



Article

Age and Burnout: The Mediating Role of Emotion-Regulation Strategies

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Abstract: In the context of an aging workforce, this study explores the interaction between age, burnout, and emotion-regulation strategies (ERS). Despite recognized challenges in managing age diversity and employee well-being, the direct impact of age on burnout and the mediating role of ERS remain unexplored. Analyzing data from 604 Portuguese workers (aged 18–65), this study utilizes a mediation model to investigate if age is directly related to the main problems that affect the workforce presently, focusing specifically on burnout and the role that emotion-regulation abilities (cognitive reappraisal and expressive suppression) have in controlling the burnout effects (measured by emotional exhaustion and disengagement). The findings indicate that age does not have a straightforward linear relationship with burnout or ERS choice. Although age alone does not significantly influence burnout outcomes, ERS markedly impacts these outcomes, suggesting that factors beyond age predominantly drive ERS selection and effectiveness in managing burnout. This study emphasizes the critical role of ERS in influencing burnout, suggesting the importance of equipping workers with effective emotion-regulation skills to mitigate burnout risks. Further research is warranted to disentangle the complex interrelations among age, burnout, and ERS in organizational contexts.

Keywords: emotion-regulation strategies; burnout; age; aging in workplace; workforce; mediation analysis



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1. Introduction

The European aging workforce is an extensively acknowledged phenomenon, with many European countries having a considerable amount of older people within the workforce. This progression is expected to continue to increase due to decreasing birth rates and prolonged life expectancy (Raymer et al. 2017). As a result, there will be a shift from a relatively young workforce to one that is relatively old (European Commission 2021), which means it is necessary to investigate how the various work factors differently influence age groups (Humboldt et al. 2022).

Beyond that, researchers have demonstrated that the trend toward an aging workforce has a significant impact on work efficiency and other factors, creating challenges for organizations (Johnson et al. 2017; Miguel et al. 2024). From a human resource management standpoint, the challenge becomes to address the issues that impact each of these aging groups differently, such as burnout caused by excessive workload and the inability to effectively manage emotions in a stressful work environment (Miguel et al. 2024).

Nevertheless, it has become important to understand how aging-related disparities make the labor force prone to such things as burnout, how emotional-strategy abilities make someone slightly affected by this problem, and if there is any correlation with age (Johnson et al. 2017).

Comprehensively, today's society understands the vulnerabilities of different aging groups to workplace stressors and whether age is the key variable to be considered or

if others, such as emotional-strategy techniques, are also important. Furthermore, it is important to acknowledge the multifaceted influence of the aging process, which extends beyond the sphere of individual experience and has significant effects on the workplace. This is evident in the escalating expenses associated with lost performance for Portuguese companies as a result of stress and psychological health problems leading to both absenteeism and workplace presenteeism. Data from the [Portuguese Psychologists' Order \(2023\)](#) indicate that these costs have increased dramatically, from EUR 3.2 billion in 2020 to EUR 5.3 billion in 2022.

Therefore, this study targets a significant gap in the current research by investigating the effectiveness of emotion-regulation strategies (ERS) in mitigating workplace burnout and determining whether their impact varies across different age groups. Specifically, we aim to delineate which ERS are most effective at reducing burnout rates and explore how age may modify the outcomes of these strategies. This research not only seeks to quantify the efficacy of these strategies but also to understand the dynamics of age-related differences in emotional regulation within organizational settings.

2. Literature Review

2.1. Burnout

Burnout is defined as a state of chronic psychological and physical discomfort developed by excessive and prolonged stress ([Freudenberger 1974](#); [Maslach et al. 2001](#); [Moss 2021](#); [Somville et al. 2022](#); [World Health Organization 2019](#)). It can be characterized as a syndrome in which emotional exhaustion takes place, detachment sets in, and there may be a decline in individual and occupational achievements ([Carod-Artal and Vázquez-Cabrera 2013](#); [Cordes and Dougherty 1993](#)). Therefore, high levels of personal stress or working in high-stress environments can often lead to burnout ([Moss 2021](#)).

Two dimensions of work burnout have been identified: emotional exhaustion and disengagement ([Demerouti et al. 2003](#); [Demerouti and Bakker 2008](#); [Sinval et al. 2019](#)). The emotional-exhaustion aspect is defined by [Sinval et al. \(2019\)](#) as a reduction of emotional energy. This energy scarcity can result in growing internal frustration and stress as employees feel they can no longer maintain their previous level of work production. The disengagement aspect refers to absenteeism, lack of motivation, detachment from work tasks and goals, and negative attitudes toward the job ([Demerouti and Bakker 2008](#)).

According to recent research, burnout syndrome is the most popularly studied phenomenon of the 21st century. It is primarily linked to careers that involve frequent interpersonal interaction, empathy, and potentially risky working conditions ([Kovács et al. 2023](#)). The workplace, a scene that affects nearly everyone's daily life, can have a detrimental impact on an employee's physical and mental health if the environment and relationships within the workplace are negative ([Akintayo and Babajide 2011](#); [Sabei et al. 2020](#); [Sabei et al. 2022](#)). This can lead to a frustrating and stressful work environment that can ultimately result in burnout for employees ([Maslach et al. 2001](#)).

2.2. Emotion-Regulation Strategies (ERS)

Emotions are the outcome of the progression of affective incidents ([Eisenberg 2000](#); [Kozubal et al. 2023](#)), a response to various stimuli, including events, thoughts, and physiological changes. When considering the control of these emotions, some research defines it as individuals adjusting the strength or aspects of their emotions to align with their intended outcomes ([Gross 1999](#); [Gross and Thompson 2007](#); [Scheibe and Moghimi 2021](#)). It requires using specific techniques, known as regulation strategies, to assist individuals in controlling and modifying their emotions, as well as shaping their future attitudes toward stressful situations ([Jazaieri et al. 2015](#)). These strategies can be arranged into two categories, adaptive and maladaptive, which aim to reinforce positive emotions and decrease negative ones, leading to greater emotional balance and psychological well-being ([Gross and John 2003](#); [Johnson et al. 2017](#); [Lawrence et al. 2011](#); [Lazarus and Alfert 1964](#)). Maladaptive techniques, such as expressive suppression, include efforts to control emotional expression ([Gross 1998](#);

Mann et al. 2024; Kozubal et al. 2023). This strategy has been associated with negative outcomes and has been considered an ineffective method of emotion regulation (Gross 1998; Kozubal et al. 2023). On the other hand, cognitive reappraisal has been found to be an efficient adaptive strategy with positive impacts (Mann et al. 2024; Kozubal et al. 2023; Troy et al. 2018). It is a fundamental aspect of emotional intelligence, which is important for interpersonal relationships, decision-making, and global mental health.

