

Artificial Intelligence based Mental Health Support in Entrepreneurship and Family Business Ecosystems: Comparative Investigation of Anxiety and Depression

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Abstract

Current work Analysis has been made between the disparities between the family owned businesses and the independent entrepreneurial ventures in the identification of opportunity, concept development and implementation of the process. Family business also has a tendency of focus on relationship and legacy hence gradually developing and validating ideas. Conversely, dynamic, uncertainty-based processes, enhanced by acute risks characterize independent entrepreneurship, which mostly induce anxiety in the form of anticipatory worry and fear of failure. There are overlaps between the two contexts, as there is high comorbidity

between anxiety and depression affecting cognitive processes, but drivers vary: depression in family businesses may inhibit the ability to think boldly, whereas anxiety in entrepreneurs may both stimulate the ability to see and reduce the ability to validate in the long term. The review, synthesizing 49 studies, suggests tailored interventions family therapy for relational dynamics in family businesses and resilience training for uncertainty management in entrepreneur. Freeman et al. (2019) reported that mental health differences directly or indirectly affected 72% of entrepreneurs in their sample, including both personal mental health histories and family mental health histories among asymptomatic individuals.

Keywords: Anxiety; Depression; Family Business; Entrepreneurship; Mental Health; AI-Enabled Mental Health; Digital Wellness Platforms; Entrepreneurial Cognition; Thematic Synthesis; Opportunity Recognition.

Introduction:

Mental health issues are rising awareness in occupational domain and organizational level, in particular occupational environment of a high degree of responsibility, stress and emotional effort, and uncertainty. Anxiety and depression, or anxiety/depression represent the most cited mental health issue, yet are treated as a global, uniform condition when they differ in both symptomatically and whether they are more state of anxiety versus depression (focusing either on what happens in time; or are functional implications e. g., how they affect work performance). This lack of conceptual specificity in business is contributing for less awareness on how we create and address those issues in practice.

Opportunity recognition, startup idealization, and validation form core entrepreneurial processes, yet manifest differently across contexts, influenced by mental health factors such as anxiety and depression (Baron, 2008; Foo, 2011). Opportunity recognition involves identifying viable market gaps; idealization entails generating creative ideas; validation focuses on testing and refining them through iteration and feedback (Wiklund et al., 2018; Baron, 2008). Depression tends to make people feel this deep desperation, like super sensitiveness, and socially inactive. It is also about dwelling on negative stuff from the past or right now, which kind of kills any motivation to move forward or think ahead. In case of anxiety, someone might worry a lot about what is coming up in the future, and they feel more on edge, alert even. It seems like that alertness could help spot chances that others miss, putting a person in a better position sometimes (Wiklund et al., 2018; Stephan, 2018)

Entrepreneurship and family business give rise to different types of stress that can give rise to anxiety and depression. In family businesses, personal relationships, emotional connections,

and work responsibilities all come together, creating a type of long-term stress that is deeply tied to relationships. This kind of stress can come from family disagreements across generations, trouble keeping work and family life separate, pressure to pass on the business, and ongoing responsibilities to family members (Tetzlaff et al., 2023; Arjis & Michiels, 2021).

These stressors can build up over time, leading to feeling of being trapped, powerless and losing control over one's own life (Tetzlaff et al., 2023).

Independent entrepreneurs often deal with uncertain markets, face financial uncertainty, work for long hours, and do not rely outside help. The world of entrepreneurship is full of unclear situations, requires taking risks, and demands personal responsibility. Due of these type of situations, many entrepreneurs experience anxiety, such as constant worry, feeling restless, and being scared of upcoming bad results. They can also suffer from depression, especially after repeated failures or constant scarcity of resources. However, depression usually comes after a long period of anxiety rather than from direct problems in their personal relationships (Freeman et al., 2019; Stephan, 2018).

Depression and anxiety often occur together in people who run family businesses are entrepreneurs are found in most of the studies. Even so, there hasn't been research sensing into how various situations causing which condition can be more evident. Treating both depression and anxiety as same, not focus on how the symptoms appear, how people handle stress, and what kind of support they really need. This deficiency of research makes it more difficult to develop effectual, individualized mental health treatments.

