

Original Research

The Relationship between Anger, Stress, Psychological Distress and Mood Disorders among Entrepreneurs

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Abstract

The present study investigates the association between anger, stress, psychological distress and mood disorders among Egyptian entrepreneurs. Approach-wise, the study is quantitative, and its cross-sectional data were collected using a questionnaire. The study's respondents are Egyptian entrepreneurs involved in several business activities. Hence, the study concluded based on 286 valid responses. We used analysis of moment structures (AMOS) software, where we conducted path analysis to conclude the results. Consequently, the findings of the study demonstrate a positive relationship between anger with psychological distress ($H1 = \beta = 0.458$; $p < 0.01$) and mood depression ($\beta = 0.367$; $p < 0.01$). Besides, stress is positively associated with psychological distress ($\beta = 0.417$; $p < 0.01$) and mood depression ($\beta = 0.462$; $p < 0.01$). Finally, psychological distress is positively related to mood depression ($\beta = 0.226$; $p < 0.01$). The findings of the study assist policymakers and health practitioners in designing policies that may decrease anger and stress among entrepreneurs, which ultimately reduces psychological distress and mood depression. Moreover, psychological distress and mood depression are critical indicators of mental health, reflecting emotional suffering and impaired



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functioning. Finally, the study's empirical insights significantly contribute to the domain literature.

Keywords

Mood disorders; psychological stress; anger; mood depression; stress; entrepreneurs

1. Introduction

Psychological distress and mood depression are among the most salient indicators for assessing mental health and well-being [1, 2]. More specifically, it is categorized by symptoms, i.e., nervousness, fatigue, restlessness, and feelings of hopelessness [3, 4]. On the other hand, mood depression incorporates persistent and continuous states of sadness, low energy, lack of interest in activities, feelings of worthlessness, and, in severe cases, suicidal thoughts [5, 6], which severely affect relationships, routines, and also the quality of life. Thus, classifying and assessing such symptoms enables early intervention, reducing the risk of severe consequences, i.e., clinical depression, anxiety disorders, or suicidal behaviour. In this way, there is a substantial contribution of anger and stress in enhancing psychological distress and mood depression [7-10]. Anger comes through irritability, outbursts, and destructive impulses, which frequently exacerbate feelings of restlessness, agitation, and hopelessness, contributing to the severity of psychological distress. Unrestrained anger can lead to relational conflicts and self-destructive behaviours, lowering mood and growing feelings of worthlessness [11, 12]. Likewise, stress, noticeable by prolonged tension, overstretching, agitation, and trouble relaxing, overpowers an individual's coping mechanisms and perpetuates fatigue, nervousness, and emotional exhaustion [13, 14].

In the domain literature, there are several factors such as emotional regulation skills, stress, family set-up, occupational stress, anger, hypertension, chronic pain, lack of social support, etc., are confirmed as the key determinants of mood depression and psychological distress [10, 13, 15-18] in the various contexts and organizations. Furthermore, the domain studies such as [1, 19-21] also recognized the predictive relevance of psychological distress towards mood depression. However, the literature lacks the investigation of an integrated approach in a single model containing constructs such as anger, stress, mood depression, and psychological distress. Contextually, Egyptian entrepreneurs confront significant psychological challenges where stress, anxiety and anger dominantly enhance the psychological distress and mood depression [22, 23]. These barriers also enhance entrepreneurs' uncertainty towards sustainability and business success [24]. Henceforth, understanding psychological distress and mood depression as significant barriers for Egyptian entrepreneurs, we raised the specific questions:

RQ1: How are anger and stress associated with psychological distress and mood depression among Egyptian entrepreneurs?

RQ2: What is the connection between psychological distress and mood depression among Egyptian entrepreneurs?

The study aims to explore the connection between anger, stress, psychological distress, and mood disorders among Egyptian entrepreneurs. The findings of the survey assist in developing

policies and strategies regarding diminishing psychological distress and mood depression. Finally, the study's empirical insights augment the literature's depth, specifically in the developing context.

2. Literature Review and Hypotheses Development

2.1 Anger

Anger is a strong emotional response characterized by irritation, frustration, or hostility. It often leads to outbursts, impulsive behaviours, or a desire to express aggression through yelling, throwing objects, or damaging things [5]. Anger negatively affects psychological and physical well-being. In end-of-life care, it is a prevalent expression of emotional distress, often arising from unmet physical, emotional, or spiritual needs, and addressing it requires empathetic listening and holistic care strategies [25]. Anger is an interpreter of psychological distress, which shows its importance in interventions targeting emotional regulation [26]. Anger also contributes to chronic health conditions, such as hypertension, by intensifying stress responses [27]. It exacerbates stress and depression over time, reflecting its role in stress proliferation [7]. In adolescents, anger interacts with emotions like sadness, influencing distress tolerance and emotional resilience [18]. Besides, age modulates the relationship between anger and depression, necessitating tailored therapeutic approaches [28].

