less funding (**Figure 5**).

Of these disorders, PTSD received the most funding: $879.7 million over the last 10 years. PTSD funding grew at an average rate of 18 percent from 2016 to 2024, and contrary to other anxiety disorder funding trends, support for PTSD continued to grow at a similar rate between 2024 and 2025.

Figure 5: NIMH Funding for PTSD, OCD, and Other Anxiety Disorders, 2016–2025



Source: Milken Institute analysis of funding from NIH RePORTER (2026)

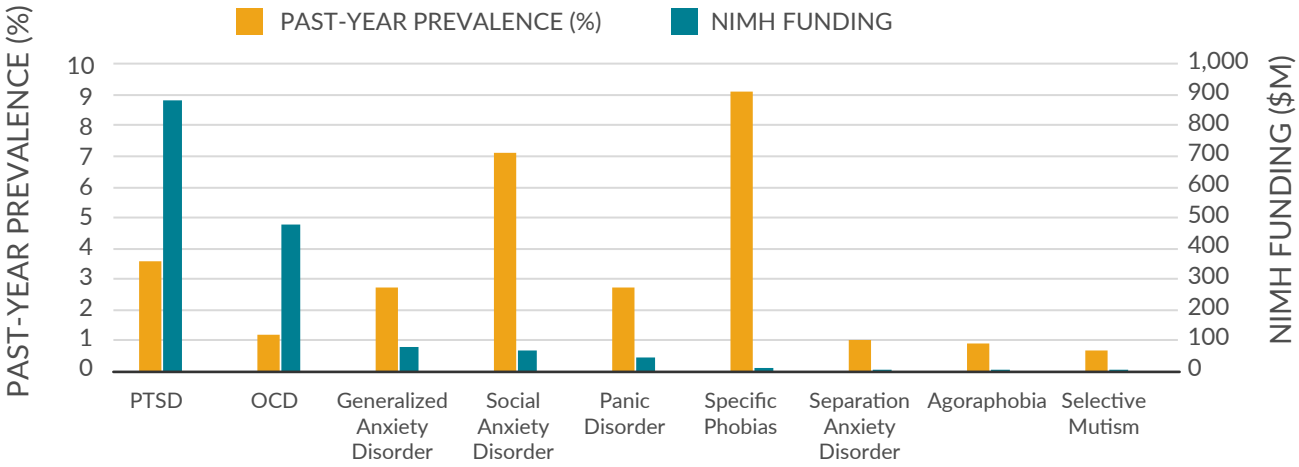
OCD received the second-highest funding: $479.6 million in the last decade. OCD research funding grew at an impressive rate of 130 percent over the last nine years but fell 38 percent between 2024 and 2025.

All other anxiety disorders combined received the least funding: $163 million over the last 10 years. Funding for these disorders fell from $18.6 million in 2016 to $11.6 million in 2025.

High funding for PTSD and OCD research may be due to the severity of impairment that people with these disorders can experience, as well as other factors, such as economic burden and illness severity. Furthermore, PTSD is often tied to military service and veterans' health. So strong advocacy groups support the cause, and the issue gains high visibility among policymakers.

Of note, higher disorder prevalence did not correlate with higher funding. Several of the most common anxiety disorders, such as generalized anxiety disorder, were funded at the lowest levels (**Figure 6**).[87] The lack of investment in common disorders highlights a concerning gap in anxiety research.

Figure 6: NIMH Funding by Anxiety Disorder Compared to Disease Prevalence, 2016–2025



Source: Milken Institute analysis of funding from NIH RePORTER (2026)

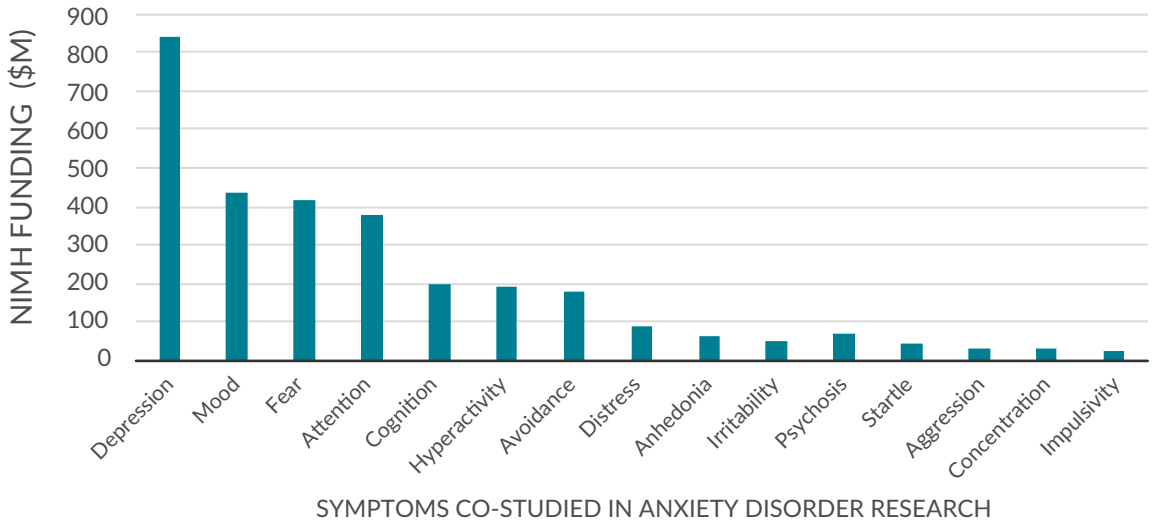
Anxiety Research Funding Frequently Overlaps with Depression, Mood, and Fear

It can be challenging to disentangle research funding that specifically targets anxiety disorders because funding resources may focus on anxiety as a normal adaptive response, as a maladaptive symptom within another disorder, or as a distinct anxiety disorder. For this reason, funding data demonstrate that anxiety disorders are often studied alongside other mental health symptoms and states of mind.

We looked at anxiety disorders' overlap with 100 neuropsychiatric symptoms. Specifically, we examined research projects that focused on anxiety and these symptoms. **Figure 7** shows the 15 symptoms most frequently studied with anxiety disorders from 2016 to 2025. The three most common overlaps were with depression ($842.7 million in funding, or 41 percent of all NIMH funding for anxiety disorders), mood ($437 million, or 21 percent), and fear ($417.7 million, or 20 percent).

Depression is a common comorbid feature of anxiety disorders. While studying depression with anxiety disorders is meaningful, it is also important to conduct research focused solely on the unique characteristics, mechanisms, and treatments of anxiety disorders. Research dedicated to anxiety disorders will assist in the development of more precise and effective treatments for individuals with these disorders.