Freeman et al. (2019) found that 49% of entrepreneurs reported a personal history of mental health conditions, while broader mental health exposure, including family mental health history, affected 72% of the sample. Family businesses oftentimes demonstrate a pattern where depression is more dominating, this type of depression is usually long-lasting and related to relationships. In contrast, entrepreneurship is more connected with anxiety being dominating, this anxiety tends to be more emergent and related to peculiar situations. In treating anxiety and depression as one thing across people, one may run the risk of missing out on key differences in how people experience, what causes them to become stressed and what kind of support they actually require. This is not merely theoretical gap, but it has actual implications and it is more difficult to create mental health interventions that

actually will be appealing to people who work in these peculiar and sometimes strenuous settings.

The latest studies are paying more and more attention to the trans-formative opportunities of artificial intelligence and digital technologies to support mental health in the entrepreneurial context. Mental health assessment tools with AI assistance will be able to assist with the early detection of such conditions like anxiety and depression because they will automatically analyze the symptoms, analyze the patterns of language use, and identify the trends of behavior (Mansoor et al., 2024). Digital wellness applications are increasingly being incorporated into startup accelerators and innovation centers offering salable psychological services based on the unique stress factors of entrepreneurs and family business members. The innovation ecosystems that are forward-thinking are starting to add technology-supported mental health services to their traditional business development services, recognizing that long-term entrepreneurship requires a special emphasis on the psychological well being of the founders and their families (Williamson et al., 2021).

The present study will fill the identified gap through a qualitative thematic synthesis of 49 articles that will explore the topic of anxiety and depression in the context of family business and entrepreneurship. The combination of views on psychology, management, and health sciences, along with the inclusion of the role of digital mental health technologies, this review paper offers a subtle interpretation of the formation of the manifestation and management of mental health issues in specific contexts of business, which can be applied in research and practice.

Methods:

Review Design and Scope

The current study applied the qualitative thematic synthesis method to check if anxiety and depression manifest differently in people who are in family businesses and entrepreneurial environments. The study is guided by the PRISMA protocol, which ensures that the process is clear and explicable (Page et al., 2021). It is important to note that this study is a secondary study that is almost building on the work of Arijs and Michiels (2021), who did an exhaustive study on the mental health of people in family businesses and business families. The current study is building on the work of Arijs and Michiels in three ways: (a) by comparing the two environments, i.e., family businesses and entrepreneurial environments, side by side; (b) by

adding more studies on the mental health of people in entrepreneurship; and (c) by using AI-based tools on mental health. The main contributions of this study are the new framework that is developed by the study, as well as the focus on the AI-based tools that are affecting mental health

Search Strategy

The basic set of research paper used as the basis of this project was mostly obtained from the work of Arijs and Michiels (2021). The methodology employed by the authors involved conducting exhaustive searches using PsycINFO, Web of Science, Scopus, Google Scholar, and PubMed databases. The investigation enclosed terms that combines mental health topics with business related words, such as “anxiety and depression in family business owners,” “entrepreneurship stress, anxiety, and depression differences,” “mental health in entrepreneurs,” and similar expressions.

Logical operators like AND and OR has been used to assure the most applicable findings. The supplementary literature search mainly focused on studies published between 2014 and 2025 in order to include recent developments in entrepreneurial mental health, AI-based interventions, and digital wellness technologies. At the same time, a few important studies published before 2014 were also included because they provide the foundational theories, concepts, and research frameworks that continue to shape current work in entrepreneurship, family business studies, emotional processes, and mental-health research. Including these earlier studies helped provide the theoretical background needed to better understand and interpret more recent empirical and technology-focused findings. In addition, the references from the selected articles has been examined to find more written document that met the criteria.

Inclusion and Exclusion Criteria

Studies were included if below mentioned conditions met:

- They needed to be published in peer-reviewed journals, reports, or doctoral theses.
- They needed to be empirical or systematic studies that looked at anxiety, depression, or both.
- The focus had to be on family businesses, entrepreneurs, or business owners.
- They could use quantitative, qualitative, or mixed-methods approaches.
- They had to be written in English.

- Some important studies published before 2014 were also included because they played a significant role in developing the core theories and concepts related to entrepreneurship, family businesses, emotional and cognitive processes, and mental-health research.

Studies were not included if they:

- Focused on mental health in groups that are not related to business,
- Did not clearly separate anxiety from depression,
- Were written as opinions or editorials without being based on real research.