2.2 Stress

Stress is a mental or emotional state that arises from high tension, overreactivity, and difficulty coping with challenges. It manifests as agitation, a sense of expending excessive energy, irritability, difficulty relaxing, and intolerance for interruptions or obstacles [19]. The domain literature demonstrates the positive association between stress, psychological, and physiological distress. In trainee secondary teachers, stress is linked to factors like managing student behaviour, workload, and lack of support, often leading to psychological distress [13]. Nurses and nursing students experience high levels of stress and psychological strain, highlighting occupational and educational challenges as significant stressors [14]. Similarly, academic stress among emerging adults and college students is influenced by gender and coping mechanisms, affecting their psychological well-being and performance [29]. Stress is also implicated in physiological responses, such as oxidative damage, linked to various psychological disorders [30]. Stress and psychological distress, with resilience, play a mediating role in mitigating these effects [31]. Additionally, stress during significant life transitions, such as in midlife women with insomnia, manifests as physiological activation alongside psychological distress [32]. According to [33], stress influences their mood and psychological health. Likewise, during the COVID-19 pandemic, stress's pervasive nature and dynamic relationship with daily moods and overall psychological states [34].

2.3 Psychological Distress

Psychological distress defines an extent of emotions characterized by symptoms of nervousness, hopelessness, restlessness, sadness, and feelings of worthlessness. It often includes physical manifestations such as fatigue without a clear cause and an inability to calm down or feel at ease. It significantly affects an individual's ability to cope with daily life and maintain emotional well-being [3, 4]. It is a major driver of mental and physical health. For instance, distress is associated with

behaviours like smoking among individuals with respiratory conditions and depression in patients undergoing dialysis for kidney disease [35, 36]. Besides, social media usage exacerbates psychological distress, anxiety, and depression in this demographic, underscoring its significant impact during formative years [20]. Its association is with harmful behaviours, i.e., polydrug use, which affects risky decision-making [37]. Similarly, food insecurity in young adults contributes to insomnia symptoms, with psychological distress serving as a critical mediating factor [21]. Inmates experiencing distress are at higher risk of self-harm ideation, particularly when compounded by unresolved anger [26]. For patients at the end of life, distress manifests as emotional responses, such as anger, often reflecting unmet psychological and spiritual needs [25].

2.4 Mood Depression

Mood depression is defined as a persistent emotional condition followed by feelings of sadness, loneliness, hopelessness, and a lack of curiosity or excitement in daily happenings. It is often accompanied by physical and behavioural symptoms, i.e., changes in appetite, low energy, sleep disturbances, and a slowed pace of activity. Severe cases may include thoughts of self-harm or suicide [5]. The role of mood depression emerges prominently across different life domains and is linked with stress, interpersonal conflicts, and contextual factors. Mood depression is associated with chronic parenting stress and its cascading effects, highlighting its persistence and emotional toll in caregiving roles [7]. Similarly, in families experiencing conflict, mood depression mediates the link between family dynamics and delinquent behavior in youth, showing its pivotal role in emotional and behavioral outcomes [5]. In adolescents, daily stress significantly contributes to mood depression, with the seeking of social support, particularly through platforms like Facebook, being a coping mechanism that may either mitigate or exacerbate depressive symptoms depending on its quality and effectiveness [33]. Teachers also face high levels of occupational stress, and mood depression impacts their workplace satisfaction and organizational commitment, emphasizing its broader implications on professional functioning [2, 38].

As a result, in the domain literature, several factors such as anger, hypertension, chronic pain, lack of social support, emotional regulation skills, stress, family set-up, occupational stress, etc., are found to be the predictors of psychological distress and mood depression [10, 13, 15-18, 27, 39, 40] in the several contexts and organizations. Besides, there is also a positive connection between psychological distress and mood depression, which is also confirmed by the literature [1, 19-21, 36, 41]. However, the literature still lacks significant gaps. For instance, the literature lacks an integrated framework that offers constructs such as anger and stress towards psychosocial distress and mood depression in a single model. Simultaneously, the connection between psychosocial distress and mood depression disappears in the presence of anger and anxiety. Finally, contextually, the investigation of such a framework among Egyptian entrepreneurs has still disappeared. Thus, based on this existing knowledge and contextual gaps, we proposed a model (Figure 1) for confirmation among Egyptian entrepreneurs. The conceptual framework of the study suggests a projecting effect of anger and stress on both psychosocial distress and mood depression. Besides, the study also intends to explore the connection between psychosocial distress and mood depression.