Figure 7: NIMH Funding at the Intersection of Anxiety Disorders and Frequently Co-Occurring Symptoms, 2016–2025

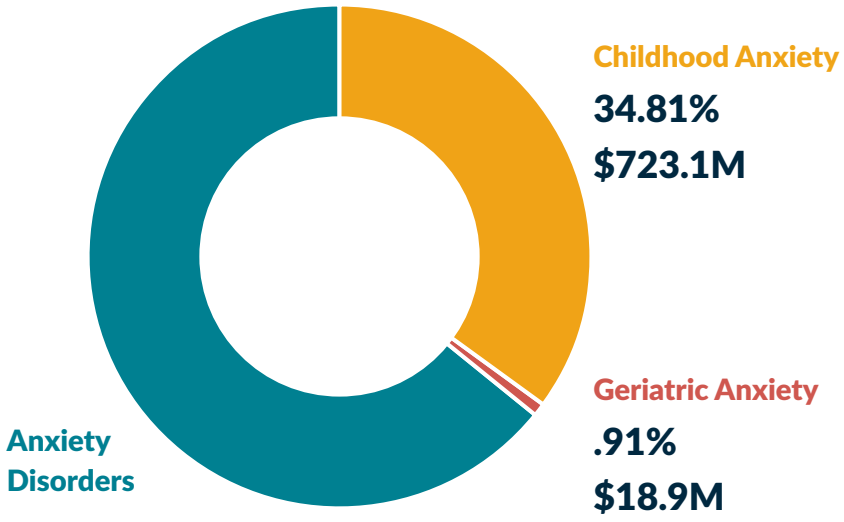


Source: Milken Institute analysis of funding from NIH RePORTER (2026)

Underfunding of Geriatric Research and Erosion of Childhood/Adolescent Funding

Analysis of 2016–2025 NIMH funding reveals unequal investment in anxiety research across the lifespan. **Figure 8** shows that approximately 35 percent ($723.1 million) of NIMH funding was directed toward early-life (childhood and adolescence) anxiety disorders. In contrast, less than 1 percent ($18.9 million) was allocated to late-life (geriatric) anxiety.

Figure 8: NIMH Funding for Childhood/Adolescent and Geriatric Anxiety as a Share of Total Anxiety Disorders Funding, 2016–2025



Source: Milken Institute analysis of funding from NIH RePORTER (2026)

To determine whether other NIH institutes compensated for this shortfall in geriatric anxiety research, we assessed the funding patterns of institutes contributing over $1 million during this period. Only two such institutes were identified: the National Institute on Aging (NIA), which provided $18.7 million, and the National Heart, Lung, and Blood Institute (NHLBI), which provided $2.7 million. These contributions were minimal, indicating that the funding gap in late-life anxiety research was not filled by other institutes.

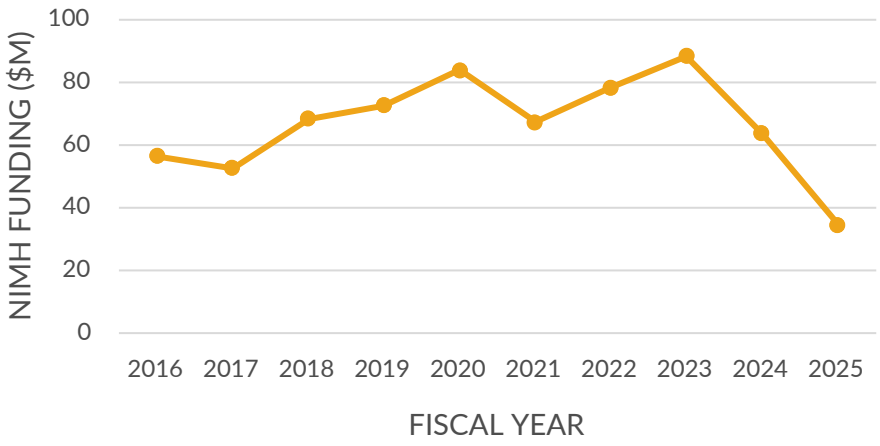
In contrast, multiple NIH institutes provided substantial support for childhood and adolescent anxiety research:

- National Institute of Neurological Disorders and Stroke (NINDS): $151.3 million
- National Institute of Child Health and Human Development (NICHD): $130.7 million
- National Institute on Alcohol Abuse and Alcoholism (NIAAA): $113.5 million
- National Institute on Drug Abuse (NIDA): $17.1 million
- NIA: $9.9 million

NIMH remains the largest funder of childhood and adolescent anxiety. Between 2016 and 2023, funding increased by an average rate of 53.7 percent (**Figure 9**). However, funding since 2023 has declined, falling from $88.3 million in 2023 to $34 million in 2025 (a 60.5 percent rate of decline).

These findings underscore a significant funding gap in geriatric anxiety research relative to childhood and adolescent anxiety. Notably, this comparison reflects relative underinvestment, as funding for anxiety research in younger populations remains low and continues to decrease.

Figure 9: NIMH Funding for Childhood/Adolescent Anxiety, 2016–2025



Source: Milken Institute analysis of funding from NIH RePORTER (2026)

Early-Career Funding for Anxiety Disorders Has Been Deprioritized

Career development awards are essential for supporting early-stage investigators as they establish themselves in scientific research. The most significant mechanism in this category comprises the "K awards" (an NIH career development award), which helps researchers, including clinician-scientists, move from doctoral or postdoctoral training to independent faculty positions. Between 2016 and 2024, total NIMH K award funding increased by 34 percent ($47.4 million in 2016 to $63.6 million in 2024) before dropping 7 percent between 2024 and 2025. K awards in PTSD also grew between 2016 and 2024, accounting for 7 percent of NIMH K awards. PTSD-related K awards continued to increase modestly in 2025.

By contrast, between 2016 and 2024, OCD-related K awards made up about 2 percent of NIMH K awards. Funding for OCD-related K awards declined 14 percent during this period and continued to fall afterward, from $1.5 million in 2024 to $1.2 million in 2025.

All other anxiety disorders collectively received about 2 percent of NIMH K awards over the past 10 years. K award funding for these disorders declined sharply (by 88 percent) from 2016 to 2024. This category saw a small rise (from $0.7 million in 2024 to $0.9 million) in 2025.

While support for early-career PTSD research remains steady, funding for early-career research in OCD and other anxiety disorders has slowed, threatening the ability to attract and sustain new talent in these fields.

Other Institutes Provide Modest Funding for Anxiety Disorders

Beyond NIMH, several institutes within the NIH also support cross-disciplinary research relevant to anxiety disorders. Between 2016 and 2025, five institutes provided the highest levels of funding in this area after NIMH: NIAAA, NIDA, NINDS, NICHD, and NHLBI. **Table 6** summarizes the funding provided by these institutes.

It is important to note that anxiety disorders are not the primary research focus of these institutes. Instead, anxiety is often mentioned in project abstracts as a potential downstream implication of the topic being studied. For example, the NHLBI funded a project on the neural pathways involved in regulating breathing that notes their possible relevance for panic disorders.