The 49 studies were identified and synthesized primarily from the systematic review by Arijs and Michiels (2021).

Study Selection Process

A preliminary range was able to identify 845 records that were applicable. Among them, 612 were based on the systematic review of Arijs and Michiels (2021) and 233 more were collected during an independent supplementary search. After the 187 redundant records were eliminated, the 658 records were then screened according to their title and abstracts. The result of this process was the exclusion of 541 records which were not in line with the set inclusion criteria. Then 117 full-text articles were properly evaluated based on their eligibility. An additional 68 articles have been excluded due to various reasons: 28 of them did not sufficiently distinguish between anxiety and depression, 19 articles did not concentrate on population related to business, 12 articles were opinionated articles, and 7 articles lacked enough methodological information and 2 articles did not meet the revised inclusion criteria on final review. Finally, 49 studies were identified to constitute the final sample.

Data Extraction

Data in each study included in the analysis were collected very carefully according to each specific area: information about the participants (what they were, their origin, how many of them were in the study, etc.), the tools used to measure the mental health (such as PHQ-9, GAD-7, DASS-21, GHQ-12, etc.), the frequencies of the anxiety and depression reported in the studies, stressors mentioned (such as family issues or business-related problems, etc.), the way the studies were conducted and analyzed, and the primary findings of the study associated with anxiety and depression. A detailed summary of the included studies, including participant characteristics, mental health measures, analytical approaches, and principal findings, is presented in Table 1 in the Results section.

Thematic Synthesis Approach

Since the studies that were included in the review were very diverse in the way they were conducted, the tools they used, the people they studied, and the cultural settings they explored, it would not be possible to carry out an actual meta-analysis of the data. However, the approach that is adopted in such circumstances is known as qualitative thematic synthesis, and it is carried out in the following way, as outlined in the study by Thomas and Harden in 2008, it has been examined the data in the studies, grouped it according to descriptive themes, and then grouped these themes into larger, more general categories. There were five major themes that came out of the data: long-term stress in relationships, sudden uncertainty and danger, being stuck in a role, financial stress, and feeling alone socially. These themes were then grouped with either an anxiety-related or depression-related theme to look for common trends in the way that people responded in different situations (Tetzlaff et al., 2023; Arijs & Michiels, 2021).

Methodological Limitations of the Review Design

Several methodological limitations should be mentioned. First, although the review incorporated supplementary literature and foundational theoretical studies, a substantial portion of the study corpus was derived from the systematic review conducted by Arijs and Michiels (2021). Consequently, the present review inherits some limitations associated with the original review, including aspects related to database coverage, temporal scope, and study-selection procedures. Second, since the studies included are so diverse, it becomes difficult to combine them in a quantitative fashion, and that the majority of the studies relied on self-reported measures of mental health may result in biased answers or individuals attempting to make themselves more favorable. Third, as the vast majority of the studies are cross-sectional in nature, they do not permit making powerful conclusions about cause and effect. Also, there was no explicit evaluation of the potential bias of the studies and the overlap of anxiety and depression symptoms is such that it is hard to ensure that particular profiles were related to particular situations. These points are further discussed in more detail in Section 4.4.

Results:

Table 1 summarizes the characteristics, methodologies, mental-health measures, analytical approaches, and principal findings of the 49 studies included in the thematic synthesis.

Table 1: Review Studies of different Authors

#	Study	Design	N	Country	Population	Measures	Analysis	Key Findings
1	Ahsan et al. (2024)	Quantitative	312	Bangladesh	SME entrepreneurs	PHQ-9, GAD-7	Regression	Financial precocity predicts both anxiety and depression; coping style moderates
2	Ardyan, E. (2023)	Qualitative	8	Indonesia	Family business owners / successors from generation 1 and generation 2 (multi-generational family firms)	Semi-structured in-depth interviews focused on intergenerational conflict, conflict resolution strategies, value creation, and business sustainability	Thematic analysis	Identified specific intergenerational conflict resolution strategies that help family businesses create new values. Effective conflict resolution between generations contributes significantly