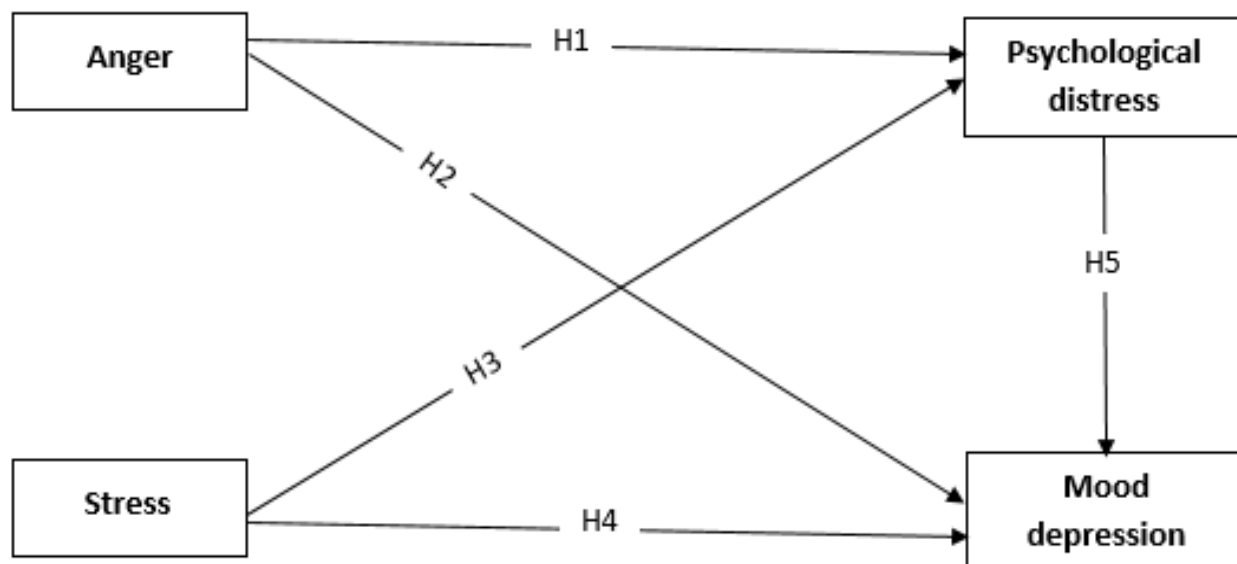


Figure 1 Conceptual model of the study. Source: Developed by the researchers.

This study is supported by the Transactional Model of Stress and Coping [42] which suggests how threats, stress, and emotional problems can be managed. In the context of entrepreneurs, this offers a valuable framework for accepting how entrepreneurs cognitively appraise and emotionally respond to the pressures integral to entrepreneurial environments. [43]’s study demonstrates that emotional strain, i.e., psychological distress, emerges when individuals perceive environmental demands as exceeding their coping capacity, a situation common in entrepreneurship due to uncertainty and high responsibility. Likewise, cognitive vulnerabilities, designed by individual differences, may intensify susceptibility to depression when stress is perceived as uncontrollable [44, 45]. In the same direction, scholars like [46, 47] reinforce the prominence of emotional reactions like anger in organizational stress, demonstrating that such emotions are affected by how individuals attribute and appraise stressful events.

2.5 Anger, Psychological Distress and Mood Depression

Anger is a factor that positively enhances psychological distress, which ultimately worsens mental and physical health complexities. Anger frequently arises in response to unchangeable or unjust circumstances [48], chronic illness [8, 9], and end-of-life experiences [25]. This unresolved anger can heighten psychological distress, as seen among inmates where anger is a predictor of self-harm ideation [26], and in individuals with hypertension and chronic pain, where anger contributes to worsened health and distress [27, 40]. The psychological toll of anger is particularly pronounced when individuals struggle with coping or lack social support, which otherwise serve as protective factors [10, 39]. Low distress tolerance and the inability to manage anger exacerbate mental health issues, underscoring the need for emotional regulation skills [15, 18]. There is an adverse role of anger in distressing experiences and a potent amplifier of psychological distress which affects mental well-being and physical health [49].

Similarly, anger has a positive role in developing mood depression. Anger is also increasingly recognized as an overlooked aspect of depression, where it may be apparent as anger attacks or irritability, particularly in individuals with major depressive disorder [50, 51]. It also anger mediates

the links between family conflict, childhood abuse, and caregiving stress [5, 7, 52]. In adolescent populations, family dynamics, anger and depression potentially influence emotions or are directed outwardly [53]. Besides, rumination on anger versus sadness has been shown to relate differently to aggression and mood depression [54]. The cyclical relationship between anger, depression, and stress is evident in caregivers, whose daily emotional states fluctuate with stress levels, leading to a proliferation of these emotions across different life areas [55]. Remarkably, anger may also play a role in transforming victimization into aggression, as observed in cases of childhood abuse and in conditions like premenstrual dysphoric disorder, where anger may more accurately represent emotional distress than depression [12, 28, 56].

As a result, the domain literature demonstrates a positive relationship between anger and psychological distress and mood depression. However, these connections in the presence of stress as a predictor have been underexplored, specifically among Egyptian entrepreneurs. Henceforth, based on this deficiency of empirical evidence, we proposed:

H1. There is a positive relationship between anger and psychological distress.

H2. There is a positive relationship between anger and mood depression.

2.6 Stress, Psychological Distress and Mood Depression

Stress is associated with psychological distress. According to [13], trainee secondary teachers in England experience significant stress due to high workloads and classroom management challenges, leading to psychological distress. Similarly, nurses and nursing students face chronic stress from their demanding roles, which correlates with ongoing mental health issues [14]. In occupational settings, routine stress in police work contributes significantly to psychological distress [57]. In the perception of [58], there is no significant connection between religiosity and psychological distress among undergraduate students. Besides, in the families' set-up, stress negatively affects psychological well-being [59]. Gender differences also play a crucial role [17, 29] indicating that females frequently report higher stress and psychological distress levels than males. Biologically, [30] links oxidative stress to psychological disorders, while [32] demonstrates that stress activates physiological responses that exacerbate distress. [31]'s study claims the mediation contribution of resilience in developing stress-distress relationships among parents of children with cancer. In the same notion, [60]'s study notes that gender influences the translation of work stress into mental health outcomes and coping strategies and resilience can mitigate the psychological impact of stress.

