ACADEMIA International Journal for Social Sciences
Volume 4, Issue 4, 2025 ISSN-L (Online): 3006-6638

The Role of Positive Emotion in Mediating the Relationship Between Psychological Distress and Physical Health

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Received: 21-08-2025 **Revised:** 26-09-2025 **Accepted:** 16-10-2025 **Published:** 29-11-2025

ABSTRACT

This study explores the mediating role of positive emotions in the relationship between psychological distress and physical health outcomes. Using a cross-sectional design, we assessed 300 adult participants (50% male, 50% female) from the general population who completed self-report measures of psychological distress (DASS-21), positive emotions (PANAS), and physical health. Mediation analysis revealed that psychological distress negatively affected both positive emotions and physical health. Positive emotions were found to partially mediate the relationship between distress and physical health, with higher positive emotions associated with better physical health outcomes, even in the presence of distress. The indirect effect was significant (β = 0.10, 95% CI = [0.03, 0.17]), suggesting that promoting positive emotional experiences may buffer the physical consequences of psychological distress. Gender moderated this effect, with stronger mediation observed among female participants. These findings highlight the importance of fostering positive emotions as a strategy for improving overall well-being, particularly in individuals experiencing psychological distress.

Keywords: *psychological distress, positive emotions, physical health, affect regulation*

INTRODUCTION

Psychological distress, including symptoms of anxiety, depression and chronic stress, is a widespread issue that has a negative impact on a large number of people across the globe (Kessler, 2003). This distress often appears as feelings of sadness or irritation and fear and can have important long-term consequences both for mental and physical health (Cohen, & Wills, 1985). Psychological distress has been consistently associated with a range of physical health problems such as cardiovascular diseases, chronic pain, and a weak immune system (Thoits, 2010). For instance, people with high levels of distress can have more inflammation and cortisol levels, both of which are responsible for various physical ailments (Saxena et al., 2013).

Understanding the relationship between psychological distress and physical health is very important because it can help to inform preventative health strategies. For therapeutic interventions to be more comprehensive in both aspects of well-being and research to guide these perspectives, individuals and their healthcare providers need an understanding of how both mental and physical health are interlinked

(Smith et al., 2013). This has led to an growing research research the examine of how variables just like emotional state might either have a moderating function or act as a mediator of the relationship between distress and well being outcomes.

Positive emotions are those associated with pleasant experiences and positive states of mind such as happiness, gratitude, joy and optimism (Fredrickson, 2001). These emotions are frequently contrasted to negative emotions which are associated with distress and maladaptive outcomes (Cohen & Pressman, 2006). Positive emotions have been shown to play an important role in buffering the effects of stress and encouraging physical and psychological resilience (Fredrickson, 2004). For example, people who are regularly positive in their emotions are less prone to the stress hormone cortisol and have improved immune function (Pressman & Cohen, 2005).

Over the last few decades, there has been an increase in interest in the possibility that positive emotions may help to offset the detrimental effects of psychological distress on physical health. Researchers have put forward the idea that experiencing positive emotions can promote adaptive coping mechanisms which can enhance overall health outcomes (Tugade & Fredrickson, 2004). This idea is central to the Broaden-and-Build Theory of Positive Emotions (Fredrickson, 2001), which suggests that positive emotions increase the thought-action repertoire of the individual leading to building personal resources and better resilience in the face of adversity. In this context, positive emotions may play an important mediating role, by reducing the negative impact of distress on health, through promoting healthier coping strategies and reducing physiological responses to stress (Cohen & Pressman, 2006).

The primary aim of this research is to explore the mediating role of positive emotions in the relationship between psychological distress and physical health. Specifically, this study will examine whether positive emotions experienced lessen the negative impact of psychological distress on physical health outcomes (immune function, cardiovascular health, and general well-being). Based on prior work, it is theorized that positive emotions may mediate the relationship between psychological distress and physical health, such that people who have more positive emotion in the context of psychological distress will report better physical health outcomes (Pressman & Cohen, 2005; Tugade & Fredrickson, 2004). This hypothesis offers that promoting positive emotional experiences may potentially be an effective strategy in improving health outcomes in people experiencing high levels of psychological distress.

