

## Factors Influencing The Usage of Stress Relief Applications: From The Psychological Perspective

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**Abstract:** Stress remains one of the most difficult challenges in responding to various situations. It elicits negative thoughts and feelings in the person. Counseling, training, exercise, and other methods effectively reduce stress. However, with the advancement of technology, different approaches to dealing with it have emerged. One of the types of digital health applications was stress relief applications. This application was starting to become famous as an alternative to help individuals manage their stress levels. Numerous stress-management or stress-relief applications are available for smartphones and tablets. These applications include a variety of stress-reduction techniques, including meditation, mindfulness breathing, cognitive behavioral therapy, and relaxation techniques. This review paper explores the psychological factors influencing the usage of stress relief applications. In this review paper, researchers focused on perceived stress, motivation for self-care, and cognitive engagement. Understanding these psychological factors can help the individual experiencing high stress levels to utilize the stress relief application. Besides, for the application developers, it gives the idea to create compelling digital tools that cater to users' specific needs and preferences, ultimately promoting better stress management and overall well-being.

**Keywords:** *Stress-Relief Application, Psychological Factors, Perceived Stress, Motivation for Self-Care, Cognitive Engagement and Review Paper*

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### 1. Introduction

It is a common issue, and it is physical stress, which can hurt their academic or work performance as well as their mental health. Various research is covered on experience with physical stress (Albdour, Hong, & Jenuwine, 2024; Paler, Claret, Poblete, Alarde, & Mamauag, 2019). In 2018, Wołowska and Górska recognized that primary school students often experience headaches and stomach discomfort as physical manifestations of stress. The situation is the same as that of college students, who also experience the physical symptoms of stress reaction (Paler et al., 2019).

As the era moves forward, there are a lot of alternatives to help individuals who are experiencing stress to minimize the impact of stress. One of the alternatives is the stress-relief applications. Stress relief applications can be defined as software programs or smartphone applications with the function of helping people manage and minimize stress levels (Shamsi & Chaube, 2024). In some of the applications, it is designated with psychological principles and practices that may help users manage their stress situation. For instance, the Calm Sense application has several elements such as meditation, breathing exercises, and personalized activities to ensure the user can cope with their stress (Shamsi & Chaube, 2024).

Interestingly, some related applications like Calm Sense have specific groups, such as healthcare workers or obese people. The functions of the applications vary with occupational stress (Alkhalwaldeh, Mukhtar, Anshasi, Amer, & Soh, 2020) and managing weight loss, which concurrently manages stress as well (Gurgevich & Nicolai, 2014).

### 2. Literature Review

Several perspectives might be reviewed to describe the factors affecting the usage of stress relief applications. For instance, the environmental and the social influence factors. In this study, the researcher reviews the factors based on contributors of psychological factors. As this is a review paper, it is essential to have focus and details about the topic to be discussed. Psychological factors, including perceived stress, motivation for self-care, and cognitive engagement, were discussed and explained in detail. However, these factors might have

positive and negative impacts on the usage based on the application features, user engagement, and the individual perspective.

**Psychological factors:** significantly influence the use of stress relief or mental health applications, as they directly affect users' motivation, attitudes, and propensity to engage with such digital tools. Several psychological factors influence the application of stress relief. These factors include perceived stress, motivation for care, and cognitive engagement. Indirectly, the factors were interrelated with the individual well-being and their applications' effectiveness to suit their condition. Understanding these factors may help application developers create practical digital applications that cater to the users' specializations and preferences. The following is a discussion on elements of psychological factors: perceived stress, motivation for care, and cognitive engagement.

**Perceived stress:** refers to the subjective experience of stress that arises from an individual's appraisal of environmental threats to their well-being. It encompasses emotional, psychological, and physiological responses to perceived challenges, varying significantly among individuals based on their unique contexts and experiences. Commonly perceived stress is triggered by the instability of mental and physical health, which includes emotional stress (Balieva et al., 2022; Chan et al., 2023), chronic mental health conditions (Pop-Jordanova et al., 2013), and environmental factors (Lehman et al., 2012). One of the evaluations to check on the perceived stress level was using the Perceived Stress Scale (PSS) (Yılmaz Koğar & Koğar, 2024). The evaluation of PSS includes terms of individual prediction, control, and whether there is an overload feeling in their daily routine.