Similarly, stress is also a positive predictor of mood depression. Stress reactivity increases vulnerability to depression among college students. At the same time, [61] claims a cognitive-affective mediation model where cognitive appraisal influences the impact of life stress on mood in adolescents [62]. [63]'s study demonstrates that mindfulness can mitigate the effects of daily stress on depressive symptoms. Additionally, [64] finds that reactivity to minor stressors is more strongly linked to mood depression than total stress. Among parents, stress correlates with mood depression [38]. According to [65], factors such as poverty and stress create depression. Likewise, [66] connects stress to mood disorders through biological mechanisms. Social support seeking through Facebook mediates the impact of daily stress on adolescents' moods, reflecting the role of social dynamics in stress response [33]. [7]'s study claims that children's symptom affects parents' mood depression through stress proliferation, while [16] highlight the connection between occupational stress and depressive mood among healthcare workers. The impact of perceived stress during the COVID-19

pandemic on daily moods suggests the pandemic's unique stressors on mental health [34]. [2]' study suggests that work-related stress and mood depression among teachers. Academic stress is a contributor to depression among college students during the pandemic [67]. In the empirical assessment of [68], temporal dynamics of perceived stress generate depression in college students.

Different studies are conducted on the relevant domain in Egypt. For instance, in an Egyptian construction site study [69] performance is negatively affected by various psychological factors such as depression, stress, and anxiety. On the other hand, stress and anxiety are positively associated with depression. Similarly, among Egyptian entrepreneurs, stress is negatively connected with personal income, entrepreneurial intention, and physical health [22].

Consequently, the above literature demonstrates a positive link between stress, psychological distress, and mood depression. However, in the context of Egypt, stress, anxiety, and depression are investigated towards performance, entrepreneurial intention, physical health, etc., among entrepreneurs. Still, specifically, the stress factor towards psychological distress and mood depression, integrated in a way, lacks empirical assessment. Henceforth, we expect:

H3. There is a positive relationship between stress and psychological distress.

H4. There is a positive relationship between stress and mood depression.

2.7 Psychological Distress and Mood Depression

Psychological distress positively and significantly predicts mood depression. Psychological distress, usually triggered by external stressors such as academic pressure, chronic health issues, and social media exposure, regularly precedes or predicts mood depression [1, 19, 35]. For instance, university students returning to in-person classes post-pandemic reported the highest levels of distress and depressive symptoms due to academic and social readjustment [19]. Similarly, individuals with chronic illnesses experience psychological distress related to health concerns, which ultimately worsens their mood over time [36]. Among adolescents, social media use has been linked to psychological distress and depressive symptoms, with passive social comparison contributing to negative mood [1, 20]. Psychological distress can also arise from perfectionistic tendencies and impostor syndrome, which place individuals under constant self-imposed pressure and increase vulnerability to depressive thoughts [41, 70]. Besides, psychological distress regularly initiates mood, while a mood depression heightens sensitivity to distress, forming a feedback loop [21, 71]. In sum, psychological distress commonly serves as a precursor to mood depression, which amplifies perceptions of distress, leading to a reinforcing cycle that complicates recovery. In the literature, several studies have underlined the related investigations in Egypt. For instance, among Egyptian public-sector university students, depression and stress negatively affect entrepreneurs' psychological well-being [72]. Eco-anxiety positively affects individuals' mental health problems but hurts entrepreneurs' psychological well-being. Furthermore, climate change anxiety is positively connected with mental health problems but negatively with the psychological well-being of Egyptian entrepreneurs [24].

As a result, the literature demonstrates a positive association between psychological distress and mood depression. In the Egyptian context, factors such as depression, stress, eco-anxiety, and climate change anxiety are investigated as the predictors of entrepreneurs' psychological well-being, mental health problems, entrepreneurial intention, and physical health [22, 24, 69, 72]. However, the connection between psychological distress and mood depression needs further confirmation

among Egyptian entrepreneurs as they confront these challenges due to ups and downs in business and entrepreneurship. Thus, we expect:

H5. There is a positive relationship between psychological distress and mood depression.

2.8 Ethical Statement

We carefully considered ethical principles. The institutional ethical committee of "the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia", approved the ethical protocols of the respondents vide project grant no. KFU251854. We ensured their privacy and secrecy regarding the utilization of their responses.

3. Methods

3.1 Approach and Respondents of the Study

We applied a quantitative approach with cross-sectional data to infer the results. The method is well-reputed, providing massive and reliable factors with numbers, figures, and graphical representations [73]. In the domain of psychological distress, fear, anger, stress, and mood depression, numerous scholars like [4, 5, 10, 16-19] applied the same strategy or quantitative approach to explore these issues.

We targeted the entrepreneurs of Egypt as suitable respondents for this study. We set the criteria for the entrepreneurs based on their current ownership and active management of a registered business in Egypt, their operation in either the manufacturing, services, or trade sectors, and their full-time business operation of at least one year. These entrepreneurs face significant psychological challenges, including anger, stress, psychological distress, and mood depression, driven by financial instability, systemic barriers, and environmental concerns in Egypt. Limited access to funding and unpredictable income contribute to frustration and stress, particularly in volatile sectors like tourism [22, 23]. Additionally, work-life imbalance and the high demands for resilience in crises exacerbate mental strain, leading to burnout and psychological distress [23]. Emerging climate-related concerns further heighten anxiety as entrepreneurs grapple with the uncertainty of sustainability and business survival, which can lead to feelings of helplessness and depression [24].