According to Basch and Fisher (2000), workers often experience more intense negative emotions than positive ones. Thus, effectively managing negative emotions throughout the day is crucial to avoiding negative outcomes (Lawrence et al. 2011), such as burnout. As a result, internal strategies for emotional management are essential for coping with workplace stress and frustration (Demerouti et al. 2001; Donoso et al. 2015).

Additionally, the importance of emotion regulation for health and work efficiency has been emphasized in studies (Brotheridge and Grandey 2002; Grandey et al. 2005; Gross and John 2003; Lam et al. 2021; Mikolajczak et al. 2009). Findings show that cognitive reappraisal, which is implemented before a full emotional response is formed, enables individuals to modify their emotional experience. Moreover, studies indicate that the practice of reappraisal can be a helpful technique in controlling adverse emotions and reducing their negative effects, therefore promoting better health outcomes (Gross 2002; John and Gross 2007; Scheibe and Moghimi 2021). However, detrimental effects of expressive suppression have also been found, not only leading to increased stress levels but also playing a significant role in burnout, as it consumes mental and emotional energy (Brotheridge and Grandey 2002; Brotheridge and Lee 2002; Grandey 2003; Grandey 2015; Pugliesi 1999).

Furthermore, Lawrence et al. (2011) found in their studies that the suppression strategy involves stopping emotions, which affects an individual's ability to attend to their emotions, making it increasingly difficult to comprehend feelings and leading to decreased awareness, clarity, and decreased effort to repair emotional regulation. Moreover, a negative correlation was found between the efficient regulation of negative emotions and the suppression strategy, whereas a positive correlation was found with the reappraisal strategy (Lawrence et al. 2011).

2.3. Age and Burnout

Several factors, including age, can influence an individual's risk of developing the syndrome of burnout. According to Rožman et al. (2019), important distinctions exist in the levels of work-related stress and burnout symptoms among younger and older workers.

According to Adams et al. (2013) and Hertel et al. (2013), older workers encounter fewer difficulties regarding job-related stress. They explain such statements by arguing that as employees go older, they embrace and gather a large amount of knowledge and work experience, acquiring more discernment and better perception of different situations, which are resources that can be utilized to prevent psychological disturbances (Adams et al. 2013).

Additionally, Adams et al. (2013) link the buildup of knowledge and work experience over time to the fact that older workers often hold high-status positions that provide them with control over job duties, work schedule versatility, and availability of support from the work environment. As a result, these factors can create a less stressful work environment for high-level employees, reducing their likelihood of experiencing burnout and other psychological disturbances (Adams et al. 2013). Moreover, Hertel et al. (2013) and Rožman et al. (2019) also found that the group of older employees had a lower average of occupational stress and burnout symptoms compared to younger employees.

Yet, other studies have challenged the previous understanding of the relationship between older workers, work stress, and sickness by presenting a different perspective (Götz et al. 2018; Lindblom et al. 2006; Wang and Shultz 2010). These studies suggest that the ability to deal with stressors might decrease with age; therefore, employees become more vulnerable to work stress because of the aging process (Götz et al. 2018; Wang and Shultz 2010). Additionally, Götz et al. (2018) postulate that as the impact of a stressful work environment may vary based on the stage of life it occurs in, older employees may be more

vulnerable to job-related stress due to this aging process, which brings about changes in coping abilities, resources, and the physiological system.

In their study, [Götz et al. \(2018\)](#) showed that work stress is correlated with higher results of sickness absence, that the impact of sickness is slightly higher among the older group of employees (pp. 58–65), and that work stress showed higher values in the middle-aged categories (pp. 30–57). Therefore, there is a positive association between sickness and age, and work stressors can be a crucial variable ([Götz et al. 2018](#)) once the correlation between stress and sickness absences is more evident for older workers ([Rožman et al. 2019](#)). Also, work-related stress associated with an intense and constant level of stress is known as burnout syndrome ([Yavas et al. 2013](#)). In summary, associations were generally more significant among older workers in [Götz et al. \(2018\)](#) study.

Other studies have found mixed results, showing that age may follow a non-linear correlation with burnout ([Marchand et al. 2018](#)).

2.4. Age and ERS

As previously stated, the ability to regulate emotions is linked to an individual's competence in managing their own and others' emotions through the acquisition of expertise, skills, and enhanced abilities through practical experience ([Brasseur et al. 2013](#); [Scheibe and Moghimi 2021](#)).

Some evidence has been found in support of the idea that aging and emotional management have a positive relationship ([Scheibe et al. 2016](#)). Additionally, research has indicated that emotional regulation skills increase with age, providing older workers with a prospective advantage in terms of employee well-being in organizations compared to younger workers ([Cappelli and Novelli 2010](#); [Scheibe and Moghimi 2021](#)).

As individuals grow older and their lifespan becomes constrained, their career aspirations tend to change from acquiring job-related knowledge and information to prioritizing emotions and significance, according to the findings of the Socioemotional Selectivity Theory (SST) ([Carstensen 2006](#); [Johnson et al. 2017](#)). This leads to the suggestion that older workers may use tactics to preserve other resources to regulate their emotions due to the shift in priorities as they age, and time becomes more limited ([Johnson et al. 2017](#); [Scheibe and Zacher 2013](#)). Thus, there is empirical evidence showing the existence of a connection between the differences in age and the regulation of emotions ([Kunzmann et al. 2022](#)).

Past studies suggest that age differences in the ability to regulate emotions may vary depending on the specific emotion-regulation strategy selected by the worker ([Kunzmann et al. 2022](#)). Nevertheless, as individuals age and develop their emotional competencies throughout their lifespan, they tend to opt for more impactful strategies that are based on their recently acquired knowledge and developed skills, becoming more efficacious in the process ([Charles and Carstensen 2007](#); [Gross and Urry 2010](#); [Scheibe and Moghimi 2021](#)). Thus, age can play an important role in determining the type of emotion-regulation strategies that individuals tend to choose as they gain more work experience.

2.5. Age, Burnout, and ERS

The relationship between age and burnout may be influenced by emotion-regulation strategies. Those who use adaptive techniques like cognitive reappraisal may have a reduced risk of burnout, while those who use maladaptive methods such as expressive suppression may be more inclined to it ([Blanchard-Fields et al. 2007](#); [Charles 2010](#); [Morgan and Scheibe 2014](#); [Scheibe and Moghimi 2021](#)). Older workers may be more skilled in using emotion-regulation strategies effectively, reducing their possibility of burnout. This suggests that age may impact an individual's ability to use adaptive strategies, potentially leading to improved emotional management and reduced burnout risk ([Lawrence et al. 2011](#)).