The utilization of stress relief applications is considerably affected by perceived stress, as these digital solutions gain recognition for their stress management capabilities. Several elements, such as the precision of stress quantification, individual personality characteristics, and the application's user interface, play crucial roles in determining the efficacy and user interaction with these tools.

A recent study commonly interrelated perceived stress with the use of stress relief applications, also known as mental health applications. (Nogueira-Leite et al., 2024) Study findings perceived stress significantly positively towards using digital mental health applications or self-relief applications among academicians in Porto. Their study found that the more individuals perceived stress or experienced high stress levels, the more intention they had to use the stress relief applications.

In contrast to the findings of Jaworski et al. (2023), the research indicates that although mental health issues are common among veterans in the United States, the utilization of mental health self-management applications remains notably low. Therefore, Jaworski et al. (2023) suggested exploring the factors influencing the use of stress relief applications with indicators such as barriers to access and awareness of the application. In addition, this study supported the study by Hoffman et al. (2019), which emphasized the need for training to use the application among healthcare providers as a tool to help patient care.

Much research has demonstrated that regular utilization of these applications can result in notable decreases in perceived stress, anxiety, and even depressive symptoms. Applications offering guided meditation, breathing techniques, or mood monitoring typically assist users in becoming more cognisant of their stress levels and managing them more effectively (Alhasani, Oyebode, Baghaei, Mulchandani, & Orji, 2022; Apolinário, Fritsche, Breil, Drüge & Hennemann, 2019; Kashyap, Liddell, Keegan, Thomson & Nickerson, 2020). Research indicates that applications designed for stress alleviation can positively influence psychological aspects associated with reducing stress levels.

Based on studies that have been done show that perceived stress appears to be a significant factor influencing the utilization of stress relief applications; the relationship is not straightforward as individuals seek methods to mitigate their symptoms. Additional elements such as knowledge, accessibility, and healthcare provider involvement also play crucial roles in these digital tools' uptake and continued use. To enhance the adoption of self-help applications, it is imperative to address these multidimensional aspects, ensuring that the applications are not only productive in stress management but also readily accessible and well-integrated into healthcare protocols (Hoffman et al., 2019; Jaworski et al., 2023; Linardon et al., 2024; Nogueira-Leite et al., 2024).

**Motivation for Self-Care:** Another psychological element that plays a crucial role in self-care motivation. A study by Holtz et al. (2023) recently showed that young adults who use stress relief applications based on their effort and features managed to reduce stress more than physical meetings with mental health care professionals. Their studies show that the impact of their motivation for self-care was huge on individual stress level management. Other than that, a study by Apolinário-Hagen et al. (2019) results in positive attitudes toward digital health applications such as stress relief applications used for stress management. They are significant usefulness of acceptance, suggesting that positive attitudes may predict the acceptance of stress management applications comparably to more intricate outcome beliefs (Apolinário-Hagen et al., 2019). The behavioral changes by motivating users to embrace stress-alleviating practices. Functionalities like alerts, achievement monitoring, and tailored guidance assist users in incorporating stress management techniques into their everyday lives. With consistent use, this can result in long-term enhancements in stress handling and general wellness (Bakker, Kazantzis, Rickwood, & Rickard, 2016).

Moreover, the attitude of individuals impacts their motivation for self-care. A study by (Kamaruzaman, Fikry, & Hussein, 2023) Indicated that attitude significantly influenced the intention to use mobile health applications as one of the significant aspects is the attitude towards using mobile health applications such as stress relief applications.

However, prior research has also shown contradictory results. Lau et al. (2020) described that there is a gap between users' perceived usefulness and the lack of scientific validation for numerous applications. Their research highlights a possible disconnect between consumer behavior and evidence-based practice. The motivation for self-care influencing the use of stress relief applications includes the perceived effectiveness and usefulness of the application and positive views of digital applications as a stress coping strategy. There is limited scientific evidence supporting the efficacy of many aspects. Such applications highlight the need for more rigorous research and possibly improved consumer guidance in selecting evidence-based options (Apolinário-Hagen et al. (2019); Holtz et al. (2023); Lau et al. (2020)

**Cognitive engagement.** Another element of psychological factors is cognitive engagement toward stress relief applications. Cognitive engagement significantly impacts the use of stress relief applications. The effect of user interaction and the benefits derived from these digital tools are undeniable. The utilization of cognitive-behavioral therapy (CBT) principles in mobile health applications has demonstrated enhancement in mental health outcomes, especially in alleviating anxiety and stress. This relationship is influenced by factors including user characteristics, emotional regulation strategies, and psychological awareness. Cognitive-behavioral therapy was introduced by Aaron T. Beck in the 1960s, focusing on mental health. CBT was developed to help individuals identify and change negative patterns of thought and behavior that influence stress emotion. The function of CBT was expanding significantly to treat individuals with mental health issues, such as depression, anxiety, and stress.