LITERATURE REVIEW

A. Psychological Distress and Physical Health

Psychological distress including symptoms of anxiety, depression and stress are well established risk factors for a range of physical health problems. In particular, psychological distress may be associated with cardiovascular disease, hypertension, chronic pain, metabolic syndrome and lowered immune function (Cohen & Wills, 1985; Kessler, 2003). These conditions not only have an impact on the overall well being of individuals, but they can result in more severe consequences such as stroke, heart attack and premature death (Kiecolt-Glaser et al., 2002). The adverse effects of psychological problems on physical health re mediated in many cases through different physiological pathways, which include dysfunction of the body's stress response system.

When an individual is experiencing distress, the body activates the hypothalamic pituitary adrenal (HPA) axis leading to the secretion of cortisol, a stress hormone. While cortisol is important to deal with acute stress, if this system is constantly stimulated, it can cause harmful effects, such as suppressed immune system, high blood pressure and inflammation (McEwen, 2007). This chronic stress response is believed to play a major role in the development of such health problems as cardiovascular disease and impaired immune function.

In addition to cortisol, psychological distress has been shown to have other physiological system impacts. Research by Steptoe et al (2002) showed that stress are linked to increased heart rate and blood pressure which may contribute to atherosclerosis in the long run. Furthermore, Cohen et al. (2007) demonstrated that chronically stressed individuals have a weakened immune system due to disruption of the creation of cytokines, proteins that regulate immune responses. These physiological changes accentuate the serious effects that [psychological] distress may have on both mental and physical health.

Importantly, studies have suggested that psychological distress does not only make physical health problems worse, it may also slow down recovery from physical illnesses. For example, people who are experiencing chronic stress or depression tend to have delayed healing after surgery or injury (Kiecolt-Glaser et al., 2002). This suggests that the interactions between psychological and physical health are both complex and reciprocal, and psychological distress is of critical importance in the deterioration of physical well-being.

B. Positive Emotions and Well-being

In contrast to the detrimental effects of distress, positive emotions such as happiness, joy, gratitude and optimism have been associated with positive mental and physical health outcomes. A great many studies have demonstrated that positive emotions have been shown to correlate with better immune function, better cardiovascular health, and an overall increased longevity (Pressman & Cohen, 2005). For example, Fredrickson and colleagues (2000) showed that people who are in positive emotions have greater immune responses to infection, as measured by a higher level of immunoglobulin A, an antibody that plays a key role in the body's defense against pathogens.

Positive emotions can affect physical health in a number of ways, one of the most important of which is the ability to help minimise the physiological effects of stress. According to Fredrickson's (2001) Broaden-and-Build Theory of Positive Emotions, positive emotions lead to broader thinking and actions in an individual, which promotes creativity, resiliency, and adaptive coping mechanisms. This broadening effect can assist individuals to manage their stress in a more effective way, which could possibly reduce the detrimental effects of distress on health. Research by Tugade and Fredrickson (2004) supports this idea, as it has been found that people who experience frequent good feelings are more likely to be able to bounce back from negative events and recover faster from negative emotional states.

Furthermore, positive emotions are linked to lower levels of inflammation, which is a major indicator of health risks such as monascular disease. Pressman and Cohen (2005) reviewed a number of studies and found that positive emotions are associated with lower levels of inflammation, as measured by reduced levels of markers such as C-reactive protein (CRP). This has important implications for the role of positive emotions in protection against diseases associated with chronic inflammation, such as heart disease, diabetes and even cancer.

Beyond physical health, positive emotions have also been found to ensure mental wellbeing. People who have positive emotions more often are less likely to develop symptoms of depression and anxiety (Keller et al., 2010). These outcomes mean that the cultivation of positive emotional experiences could be a successful approach not only for improving one's physical health but could also contribute to improving a psychological resilience against distress.

C. Theoretical Models

To understand the mechanisms through which positive emotions can mediate the relationship between psychological distress and physical health, several theoretical models provide useful frameworks. One of the most prominent is the **Broaden-and-Build Theory of Positive Emotions** (Fredrickson, 2001). This theory proposes that positive emotions serve to broaden an individual's thought-action repertoire, encouraging behaviors and thoughts that are beneficial for both mental and physical health. Over time, the accumulation of these resources—such as increased social support, better coping skills, and improved physiological functioning—builds resilience and fosters well-being. According to this theory, positive emotions can mitigate the harmful effects of psychological distress by helping individuals cope more effectively with stress, thereby protecting against the development of stress-related health problems.