Table 6: Top 5 NIH Institutes (Beyond NIMH) Funding Anxiety Disorder Research

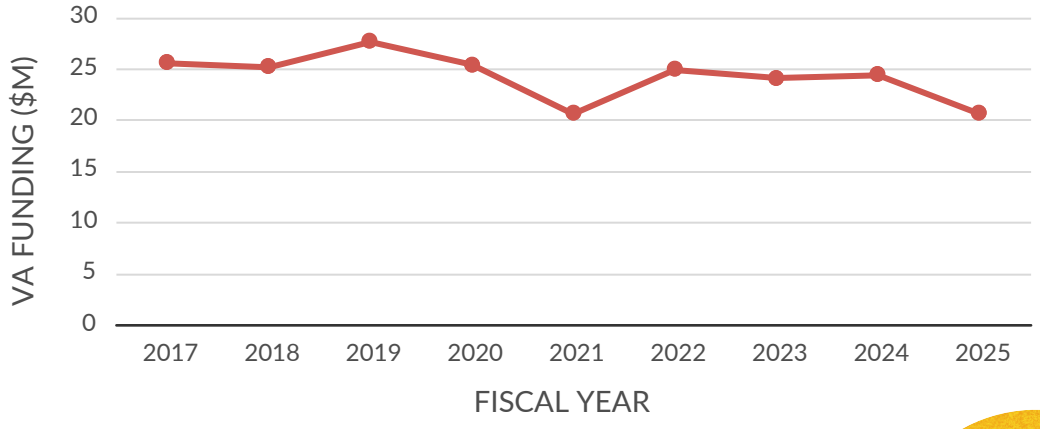
NIH INSTITUTE	ANXIETY DISORDER FUNDING (2016–2025)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	$276.0M
National Institute on Drug Abuse (NIDA)	$227.9M
National Institute of Neurological Disorders and Stroke (NINDS)	$310.7M
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)	$168.3M
National Heart, Lung, and Blood Institute (NHLBI)	$108.6M

Source: Milken Institute analysis of funding from NIH RePORTER (2026)

Other Public Funders

The US Department of Veterans Affairs (VA) Office of Research and Development focuses on research to improve veterans' well-being, with PTSD as an important priority. Since 2017, the VA has provided $218 million in funding for anxiety disorder research. Funding has decreased during this period, falling from $25.6 million in 2017 to $20.7 million in 2025 (**Figure 10**).

Figure 10: VA Funding for Anxiety Research, 2017–2025

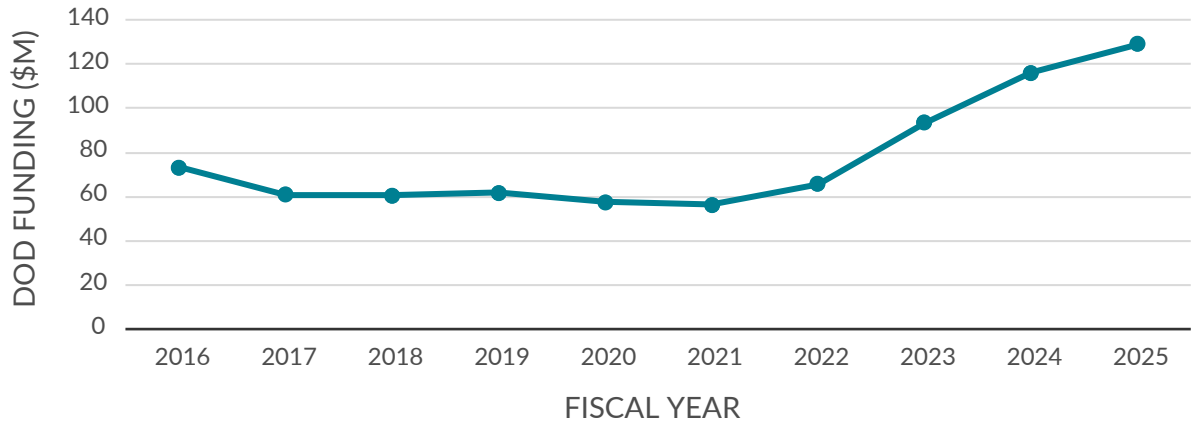


Source: Milken Institute analysis of funding from Veterans Affairs (2026)

The US Department of Defense (DoD) is also a significant funder of research on anxiety disorders. The focus of this DoD research is broad, including work that directly and tangentially affects servicepeople and military readiness. The inclusion of anxiety disorders in this research portfolio indicates recognition of anxiety disorders' impact and a commitment to seeking solutions.

Over the past 10 years, the DoD has directed $774.7 million toward anxiety disorder research, which is about one-third of the NIMH funding for anxiety research during the same period. Between 2016 and 2021, DoD funding declined from $73.3 million to $56.5 million (**Figure 11**). Interestingly, funding increased dramatically between 2021 and 2025, reaching $129.08 million in 2025. Much of this increase is attributable to enhanced funding for PTSD research during this period.

Figure 11: DoD Funding for Anxiety Research, 2016–2025



Source: Milken Institute analysis of funding from Defense Technical Information Center (2026)

Over the past 10 years, the US Centers for Disease Control and Prevention (CDC) has funded $47.3 million in anxiety research projects. These projects focus primarily on understanding anxiety prevalence, risk factors, and prevention strategies. The Substance Abuse and Mental Health Services Administration also supports individuals with anxiety disorders. It primarily focuses on care and support for SMIs.

Private Funding in Anxiety

Private funders also help advance research on and awareness of anxiety disorders. Support from philanthropic foundations, nonprofits, and venture philanthropy has become a vital component of the scientific landscape, often providing targeted investments in areas with limited government funding.

However, while many philanthropic initiatives broadly support mental health or biomedical research, relatively few programs have specifically prioritized anxiety, despite its high prevalence and significant societal burden. Expanding philanthropic and nonprofit engagement in this field could have an outsized impact. **Table 7** highlights several groups that have begun to lead the way.

Table 7: Private Funding in Anxiety

PRIVATE FUNDER	SUMMARY
Brain & Behavior Research Foundation (BBRF)	BBRF funds neuroscience and psychiatric research in areas of mental health, including anxiety and stress-related disorders. Since 1987, BBRF has provided an estimated $54.6 million in grant awards to scientists at various career stages.[88] The focus areas of awarded grants include anxiety disorder ($25.3M), PTSD ($14.7M), and OCD ($6.6M).[89]
Wellcome Trust	Wellcome Trust, one of the world's most influential charitable foundations, is dedicated to improving health through research, innovation, and advocacy. Operating out of London, UK, the Trust has supported a range of projects related to anxiety, both as part of broader mental health research and as dedicated anxiety-focused initiatives. Its funding has included $6.4 million for stratified psychological treatment research in anxiety and up to $3.9 million for generative AI research targeting anxiety, depression, or psychosis.[90]
International OCD Foundation (IOCDF)	IOCDF focuses on advancing research, education, and awareness for OCD and related conditions. To date, the Foundation has awarded an estimated $12 million in OCD research funding through approximately 155 grants.[91] IOCDF focuses on fostering scientific discovery across the continuum of OCD research, from basic mechanisms to treatment development.
Foundation for OCD Research (FFOR)	FFOR aims to accelerate scientific breakthroughs in OCD.[92] FFOR supports basic, clinical, and translational research focused on identifying the genetic and neural circuit mechanisms underlying OCD, as well as developing targeted treatments to improve patient outcomes.
Foundation of Hope	The Foundation of Hope supports research on anxiety and stress-related disorders, aiming to understand the root causes of mental illnesses and potential treatment options. Since 1985, the Foundation has invested over $1 million in anxiety-related research projects.[93] The Foundation of Hope has also supported 47 local mental health initiatives, awarding more than $690,000 to community-based organizations.[94]
Kavli Institute for Brain and Mind (KIBM)	KIBM is a collaborative initiative between the University of California, San Diego and the Salk Institute.[95] KIBM's mission is to foster interdisciplinary partnerships among scientists to accelerate discoveries in neuroscience. Anxiety disorders are not a specific focus of all KIBM-supported research, but the Kavli Foundation has made contributions relevant to this area. For example, the Foundation provided a $300,000 gift to a Salk Institute neuroscientist to study the neural circuits underlying emotion and motivation.[96]
American Psychological Foundation (APF)	APF supports basic and clinical research to advance psychological science and support its application. APF provides several competitive grants, focusing particularly on graduate students and early-career investigators.[97]
The Eye Movement Desensitization and Reprocessing (EMDR) Research Foundation	The EMDR Research Foundation funds research to advance EMDR therapy, primarily for trauma-related conditions such as PTSD.[98] Anxiety disorders are listed as one of the Foundation's priority research areas, but its $40,000 Research Grant Award is currently the only funding mechanism explicitly open to proposals focused on anxiety-related conditions, including PTSD.[99]
American Psychiatric Nurses Association (APNA)	APNA is a charitable organization that supports early-career psychiatric nurse investigators. While anxiety is not a primary focus of their initiatives, APNA has contributed to research in this area—for example, by funding work related to perinatal anxiety.[100]

Source: Milken Institute (2026)

Private institutions working in the anxiety disorders field not only contribute valuable research funding but also help advance education, outreach, and community support. Their impact, therefore, extends well beyond research, making them important ecosystem players across multiple dimensions. **Table 8** outlines their efforts.