As mentioned before, research has shown that burnout is a common issue in the workplace, characterized by feelings of exhaustion, disengagement ([Sinval et al. 2019](#)), and a decrease in professional efficacy ([Maslach et al. 2001](#)). It is often caused by long-term stress and a lack of successful coping skills ([Rožman et al. 2019](#)). Emotion-regulation

strategies can play an important task in avoiding burnout; however, it is important to note that not all strategies are equally efficient. For example, expression suppression, which includes hiding or suppressing emotions, has been shown to be a maladaptive strategy that can contribute to burnout (Grandey et al. 2005).

The improvement of emotion-regulation capability in individuals is attributed to their enhanced ability to select more productive emotion-regulation strategies, such as cognitive reappraisal. This shift is achieved through a decrease in the utilization of maladaptive techniques, such as expressive suppression (Scheibe and Moghimi 2021). Finally, this leads to an improvement in quality of life (Scheibe et al. 2016) in both the short and long term, with a decreased likelihood of burnout syndrome occurrence (Dahling and Perez 2010; Hertel et al. 2015).

Overall, the relationship between age, burnout, and emotion-regulation strategies is complex, with age playing a role in the type of regulation strategies utilized by workers. However, adaptive strategies, like cognitive reappraisal, can be effective in preventing burnout and promoting well-being (Scheibe and Moghimi 2021). Using these strategies, employees can better manage their emotions during stressful situations and improve their overall psychological outcomes.

We anticipate that the relationship between age, emotion-regulation strategies, and positive work outcomes secures great significance in modern society and that emotion-regulation competencies may serve as a mediating variable between age and burnout. We expect that there will be a meaningful correlation between age and the implementation of diverse emotion-regulation strategies by individuals and that these strategies will, in turn, be related to burnout. This proposes that the regulation of emotions may function as a mediating mechanism between age and burnout.

3. The Present Study

While extensive research has been conducted on the aging workforce and its impact on productivity and workplace dynamics, as demonstrated by studies such as Johnson et al. (2017) and Scheibe and Moghimi (2021), significant gaps remain, particularly concerning the interaction of age with ERS and their effects on burnout. Prior studies have often restricted their focus to specific sectors or have not thoroughly examined how different ERSs, like cognitive reappraisal and expressive suppression, influence burnout's key dimensions, disengagement, and emotional exhaustion across a wide age range. Furthermore, there is a notable scarcity of detailed investigations into how these strategies differently affect older versus younger workers within diverse occupational settings. This study seeks to address these lacunae by exploring the detailed roles that age and ERS play in influencing workplace burnout. We aim to provide comprehensive insights into how age-related differences in the use of ERS can inform tailored interventions to effectively mitigate burnout across age groups within organizations. Therefore, the following hypotheses guided our investigation:

H1. *Age is negatively related to burnout.*

H2a. *Aging increases the use of adaptive emotion-regulation strategies.*

H2b. *Aging decreases the use of maladaptive emotion-regulation strategies.*

H3a. *Cognitive reappraisal is negatively related to burnout.*

H3b. *Expressive suppression is negatively related to burnout.*

H4. *Emotion-regulation strategies mediate the relationship between age and burnout.*

Figure 1 illustrates the model and the hypotheses that were analyzed in this study:

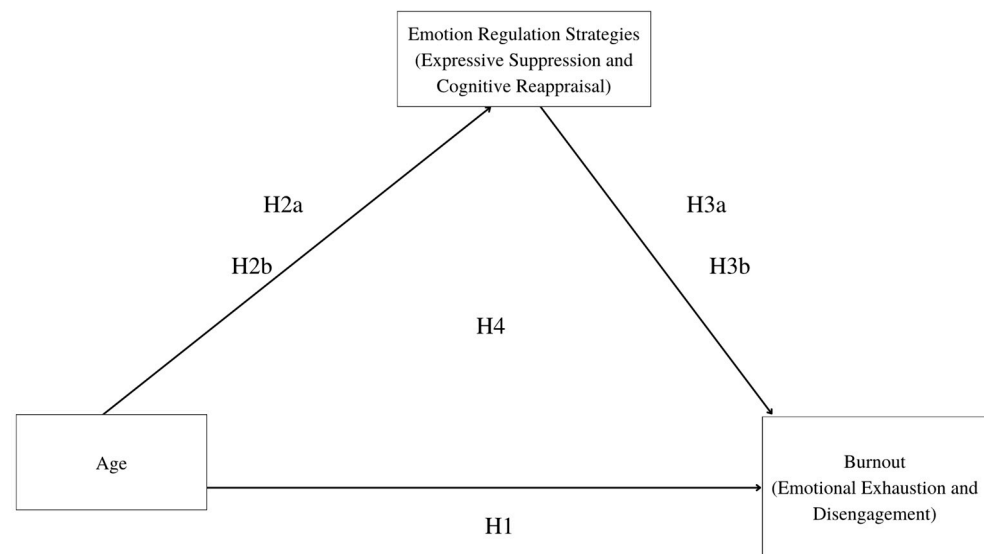


Figure 1. Mediation model and hypotheses of the present study.

Regarding Hypothesis 1, research suggests that as individuals age, they tend to develop more refined emotional management skills, which are inversely related to the occurrence of burnout syndrome and stress (Scheibe et al. 2016; Cappelli and Novelli 2010; Scheibe and Moghimi 2021; Carstensen 2006; Johnson et al. 2017). Consequently, our study hypothesized that older individuals would experience lower levels of burnout, specifically in terms of both dimensions, disengagement and emotional exhaustion.

Discussing H2a and H2b, research shows a link between ERS and age, which is assignable to the natural development of emotional skills throughout a person's life. Theories suggest that with age, individuals often adapt their priorities and utilize different resources, leading to the selection of more effective emotion-regulation strategies (Mikkelsen and O'Toole 2022). Specifically, aging tends to change focus toward achieving immediate emotional satisfaction rather than long-term goals (Carstensen 2006; Johnson et al. 2017). This shift typically results in a preference for adaptive emotion-regulation strategies that enhance positive emotions and reduce negative ones (Livingstone and Isaacowitz 2021). Additionally, accumulated life experiences are believed to improve older adults' capability to select and employ the most appropriate emotion-regulation strategies based on their specific situations and available resources (Gross and Urry 2010). Consequently, H2a states that maturing increases the use of adaptive emotion-regulation strategies, while H2b asserts that aging reduces the use of maladaptive strategies.