3.2 Questionnaire's Reliability and Validity

Adequate and valid studies must be conducted to determine the reliability and validity of the survey tools. Considering this, we conducted a pilot study to confirm these critical aspects. In this way, we assessed reliability using Cronbach's alpha. As a result, the overall reliability is found to be 0.832, while it also appeared to be greater than 0.70 for all the constructs, which is regarded as fair [74]. We also validated the instrument by seeking feedback from both respondents and field experts [75].

3.3 Data Collection Modes

We applied both online and offline modes of data collection based on convenience sampling to trace Egyptian entrepreneurs. We conducted an online survey using different channels, such as

online platforms and social media, such as WhatsApp groups and Facebook pages. Besides, we developed the digital questionnaire using Google Forms and distributed it via email invitations and professional networks, i.e., emails and LinkedIn platforms. Besides, we conducted in-person visits, where we contacted respondents with printed copies of the questionnaire and distributed them in person.

In this way, we obtained informed consent from each participant after explaining the study's purpose and the voluntary nature of participation. Finally, the researchers collected 286 valid responses/cases and employed them for final analysis.

In this study, we applied G*Power, a statistical program that ensures a minimum sample size. We used three predictors with three regressions at a statistical significance level of 0.05 [76, 77]. Hence, G*Power suggested that 119 cases are enough to get the results or test the study's hypotheses [78]. In this way, our 286 sample size fulfils all the requirements.

3.4 Measurements

We measured all the variables from the domain literature, where each scale item is calculated by applying a five-point Likert scale (strongly agree to strongly disagree). More specifically, we measured the anger variable with four items and mood depression with ten items. These items are adopted from [5]. Likewise, we assessed stress using seven items from the study of [19]. Finally, we evaluated the psychological distress variable with ten items, which are adopted from [3, 4] [for details see Table 1].

Table 1 Measurements.

Variables	Items	Reference
Anger	AGR1: I was easily annoyed and irritated.	[5]
	AGR2: I experienced outbursts of anger that I could not control.	
	AGR3: I wanted to break or damage things.	
	AGR4: I yelled at somebody or threw things.	
Stress	STS1: It took me a long time to release the tension.	[19]
	STS2: I have tended to overreact to situations.	
	STS3: I have felt that I was expending a large amount of energy.	
	STS4: I have felt agitated.	
	STS5: I have found it difficult to relax.	
	STS6: I have not tolerated anything that prevented me from continuing with what I was doing.	
	STS7: I have tended to get angry easily	
Psychological distress	PGD1: I often feel tired out for no good reason.	[3, 4]
	PGD2: I often feel nervous.	
	PGD3: I often feel so nervous that nothing could calm me down.	
	PGD4: I often feel hopeless.	
	PGD5: I often feel restless or fidgety.	
	PGD6: I often feel so restless that I cannot sit alone.	
	PGD7: I often feel depressed.	
	PGD8: I often feel that everything is not an effort.	

Mood depression	PGD9: I often feel so sad that nothing could cheer me up.	[5]
	PGD10: I often feel worthless.	
	How often during the last week:	
	MDP1: I was sad or had little interest in doing things.	
	MDP2: I had little appetite.	
	MDP3: I felt lonely.	
	MDP4: I had sleeping problems.	
	MDP5: I cried easily or wanted to cry.	
	MDP6: I felt sad or blue.	
	MDP7: I was not excited about doing things.	
	MDP8: I was slow or had little energy.	
	MDP9: The future seemed hopeless.	
	MDP10: I thought of committing suicide.	

Source: Adopted from domain literature.

4. Results

4.1 Respondents' Profile

The demographic profile of the respondents suggests a majority of male respondents [$n = 184/64.33\%$] than female respondents [$n = 102/35.67\%$]. Concerning the age of respondents, we used exclusion criteria that included individuals under 18, those involved only in informal or part-time business activities, and individuals who did not have managerial responsibilities within their ventures. In this way, the majority of respondents were 26-35 [$n = 122/42.66\%$], 36-45 [$n = 86/30.07\%$], 18-25 [$n = 40/13.99\%$], 46-55 [$n = 31/10.84\%$], and 56 and above [$n = 7/2.44\%$]. Concerning the educational level of the respondents, a majority of respondents have a bachelor's degree [$n = 162/56.64\%$], 25.18 [$n = 72$] possessed a Master's degree, 16.78% [$n = 16.78$] had high school or less educational level. Only 1.40 [$n = 4$] had a doctoral or professional degree. Finally, the entrepreneurial experience indicator shows that a majority of respondents [$n = 87/30.42\%$] were 4-7, while a minority of respondents [$9.09\%/n = 26$] had less than one year of experience in entrepreneurship (see Table 2).

Table 2 Respondents' profile.

Constructs	Category	Frequency	%
Gender	Male	184	64.33
	Female	102	35.67
	<i>Total</i>	286	100.0
Age [years]	18-25	40	13.99
	26-35	122	42.66
	36-45	86	30.07
	46-55	31	10.84
	56 and >	07	2.44
	<i>Total</i>	286	100.0

Education level	High school diploma or less	48	16.78
	Bachelor's degree	162	56.64
	Master's degree	72	25.18
	Doctorate or professional degree	04	1.40
	<i>Total</i>	<i>286</i>	<i>100.0</i>
Entrepreneurial experience [years]	<1	26	9.09
	1-3	55	19.23
	4-7	87	30.42
	8-10	56	19.58
	>10	62	21.68
	<i>Total</i>	<i>366</i>	<i>100.0</i>

Source: Authors' calculations.