There is a study that supports the cognitive-behavioral mental health application revealed that increased engagement, especially among younger users exhibiting more severe symptoms, resulted in enhanced mental health outcomes. This indicates that cognitive engagement is essential for alleviating symptoms, particularly in digital interventions like stress relief applications aimed at young adults Danilo, Moggia., Wolfgang, Lutz., Nikolaos, Kazantzis., Brian, S., Schwartz., David, Bakker (2023). A randomized controlled trial indicated that a smartphone-based CBT application significantly alleviated stress and anxiety in the workplace, underscoring the significance of user engagement in attaining these results (Hwang et al., 2022).

Cognitive emotion regulation (ER) strategies, including cognitive reappraisal, are crucial for stress management. These strategies depend on cognitive control systems that may be compromised by acute stress, thereby diminishing the effectiveness of stress relief interventions. Successful emotion regulation can bolster resilience to stress, indicating that cognitive involvement in these strategies is essential for effective stress management (Langer, Jentsch & Wolf, 2023). This indicator reflects the study by Kosasih et al. 2022 that psychological mindedness, or the ability to reflect on psychological processes, mediates the relationship between app engagement and anxiety reduction. Users who are more psychologically minded tend to engage more deeply with CBT-based activities, leading to better mental health outcomes.

There are also cognitive resilience interventions that reduce anxiety, and they may also decrease anxiety-driven behaviors, such as political engagement. This trade-off highlights the complex interplay between cognitive engagement, stress relief, and broader behavioral outcomes. (Hwang et al., 2022). Thus, cognitive engagement is a critical factor in the success of stress relief applications, influencing symptom reduction, emotional regulation, and overall mental health improvements. However, the relationship between cognitive engagement and behavioral outcomes can be complex, as seen in the potential reduction of anxiety-driven activities. This complexity underscores the need for personalized and adaptive digital interventions to maximize benefits across diverse user profiles.

### 3. Conclusion and Recommendations

There are several ways to mitigate stress, either by using pharmacological or non-pharmacological means. Relying on pharmacological means (that is, medication) will provide a long-term effect on individuals with stress issues. Thus, non-pharmacological means such as the use of stress relief applications are believed to be the best option to monitor and reduce stress levels among app users, with fewer or no long-term side effects among mental health patients. Instead of that, this paper aims to review factors influencing stress relief application usage. Several factors regarding using stress relief applications have been highlighted, namely psychological factors (such as attitude, stress reduction, and behavioral changes).

Noting that this paper provides reviews of factors influencing the usage of stress relief applications, it will be interesting for future researchers to conduct empirical studies about the main factors affecting the intention and adoption of stress relief applications.

Besides, this paper only reviews the main factors affecting the usage of stress relief applications, such as psychological factors. Other factors such as technology adoption level, social factors and environmental factors, security and privacy of applications data (Oyebode and Alqahtani, 2020), and applications price and promotion factors (Melumad and Pham, 2020) may be of interest to be focused on for future researcher.

### 4. Implications for practitioners and researchers

This review paper enables individuals with stress issues to get an overview of the importance of installing simple yet low-cost interventions to monitor and reduce their stress levels (that is, by using stress relief applications) (Wasil et al., 2020). It is undeniable that cognitive engagement also plays a role in using stress relief applications (Danilo et al., 2023; Hwang et al., 2022). Using stress relief applications with an implementation of cognitive behavioral therapy may help the individual minimize and manage their stress level.

Notify that stress management programs in stress relief applications may reduce the organization's cost and enhance health. Thus, this review paper will provide hints and guide application designers in designing stress relief applications. The application designer will be able to understand the types of personalization features that are in dire need of the stress relief application user. Knowing the most sought-after personalization features will enable application designers to anticipate user needs and tailor intervention features to meet those needs. For example, a specific meditation session can be recommended based on user heart rate variability over time and accumulated stress levels, as it can be detected based on sensor data (Alhasani, 2020).

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