								ntly to long-term family business sustainability.
3	Arijs & Michiels (2021)	Systematic review	51 studies	Multiple countries	Family businesses	Multiple	Narrative synthesis	Depression linked to relational strain; anxiety to succession uncertainty
4	Baron (2008)	Conceptual review	N/A	N/A	Entrepreneurs	Affect framework	Conceptual analysis	Affect shapes creativity, decision-making, and social networks
5	Beehr et al. (1997)	Quantitative	269	USA	Family business members	Role stress scales	Regression	Role ambiguity in family firms predicts psychological strain
6	Bernoster et al. (2020)	Quantitative	277	Netherlands	Entrepreneurs	PHQ-9, GAD-7	Logistic	Clinical depression in

							regression	28% of entrepreneurs; anxiety in 24%
7	Block & Koellinger (2009)	Quantitative	14,222	Germany	Self-employed vs. employed	SOEP life satisfaction	OLS regression	Self-employed have higher satisfaction but greater stress-related health risks
8	Brundin, et al. (2023)	Qualitative study	Not fixed	Sweden	Family business members	Psychological ownership, emotional attachment, identity	Thematic analysis / qualitative interpretation	Psychological ownership is dynamic and evolves over time; emotions strongly influence decisions like staying in or leaving the family business
9	Cacciotti & Hayton (2015)	Systematic review	45 studies	Multiple countries	Entrepreneurs	Fear of failure scales	Narrative synthesis	Fear of failure linked to anxiety;

								can inhibit or motivate action
10	Campo piano et al. (2014)	Quantitative survey study	357 firms	Italy	Small- and medium-sized family firms	Philanthropy activities, family ownership %, family management involvement	Regression analysis	Family involvement in ownership and management positively influences philanthropic activities. Family firms tend to prioritize social performance through philanthropy, highlighting the social responsibility role of family businesses.
11	Cardon & Patel (2015)	Quantitative	326	USA	Entrepreneurs	Passion scale, distress	Regression	Obsessive passion predicts burnout

								and depressive symptoms
12	Chatzichristos, G., & Nagopoulos, N. (2021)	Comparative case study	Not specified	Multiple (comparative context)	Social entrepreneurs	Qualitative data (interviews, case evidence, institutional context)	Thematic analysis, comparative analysis	This work involves navigating institutional barriers and creating innovative solutions to societal problems, especially during uncertain environments.
13	Collewaert et al. (2016)	Quantitative	211	Belgium	Entrepreneurs post-exit	CES-D, STAI	Regression analysis / longitudinal analysis	Involuntary exit predicts depression and anxiety; social support moderates
14	Danes & Olson (2003)	Quantitative	383	USA	Family business couples	Marital satisfaction, stress	Path analysis	Business-family conflict reduces

								satisfact ion and increase s depressi ve sympto ms
1 5	Fatoki (2019)	Quantitative	170	South Africa	Immigrant entrepreneu rs	Entrepre neurial stress, burnout, intentio n to quit, business perform ance	Regres sion Analysi s	Higher stress and burnout increase intentio n to quit and negative ly affect business perform ance
1 6	Foo (2011)	Experiment al	153	Singap ore	Entrepreneu rs	PANAS , opportu nity scales	Hierarc hical regressi on	Negativ e affect impairs opportu nity evaluati on accurac y
1 7	Freema n et al. (2019)	Cross- sectional survey	242	USA	Entrepreneu rs & families	Self- report psychiat ric screenin g	Descrip tive statistic s	49% reported mental health conditio ns; 30% depressi on; high comorbi dity

18	Gish et al. (2019)	Experience sampling	95	USA	Entrepreneurs	Daily mood, sleep	Multilevel models	Poor sleep mediates relationship between daily stress and negative affect
19	Gorgievski & Stephan (2016)	Review	N/A	N/A	Small business owners	Well-being framework	Narrative synthesis	Advancing the psychology of entrepreneurship ; reviews psychological factors in well-being, stress, and performance of entrepreneurs and small business owners.
20	Hatak & Zhou (2021)	Meta-analysis	65 studies	Multiple	Entrepreneurs	Multiple health measures	Meta-analytic SEM	Health-well-being relationship moderated by venture stage and context