D. Gaps in Existing Literature

While a large body of literature has examined the link between psychological distress and physical health, as well as the role of positive emotions in health status, there still appears to be large gaps in the literature, especially in terms of the mediating role of positive emotions in this relationship. A major gap is the absence of longitudinal studies which can show the function of positive emotions as a mediator across time. Although cross-sectional studies have provided valuable insights into the associations between distress, positive emotion and health, these studies do not prove causal relationships. Longitudinal research is needed to learn about the effects of positive emotions in the long run to see if positive emotions can consistently mitigate the effects of distress on physical health.

Another gap is a lack of research on various populations. Much of the existing literature has been based on Western, educated, industrialized, rich and democratic (WEIRD) populations. There is a need for more research, including individuals from different cultural, socioeconomic, and geographical backgrounds to investigate whether the mediating role of positive emotions is similar across different groups (Henrich et al., 2010). For instance, cultural variations in the manifestation and experience of positive emotions may play a role in their buffering of the consequences of distress.

Additionally, although some studies have examined the role of positive emotions in mental health, fewer studies have specifically focused on the role of positive emotions in physical health outcomes in distressed individuals. Although there is good evidence that positive emotions are associated with improved immune function and cardiovascular health, further attention needs to focus on the more complex ways positive emotions may be protective against stress-related diseases such as hypertension, metabolic disorders and chronic pain.

Finally, experimental studies that attempt to make distressed individuals feel good are relatively few. More research with an intervention focus is required to answer the question of whether cultivating positive emotions in those suffering from psychological distress can directly enhance their physical health. Such studies would help to establish whether interventions that focus on positive emotions can be incorporated into clinical practices to improve outcomes for individuals who are suffering from chronic psychological distress.

METHODOLOGY

A. Research Design

This study uses a cross-sectional design**,** collecting data from participants at a single point in time to examine the relationship between psychological distress, positive emotions, and physical health.

B. Participants

The study were included 300 adults (18-65 years of age) from the general population who do not have diagnosed clinical mental health disorders. Participants were recruited via online sources (e.g., social media, survey websites) and offline sources (e.g., paper based questionnaire). A pre-screening survey were ensured eligibility through the screening out of people with major psychological disorders.

The sample uses stratified to ensure sufficient representation of male and female subjects (equal distribution i.e. 50% male, 50% female). Demographic characteristics such as age, socioeconomic status and educational level are also taken into consideration and the sample target the following age groups: 18-30 (30%), 31-45 (30%), 46-60 (30%) and 61-65 (10%). As regards socioeconomic status, participants will be divided into 3 groups according to their socioeconomic status: low (30%), middle (50%) and high (20%). In terms of education level, the sample include those with high school education or less (30%), some college or associate degree (40%) and bachelor's degree or above (30%). These demographic details enable an analysis of possible subgroup differences of the relationships between psychological distress, positive emotions, and physical health.

C. Measures

1. **Psychological Distress**: Psychological distress are assessed using the Depression, Anxiety, and Stress Scale (DASS-21**)** (Lovibond & Lovibond, 1995), which measures depression, anxiety, and stress levels on a 4-point Likert scale.
2. **Positive Emotions**: Positive emotions measured with the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988), which assesses positive and negative affect on a 5-point Likert scale.
3. **Physical Health Outcomes**: Physical health measured through self-reported health surveys assessing general health, chronic conditions, and lifestyle factors (e.g., exercise, smoking, diet).

D. Data Analysis

1. **Mediation Analysis**: To test whether positive emotion mediates the relationship between psychological distress and physical health, regression-based mediation analysis will be conducted using the PROCESS macro for SPSS (Hayes, 2013). This analysis estimate the direct and indirect effects, with bootstrapping used to confirm the significance of the mediation effect.
2. **Control Variables**: Confounding factors such as age, gender, socioeconomic status**,** and lifestyle factors (e.g., exercise, smoking) will be controlled for in the analysis to ensure the mediation effect is not due to these variables.

RESULTS

Table 1

Demographic Characteristics of Participants (N = 300)

Demographic Variable	Category	Percentage (%)
Gender	Male	50%
	Female	50%
Age Group	18-30 years	30%
	31-45 years	30%
	46-60 years	30%
	61-65 years	10%
Socioeconomic Status	Low	30%
	Middle	50%
	High	20%
Education Level	High school or less	30%
	Some college or associate	40%
	Bachelor's degree or higher	30%

Descriptive statistics was first conducted to summarize the demographic characteristics of the sample. The mean age of the 300 participants was 38.5 years (SD = 12.4). The sample number was 50% males (n = 150) and 50% females (n = 150). As far as socioeconomic status was concerned, 30% were evaluated as low, 50% as middle and 20% as high. When it came to education level, 30% held a high school diploma or less, 40% had attended some college or received an associate degree and 30% were high school-educated or above.