Table 8: Overview of Private Funding Entities and Their Comprehensive Efforts in the Anxiety Disorders Ecosystem

	RESEARCH FUNDING	ADVOCACY	EDUCATION AND OUTREACH	COMMUNITY SUPPORT
Brain & Behavior Research Foundation (BBRF)	●	●	●	
Wellcome Trust	●	●	●	
Foundation of Hope	●	●	●	●
American Psychological Foundation	●	●	●	
American Psychiatric Nurses Association (APNA)	●	●	●	●
EMDR Research Foundation	●		●	
Kavli Institute for Brain and Mind (KIBM)	●			
International OCD Foundation (IOCDF)	●	●	●	●
Foundation for OCD Research (FFOR)	●			

Source: Milken Institute (2026)

While philanthropic foundations and nonprofits have played a critical role in advancing anxiety research, particularly where governmental funding has been limited or insufficient, significant gaps remain in anxiety research. Funding for anxiety-specific research is still limited in scope and scale; is often embedded within broader mental health priorities; and does not have sustained, condition-focused investment. As the burden of anxiety disorders continues to grow, so, too, must the strategic, transparent, and dedicated support for research in this area. Continued and expanded nongovernmental engagement will be essential to advancing effective prevention, diagnosis, and treatment strategies for anxiety and its stress-related conditions.

Philanthropic Opportunities to Accelerate Anxiety Research

SPARC has identified five opportunities through which thoughtful philanthropic investment could help overcome barriers to scientific progress in the field of anxiety. Supporting any of these opportunities will strengthen the anxiety research ecosystem and accelerate progress toward better prevention, diagnosis, and treatment of anxiety.

OPPORTUNITY 1

Bridge Bench and Bedside to Advance Translational Medicine

Research ecosystem challenge: Scientists have identified several of the biological underpinnings of anxiety disorders, such as specific genetic variants, brain regions, and brain circuits associated with anxiety. However, less is understood about how these mechanisms interact and how these discoveries can be translated into clinical practice. For example, mechanistic discoveries in animal models may not ultimately inform clinical practice (forward translation), while clinical observations that could guide basic research often fail to reach laboratory scientists (reverse translation). Limitations in the flow of information about discoveries in both directions can slow development of more effective clinical treatments.

There is a significant opportunity to facilitate the bidirectional translation of basic and clinical science in anxiety. SPARC recommends directing funding to the following:

Opportunity 1A: Establish dedicated funding opportunities for joint research projects

Funding research projects that stipulate partnerships between basic and clinical scientists can catalyze and sustain collaboration. Opportunities should specify that research teams pursue shared priorities, with dedicated strategies for bidirectional translation. Larger funding efforts can support research infrastructure (such as interdisciplinary research centers) that provides an environment for basic and clinical science partnerships and joint projects.

- **Short-term impact:** Research teams have the infrastructure they need for cross-sector collaboration.
- **Long-term impact:** Smooth bidirectional translation exists between basic and clinical science, leading to faster development of effective treatments.

Opportunity 1B: Create structured forums that bring together basic and clinical scientists

Funding working groups, convenings, and collaborative networks that bring together basic and clinical scientists in anxiety research can help foster and sustain multidisciplinary collaboration. Increased opportunities for cross-sector engagement support knowledge exchange and the development of a common language, while creating awareness of collaborative approaches. Forums should be designed as recurring platforms that build durable connections over time.

- **Short-term impact:** Scientific networks expand, and multidisciplinary knowledge sharing is seamless.
- **Long-term impact:** Scientific culture shifts toward integrated research.

Opportunity 1C: Support interdisciplinary training programs

Early-career, cross-disciplinary training programs that train clinician-scientists and/or expose discipline-specific scientists to other research areas can equip researchers with the skills, perspectives, and shared language to work across disciplines. Scientists trained in both mechanistic and clinical approaches are well positioned to lead integrative, innovative research programs.

- **Short-term impact:** Early-career investigators develop strong cross-sector expertise.
- **Long-term impact:** A strong leadership pipeline is equipped to take innovative, multidisciplinary approaches to anxiety research.

Opportunity 1D: Fund data sprints and shared cohort initiatives

Intensive, time-limited collaborations in which basic and clinical scientists analyze existing datasets can yield rapid proof-of-concept findings and identify promising directions for larger studies. Shared data resources and harmonized outcome measures across studies enable the kind of cross-disciplinary integration that neither group could achieve on its own.

- **Short-term impact:** Researchers harmonize data analysis to generate novel hypotheses rapidly.
- **Long-term impact:** Scientific discovery and innovation accelerate.

OPPORTUNITY 2

Study Brain-Body Connections in Anxiety

Research ecosystem challenge: Anxiety is increasingly understood as a whole-body phenomenon. Emerging research reveals that connections between the central nervous system and peripheral systems are central to the origins of, maintenance of, and treatment for anxiety. Yet mapping the complete circuit from brain to periphery remains difficult, given the limitations in standardized, multisystem measurement. Compounding this issue, brain and body research has often progressed in silos with limited infrastructure to support robust and sustainable cross-disciplinary research approaches.

A more comprehensive, cross-disciplinary research approach that integrates brain and body mechanisms could reveal new therapeutic targets, identify biomarkers that predict treatment response, and ultimately lead to interventions that address the full biological complexity of anxiety. To catalyze research on brain-body connections in anxiety, SPARC recommends directing funding to the following:

Opportunity 2A: Convene expert task forces to define an actionable research agenda

Convening scientists across multiple disciplines (e.g., neuroscience, immunology, gastroenterology, endocrinology, psychology, psychiatry) to define the most pressing research priorities for the brain-body interface of anxiety can establish a shared roadmap to build momentum for the field. These task forces should develop and publish consensus statements that present conceptual frameworks, identify gaps in the field, outline research priorities, and recommend approaches to drive progress.

- **Short-term impact:** Clear scientific directions emerge, along with new cross-disciplinary collaborations.
- **Long-term impact:** A consensus roadmap accelerates impactful brain-body research initiatives.

Opportunity 2B: Develop standardized protocols for multisystem measurement

The field lacks standardized methods for measuring brain-body interactions in anxiety research. Comparisons and meta-analyses would be possible with funding for the development and validation of standardized assessment batteries that can be integrated across studies.