Moving on to H3a and H3b, these hypotheses focus on how two different ERS relate to burnout, our study's dependent variable. Cognitive reappraisal, an adaptive strategy, occurs early and targets the antecedents of emotional responses. This timely intervention allows it to effectively alter the course of emotions, reducing both the feelings and behaviors associated with negative emotions, as suggested by some studies (Gross and John 2003). In contrast, expressive suppression is considered a maladaptive strategy, which involves stopping emotions as they emerge. This suppression weakens one's ability to process and understand emotions, leading to reduced emotional awareness and greater difficulty in managing emotions, which can contribute to increased stress and burnout (Gross and John 2003).

In addressing H4, we have considered the dynamic nature and evolving effectiveness of emotion-regulation strategies (ERS) across an individual's lifespan. As presented before, research indicates that with age, people are more likely to adopt adaptive strategies such as cognitive reappraisal, which reshapes one's emotional response to stressors, therefore reducing their negative impact. This capability increases due to accumulated life experiences and improved emotional insight. In contrast, the use of maladaptive strategies like expressive suppression, which involves hiding one's emotions and can exacerbate stress, tends to

decrease with age. In contrast, the use of maladaptive strategies like expressive suppression, which involves hiding one's emotions and can intensify stress, tends to decrease with age. Consequently, as age increases, the shift towards more effective emotion regulation contributes to lower levels of burnout. The mediation effect we propose emphasizes the significant role of age-related improvements in emotion regulation, highlighting it as a pivotal factor in mitigating workplace stress and preventing burnout. This hypothesized mediation underscores the transformative impact of developing emotional strategies on improving workplace well-being and reducing the risk of burnout.

By exploring these hypotheses, this research not only seeks to quantify the efficacy of these strategies but also enhances our understanding of the dynamics of age-related differences in emotion regulation and burnout within organizational settings.

4. Materials and Methods

4.1. Participants

Data were collected from a sample of 604 Portuguese workers from various organizations, occupational environments, and job sectors in Portugal, all aged 18 to 65 (average age 39.79, $SD = 10.72$). Initially, 803 participants filled out the questionnaire, of which 604 met the selection criteria and were included in the study analysis. The sample size of 604 workers is robust, exceeding the minimum of 385, which is the recommended sample size considering the present study's target population of 4,571,200 (Pordata 2024), with a 95% confidence interval and a 5% margin of error. The group included 58.9% women and was divided into 142 young (18–30 years), 342 mid-careers (31–49 years), and 120 senior employees (50–65 years).

Most worked in services (43.4%), industry (16.9%), business (14.6%), and agriculture/fisheries (2.8%). Educational levels were high education (44.1%), high school (32.6%), and basic schooling (23.3%). The majority (65.9%) were in the private sector, while 31.8% were in the public sector.

Only 32.1% held high-ranking leadership roles. Regarding quality of life, 58.3% rated it as good, and 28% as average. Health satisfaction was reported as satisfactory by 55.3%, high by 17.7%, and neutral by 19.5%.

4.2. Measures

4.2.1. Sociodemographic Questionnaire

In this study, participants were requested to provide personal data, including their demographic details and professional information, including gender, age, marital status, education level, employment status, contract type, work schedule, occupation, job sector, job title, quality of life, and health satisfaction.

4.2.2. Oldenburg Burnout Inventory (OLBI)

Oldenburg Burnout Inventory (OLBI; Demerouti et al. 2001; Portuguese adaptation from SINVAL et al. 2019) was used to assess burnout and demotivation in individuals. This inventory consists of 16 items rated on a 5-point Likert scale (1 = "Completely disagree"; 5 = "Completely agree"). It includes questions assessing detachment from work, disengagement (e.g., "Lately I have been thinking less about my work and I do tasks almost mechanically"), and feelings of physical and emotional exhaustion (e.g., "There are days when I feel tired even before reaching work"). Moreover, for this study, internal consistency for the current sample was very satisfactory, as demonstrated by a Cronbach's alpha of 0.80 for a general measure of burnout.

4.2.3. Emotion-Regulation Questionnaire (ERQ)

The ERQ was used to assess the emotion-regulation strategies employed by the participants. This 10-item survey on a 5-point Likert scale (1 = "Strongly disagree"; 5 = "Strongly agree") assesses two emotion-regulation strategies: cognitive reappraisal and expressive suppression (Gross and John 2003). Participants responded to items related to altering

their thinking to manage emotions, cognitive reappraisal (e.g., “When I want to feel fewer negative emotions, I tend to change the way I’m thinking about the situation.”) and keeping emotions to themselves, expressive suppression (e.g., “When I am feeling positive emotions, I take care not to express them”). The ERQ demonstrated high reliability with a Cronbach’s alpha of 0.89 for a general measure of emotion-regulation strategy.

4.3. Procedures

4.3.1. Data Collection

The convenience sample was gathered in March and April 2021 by systematically reaching out to active workers across diverse sectors through targeted outreach efforts and employing informal social networks for broader engagement. Participants were required to meet several criteria to participate in the study: (i) be 18 years of age or older, (ii) be currently employed, (iii) have been working for a minimum of six months, and (iv) be a full-time worker. They all had to complete a Google Forms Questionnaire, with strict confidentiality measures in place to protect their privacy. Before the survey, an overview of the research was provided, emphasizing voluntary participation and the right to withdraw at any time without consequences. Informed consent was obtained, honoring the ethical principles outlined in the Portuguese Psychologists Code of Ethics and the Helsinki Declaration for Research. Participants were not compensated for their involvement.

4.3.2. Data Analysis

In our study, we applied a mediation model to explore the causal relationships between emotion-regulation strategies, specifically expressive suppression and cognitive reappraisal, and burnout (measured by emotional exhaustion and disengagement) as the dependent variable of the model, and age as their associated independent variable. We utilized the Statistical Package for Social Sciences Software (SPSS) to perform statistical analysis, in which the 26 version for IOS was used to obtain the descriptive statistics, to characterize the sample, and describe the study variables. Additionally, we conducted a Pearson’s correlation analysis to determine the strength and direction of the relationships among the variables. Our primary goal was to evaluate the assessment of the importance of each indirect impact and meticulously examine the confidence intervals. Furthermore, an investigation was performed to detect any remaining direct impacts of age on dependent variables, namely emotional exhaustion and disengagement, to establish the extent of full or partial mediation. Our approach explored the presence of indirect effects in the causal relationships.