Table 2

Descriptive Statistics of Study Variables

Measure	Mean (SD)
Psychological Distress (DASS-21) Score	22.3 (10.1)

Measure	Mean (SD)
Positive Affect (PA) (PANAS)	28.5 (7.9)
Negative Affect (NA) (PANAS)	20.3 (6.4)
Physical Health Rating: Excellent/Very Good	45% rated excellent/very good
Physical Health Rating: Good	35% rated good
Physical Health Rating: Fair/Poor	20% rated fair/poor

The mean score on the DASS-21 (psychological distress) was 22.3 (SD = 10.1) indicating moderate levels of distress in the group. The results of the PANAS showed the mean score of Positive Affect (PA) was 28.5 (SD = 7.9) and the mean score of Negative Affect (NA) was 20.3 (SD = 6.4). Physical health ratings from self-reported health survey showed that 45% of the participants rated their health as "excellent" or "very good", 35% rated their health as "good", and 20% rated their health as "fair" or "poor."

Table 3

Mediation Analysis Results

Variable Pair	Path Coefficient (β)	p-value	95% Confidence Interval
Psychological Distress (X) → Positive Emotions (M)	-0.40	< 0.001	N/A
Positive Emotions (M) → Physical Health (Y)	0.25	< 0.001	N/A
Psychological Distress (X) → Physical Health (Y)	-0.35	< 0.001	N/A
Indirect Effect (Mediation)	0.10	< 0.05	[0.03, 0.17]

Figure 1 visualizes the mediation model with path coefficients:

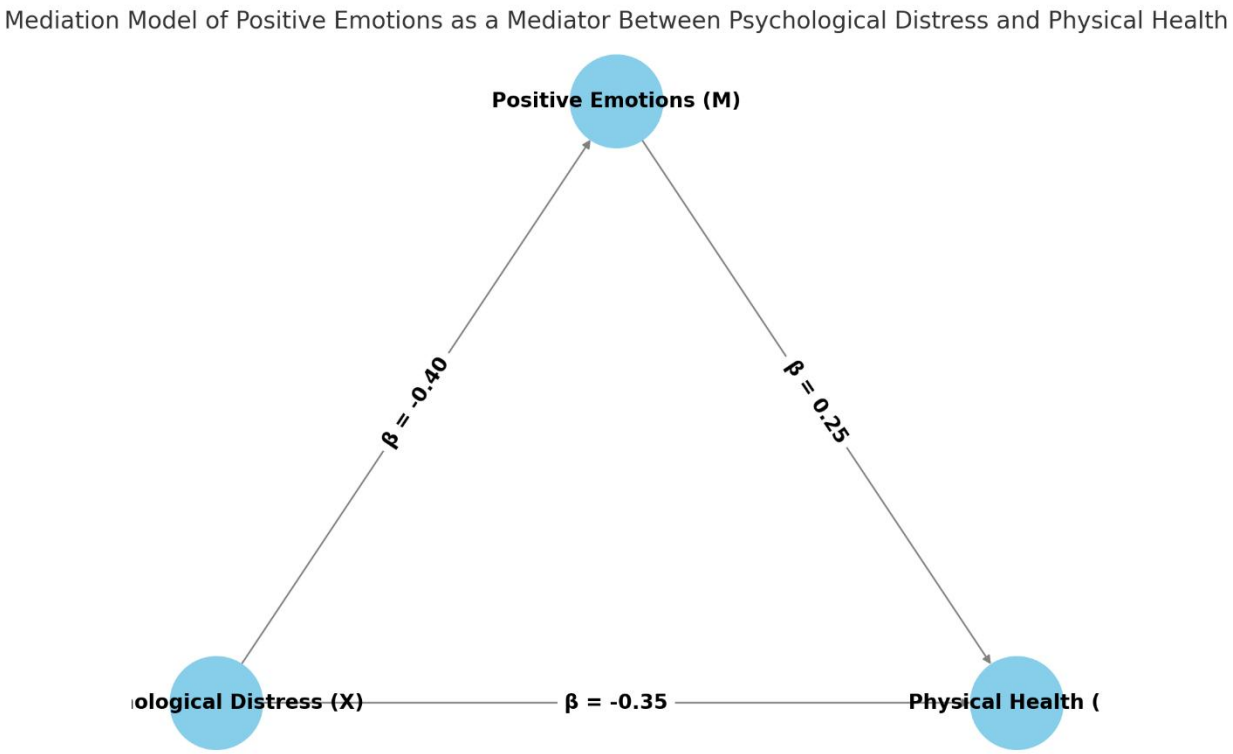

Figure 1: Mediation Model of Positive Emotions as a Mediator Between Psychological Distress and Physical Health.