- **Short-term impact:** Capacity for comparability and reproducibility across studies increases.
- **Long-term impact:** The field develops measurement standards that enable large-scale meta-analyses to combine findings across studies.

Opportunity 2C: Support research projects at the intersection of multiple biological systems

Grant programs designed specifically to support research that integrates across brain and body systems can generate the kind of multidimensional data needed to understand how these systems interact in anxiety. For example, grants could support cross-disciplinary research teams in simultaneously measuring neural activity, immune markers, gut microbiome composition, and behavioral phenotypes. Further, support for use of causal inference methods, experimental manipulation, and longitudinal designs can help establish directionality of pathways and identify intervention targets.

- **Short-term impact:** Researchers have the infrastructure and resources they need to collaborate with scientists in different fields.
- **Long-term impact:** The field develops new mechanistic models and therapeutic targets that integrate complexity across multiple biological systems.

OPPORTUNITY 3

Characterize Anxiety Across Diverse Populations and Strengthen Research on Risk and Resilience Across the Lifespan

Research ecosystem challenge: Populations most at risk for anxiety (such as children, older adults, and other underserved populations) are underrepresented in anxiety research. While these populations may benefit the most from early prevention and treatment, less is known about anxiety in these individuals. Further, anxiety manifests differently during developmental transitions and is often comorbid with other mental and physical health disorders. There is limited longitudinal data, however, that allows robust investigation of anxiety-specific risk and protective factors across the life course.

These challenges highlight the critical need for more inclusive, lifespan-focused studies dedicated solely to anxiety. Strengthening research on risk and resilience in anxiety across the lifespan may be operationalized by establishing new cohort studies on anxiety and supporting secondary data analyses of existing cohorts. To understand the development, progression, and resolution of anxiety across the life course, SPARC recommends directing funding to the following:

Opportunity 3A: Characterize anxiety across diverse populations

Funding research that explicitly includes children, adolescents, older adults, and other underrepresented populations is critical for understanding how anxiety manifests in diverse groups and how to implement interventions for often-overlooked populations.

- **Short-term impact:** The field collects more representative data and develops clearer insight into anxiety across populations.
- **Long-term impact:** Underserved populations have access to improved anxiety diagnoses and treatment, reducing disparities in health outcomes.

Opportunity 3B: Identify critical windows and sensitive periods

Developmental transitions (e.g., early childhood, adolescence, perimenopause, late life) may represent periods of heightened vulnerability to anxiety. Research that robustly characterizes these periods and the biological, environmental, and social factors that modulate risk could inform more effective strategies for identifying populations at risk for early prevention and intervention.

- **Short-term impact:** Researchers develop lifespan models to describe how vulnerability to anxiety changes over time.
- **Long-term impact:** At-risk individuals are more precisely identified and have access to better-timed interventions across the lifespan.

Opportunity 3C: Prioritize research on resilience and adaptive recovery

Studies that examine protective factors, adaptive coping mechanisms, and recovery processes could reveal factors associated with resilience and inform prevention and treatment strategies.

- **Short-term impact:** Researchers identify intervention targets that provide resilience to anxiety.
- **Long-term impact:** Individuals have access to personalized treatments that include resilience-focused strategies.

Opportunities to strengthen research on risk and resilience in anxiety across the lifespan may be realized by establishing new cohort studies on anxiety and supporting secondary data analyses of existing cohorts.

OPPORTUNITY 4

Disseminate and Implement Existing Treatments for Anxiety

Research ecosystem challenge: Effective treatments for anxiety exist, yet they reach only a fraction of individuals who could benefit from them. Systemic barriers to care include mental health–care cost; inadequate insurance coverage; mental health stigma; and provider shortages, particularly in rural and underserved communities. Further, lack of awareness of symptoms and available treatments can discourage individual help-seeking.

Improving the dissemination and implementation of existing evidence-based treatments at scale can reduce unmet need and substantially lower the burden of anxiety. To accomplish this, SPARC recommends directing funding to the following:

Opportunity 4A: Support workforce training and capacity-building programs

Scalable e-learning platforms can train geographically dispersed clinicians in evidence-based anxiety interventions, with continuing education credits serving as participation incentives. Training should be complemented by clinical consultations during which frontline providers can discuss cases with experts, as research consistently demonstrates that training alone is insufficient for sustained practice change.

- **Short-term impact:** More clinicians in underserved areas are trained in evidence-based anxiety interventions.
- **Long-term impact:** There is more equitable access to anxiety care, improving mental health outcomes for all.

Opportunity 4B: Use digital technology to extend treatment reach

App-based interventions, guided self-help platforms, and AI-supported tools can deliver evidence-based content to individuals who cannot access traditional care. Digital therapeutics can serve as stand-alone interventions for mild to moderate anxiety, as adjuncts to clinician-delivered care, or as stepped-care options that reserve intensive provider involvement for patients who need it most.

- **Short-term impact:** Individuals with mild to moderate anxiety face fewer barriers to care.
- **Long-term impact:** Digital therapeutics are integrated into standard care pathways, increasing access to care and reducing the burden on care providers.

Opportunity 4C: Develop and validate remote monitoring and detection tools

Passive sensing through smartphones and wearable devices can identify early warning signs of anxiety escalation, enabling timely intervention before symptoms become severe. Digital phenotyping tools deployed in natural settings, including schools and primary care, can support early identification and appropriate referral.

- **Short-term impact:** At-risk individuals are identified early, enabling appropriate referral before symptoms become severe.
- **Long-term impact:** Anxiety care delivery shifts from reactive treatment to proactive prevention.

Opportunity 4D: Embed evidence-based care in community settings

Bringing anxiety treatment into schools, primary care offices, workplaces, and community organizations can facilitate treatment for individuals who are less likely to go to specialty mental health services. Pragmatic implementation research that tests how to best integrate anxiety interventions into these settings can generate scalable models for widespread adoption.

- **Short-term impact:** Individuals will have faster and more convenient access to mental health support.
- **Long-term impact:** Mental health care is structurally integrated into places where people live, learn, work, and gather.

Opportunity 4E: Address systemic implementation barriers

Successful dissemination requires not only effective training and tools but also attention to the system-level factors that impede adoption. Funding for implementation science research that identifies barriers, tests implementation strategies, and engages health systems and payers from the outset can accelerate the translation of evidence into practice.

- **Short-term impact:** Innovation is accelerated and evidence is translated into practice.
- **Long-term impact:** Evidence-based anxiety care is delivered at scale.

OPPORTUNITY 5

Support Research and Implementation of Personalized Approaches to Anxiety Treatment

Research ecosystem challenge: Current approaches to anxiety treatment can be inefficient and non-personalized or less personalized to specific patient needs. While symptoms can manifest differently according to age, cultural context, and other socioeconomic factors, diverse presentations of anxiety are not well integrated into diagnosis and care, leading to delays in accurate diagnoses, especially for vulnerable populations. Further, approximately 50 percent of patients do not respond to first-line treatments, such as CBT and/or pharmacotherapy, and require more personalized approaches.