All hypotheses were tested using SPSS’s macro-PROCESS tool, which Hayes developed (Hayes 2013). The PROCESS model 4 permits, through bootstrapping, the construction of a 95% CI to evaluate a simple mediation. The indirect effect of the simple mediation was calculated through the coefficient results of the independent variable in the mediator and the independent variable in the dependent variable through the mediator. The effect will be considered statistically significant if zero is not included between the maximum and minimum limits of the 95% CI established by PROCESS.

5. Results

The analysis of correlations among the study variables, presented in Table 1, provides substantial insights into their interrelationships, complemented by descriptive statistics, including mean values and standard deviations, essential for comprehending the subsequent detailed analysis that follows. In terms of these statistics, it is observed that, excluding the disengagement dimension, most values are closely grouped around their respective means, within a range from 1 to 5. Significantly, cognitive reappraisal is negatively and significantly correlated with one specific dimension of burnout (disengagement). In contrast, expressive suppression is positively and significantly correlated with both dimensions of burnout, as detailed in Table 1. This delineates a distinct differential impact of these emotion-regulation strategies on the aspects of burnout.

Table 1. Means, standard deviations, and correlations between study variables.

Variable	M	SD	1	2	3	4	5
1. Age	39.79	10.72	-				
2. Disengagement	2.71	0.66	0.024	(0.74)			
3. Exhaustion	3.05	0.55	−0.006	0.583 **	(0.64)		
4. Reappraisal	3.40	0.79	−0.053	−0.112 **	0.005	(0.88)	
5. Suppression	3.14	0.86	−0.071	0.143 **	0.118 **	0.614 **	(0.80)

Note. ** $p < 0.01$. Cronbach alphas are shown on the diagonal.

Age, Emotion Regulation, and Burnout: Direct and Indirect Effects

In the analysis presented in Tables 2 and 3, the relationship between age and the dimensions of burnout, exhaustion, and disengagement was explored. Contrary to what might be expected, the results indicated no significant correlation between age and these two dimensions of burnout. This finding suggests that age does not have a notable impact on these aspects of burnout, therefore not supporting Hypothesis 1 (H1).

Table 2. Mediation effect of age on exhaustion through the mediator, suppression.

Variable Relationship	b	SE	t	p	LLCI	ULCI
Relationship Age (X) to Suppression (M)	−0.006	0.003	−1.74	0.083	−0.012	0.001
Relationship Suppression (M) to Exhaustion (Y)	0.075	0.026	2.907	0.004	0.024	0.126
Relationship Age (X) to Exhaustion (Y)	−0.000	0.002	−0.141	0.888	−0.004	0.004
Total Effect of Age (X) on Exhaustion (Y)	−0.000	0.002	−0.141	0.888	−0.004	0.004
Direct Effect of Age (X) on Exhaustion (Y)	0.000	0.002	0.064	0.949	−0.004	0.004
Indirect Effect	−0.000	0.000	-	-	−0.001	0.000

Note: b = Regression coefficient. SE = Standard error. LLCI = Lower CI limit. ULCI = Upper CI limit. The table presents the mediation analysis for the dependent variable (exhaustion), the independent variable (age), and the mediator (suppression).

Table 3. Mediation effect of Age on Disengagement through the mediator, Suppression.

Variable Relation	b	SE	t	p	LLCI	ULCI
Relationship Age (X) to Suppression (M)	−0.006	0.003	−1.736	0.083	−0.012	0.001
Relationship Suppression (M) to Disengagement (Y)	0.111	0.031	3.588	0.000	0.050	0.172
Relationship Age (X) to Disengagement (Y)	0.002	0.003	0.588	0.557	−0.003	0.0006
Total Effect of Age (X) on Disengagement (Y)	0.002	0.003	0.588	0.557	−0.003	0.006
Direct Effect of Age (X) on Disengagement (Y)	0.002	0.003	0.845	0.398	−0.003	0.007
Indirect effect	−0.001	0.000	-	-	−0.002	0.000

Note: b = Regression coefficient. SE = Standard error. LLCI = Lower CI limit. ULCI = Upper CI limit. The table presents the mediation analysis for the dependent variable (disengagement), the independent variable (age), and the mediator (suppression).

Furthermore, the data reveals that age does not significantly influence the use of expressive suppression, a maladaptive emotion-regulation strategy. This implies that the tendency to use this strategy is not age-dependent, therefore not supporting Hypothesis 2 (H2).

However, it is critical to note a slightly positive relationship between expressive suppression and the dimensions of disengagement and exhaustion. This observation aligns with Hypothesis 3 (H3), suggesting a link between emotional regulation strategies and burnout.

Additionally, the study explored the indirect effects, examining whether cognitive reappraisal and expressive suppression mediate the relationship between age and burnout dimensions. The analyses revealed that age did not have an indirect effect on exhaustion through expressive suppression ($b = -0.0004$, $SE = 0.0003$, 95% CI $[-0.0011, 0.0001]$), nor on disengagement through expressive suppression ($b = -0.0006$, $SE = 0.0004$, 95% CI $[-0.0015, 0.0001]$). Consequently, the hypothesis suggesting a mediation effect was not confirmed by the results.

Tables 4 and 5 present the results of the mediation analysis exploring the role of cognitive reappraisal in the relationship between age and the burnout dimensions, exhaustion, and disengagement. The analysis reveals that age does not significantly influence cognitive reappraisal or any dimension of burnout.

Table 4. Mediation effect of age on exhaustion through the mediator, reappraisal.

Variable Relation	b	SE	t	p	LLCI	ULCI
Relationship Age (X) to Reappraisal (M)	−0.004	0.003	−1.294	0.196	−0.009	0.0020
Relationship Reappraisal (M) to Exhaustion (Y)	0.003	0.028	0.108	0.914	−0.052	0.058
Relationship Age (X) to Exhaustion (Y)	−0.000	0.002	−0.141	0.888	−0.004	0.004
Total Effect of Age (X) on Exhaustion (Y)	−0.000	0.002	−0.135	0.893	0.004	0.004
Direct Effect of Age (X) on Exhaustion (Y)	−0.000	0.002	−0.134	0.893	−0.004	0.004
Indirect Effect	0.0000	0.000	-	-	−0.000	0.000

Note: b = Regression coefficient. SE = Standard error. LLCI = Lower CI limit. ULCI = Upper CI limit. The table presents the mediation analysis for the dependent variable (exhaustion), the independent variable (age), and the mediator (cognitive reappraisal).

Table 5. Mediation effect of age on disengagement through the mediator, suppression.