4.2 Descriptive Statistics and Correlation

To conclude the illustration of data for the entire population, we calculated descriptive statistics. We detected the highest mean scores for MDP (3.532) and the lowest for AGR (2.988). With regard to the values of standard deviation, we noticed the highest values for AGR (1.212) and the weakest for MDP (1.109) (see Table 3).

Table 3 Descriptive statistics.

Variables	No. of items	Mean	Std. deviation
MDP	10	3.532	1.109
PGD	10	3.093	1.121
AGR	4	2.988	1.213
STS	7	3.222	1.199

Source: Authors' estimation.

Note(s): MDP = mood depression; PGD = psychological distress; AGR = anger; STS = stress.

4.3 Measurement Model

In this study, for data analysis, we applied analysis of moment structures (AMOS) software, where we conducted path analysis due to its simultaneous ability to test the complex and simple relationships in the model [79]. In the measurement model, we assessed three primary constructs: loadings, average variance extracted (AVE) and composite reliability. About loadings, a majority of items have been loaded above the required values (>0.70), as suggested by [74]. However, a few items, such as STS4, PGD6, PGD9, MDP3 and MDP7, were not loaded above the required values and were deleted accordingly. Furthermore, the values of composite reliability and AVE are found within acceptable ranges as composite reliability appeared above 0.70 (>0.70) and AVE above 0.50 (>0.50) [74]. Finally, we also evaluated the internal consistency of the items through Cronbach's alpha (α) reliability. As a result, alpha also appeared above 0.70 (>0.70) for all the constructs of the study and ensured an adequate and fair reliability among the items (Table 4).

Table 4 Measurement model.

Variable	Items	Loadings values	Composite Reliability	Average variance extracted	Cronbach's alpha
Anger [AGR]	AGR1	0.866	0.912	0.721	0.809
	AGR2	0.860			
	AGR3	0.851			
	AGR4	0.819			
	STS1	0.852			
Stress [STS]	STS2	0.848	0.924	0.671	0.827
	STS3	0.829			
	STS5	0.819			
	STS6	0.800			
	STS7	0.762			
Psychological distress [PGD]	PGD1	0.892	0.939	0.689	0.766
	PGD2	0.877			
	PGD3	0.852			
	PGD4	0.816			
	PGD5	0.806			
Mood depression [MDP]	PGD7	0.799	0.944	0.708	0.841
	PGD8	0.762			
	PGD10	0.736			
	MDP1	0.888			
	MDP2	0.872			
	MDP4	0.855	0.944	0.708	0.841
	MDP5	0.841			
	MDP6	0.829			
	MDP8	0.803			
	MDP9	0.798			
	MDP10	0.777			

Source: Calculated by the authors.

Note(s): Excluded items due to low loadings = STS4; PGD6; PGD9; MDP3; MDP7.

The researchers assessed discriminant validity (DV), the extent of correlation between study variables [66]. To fulfil this critical aspect, we measured DV where all the correlations of variables appeared between 0.221 and 0.472, which is less than the square root of the AVE estimates, in the value of 0.494 to 0.791. This validates strongly that the variables are correlated to their pertinent indicators compared to other constructs [66]. Besides, the correlation between exogenous components is less than 0.85 (Table 5). Thus, the DV of the model variables is met.

Table 5 Discriminant validity.

Variables	MDP	PGD	AGR	STS
MDP	0.630			
PGD	0.472	0.791		
AGR	0.221	0.275	0.494	
STS	0.345	0.421	0.335	0.697

Source: Calculated by the authors.

Note(s): MDP = mood depression; PGD = psychological distress; AGR = anger; STS = stress.

4.4 Structural Model

Before moving to hypothesized paths, we ensured the model fitness where all the model fit indicators were found within the standard ranges (see caption of Figure 2). About hypothesis testing, we applied path analysis, where the study shows a positive relationship of anger with both psychological distress and mood depression ($H1 = \beta = 0.458$; $p < 0.01$; $H2 = \beta = 0.367$; $p < 0.01$). Thus, $H1$ - $H2$ are accepted. Moreover, stress's relationship with psychological distress and mood depression ($H3 = \beta = 0.417$; $p < 0.01$; $H4 = \beta = 0.462$; $p < 0.01$) is also positive and significant, which supports $H3$ - $H4$. Finally, psychological distress has a positive relationship with mood depression, which also supported the $H5$ ($H5 = \beta = 0.226$; $p < 0.01$) (see Table 6 and Figure 2).

Table 6 SEM coefficients.

H. No.	Relationships	Est:	SE	CR	<i>P</i>	Decision [Supported = Yes; Rejected = No]
H1	AGR → PGD	0.458	0.054	8.509	0.000	Yes
H2	AGR → MDP	0.367	0.058	6.293	0.000	Yes
H3	STS → PGD	0.417	0.061	6.788	0.000	Yes
H4	STS → MDP	0.462	0.053	8.710	0.000	Yes
H5	PGD → MDP	0.226	0.082	2.775	0.006	Yes

Source: Authors' estimation.