Effective personalized medicine matches individuals to optimal treatments from the outset, based on their unique biological, psychological, and social profiles. Implementing tools that enable more accurate diagnoses and precise predictions of treatment response can promote a more personalized and effective standard of care for anxiety. To develop personalized approaches to treatment, SPARC recommends directing funding to the following:

Opportunity 5A: Integrate diverse presentations of anxiety in diagnosis and care

Personalized treatment begins with accurate diagnoses, yet anxiety is often under- or misdiagnosed in populations (e.g., children, older adults) with symptoms that do not align with "classic" presentations. Research that develops and validates assessment tools that incorporate how anxiety presents across diverse populations can improve diagnostic accuracy and personalization of care.

- **Short-term impact:** Patients and care providers are more aware of diverse presentations of anxiety.
- **Long-term impact:** Patients receive accurate diagnoses, enabling personalized care and reducing health disparities.

Opportunity 5B: Support the identification of candidate biomarkers of treatment response

To inform prediction models of treatment response, researchers need to identify biological measures (e.g., genetic variants, neural activity patterns, inflammatory markers, gut microbiome profiles, physiological responses) that may predict response to specific treatments. Small-scale, hypothesis-generating studies can efficiently screen candidate markers and prioritize those most worthy of further investigation.

- **Short-term impact:** Candidate biomarkers are discovered and validated at an accelerated rate.
- **Long-term impact:** Anxiety care is more precise, with reduced need for trial-and-error treatment approaches.

Opportunity 5C: Fund development of computational approaches

Computational approaches can integrate multiple data types (e.g., genetic, physiological, neuroimaging, cognitive, and behavioral) to build more precise biomarker models of treatment response. These models require large training and validation datasets, sophisticated analytical expertise, and iterative refinement informed by clinical testing.

- **Short-term impact:** Anxiety researchers efficiently integrate data from multiple biological systems.
- **Long-term impact:** Data from disparate biological systems are comprehensively linked, enabling precise biomarker models.

Opportunity 5D: Invest in clinical validation and implementation

Prediction models developed in research settings must be validated in real-world clinical populations and translated into usable tools before they can benefit patients. Funding implementation studies that test whether biomarker-guided treatment selection improves outcomes relative to standard treatment is essential for translating scientific discovery into clinical impact.

- **Short-term impact:** Research is clinically validated and translated into practice more rapidly.
- **Long-term impact:** Patients receive more precise, effective treatments.

Summary and Conclusion

Anxiety disorders have a wide range of manifestations—from social anxiety disorder to PTSD—and can affect individuals at any stage of life. Despite the diverse ways these disorders affect lives, they share the core defining feature of disproportionate, excessive anxiety. This report provided an overview of anxiety disorders (including the affected populations, risk factors, and biological underpinnings) and discussed important research areas and methods in the field, explaining existing and emerging treatment options.

Although anxiety poses steep economic and personal burdens, public funding for anxiety research is low and falling. Limited public funding subsequently restricts many essential lines of inquiry, including how anxiety develops and changes over the lifespan. Several notable private funders support mental health research, but many do not focus specifically on anxiety, leaving major gaps in philanthropic funding.

These challenges create opportunities for bold, innovative investment in anxiety research. There is no shortage of promising research avenues in anxiety, but several paths have the potential to make an outsized impact. These opportunities include advancing translational research, studying brain-body connections, clarifying risk and resilience factors, disseminating existing treatments, and creating personalized treatment approaches. If appropriately resourced, these opportunities could transform anxiety research and care, ultimately improving mental health for individuals with anxiety disorders.

Appendix

Funding Analysis Methods

Funding Analysis Search Terms

We selected the following search terms to analyze funding on the NIH Research Portfolio Online Reporting Tools Expenditures and Results (RePORTER) database and the websites of the Defense Technical Information Center and the VA. We chose these search terms after reviewing the literature and conducting test searches on each platform. Each of the following sections will discuss how these search terms were used in searches and analyses. Collectively, these terms will be referred to as "**all anxiety disorder search terms.**"

Overall: "anxiety disorder" or "anxiety disorders"

Generalized anxiety disorder: "generalized anxiety disorder" or "generalized anxiety disorders"

Post-traumatic stress disorder: "PTSD" or "Post-traumatic stress disorder" or "post traumatic stress disorder" or "posttraumatic stress disorder" or "Post-traumatic stress disorders" or "post traumatic stress disorders" or "posttraumatic stress disorders"

Obsessive-compulsive disorder: "OCD" or "obsessive-compulsive disorder" or "obsessive compulsive disorder" or "obsessive-compulsive disorders" or "obsessive compulsive disorders"

Agoraphobia: "agoraphobia" or "agoraphobias"

Panic disorder: "panic disorder" or "panic disorders"

Specific phobia: "specific phobia" or "specific phobias"

Social anxiety disorder: "social anxiety disorder" or "social anxiety disorders"

Separation anxiety disorder: "separation anxiety disorder" or "separation anxiety disorders"

Selective mutism: "selective mutism" or "selective mutisms"

NIH RePORTER

We used the NIH RePORTER database to understand NIH funding for anxiety research. We conducted advanced searches in the NIH RePORTER database for fiscal years (FYs) 2016–2025 and used Boolean search strings to combine relevant search terms for each analysis. Unless noted otherwise, we limited the agency, institute, and center to NIMH. We added only those projects for which relevant search terms were included in the project title or project abstract.

It is important to note that for some projects, anxiety disorders may not be the primary research focus; relevant search terms may be mentioned in the project abstract as part of the study's background and future implications. Therefore, estimates should be interpreted as an upper bound of administered public funding for this area.

Non-NIMH Funding

To determine NIH funding that did not come from NIMH, we used all anxiety disorder search terms and analyzed the top funding institutes. To analyze CDC funding, we used all anxiety disorder search terms and limited the agency, institute, and center to "ALLCDC," which returns all projects funded by the CDC.

NIMH Funding

Analysis 1. Overall NIMH Funding Compared with NIMH Funding for Anxiety Disorders: For overall NIMH funding, we did not use any specific search terms in order to see the entirety of NIMH funding. For anxiety disorder funding, we used all anxiety disorder search terms.

Analysis 2. Ten-Year Trend in NIMH Funding for PTSD, OCD, and Other Anxiety Disorders: To analyze PTSD funding, we used all PTSD search terms. To analyze OCD funding, we used all obsessive-compulsive disorder search terms. For other anxiety disorders, we used search terms for generalized anxiety disorder, agoraphobia, panic disorder, specific phobia, social anxiety disorder, separation anxiety disorder, and selective mutism.

Analysis 3. NIMH Funding by Anxiety Disorder, Compared with Disease Prevalence: To determine funding for each disorder, we used each disorder's corresponding search terms. We determined each disorder's past-year prevalence by analyzing relevant literature.

Analysis 4. NIMH Funding at the Intersection of Anxiety and Frequently Co-occurring Symptoms: For each symptom and mood, we searched with all anxiety disorder search terms *and* the relevant symptom and mood. In other words, the project title or project abstract of search results was required to have at least one anxiety search term and the name of the symptom.

Analysis 5. NIMH Funding for Childhood, Adolescent, and Geriatric Anxiety as a Share of Total Anxiety Disorder Funding: For children and adolescents, we used all anxiety disorder search terms *and* the following search terms: "childhood" or "children" or "child" or "infant" or "infancy" or "toddler" or "pediatric" or "adolescent" or "adolescence" or "juvenile" or "youth" or "early life" or "puberty" or "teen" or "teenager." To ensure that results focused specifically on early-life anxiety, and not on all stages of anxiety, we excluded results that included the following search terms: "geriatric" or "elderly" or "older adult" or "older adults" or "late life."