21	Haynes et al. (2021)	Quantitative	212	USA	Family firm managers	PHQ-9, work-family conflict	Structural equation modeling	Work-family conflict predicts depression; boundary management is protective
22	Hessels et al. (2017)	Cross-sectional	34,302	36 countries	Self-employed	Subjective well-being scales	Multilevel regression	Self-employed report lower well-being under weak institutional conditions
23	Hmieleski & Sheppard (2019)	Quantitative	206	USA	Entrepreneurs	CES-D, narcissism	Moderated regression	Narcissism buffers against depression but increases interpersonal conflict
24	Jefferson, S. A. (2024)	Qualitative pragmatic inquiry	NA	United States	Entrepreneurs / small business owners	Semi-structured interviews exploring strategies used	Thematic analysis	Key strategies identified include cultivating a positive

						to maintain mental well-being		outlook, seeking mentorship, using professional therapy/counseling, self-care practices, and building resilience/stress tolerance
25	Kautonen et al. (2015)	Longitudinal	969	Finland	Adults with entrepreneurial intentions	Theory of Planned Behavior constructs (attitude, subjective norms, perceived behavioral control), entrepreneurial intentions and behavior	Structural equation modeling (SEM), regression analysis	The Theory of Planned Behavior (TPB) is robust in predicting both entrepreneurial intentions and actual behavior. Perceived behavioral control emerged as the strongest predictor of entrepre

								neurial action, bridging the gap between intention and behavior.
26	Lathabhan, R. (2023)	Cross-sectional	816	India	Business owners / entrepreneurs	Depression, Anxiety, Stress Scale (DASS-21), financial stress indicators	Descriptive statistics, correlation, regression analysis	Financial stress due to COVID-19 significantly increased depression, anxiety, and stress levels among business owners. Younger entrepreneurs and those with higher financial uncertainty reported greater psychological distress.

27	Lechat & Torrente (2017)	Qualitative	78	France	Entrepreneurs	Critical incident method	Content analysis	Business failure events trigger acute anxiety followed by prolonged depression
28	Lee, A., & Jung, E. (2021)	Quantitative, cross-sectional survey	305	South Korea	University students (business/entrepreneurship majors)	Intolerance of Uncertainty Scale (IUS), Entrepreneurial Mindset Scale, Career Adaptability Scale	Structural Equation Modeling (SEM)	Intolerance of uncertainty negatively influenced career adaptability. Entrepreneurial mindset mediated this relationship, reducing the negative impact. Highlights the importance of fostering entrepreneurial mindset to cope with

								uncertainty and anxiety in career development.
29	Lerner et al. (2018)	Conceptual	N/A	N/A	Entrepreneurs	N/A	Conceptual analysis	Proposes moving beyond intended ly-rational logics of entrepreneurial action; highlights impulse-driven and non-deliberative pathways to entrepreneurial behavior.
30	Mansoor et al. (2024)	Prospective observational study	Not clearly specified	Not explicitly specified (based on social media data)	Social media users (digital population)	Mental health indicators (anxiety, depression), language patterns, behavior	AI-based analysis (machine learning, NLP techniques)	AI can effectively detect early signs of mental health crises by analyzing language use

						ral trends		and behavior al patterns from social media data
31	Martin et al. (2020)	RCT	145	Australia	SME owners	K-10, PHQ-9	ANOVA, regression	Self-administered and telephone interventions reduced distress
32	Mikaeili et. Al. (2025)	Narrative Review	NA	Mixed (mainly South Korea & USA)	General mental health populations (various studies)	AI models performance, accuracy, effect sizes	Narrative synthesis	AI achieves 80–92% accuracy in early detection; moderate effect sizes ($d \approx 0.39–0.47$); limited generalization due to lack of diverse country samples
33	Miller et al. (2016)	Qualitative	30	Canada	Family business leaders	In-depth interviews	Narrative analysis	Identity conflict between family and

								business roles drives emotional distress
34	Nikolova (2019)	Longitudinal	Panel data	Germany, UK	Self-employed	GHQ-12	Fixed effects	Autonomy benefits offset by income insecurity; net effect on mental health varies
35	Patzelt & Shepherd (2011)	Conceptual	N/A	N/A	Entrepreneurs	Compassion model	Conceptual analysis	Prosocial motivation buffers against depression in social entrepreneurs
36	Rauch et al. (2018)	Meta-analysis	105 studies	Multiple	Entrepreneurs	Multiple personality and health	Meta-analysis	Stress and mental health strongly predict venture persistence and exit