Variable Relation	b	SE	t	p	LLCI	ULCI
Relationship Age (X) to Reappraisal (M)	−0.004	0.003	−1.294	0.194	−0.009	0.002
Relationship Reappraisal (M) to Disengagement (Y)	−0.092	0.034	−2.773	0.007	−0.158	0.026
Relationship Age (X) to Disengagement (Y)	0.002	0.003	0.588	0.557	−0.003	0.006
Total Effect of Age (X) on Disengagement (Y)	0.002	0.003	0.588	0.557	−0.003	0.006
Direct Effect of Age (X) on Disengagement (Y)	0.001	0.003	0.4464	0.655	−0.004	0.006
Indirect Effect	0.000	0.000	-	-	−0.004	0.018

Note: b = Regression coefficient. SE = Standard error. LLCI = Lower CI limit. ULCI = Upper CI limit. The table presents the mediation analysis for the dependent variable (disengagement), the independent variable (age), and the mediator (suppression).

There was partial confirmation of Hypothesis 3 (H3), which hypothesized a significant influence of cognitive reappraisal on disengagement. As detailed in Table 5, a significant relationship was observed between cognitive reappraisal and disengagement. In contrast, Table 4 indicates no significant effect of cognitive reappraisal on exhaustion, suggesting no significant connection between these variables.

Furthermore, Hypothesis 4 (H4) proposed an indirect effect of age on the burnout dimensions, emotional exhaustion, and disengagement mediated through cognitive reappraisal. The mediation analysis produced no significant indirect effects (Emotional Exhaustion: $b = 0.0000$, $SE = 0.0002$, 95% CI [−0.0004, 0.0004]; Disengagement: $b = 0.0004$, $SE = 0.0003$, 95% CI [−0.0037, 0.0181]), as indicated by confidence intervals that include zero. This result implies that the hypothesized mediating role of cognitive reappraisal in the relationship between age and burnout is not substantiated by the results generated.

6. Discussion

The primary objective of this study was to investigate the utilization of emotion-regulation strategies, specifically expressive suppression, and cognitive reappraisal, across different age groups and to assess their influence on the relationship between age and burnout (disengagement and emotional exhaustion). Guided by the theory that emotion regulation skills evolve throughout an individual’s life (Charles and Carstensen 2007; Gross and Urry 2010), this study explored the potential impact of these skills on burnout outcomes as people age. We hypothesized that age would be positively associated with the use of ERS. Moreover, we expected that ERS would mediate the relationship between age and burnout, with cognitive reappraisal potentially reducing burnout and expressive suppression, possibly intensifying it. These hypotheses reflect our anticipation of how different emotion-regulation strategies could influence burnout across varying age groups. Accordingly, the study carefully analyzed this set of hypotheses.

6.1. Findings

In examining Hypothesis 1, our study targeted to investigate the direct negative relationship between age and burnout, building on prior research that has indicated some degree of association between these two variables (Scheibe et al. 2016; Cappelli and Novelli 2010; Scheibe and Moghimi 2021; Carstensen 2006; Johnson et al. 2017). However, the complexity of this relationship necessitates a more detailed analysis. Aligning with findings from Marchand et al. (2018), the limited support for Hypothesis 1 in our study could be due to a potentially non-linear relationship between age and burnout. This suggests that the influence of age on burnout may not manifest in a straightforward linear pattern, as proposed by Marchand et al. (2018). Additionally, the results may have been affected by the presence of confounding variables not accounted for in this study. Such factors could mask the true nature of the age-burnout relationship, indicating a need for further research to clarify these complex interactions. Other factors, such as individual differences, emotional job demands, and social context factors, may play a more influential role in determining burnout levels, suggesting that the correlation between age and burnout is more complex than a simple direct relationship (Rožman et al. 2019; Sinval et al. 2019). Moreover, burnout symptoms can contrast according to different phases of work, different experiences of work-family struggles, and different proficiency of work requirements and demands faced by the individuals (Marchand et al. 2018).

Regarding Hypothesis 2, the study findings diverge from existing literature (Blanchard-Fields et al. 2007; Charles 2010; Morgan and Scheibe 2014), which suggests age influences the adoption and use of emotion-regulation strategies. In contrast to these established studies, our results did not indicate a significant impact of age on the choice or application of these strategies among Portuguese workers. This divergence points to the possibility that age may not be a predominant factor in shaping emotion-regulation strategies. Instead, it appears that other elements such as individual differences, interpersonal dynamics, social-contextual factors, work-related events, personal preferences, and cumulative life experiences might have a more significant influence in determining which emotion-regulation strategies are employed (Gross and John 2003; Scheibe and Moghimi 2021). This insight highlights the complexity of emotional regulation, highlighting the need to consider a wider range of influencing factors beyond just age.

In this study, we also examined the influence of adopting different emotion-regulation strategies on burnout experience (H3). The findings provided partial support for Hypothesis H3, showing a significant association between emotion-regulation strategies and burnout. Specifically, the use of expressive suppression was positively connected to both emotional exhaustion and disengagement (H3b), aligning with prior research that associates maladaptive strategies like suppression with increased burnout risk (Blanchard-Fields et al. 2007; Charles 2010; Morgan and Scheibe 2014; Scheibe and Moghimi 2021). This indicates that individuals depending greatly on suppression tend to experience higher burnout levels, characterized by emotional drain and detachment from work.

In contrast, cognitive reappraisal, an adaptive strategy, exhibited a distinct pattern. No significant connection was found between cognitive reappraisal and emotional exhaustion, suggesting a lack of correlation in this area. However, a significant association was observed with disengagement, indicating that frequent use of cognitive reappraisal in reevaluating work-related challenges correlates with lower disengagement levels, partially supporting H3a.

However, the relationship between reappraisal and emotional exhaustion was not significant, potentially due to the reduced effectiveness of reappraisal in highly intense emotional contexts, as discussed by Scheibe and Moghimi (2021). This could account for the lack of a significant correlation between reappraisal and emotional exhaustion in our study, therefore not fully supporting H3.

Hypothesis 4, suggesting emotion-regulation strategies as mediators between age and burnout, was not confirmed by our findings. Despite literature indicating potential age-related differences in the adoption of emotion-regulation strategies and their impact

on burnout (Dahling and Perez 2010; Hertel et al. 2015; Scheibe et al. 2016), our study did not find a significant mediating effect.

It is crucial to recognize that the choice and use of emotion-regulation strategies may be influenced by various factors such as individual differences, contextual variables, and personal preferences (Gross and John 2003; Scheibe and Moghimi 2021) rather than age alone. These factors could be more significant in explaining the relationship between age and burnout, a complex occurrence influenced by various personal, social, and occupational factors (Purvanova and Muros 2010). Consequently, additional variables might play a more significant role in clarifying the age-burnout link, overcoming the mediating role of emotion-regulation strategies.

