



# The Scientific Times

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## **AHA Scientific Statement** *Psychological Health*

**Mind** • **Heart** • **Body**  
**Connection**



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CLINICAL IMPLICATIONS

While delivering health care, much focus of attention has been on the specific physical condition rather than the patient as a whole. Less attention has been paid to psychological health and how that can contribute to physical health and disease. However, there is now emerging appreciation of how psychological health can contribute not only in a negative way to cardiovascular disease (CVD) but also in a positive way to better cardiovascular health and reduced cardiovascular risk.

The 2021 American Heart Association (AHA) scientific statement on Psychological Health has attempted to evaluate, synthesize, and summarize the relationship between psychological health and cardiovascular health.

There are substantial evidences available to show psychological health may be causally linked to biological processes and behaviors that contribute to and cause CVD. While improving psychological health can have a beneficial impact on cardiovascular health.



The **World Health Organization** defines mental health as “a state of well-being in which an individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.

**While treating patients one must strive to reduce negative aspects of psychological health and promote an overall positive and healthy state of being.**

Negative Psychological Health	Positive Psychological Health
Depression	Sense Of Optimism
Chronic Stress	Sense Of Purpose
Anxiety	Gratitude
Anger	Resilience
Pessimism	Happiness
Dissatisfaction With One's Current Life	Positive Affect (Positive Emotion)

The mind, heart, and body are interconnected and interdependent. Factors, conditions, and disease states (both physical and psychological) that may affect 1 of these 3 components of a person can also affect the other 2 components. For example, the development of CVD such as myocardial infarction (MI), heart failure, stroke, or need for undergoing coronary revascularization may also lead to the development of negative psychological health.

This intertwined relationship between heart, body, and mind can be called the **mind-heart-body connection**.



## NEGATIVE PSYCHOLOGICAL HEALTH AND CVD

### **Chronic Stress and Social Stressors**

Stressful life events, chronic daily stressors, and high levels of perceived stress can affect cardiovascular health. Psychological stress may result from numerous sources such as challenges from work, poor-quality or insufficient relationships, financial hardships, and discrimination. Apart from these, people may also be exposed to traumatic stress if they experience or witness events that involve a threat to safety.

### **Anger and Hostility**

Instances of anger and hostility can precipitate undesirable sympathetic response. Induction of anger can result into -

increased cardiovascular reactivity as measured by heart rate, systolic and diastolic blood pressure.

### **Anxiety**

As per American Psychological Association definition 'anxiety is an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure.' It suggests the likelihood of a link between anxiety and CVD risk.



## Depression

Findings from numerous studies have shown that people who experience depression are at increased risk of developing and dying of CVD. The increased CVD risk in these patients are driven partially by elevation in traditional cardiovascular risk factors. Obesity has received the most attention, with studies finding a significant bidirectional association.

As per experts anxiety and depression can additionally lead to ischemia through coronary artery vasospasm.

## Pessimism

Pessimism is characterized by the tendency to expect negative outcomes or to routinely explain events in a negative way. An explanatory style of a pessimist has been linked to a sense of hopelessness.

These factors have been linked to cardiovascular risk.



### Effect Estimates for Associations of Negative Psychological Factors With Cardiovascular Events and Conditions

Negative Psychological factors	Parameter/end point	Risk estimate (approx.)
Work-related stress	Incident CVD events	40%
Any-cause stress	Incident CHD/CHD mortality	27%
Anger and hostility	Incident CHD	19%
	Recurrent CHD	24%
Anxiety	CVD mortality	41%
	Incident CHD	41%
	Coronary artery spasm	5 times
	Incident stroke	71%
	Heart failure	35%
Depression	Incident MI	30%
	Incident CHD	30%
	Stroke	45%
	Obesity	37%
	Hypertension	42%
	Diabetes	32%
Pessimism	CHD mortality	2 times
PTSD	Incident CHD	61%
Social isolation and loneliness	Incident CVD events	50%

CHD: Coronary heart disease; PTSD: Post-traumatic stress disorder

# POSITIVE PSYCHOLOGICAL HEALTH AND CVD

## Optimism

Optimism is characterized by having a sense of hopefulness and confidence that things will work out well in the future and anticipating the best possible outcomes.