To test the hypothesis that positive emotions mediate the relationship between psychological distress and physical health, regression-based mediation analysis was conducted using the PROCESS macro (Hayes, 2013). The results of the analysis are summarized in Figure 1 and Table 3

1. **Total Effect**: The total effect of psychological distress on physical health was significant ($\beta = -0.35$, $p < 0.001$), indicating that higher levels of psychological distress were associated with poorer physical health.
2. **Effect of Psychological Distress on Positive Emotions**: Psychological distress was found to significantly reduce positive emotions ($\beta = -0.40$, $p < 0.001$), confirming that higher distress is associated with lower levels of positive emotions.
3. **Effect of Positive Emotions on Physical Health**: Positive emotions had a significant positive effect on physical health ($\beta = 0.25$, $p < 0.001$), indicating that greater positive emotions were associated with better physical health outcomes.
4. **Indirect Effect (Mediation)**: The **indirect effect** of psychological distress on physical health through positive emotions was significant ($\beta = 0.10$, 95% CI = 0.03, 0.17). This result indicates that positive emotions partially mediate the relationship between psychological distress and physical health, supporting the hypothesis.

Moderation by Demographics

A supplementary analysis was performed to test whether demographic variables (age, gender, socioeconomic status and education level) moderated the effect of psychological distress, positive emotions and physical health. A series of moderated mediation analyses showed a significant moderating effect of gender, with the indirect effect of each being stronger for female compared with male participants (medication pathway: males (median = 14, 95% CI = 0.05, 0.23) and moderated mediation analysis showed that the mediation pathway was stronger for females (0.05, 95% CI = 0.00, 0.10)). This seems to indicate that positive emotions may be a more powerful mediator between distress and health for females than for males.

DISCUSSION

This study contributes to understanding how positive emotions interact with distress and physical well-being. Positive emotions partially mediated the relationship between distress and physical health as conjectured. As in prior studies, those who were experiencing greater distress reported poorer levels of overall health.

The potential mediating relationship offered between positive emotions and the physical effects of psychological distress suggests the potential for the protective function of positive emotional experiences for an individual or group. This would be consistent with the Broaden-and-Build Theory of Positive Emotions. In this study, positive emotional states (e.g., joy, optimism) corresponded with better overall physical health consistent with previous literature that documents how positive emotional experiences positively affect both an individual's immune system, decrease inflammation, and lessen levels of cortisol (Pressman & Cohen, 2005).

New Ways to Help People Cope with Psychological Distress

People that experience high levels of psychological distress are often unable to cope effectively with their stressors. Furthermore, when coping methods with stressors fails to successfully alleviate psychological distress, this has been shown to result in physical effects, including an increase in health-related challenges. Positive emotional experiences can help individuals to expand the types of coping mechanisms they use to deal with psychological distress, increasing their ability to cope effectively with stress.

Individuals experiencing psychological distress may benefit from developing an understanding of what brings about positive emotional experiences. Creating opportunities for individuals to experience positive emotions through participation in group activities or through the use of spirituality may provide the necessary tools for developing effective coping mechanisms. An example of an activity used to achieve this would be positive group therapy, where a group of individuals support each other through the use of positive emotional experiences to promote growth within the individual members of the group.

The findings of this study have several theoretical implications. For example, it supports the utility of the Broaden-and-Build Theory (Fredrickson, 2001) in the process of providing a mechanism for resilient functioning through positive emotions. The Broaden-and-Build Theory posits that positive emotions allow resilient individuals to create and accumulate resources that are beneficial in coping with stress in the future. In doing so, the results of this study contribute to the growing body of research that connects physical health to positive emotional experiences and reinforces the concept of emotional wellness as a critical component of physical well-being.