6.2. Theoretical Implications

This study highlights the critical role of emotion-regulation strategies in managing workplace burnout. Significantly, the findings emphasize the potential benefits of adopting adaptive strategies like cognitive reappraisal to mitigate disengagement, contrasting with the harmful effects of maladaptive strategies such as expressive suppression, which appear to intensify disengagement and exhaustion. These insights promote a transition from expressive suppression in favor of cognitive reappraisal whenever possible.

Theoretical frameworks further emphasize the importance of emotion regulation in both individual well-being and workplace effectiveness, as demonstrated by extensive research (Brotheridge and Grandey 2002; Grandey et al. 2005; Gross and John 2003; Lam et al. 2021; Mikolajczak et al. 2009; Scheibe and Moghimi 2021). Scholars emphasize that the consistent application of adaptive strategies in the workplace effectively navigates complex emotions, fostering improved health outcomes and well-being within organizational settings (Gross 2002; John and Gross 2007; Scheibe and Moghimi 2021), therefore reducing the risk of burnout (Dahling and Perez 2010; Hertel et al. 2015).

The capacity to employ effective emotion-regulation strategies is closely tied to individuals' knowledge of how to manage their own emotions, training, and exposure to situations requiring such strategies (Johnson et al. 2017). Selecting productive emotion-regulation strategies, such as cognitive reappraisal, demonstrates one's ability to regulate emotions effectively. Conversely, increasing the use of maladaptive techniques, such as expressive suppression, indicates low emotion-regulation capabilities, which can be honed over time through practice and exposure (Scheibe and Moghimi 2021).

Finally, adopting adaptive emotion-regulation strategies leads to overall well-being improvements, including reduced stress levels and enhanced quality of life, in both the short and long terms (Scheibe et al. 2016). This shift toward adaptive strategies not only fosters transparency and a better quality of life but also significantly decreases the likelihood of experiencing burnout syndrome (Dahling and Perez 2010; Hertel et al. 2015). Thus, fostering the development and implementation of adaptive emotion-regulation skills in the workplace is crucial for promoting employee well-being and preventing burnout.

6.3. Practical Implications

Managing emotions is an essential aspect of work environments, and organizations need to encourage their employees to adopt adaptive emotion-regulation strategies over maladaptive ones. Our research contributes to existing studies by highlighting the varying positive outcomes related to burnout dimensions, well-being advantages, and drawbacks associated with two different strategies, particularly evident in employees' work settings (Scheibe and Moghimi 2021).

Consistent with Johnson et al. (2017), emotion regulation emerges as a significant element within work environments, needing organizational support for employees to adopt more adaptive strategies. Our study extends this understanding by demonstrating the varying impacts of different strategies on burnout dimensions. The observed tendency for employees to inefficiently apply reappraisal under high-stress conditions suggests that enhancing workers' capacity to manage stress and regulate emotions could be beneficial.

Organizational training programs play a crucial role in this regard, providing education on the efficiency of adaptive strategies like cognitive reappraisal and offering practical methods for their application in workplace scenarios. As [Johnson et al. \(2017\)](#) state, emotional regulation skills can be cultivated and developed, potentially increasing the adoption of adaptive strategies among employees. Focused training, especially for workers vulnerable to using expressive suppression, could involve techniques like role-playing to differentiate between adaptive and maladaptive strategies ([Goodwin et al. 2011](#); [Johnson et al. 2017](#)), therefore fostering a workplace culture that values and promotes the use of adaptive strategies. This could include resources, guidance, and feedback on effective emotion management and coping strategies for high-stress situations.

Moreover, organizations should focus on identifying and mitigating workplace stressors, such as excessive workloads, limited job control, and work-life inconsistencies, and implement strong support systems. By equipping employees with essential skills and knowledge, organizations empower them to explore emotional challenges and stressful circumstances better, eventually contributing to a reduction in burnout risk within the workplace.

7. Limitations and Future Directions

The development of this study has highlighted some limitations, strengths, and potential areas for future research. First, the use of a cross-sectional study design implicates some limitations, particularly in capturing longitudinal changes in emotion-regulation abilities and burnout. This design limits our ability to establish causal effect relationships and may lead to imprecisions due to the collection of the data representing only a single time point. While a longitudinal approach would offer a more comprehensive understanding of the dynamic interaction between age, burnout, and emotion regulation over time, we acknowledge the practical challenges associated with conducting such studies ([Scheibe and Zacher 2013](#)). Even though a longitudinal study spanning from age 18 to 65 would indeed be resource-intensive and logistically complex, exploring alternative longitudinal methodologies or incorporating longitudinal elements into future research designs could provide valuable insights into the evolving nature of emotion-regulation abilities and burnout across the lifespan. A longitudinal approach would be more effective in capturing the complex interaction between age, burnout, and emotion regulation over time, but it is noteworthy that such studies require significant time and resources to be successfully implemented ([Scheibe and Zacher 2013](#)).

Second, while self-report measures often face criticism for potential biases like social desirability, research indicates that they can still generate accurate and meaningful data ([Paunonen and LeBel 2010](#)). In the context of emotion regulation, self-reporting remains a practical approach due to the internal nature of the process ([Johnson et al. 2017](#)). The Oldenburg Burnout Inventory (OLBI) used in this study, albeit an abbreviated version, demonstrates the utility of self-report instruments in burnout research. Future studies should, however, test this adapted OLBI in several different samples and incorporate a variety of methods for assessing burnout to confirm its measure's reliability and validity ([Marôco et al. 2014](#); [Sinval et al. 2019](#)).

Third, our study's focus on two primary emotion-regulation strategies, specifically antecedent-focused (cognitive reappraisal) and response-focused (expressive suppression), may have limited the extent and profundity of our findings. This measurement approach might not fully capture the complex scope of emotion-regulation strategies employed in the workplace, potentially missing other significant strategies that could influence burnout, such as early antecedent-focused and problem-focused strategies ([Lazarus and Folkman 1987](#); [Scheibe and Moghimi 2021](#)). Research indicates that context-specific measures, particularly those that evaluate emotion regulation in specific workplace scenarios, provide more detailed insights into how employees handle stress ([Johnson et al. 2017](#); [Grandey et al. 2005](#)). Moving forward, incorporating a broader range of contextually tailored emotion-regulation measures could enhance our understanding of these dynamics, offering a more

detailed view of how different strategies impact employee well-being and burnout. Future studies should explore this broader range of strategies (Gross and John 2003; Johnson et al. 2017; Lawrence et al. 2011), especially in varying work situations, to better understand age-related impacts on burnout (Scheibe and Moghimi 2021).