For geriatric anxiety, we used all anxiety disorder search terms *and* the following terms: "geriatric" or "elderly" or "older adult" or "older adults" or "late life." To ensure that results focused specifically on anxiety in older adults, and not on all stages of anxiety, we excluded results that included the following search terms: "childhood" or "children" or "child" or "infant" or "infancy" or "toddler" or "pediatric" or "adolescent" or "adolescence" or "juvenile" or "youth" or "early life" or "puberty" or "teen" or "teenager."

To determine funding for anxiety research overall, we searched with all anxiety disorder search terms.

Analysis 6. Ten-Year Trend in NIMH Funding for Childhood and Adolescent Anxiety: To observe the 10-year trend in funding for early-life anxiety research, we used all anxiety disorder search terms *and* the following search terms: "childhood" or "children" or "child" or "infant" or "infancy" or "toddler" or "pediatric" or "adolescent" or "adolescence" or "juvenile" or "youth" or "early life" or "puberty" or "teen" or "teenager." To ensure that results focused specifically on early-life anxiety, and not on all stages of anxiety, we excluded results that included the following search terms: "geriatric" or "elderly" or "older adult" or "older adults" or "late life."

Analysis 7. Ten-Year Trend in NIH Early-Career Funding for PTSD, OCD, and Other Anxiety Disorders: To analyze PTSD funding, we used all post-traumatic stress disorder search terms. To analyze OCD funding, we used all obsessive-compulsive disorder search terms. For other anxiety disorders, we used search terms for generalized anxiety disorder, agoraphobia, panic disorder, specific phobia, social anxiety disorder, separation anxiety disorder, and selective mutism. K awards make up the bulk of early-career funding, so in each search, we limited the Activity Code to K08, K01, K23, K25, and K99.

VA Office of Research and Development

We used the VA Office of Research and Development database of funded projects to understand the VA's funding for anxiety research. We conducted searches for FYs 2017–2025 (data for 2016 is not publicly available). The VA grants database allows searches of only grant project titles. We used all anxiety disorder search terms. After testing search terms in the VA grants database, the term *anxiety* was also added to better capture all relevant research.

Defense Technical Information Center

We used the Defense Technical Information Center's Dimensions tool to analyze DoD funding for anxiety research. We conducted advanced searches in the database for FYs 2016–2025 and used Boolean search strings to combine all anxiety search terms. We added only those projects for which relevant search terms were included in the project title or project abstract.

It is important to note that for some projects, anxiety disorders may not be the primary research focus; relevant search terms may be mentioned in the project abstract as part of the study's background. Therefore, estimates should be interpreted as an upper bound of administered public funding for this area.

Glossary

Adverse childhood experiences: These are challenging circumstances or events that may occur in childhood, such as abuse, neglect, or household dysfunction. These experiences lead to a heightened risk of developing anxiety disorders.

Agoraphobia: This disorder is characterized by intense fear of situations in which escape or help may be difficult (it is not just "fear of open spaces").

Amygdala: This part of the brain serves as the central hub for threat detection and fear processing. The amygdala orchestrates physiological and behavioral responses to anxiety. In anxiety disorders, amygdala activation is heightened in response to disorder-relevant stimuli.

Anterior cingulate cortex (ACC): This region of the brain monitors conflict and emotional regulation in anxiety. The ACC generally shows lower activity in individuals with anxiety disorders.

Anxiety: This fundamental, natural emotion is characterized by feelings of nervousness or unease, typically about a future event or something with an uncertain outcome. It is important to distinguish between adaptive anxiety, which is a normal and useful part of the human experience, and maladaptive anxiety, which can contribute to several clinical and psychiatric conditions or exist as a clinical disorder on its own.

Anxiety disorder: In this class of mental health conditions, anxiety is a primary symptom. Anxiety disorders include generalized anxiety disorder, specific phobias, and social anxiety disorder.

Autonomic nervous system (ANS) dysregulation: This is a common phenomenon in anxiety disorders, typically leading to heightened sympathetic ("fight or flight") activity and reduced parasympathetic ("rest and digest") activity. This imbalance exacerbates arousal, stress reactivity, and physical symptoms of anxiety and also affects the cardiovascular, digestive, and respiratory systems.

Bed nucleus of the stria terminalis (BNST): This part of the brain mediates fear responses to ambiguous threats and regulates longer-duration anxiety states. BNST dysfunction is related to the recurrence and chronicity of anxiety symptoms.

Behavioral inhibition: This pattern of avoidant responses to unfamiliar people, objects, and situations appears in childhood. Children who exhibit behavioral inhibition under the age of five are at increased risk of developing an anxiety disorder.

Benzodiazepines: This class of drugs enhances GABA inhibitory neurotransmission, providing rapid anxiety relief. Their use is limited because of risks of dependence, tolerance, and sedation, and thus they are recommended only for short-term therapy or adjunctive use.

Biomarker: This is a measurable indicator of biological or pathological processes. Biomarkers for anxiety can help identify or validate therapeutic targets. They can also help measure treatment success.

Cognitive-behavioral therapy (CBT): This structured, time-limited therapy is used to treat several psychiatric conditions, including anxiety disorders. It combines cognitive restructuring and behavioral techniques to modify maladaptive thoughts and behaviors that contribute to symptoms.

Data-driven computational approaches: These approaches to computational psychiatry typically apply machine learning and AI to analyze large, complex datasets from clinical, behavioral, genetic, and neuroimaging sources. The aim is typically to identify features that can divide patients into subgroups linked to different symptom profiles and/or treatment responses.

Deep-brain stimulation (DBS): This invasive neuromodulation technique requires a surgical procedure to implant electrodes in specific areas of the brain to deliver electrical stimulation. The US Food and Drug Administration has approved DBS to treat obsessive-compulsive disorder only in severe, intractable cases. Adaptive "closed loop" DBS (which automatically adjusts stimulation parameters in real time) is being investigated to improve its efficacy.

Depression: Persistent sadness and a lack of interest in daily life characterize this mood disorder. Depression often co-occurs with anxiety.

***Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition *(DSM-5)*:** The American Psychiatric Association publishes this professional guide for diagnosing and classifying mental disorders.

Epigenetics: This is a process through which gene expression is modified without a change in DNA sequence. Epigenetic changes can be caused by environmental factors, such as early-life stress, and can include DNA methylation and histone modifications.

Exposure therapy: This method is used to systematically and repeatedly confront patients with feared stimuli or situations to reduce avoidance and anxiety through habituation and extinction learning. It is especially effective for phobias, post-traumatic stress disorder, and obsessive-compulsive disorder.

Fear: This is an emotional and physiological alarm reaction to an imminent and identifiable threat. It is associated with a surge of autonomic arousal necessary for the "fight or flight" response, preparing the organism to confront or escape danger.

Focused ultrasound (FUS): This noninvasive neuromodulation technique for treating anxiety employs targeted ultrasound to modulate deeper brain regions, such as the amygdala.

Gamma-aminobutyric acid (GABA): This is the main inhibitory neurotransmitter in the brain. Reduced GABA signaling and receptor function are implicated in the pathophysiology of anxiety.

Generalized anxiety disorder: Excessive, uncontrollable worry across multiple life domains (e.g., work, health, family, finances) characterizes this disorder.