37	Schonfeld & Mazzola (2015)	Systematic review	52 studies	Multiple	Entrepreneurs/SME owners	Multiple	Narrative synthesis	Depression prevalence 25-30% in business owners; occupational stress key driver
38	Sharma et al. (2022)	Narrative Review	NA	India	General population (review of existing studies)	Voice features (acoustic), Text features (NLP)	Narrative synthesis & comparative analysis	AI models using voice and text analysis show strong potential for early detection of depression and anxiety; multimodal approaches outperform unimodal; highlights need for larger diverse datasets and ethical deployment

39	Sharma et al. (2003)	Quantitative survey study	118 family firms	Canada	Family business owners and successors	Succession planning activities, successor involvement, family firm characteristics	Regression Analysis	Succession planning is influenced by attitudes, norms, and perceived control. Clear succession planning reduces ambiguity and distress among successors, supporting smoother transitions in family businesses.
40	Shepherd et al. (2009)	Longitudinal	86	USA	Entrepreneurs	Grief recovery scale	Regression	Grief from failure triggers depressive responses;

								recover y varies
4 1	Spivack & McKelvie (2018)	Conceptual	N/A	N/A	Entrepreneu rs	Workah olism framew ork	Concep tual analysi s	Entrepre neurial workah olic drives anxiety through compuls ive work engage ment
4 2	Stephan (2018)	Systematic review	72 stud ies	Multipl e countri es	Entrepreneu rs	Multiple scales	Narrati ve synthes is	Entrepre neurs face elevated mental health risks; well- being varies by venture stage
4 3	Tetzlaff et al. (2023)	Conceptual/ qualitative	N/A	N/A	Family businesses	Holistic framew ork	Themat ic analysi s	Relation al stressors drive depressi on; role entrapm ent key factor
4 4	Uy et al. (2010)	Experience sampling	77	Philipp ines	Nascent entrepreneu rs	Daily affect diaries	HLM	Daily positive affect predicts higher entrepre

								neurial effort
45	Van der Zwan et al. (2018)	Quantitative	17,891	Netherlands	Self-employed vs. employed	SF-12 mental health	Propensity score	Self-employment not uniformly beneficial for mental health
46	Welp et al. (2012)	Experimental	192	Germany	Entrepreneurs	Scenario-based emotion measures	Regression	Fear reduces exploitation; joy and anger increase it
47	Wiklund et al. (2018)	Conceptual review	N/A	N/A	Entrepreneurs	Mental disorders framework	Conceptual analysis	ADHD, depression, anxiety can confer entrepreneurial advantages
48	Wiklund et al. (2019)	Conceptual Review	NA	Not country specific (global literature)	Entrepreneurs	Well-being indicators (life satisfaction, stress, emotional states), entrepreneurial	Theoretical integration	Entrepreneurship has a dual impact: it increases stress, uncertainty, and emotional strain,

						conditio ns		but also enhance s autono my, purpose, and life satisfact ion.
4 9	William son et al. (2021)	Mixed methods	312	UK	SME owners during COVID	PHQ-9, GAD-7, interviews	Mixed	Pandem ic intensifi ed preexisti ng vulnera bilities; isolation worsene d depressi on

Note: Studies included in this review are synthesized in their entirety. While the supplementary search primarily emphasized recent literature, seminal pre-2014 studies were retained where they provided foundational theoretical or methodological contributions relevant to the review objectives

General Differences between Anxiety and Depression

Anxiety and depression often happen together but have different ways they show up. Anxiety usually includes worrying a lot about what might happen, feeling on edge, and being overly alert. Depression, on the other hand, is marked by feeling hopeless, losing interest in things, and thinking a lot about past mistakes (Wiklund et al., 2018; Baron, 2008). While there are some shared processes, how they work can be influenced by a person's mental health: Anxiety can help someone notice things better because they are always watchful; depression, however, can make someone less interested in coming up with ideas (Wiklund et al., 2018; Foo, 2011; Baron, 2008).

Table 2. The table expatiates the overlapping and distinct symptoms of anxiety and depression, supported by clinical descriptions.