Fourth, ensuring the control of confounding variables, including job role, organizational culture, and external stressors, is imperative for the integrity of the study. However, despite these efforts, the presence of unmeasured or uncontrolled variables could have still influenced the observed relationships between age, burnout, and emotion regulation. This limitation emphasizes the intricate nature of workplace dynamics and the difficulty in isolating specific factors contributing to burnout, calling for future researchers to employ robust methodologies and comprehensive data collection techniques to address these challenges and enhance the validity of their findings.

Fifth, throughout the implementation of questionnaires distributed via social networks and outreach channels, we encountered certain challenges regarding data validity. Notably, the lack of direct supervision or participant identity verification raised concerns regarding the accuracy and authenticity of the data collected. Despite proactively implementing measures to address these challenges, including stringent validation procedures, it is important to acknowledge the inherent complexities associated with remote data collection methods. Furthermore, the possibility of misunderstanding a question or lacking access to someone for clarification presents an additional challenge. These challenges highlight the need for ongoing methodological refinement and the importance of transparency in research practices.

Sixth, participants were afforded the flexibility to complete the questionnaires at their convenience, enabling reflection on their experiences over recent years. However, this approach may have introduced memory biases, as individuals could have varied in their criteria for evaluating the work environment as report-worthy or in their perceptions of it. Moreover, perceptions of the workplace environment may have evolved over time, particularly if issues were resolved by the time they completed the survey. Thus, reliance on memory for reporting could have led to inaccuracies or omissions in the collected data. Additionally, there is the possibility that individuals who did not use the specific platform for questionnaire distribution were inadvertently excluded from participation, potentially introducing selection biases. Nonetheless, despite these potential limitations, social media outreach offers advantages over traditional sampling methods. It provides participants with a relaxed environment in which to respond, therefore fostering openness and honesty in their answers without external pressure or observation by others.

Moreover, the generalization of our findings may be limited due to the characteristics of the sample used. While our study did consider the job sector, employing a sample of workers from different industries and services, it did not account for the specific environmental contexts in which these workers operate. The small-scale environments, such as office dynamics, team structures, and management styles, could significantly influence both emotion-regulation processes and burnout. This oversight might affect how globally applicable our results are to different workplace environments. Future studies should aim to collect data that not only differentiates between sectors but also considers the specific environmental contexts within these sectors. Such focused sampling and stratification would facilitate a more detailed understanding of how contextual factors influence the effectiveness of emotion-regulation strategies and their impact on burnout.

Furthermore, future research could examine cultural, personal, and job-type factors influencing organizational behavior among Portuguese workers (Johnson et al. 2017). Cultural values, personality traits, coping styles, and specific job characteristics might significantly moderate the relationships between age, emotion regulation, and burnout. Understanding these interactions can help adapt interventions to address burnout more effectively.

Additionally, exploring the length of time a worker has been with a company or years of experience in the job could provide valuable insights into the relationship between age, burnout, and emotion regulation. While it is acknowledged that burnout can occur across

various job tenures, including “long-term employments”, investigating the influence of tenure on burnout could shed light on more detailed dynamics between the variables analyzed in this study. Subjects who have been in their job longer and have accumulated more experience within the company are likely to have developed more adaptive coping strategies or not. It is essential to recognize that burnout can manifest at any stage of employment tenure. Thus, understanding how different lengths of tenure interact with age and emotion regulation in contributing to burnout is crucial. Such investigations in future studies could deepen our understanding of the complex interplay between burnout and workplace dynamics.

Finally, there is a need to explore additional factors that could mediate the relationship between age and burnout, as well as the mechanisms through which emotion-regulation strategies affect burnout. A more comprehensive examination of these variables will enrich our understanding of their interactions, contributing to more effective strategies to manage burnout across diverse work populations.

8. Conclusions

The focus of this study was to dig into the detailed relationship between three key workplace variables: age, emotion-regulation strategies (ERS), and burnout, with a particular emphasis on examining the potential mediating role of ERS in the age-burnout dynamic. Research from [Johnson et al. \(2017\)](#) was immensely considered, which highlights the existing gap in understanding how variables like age and burnout interact within the workforce. This study contributes valuable insights into managing workforce changes beneficially, rather than observing them as alarming challenges for human resources management, providing new insights that advance our knowledge in this area.

This research highlights the importance of addressing burnout in organizational settings and highlights the main role of emotion-regulation strategies, such as cognitive reappraisal, which has been traditionally linked to positive work outcomes and the reduction of burnout rates. Moreover, our findings demonstrate that cognitive reappraisal directly reduces burnout among different age groups, encouraging a need to reevaluate the current understanding of emotion regulation in professional environments. This is key as it expands the concept of emotional labor ([Morris and Feldman 2020](#)), moving beyond simple participation in emotion regulation to a deeper comprehension of how strategies like cognitive reappraisal operate across different age groups.

The findings propose practical implications for applying emotion-regulation strategies for businesses, particularly for HR managers. It suggests that effective emotion management training should focus on promoting adaptive strategies such as cognitive reappraisal, which can enhance employees’ work lives, therefore increasing performance and engagement. This approach not only has implications for enhancing individual employee well-being but also for improving overall organizational health.

Furthermore, as burnout syndrome develops as a significantly studied phenomenon in the 21st century, this study not only reduces existing research gaps but also explores practical strategies to alleviate burnout. Our research provides a deeper understanding of which emotional regulation strategies are most effective and clarifies how these strategies can be systematically implemented within organizational contexts. Doing so contributes significantly to the ongoing discussion on improving employees’ well-being and productivity, thus offering actionable insights for enhancing the current business setting.

Finally, a critical insight from our study is crucial for organizations to invest in the development of their employees’ emotion-regulation skills. It is essential to ensure that workers are completely informed about the various emotion-regulation strategies, their benefits, and potential disadvantages. A key focus should be on guiding employees towards more adaptive strategies like cognitive reappraisal while actively providing insights into the downsides of maladaptive approaches, such as expressive suppression.

The implementation of training programs is crucial in spreading knowledge about different emotion-regulation strategies and their impacts on workplace well-being. These

programs should be complemented with mindfulness sessions and other relevant techniques to foster a holistic approach to emotional well-being. By providing employees with the right tools and understanding, organizations can more effectively manage an age-diverse workforce and create a supportive environment that reduces the risk of burnout. Such proactive measures are not just beneficial for individual employees but also contribute to the overall health and productivity of the organization, catering to a more resilient and engaged workforce capable of navigating the challenges of the modern workplace.

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