Genome-wide association studies (GWAS): These studies are used to identify genetic variants that are statistically associated with risk of a trait or condition. Though it is lacking in anxiety research, translation of

GWAS findings into clinical action is necessary because thousands of variants each contribute minuscule risk.

Gut-brain axis: This refers to the relationship between brain health and the gut microbiome. Gut bacteria produce metabolites that reach the brain and engage with the immune system to produce anxiety. Diverse and healthy gut microbiomes have been shown to reduce anxiety, and stress has been found to affect microbiome composition.

Hippocampus: This part of the brain integrates contextual information, regulates stress hormone responses, and supports memory processing and contextual learning. Anxiety disorders are associated with reduced hippocampal volume and impaired hippocampal-dependent learning.

Hypothalamic-pituitary-adrenal (HPA) axis: This refers to a part of the brain that is responsible for stress response and management. Dysregulation can lead to anxiety symptoms.

Hypothalamus: This is a central hub for stress and anxiety regulation, coordinating neuroendocrine, emotional, and autonomic responses to threats. As the master regulator of the hypothalamic-pituitary-adrenal (HPA) axis, it mobilizes a cascade of hormones responsible for stress adaptation. Dysregulation of this cascade contributes to heightened anxiety states.

***International Statistical Classification of Diseases and Related Health Problems (ICD)*:** WHO developed this system to standardize and classify the definitions of diseases and health conditions for the purposes of accurate, consistent diagnoses and clinical documentation.

Insular cortex: This part of the brain is densely interconnected with the amygdala, integrating sensory, affective, and bodily signals critical to anxious states and their conscious appraisal. The insular cortex generally shows higher activity in individuals with anxiety disorders.

Longitudinal study: This type of research study involves repeated observation of participants over a long time. These studies can help researchers understand how anxiety develops and changes over time.

Mechanistic study: This is a research study that seeks to uncover the precise biological or physical process driving a phenomenon.

Mindfulness-Based Stress Reduction: This treatment method trains patients to have nonjudgmental, present-moment awareness to reduce rumination and emotional reactivity.

Neuroimmune dysregulation: This refers to the activation of the peripheral innate immune system, which can be caused by chronic stress and leads to the release of inflammatory cells. These inflammatory cells may breach a compromised blood-brain barrier and infiltrate brain tissue, where they can disrupt neuronal environments. In this interaction, pro-inflammatory and anti-inflammatory cytokines can increase or decrease anxiety, respectively.

Neuromodulation: This refers to the process of altering neural activity through the targeted stimulation of specific areas of the nervous system using electrical, magnetic, or acoustic energy. It aims to restore or

normalize dysregulated brain circuits.

Neuroticism: Individuals with this personality trait are prone to feel negative emotions. Neuroticism is consistently recognized as a major risk factor for anxiety disorders.

Norepinephrine: This neurotransmitter influences arousal and the stress response, which influence anxiety symptoms. Both excessive and insufficient release of norepinephrine is linked to impaired neural functioning in anxiety.

Obsessive-compulsive disorder (OCD): Recurrent obsessions (such as intrusive thoughts or impulses) and compulsions (repetitive behaviors and mental acts) characterize this disorder.

Oxytocin: This neuropeptide can relieve anxiety by normalizing amygdala activity, decreasing cortisol, and suppressing stress-induced hypothalamic-pituitary-adrenal activity. Recent research has shown that oxytocin's role is complex, and when active in some parts of the brain, it can lead to anxiety responses.

Panic disorder: Recurrent, unexpected panic attacks, with an abrupt surge of intense fear peaking within minutes, characterize this disorder.

Precision psychiatry: This approach personalizes interventions based on biological and clinical profiles.

Prefrontal cortex (PFC): This region of the brain downregulates amygdala activation, damping excessive emotional and physiological reactions to anxiety. The PFC generally shows lower activity in individuals with anxiety disorders.

Post-traumatic stress disorder (PTSD): Flashbacks, nightmares, hypervigilance, or avoidance following trauma exposure characterize this disorder.

Repetitive transcranial magnetic stimulation (rTMS): This noninvasive neuromodulation technique for treating anxiety applies magnetic fields to select cortical regions of the brain, attempting to normalize dysregulated circuits.

Resilience factors: These factors make someone less likely to develop an anxiety disorder, even if they have been exposed to trauma or other risk factors. This is an under-studied aspect of anxiety research.

Selective mutism: A consistent failure to speak in specific situations, despite normal speech in other situations, characterizes this disorder.

Selective serotonin reuptake inhibitors (SSRIs): These first-line treatments for anxiety increase synaptic serotonin, alleviating anxiety symptoms with generally minimal side effects.

Separation anxiety disorder: An excessive, developmentally inappropriate fear of separation from attachment figures or familiar places characterizes this disorder.

Serious mental illness (SMI): This type of mental illness substantially interferes with an individual's daily life and ability to function. Anxiety commonly occurs with SMIs, negatively influencing disease outcomes.

Serotonin: This neurotransmitter modulates anxiety by acting on multiple receptors. It can either induce or inhibit anxiety, depending on receptor subtype and brain region.

Serotonin-norepinephrine reuptake inhibitors (SNRIs): These first-line treatments for anxiety increase synaptic norepinephrine, alleviating anxiety symptoms with generally minimal side effects.

Social anxiety disorder: An intense fear of social situations involving scrutiny, rejection, or embarrassment characterizes this disorder.

Specific phobia: A persistent and disproportionate fear of a specific object or situation characterizes this disorder.

Substance use disorders (SUDs): These disorders lead to an inability to control one's use of a drug or medicine. SUDs frequently co-occur with anxiety disorders.

Theory-driven computational approaches: These approaches focus on building models that can tease apart specific neural or cognitive processes. They specify the processes and computations of interest and enable clear interpretation and easy translation. These models are typically applied to behavioral data, physiological readouts, and neural data acquired from human or animal subjects.

Transcranial direct current stimulation (tDCS): This noninvasive neuromodulation technique for treating anxiety uses low-intensity electrical currents to modulate excitability.

Vasopressin: This neuropeptide can induce and increase anxiety, with increased avoidance and heightened responses to social and physical stress. Recent research has shown that vasopressin's role is complex, and when active in some parts of the brain, it can reduce anxiety responses.

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Prior to joining the Milken Institute, she was a research fellow at the Council on Strategic Risks, where her work focused on biosecurity policy and pandemic prevention. Parr holds a Bachelor of Science in biology from the College of William & Mary, where she conducted synthetic biology research focused on information processing.

Sylvie Raver, PhD, applies her expertise in neuroscience, neurodegenerative disease, mental health, and biomedical research to identify opportunities for philanthropic investments that can have a transformative impact on medical research and health. She provides guidance to philanthropists, families, and foundations and implements strategies to deploy philanthropic capital to advance research and health priorities.

Raver has published work on biomedical strategy, with a focus on mental health, neurotechnology, and rare neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS). She was instrumental in developing a consensus definition for misophonia, a disorder of decreased tolerance to specific sounds or stimuli associated with such sounds.

Before joining the Milken Institute, Raver worked at the Society for Neuroscience, where she led the society's global programming and policy efforts around neuroscience training for individual scientists and members engaged in biomedical workforce education and training. Raver received a bachelor's degree from Lafayette College and a doctorate from the University of Maryland School of Medicine and conducted postdoctoral training at the NIA.


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