Multiple studies have shown the association of optimism with healthier behaviors such as more physical activity, nonsmoking, healthy diet score, better sleep quality, and higher composite cardiovascular health scores.

## Happiness and Positive Affect

Happiness is a form of positive affect, characterized by a state of positive well-being and contentment. Happy individuals sleep better, exercise more, eat better, and don't smoke.

## Sense of Purpose

It conceptualize as finding meaning in one's daily life and being motivated and directed by their values and life goals. Similar to

optimism, adults with a greater sense of purpose have more favorable lifestyle and cardiovascular risk factors such as less smoking, alcohol and substance abuse, more physical activity, and better glucose control.

## Mindfulness

Mindfulness can be defined as nonjudgmental awareness of one's thoughts, emotions, and actions. Mindfulness is associated with less stress, more compassion, and higher levels of well-being.

## Other Positive Factors

Other positive psychological factors have been linked to reduced risk of CVD, including gratitude, and resilience, and overall psychological well-being. However, the quantity of study data to date are extremely limited.

## Positive Psychological Factors and its Association with Cardiovascular Events and Health

Positive psychological factors	Parameter/end point	Benefit estimate (approx.)
Optimism	Incident CVD	35%
	Hospital readmission after ACS	8%
	All-cause mortality	14%
Sense of purpose	CVD risk	17%
	All-cause mortality	17%
Happiness/more positive affect	Incident CHD	22%
Mindfulness*	Good cardiovascular health	83%
	Nonsmoking	37%
	Body mass index <25 kg/m <sup>2</sup>	2 times
	Fasting glucose <100 mg/dL	47%
	High level of physical activity	56%
Higher emotional vitality	Incident CHD	19%
Psychological well-being	Cardiovascular mortality	29%

Benefit estimate are in terms of percent risk reduction  
\*association of parameters in increasing the positive psychological factor. E.g. Nonsmoking can increase the mindfulness by 37%

## PATHWAYS LINKING PSYCHOLOGICAL HEALTH AND CVD

Psychological factors lead to specific biological alterations that influence cardiovascular health.

**Anger and hostility** are associated with increased **platelet aggregation** and **inflammation**.

Most forms of **psychological distress** (eg, anger, anxiety, depression, PTSD) lead to activation of the hypothalamic-pituitary-adrenal axis, resulting in **dysregulation of the autonomic nervous system** and a cascade of downstream effects that can increase the risk of developing CVD.

Acute instances of distress can lead to immediate changes and even dramatic elevations in catecholamines.

**Positive psychological factors**, are mechanistically responsible for healthier basal levels of autonomic parameters such as heart rate and heart rate variability, greater vagal tone, and healthier biological stress responses.

Psychological illness and psychological health have been shown to be associated with medication nonadherence or adherence, respectively. Positive psychological factors may lead to **better medication and treatment adherence**.