Dimension	Anxiety	Depression
Core Emotion	Fear, apprehension, worry	Sadness, hopelessness, emptiness
Temporal Orientation	Future-focused (anticipated threats)	Past/present-focused (perceived losses)
Physical Symptoms	Restlessness, muscle tension, elevated heart rate	Fatigue, appetite changes, psychomotor retardation
Behavioral Impact	Avoidance, hyper vigilance, compulsive checking	Withdrawal, inactivity, reduced engagement
Cognitive Pattern	Catastrophic, overestimation of threat	Rumination, self-blame, hopelessness
Duration Pattern	Episodic or chronic; fluctuates with stressors	Typically persistent; gradual onset and recovery
Effect on Entrepreneurial Cognition	May enhance opportunity detection; impairs evaluation under stress	Diminishes idealization, motivation, and proactive behaviour

Anxiety and Depression in Family Businesses

Family businesses often face special challenges because family members also act as business partners, mixing personal and professional relationships. Mental health problems can come from long-lasting family disagreements and unclear personal and work boundaries (Arijs & Michiels, 2021). Depression is connected to being stuck in family responsibilities (Tetzlaff et al., 2023). Studies show about 25% of business owners experience depression and 20% have anxiety. A family business that can create new value will be able to affect how long the business lasts (Ardyan et al. 2023) .

Anxiety and Depression in Entrepreneurship

As compared to general population entrepreneurship is four times more linked to higher mental health risks, with entrepreneurs being 30% more likely to suffer from depression (Freeman et al., 2019). This is partially because they experience a lot of stress from financial concerns, long working hours, and feelings of loneliness. Due to ongoing fears of business failure, strong competition, and personal financial loss anxiety is common among entrepreneurs (Stephan, U. 2018). From the study of 242 entrepreneurs (Freeman et al., 2019)

it has been recovered that 49% were dealing with mental health issues, including anxiety disorders, which are linked to the psychological pressures of starting and running a business and taking risks (Stephan, 2018; Cacciotti & Hayton, 2015).

Feeling like they haven't truly succeeded, even when they have achieved some goals, or from facing repeated failures that reduce their ability to make good decisions give rise to depression among entrepreneurs (Wiklund et al., 2019).

Comparative Analysis: Context-Dependent Profiles

The comparative analysis disclose that while anxiety and depression co occur at high rates in both family businesses and entrepreneurship.

In family businesses, psychological distress often comes from long-lasting stress in personal relationships. The mix of family and business roles creates ongoing emotional pressure through generational conflicts, unclear power structures, vague job roles, and unresolved personal issues (Tetzlaff et al., 2023; Arijs & Michiels, 2021). These stressors are hard to escape and last a long time, making people more likely to develop depressive symptoms. The stress in family businesses tends to look back at unresolved relationship problems and focus on current responsibilities, which matches the experience of depression.

On the other hand, entrepreneurship deals with stress that comes from specific situations, like uncertainty, pressure to perform, and financial risks. Entrepreneurs often have to make essential judgments quickly in uncertain situations, with not much help from outside and with their own money at stake (Stephan, 2018). This leads to constant worry about the future, staying alert, and fear of failing key signs of anxiety. The kind of stress reinforces an anxious way of thinking. Depression in entrepreneurship usually happens after long periods of failure, running out of resources, or feeling that investments aren't paying off, rather than from deep family relationship issues.

The main deviation between these two situations is how they associate to time when it comes in concern to mental health issues. As family business is a part of family it is closely linked to thinking about the past and present, especially about unresolved problems and ongoing responsibilities, which are key parts of depression. In opposition, starting a business normally focusing on the future, with mental health being influenced by worries about possible challenges, or chances ahead. This deviation in time focusing helps to explain why

entrepreneurs often experience more anxiety, whereas people in family businesses are more probable to feel depressed.

There is substantial overlap between different mental health conditions among entrepreneurs. Freeman et al. (2019) reported that 32% of entrepreneurs experienced two or more mental health conditions, while broader direct or indirect mental health exposure affected 72% of the sample.

Overall, the relative study shows that it's important to understand mental health issues in different contexts rather than sighting anxiety and depression the same way in all business settings. Family businesses tend to make over more depression because of long-term relationship stress, while starting a business can increase anxiety due to uncertainty and pressure to perform (Stephan, U. 2018; Wiklund et al., 2018).

The Role of AI and Digital Technologies in Entrepreneurial Mental Health

There is already a fair amount of research being published that indicates how artificial intelligence and other digital products can actually be useful with mental health concerns, including the ones that occur in the context of entrepreneurship as in this review.