In addition, the results of the current study support the Affect Regulation Theory (Gross, 2002) that postulates people will use emotional regulation strategies to help balance and improve emotional health and therefore increase their overall quality of life. The ability to have a positive emotional experience and to regulate positive emotions, despite the presence of psychological distress appears to support the fact that people will generally maintain better physical health than those who suffer from high levels of psychological distress. Therefore, promoting positive emotional experiences and effective emotional regulation will enhance well-being and provide important benefits to the health of individuals.

The research findings can be applied to develop methods for improving both mental and physical well-being. The findings provide a unique opportunity for the development of interventions designed to facilitate increased experiences of positive emotions as well as decrease the negative health consequences associated with psychological distress. Cognitive-behavioral therapy (CBT) and mindfulness-based interventions that provide a focus on positive emotional experiences would be beneficial in assisting individuals who are experiencing high levels of chronic stress or mild psychological distress to feel better.

Positive Psychology Interventions (PPIs) can be implemented into existing Public Health Campaigns to facilitate the development of positive emotional states such as Gratitude, Optimism and Social Connection among the target population. Evidence suggests that increasing a person's emotion and enhancing social connections through the implementation of PPIs may lead to improvements in a person's overall emotional state and ultimately assist with the prevention of negative health effects associated with high levels of Stress; for example, through Gratitude Journaling, Mindfulness Meditation, and Positive Affirmations. Through the implementation of these types of methods, a person may feel more equipped to handle the challenges associated with stress and result in a reduction of the potential Negative Health Effects experienced physically by that individual. Furthermore, the current findings demonstrate that it is essential that the emotional component (positive) must be addressed when treating a Physical Health Concern. Psychological interventions that increase positive emotions among individuals experiencing chronic physical health conditions, in addition to Medical Interventions, might provide a means by which to promote overall health and well-being, as well as reduce healthcare spending by limiting or preventing worsening of conditions resulting from Stress.

LIMITATIONS

While the results of this study are important, a number of limitations should be noted. First, the cross-sectional design results in limited capacity to make causal inferences. Although we discovered that positive emotions mediated the link between psychological distress and physical health, we cannot unequivocally conclude that positive emotions can directly result in improvements in physical health. Longitudinal studies are required on the question of whether interventions to increase positive emotions can result in long-term improvements in physical health outcomes.

Another limitation is the use of self-reported measures of distress, emotions and health. While the use of established and validated scales such as the DASS-21 and PANAS is a strength, data from self-reports are subject to biases such as social desirability or memory recall. Future research may also include objective measures of health (e.g., biomarkers, e.g., cortisol levels, biological markers of inflammation, clinical assessment) to offer a more comprehensive perspective of the link between emotions and distress and one's physical health.

Moreover, although this study looked at a general adult population, the findings may not be completely generalizable to the general clinical population and/or populations with more severe mental health issues. Future research should examine the question of whether the mediating effect of positive emotions holds true for people who have clinical diagnoses such as depression, anxiety disorders or chronic illness.

Finally, while the study controlled for important demographic factors such as age, gender, and socioeconomic status, there are other variables that were not measured, such as personality characteristics or social support, that may have contributed to the study results. Future studies may want to examine a wider variety of possible moderators and mediators to better understand the complex relationship between psychological distress, emotions and physical health.

FUTURE RESEARCH

Another area of study for the future is the longitudinal effects of positive emotions on psychological as well as physical health. This would give a better picture of whether it is possible to generate positive emotions, which can lead to sustainable health over time. Additionally, experimental work could also be done manipulating positive emotion (e.g., through interventions) that is needed to establish causal research between emotional regulation and improved physical health outcomes.

In addition, further research is required to examine the role of cultural and individual differences in the link between distress, positive emotions and health. For example, cultural factors might influence the way people feel and express positive emotions, and this might influence their ability to buffer against the effects of distress. Research with varied populations would help identify if the findings are consistent across other cultures.

Finally, research must take into account the role of social support and social networks in moderating the link between distress, emotions and physical health. Since social connection has been shown to have an impact on both emotional and physical well-being, it is likely that social support may have a significant role in mediating the effects of psychological distress on health through the effects of positive emotions.

CONCLUSION

The study's findings provide compelling support for the mediating role of positive affective states on the association between distress and physical health. The results indicate that by promoting positive affective states, we can potentially mitigate some of the detrimental impacts of distress on physical health. Future research should investigate the relationships between distress, affective states and health to identify more effective methods for enhancing people's mental and physical well-being.

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