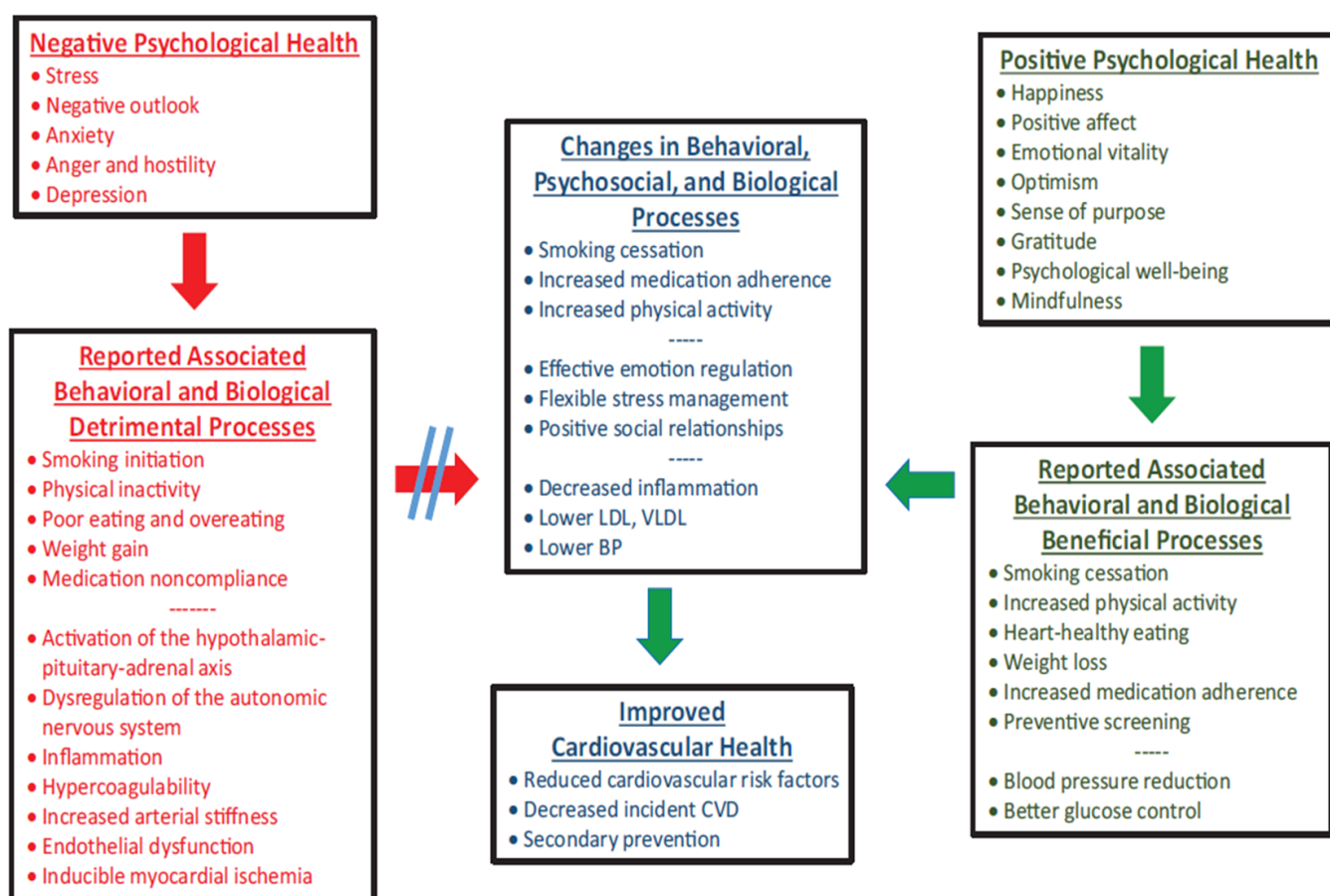


Fig. 1: Negative and positive associations of psychological health and cardiovascular risk

## CLINICAL IMPLICATIONS

The discussions about psychological health may take some time during tightly scheduled clinical visits. However, if substantial issues are identified that are leading to medication nonadherence, poor self-care, or high-risk behavior, such discussion might lead to fewer subsequent visits, better adherence, and better patient quality of life and cardiac outcomes.



### Sample Statements to Address Psychological Health in Clinical Encounters

#### For depression

"It seems like feeling down or even a little hopeless might be affecting the way you are taking care of yourself. Let's think about how we can tackle this problem together."

#### For anxiety

"It seems like your level of anxiety and worry is really wearing on you, and that can really affect your health and the way you take care of yourself. Let's think about how we can tackle this problem together."

#### To support optimism

"I have taken care of many patients with this kind of heart problem before, and many of them have done very well. I think you can, too."

#### To support positive affect

"There is a lot of research finding connections between feeling happy and satisfied with your life and your heart health. I want to really support you in taking time for yourself and engaging in \_\_\_\_\_ [fill in as appropriate such as "hobbies" or "meaningful activities"]. Let's think together about that."

#### To support gratitude

"We were lucky to catch your heart problem when we did, and there are some good treatments. I think that means that we have a lot to be grateful for here, and there is a good chance that your health can remain strong if we work together."

## Interventions

Psychotherapy (cognitive behavioral therapy) after CV events have shown marked improvement in depression.

Standard antidepressants [primarily selective serotonin reuptake inhibitors (SSRIs)] are found to be safe and largely effective in the prevention or treatment of major depressive disorder among patients with CVD.

*In a EsDEPACS trial (Escitalopram for Depression in Acute Coronary Syndrome) of 300 depressed patients after ACS, it was observed that patients assigned to the Escitalopram group had significant **31% lower rates of major adverse cardiac events at 8 years versus placebo.***

**For any scientific queries on above topic**

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