Note: SE = standard error; CR = critical ratio; p = significance level = $p < 0.05$.

MDP = mood depression; PGD = psychological distress; AGR = anger; STS = stress.

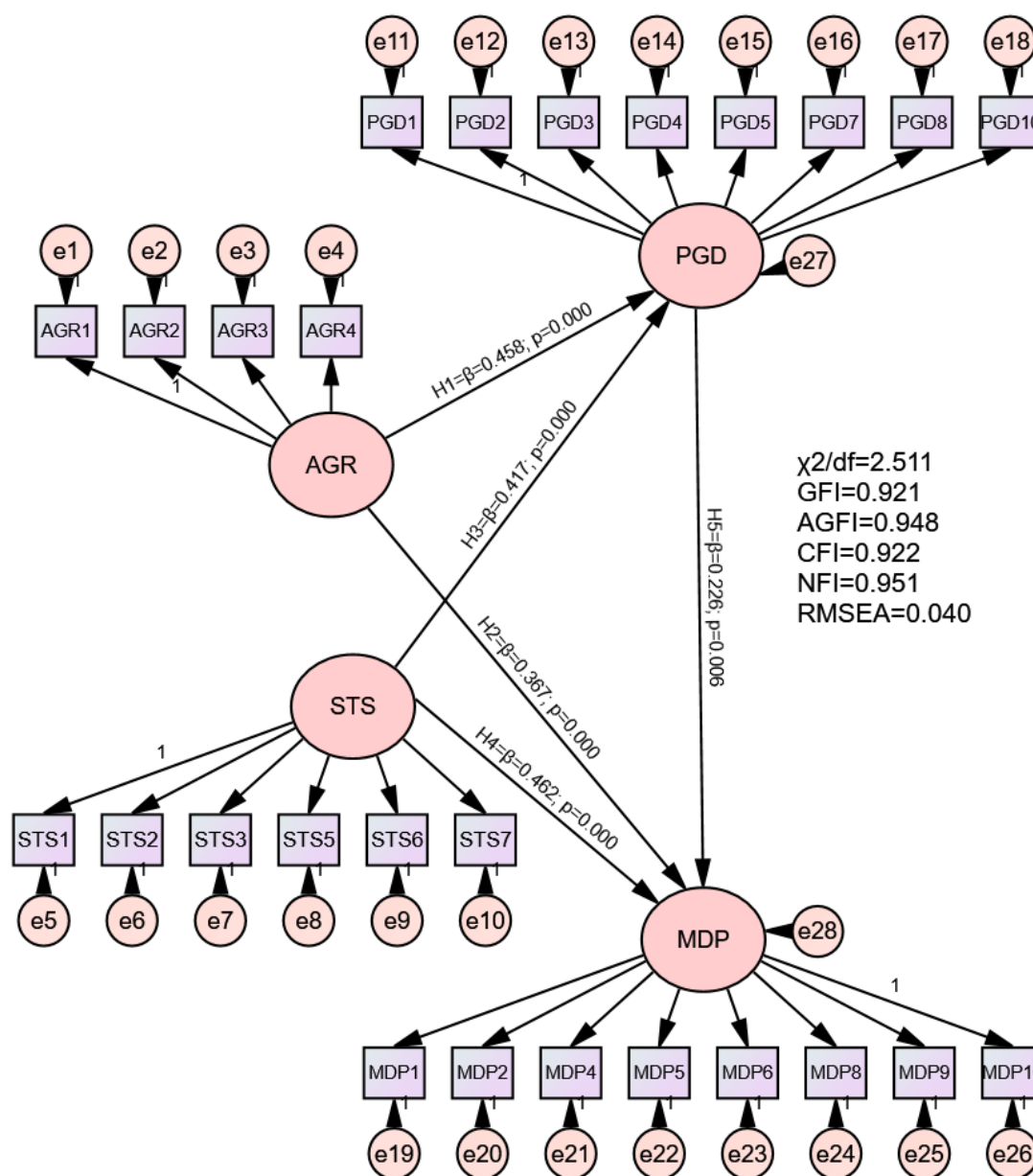


Figure 2 Path model. Source: Authors' estimation. Note: MDP = mood depression; PGD = psychological distress; AGR = anger; STS = stress.

5. Discussion

The study was projected to investigate the connection between anger, stress, psychological distress, and mood disorders among Egyptian entrepreneurs. The findings of the study suggest a positive relationship between anger and psychological distress and mood depression. These results concur with several scholars like [10, 12, 15, 18, 25, 28, 39, 55, 56], who confirmed a positive relationship between anger and psychological distress and mood depression. On the other hand, these results are in contradiction with studies such as [15, 18, 25, 49], which claimed a negative connection between anger, psychological distress and mood depression. The study's results demonstrate that anger is a substantial construct that positively triggers the high stress and uncertainty of entrepreneurial activities, which enhances frustration with unmet expectations or perceived lack of control. In the context of Egyptian entrepreneurs, anger enhances negative

emotions, i.e., sadness and hopelessness, which leads to an upsurge in psychological distress and depressive symptoms. Besides, recurrent expressions of anger, such as roaring or irritability, may ruin relationships and diminish access to social support, worsening feelings of loneliness and worthlessness. Physiologically, chronic anger triggers stress responses and contributes to fatigue, restlessness, and emotional exhaustion. Culturally, anger may also be observed as a legitimate response to misfortune, but when unfettered, it risks escalating mental health challenges in the Egyptian context.

Furthermore, the study confirmed a positive relationship of stress with both psychological distress and mood depression, which are reinforced by the domain literature [2, 17, 31, 33, 34, 60, 66-68]. On the other hand, these results are in contradiction with several studies like [17, 29, 58, 59], which observed the negative connection between stress, psychological distress and mood depression. These results demonstrate that Egyptian entrepreneurs are in chronic stress, characterized by tension, overreaction, and trouble relaxing, which continuously stems from the constant decision-making and energy demands of managing a business. Entrepreneurs' low tolerance for disruptions and tendency to get easily nervous or angry may worsen interpersonal conflicts and emotional strain. Cultural and societal pressures in Egypt, combined with the uncertainty of entrepreneurial ventures, strengthen these stressors, growing vulnerability to distress and depression. Besides, Egyptian entrepreneurs neglect self-care and experience burnout due to overwork and perfectionism, which exacerbate their mental health challenges.

Finally, the results show a positive connection between psychological distress and mood depression. These outcomes are supported by the literature, which provided the same outcomes as earlier claimed by [1, 19-21, 36, 41]. However, these results are not supported by a few researchers, such as [18, 49, 59]. These positive results demonstrate that Egyptian entrepreneurs constantly experience moods of sadness, hopelessness, and lack of interest, which are marked signs of depression, together with the emotional exhaustion and insignificance associated with psychological distress. There are an existence of several symptoms, i.e., changes in appetite, fatigue, sleep disturbances, and depression. The continuous nervousness worsens these feelings of being overwhelmed and restlessness, which illustrate psychological distress. This makes a cycle where physical and emotional symptoms strengthen one another, increasing both psychological distress and mood depression. In the high-pressure, indeterminate entrepreneurial environment, this cycle is more augmented by burnout, high expectations, and a lack of work-life balance, ultimately leading to a substantial decline in the mental health of Egyptian entrepreneurs.

6. Conclusion

Psychological distress and symptoms of mood depression are widely recognized as key indicators in the evaluation of mental health and well-being. The study offers practical implications as these address Egyptian entrepreneurs' emotional and psychological well-being is crucial for their personal health and business success. The study focuses on interventions for stress management and emotional regulation techniques, i.e., relaxation exercises, mindfulness, and anger management programs. Entrepreneurs must be inspired to adopt strategies to handle stress better, avoid overburdening, and improve work-life balance to decrease the impact of psychological distress. Moreover, offering mental health support and generating a more supportive entrepreneurial ecosystem, with access to counselling and peer networks, could assist in alleviating the risk of

depression. By addressing the main reasons for psychological distress, such as anger and stress, entrepreneurs can maintain better mental health, which in turn could improve their decision-making, productivity, and overall well-being.

Concerning the theoretical implications, the study's findings contribute to the thoughtfulness of emotional factors, i.e., anger and stress, impacting mental health consequences among entrepreneurs. These outcomes also assist the requirement for a more robust model of entrepreneurial mental health that integrates emotional factors such as anger, stress, and psychological distress as key enablers of well-being. Moreover, the findings challenge traditional views, frequently overlooking entrepreneurship's emotional and psychological toll. This study validates the Transactional Model of Stress and Coping in the context of entrepreneurs, which offers the best insights into the theoretical stance. This suggests that future research should examine how these emotions interact over time and affect short-term and long-term entrepreneurial consequences. The study delivers a foundation for developing more comprehensive theories on the psychological processes at play in entrepreneurship and underlining the prominence of emotional health in sustaining personal and professional success.

The study has a few limitations as it is conducted in a developing context. Approach-wise, the study only employed the quantitative methods, which collected the cross-sectional responses from the respondents. The study is restricted to a few variables, such as anger, stress, psychological distress, and mood depression. Besides, the study is limited to a specific context of Egypt, where only entrepreneurs are targeted as suitable units of analysis. The study only collected the data through a single source (questionnaire). The findings are correlational and cannot imply causation, and b) results may not generalize beyond the sampled group of Egyptian entrepreneurs. Hence, more research is needed in diverse populations and with longitudinal methods. Finally, the study's conclusions are based on only a 286 sample size.

In the future, more studies should be conducted by underpinning the theoretical frameworks with concerned theories, such as cognitive appraisal theory and the biopsychosocial model, to predict psychological distress and mood depression. More variables, such as anxiety, fear, mental health problems, and psychological well-being constructs, should be added to the model. Other respondents, such as engineers, doctors, and faculty members, may be targeted as the respondents of future studies. Lastly, the sample size should be enhanced to achieve more generalizability.

Abbreviations

AGR	Anger
AMOS	Analysis of moment structures
AVE	Average variance extracted
CR	Critical ratio
DV	Discriminant validity
MDP	Mood depression
PGD	Psychological distress
SE	Standard error
STS	Stress

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Author Contributions

Abdelwahed NAA developed the conceptualization framework, hypotheses of the study, analyzed the data and discussed the results in the light of literature. Ramish MS developed the methods and write-up of the manuscript. Both authors accepted the final version after revisions.

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Competing Interests

The authors have declared that no competing interests exist.

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