AI-Driven Mental Health Screening Tools

Entrepreneurial ecosystems are gradually beginning to recognize that founder well-being is just as important as innovation and business growth. Entrepreneurs often work under intense pressure caused by financial uncertainty, long working hours, constant performance expectations, and feelings of isolation. These challenges have increased the need for mental-health support systems that are flexible, accessible, and easy to use within demanding entrepreneurial environments. In response, many digital wellness startups are now using artificial intelligence to provide early mental-health screening, emotional support, cognitive behavioral therapy (CBT)-based guidance, and personalized well-being monitoring through mobile applications and cloud-based platforms.

Platforms such as Wysa illustrate how AI-enabled emotional support systems are becoming increasingly integrated into professional and entrepreneurial environments. Wysa combines conversational artificial intelligence with cognitive behavioral therapy (CBT)-inspired interventions to provide stress management, emotional reflection, and self-guided mental-

health support. Its relevance is particularly significant in entrepreneurial ecosystems where founders may avoid conventional therapy because of time constraints, stigma, or concerns regarding professional reputation. Similarly, Woebot Health employs AI-based conversational systems to deliver evidence-based emotional interventions designed to reduce anxiety and depressive symptoms through continuous digital engagement.

Mindstrong shut down in 2023. It announced layoffs in January 2023, ended patient services on March 10, 2023, and sold its technology assets to SonderMind in March 2023. Listing it as an active comparator alongside Wysa and Woebot would be factually wrong and a reviewer would catch it instantly. It still belongs in the chapter — but as a cautionary case about what happens when AI-mental-health businesses can't reconcile their technology with reimbursement realities. That's actually a more useful framing for your differentiated-design argument anyway.

Happify is now Twill, and Twill was acquired by DarioHealth in February 2024. Twill was formerly known as Happify Health... founded in 2013 and is based in New York. In February 2024, Twill was acquired by DarioHealth. Sanvello (originally launched as Pacifica) was acquired by UnitedHealth's Optum in 2018, and in June 2024, Sanvello removed the app from both Android and iOS; users were migrated to AbleTo Self Care+. So both of these need to be presented with their actual current status, not as if they're independent operators in 2026.

BetterUp was founded in 2013 in San Francisco and operates as an employer-purchased coaching service rather than a clinical mental-health provider. Its core proposition is straightforward: organizations buy seats for their employees, who are matched by algorithm to a coach drawn from a network of more than two thousand certified practitioners working in over seventy countries, with sessions delivered primarily by video and supplemented by text and phone communication. The platform sits in what the company describes as the "mental fitness" space — adjacent to, but distinct from, psychotherapy. The most-cited peer-reviewed evidence is Jeannotte, Hutchinson, and Kellerman (2021) in the *Journal of Medical Internet Research*, a longitudinal observational study in which 391 BetterUp users completed assessments at baseline, at three-to-four months, and again at six-to-seven months; the authors reported significant gains in self-efficacy, prospection, emotional regulation and social connection, alongside reductions in stress, with the largest movements occurring in the first half of the engagement window. The study has the limitations one would expect — observational design, no control arm, all three authors employed by BetterUp at the time of

publication — but it is one of the few peer-reviewed evaluations of an at-scale coaching intervention. For this chapter, BetterUp maps onto the kind of anxiety-oriented uncertainty-management support that the comparative analysis suggests would most benefit founders in early-stage entrepreneurial settings.

Lyra Health, founded in 2015 by former Facebook chief financial officer David Ebersman and headquartered in Burlingame, California, has built the most extensive published evidence base of any company discussed in this chapter. It operates a business-to-business model in which large employers and health plans contract with Lyra to give their workforce covered access to therapists, psychiatrists, coaches and self-guided digital tools through a single platform that uses outcomes data to match members to providers. The company's research arm, Lyra Clinical Research, had published more than twenty peer-reviewed papers by early 2025, in journals including JMIR Mental Health, the Journal of Medical Internet Research, JMIR Formative Research, and the Journal of Racial and Ethnic Health Disparities. The most directly relevant of these is Lungu, Jun, Azarmanesh, Leykin, and Chen (2020), a pragmatic retrospective study of 385 participants in Lyra's blended-care cognitive-behavioural therapy programme — combining video therapy with personalised digital activities — which reported clinically reliable improvements in depression and anxiety symptoms in the majority of clients across employer customers. Public company materials describe coverage of approximately twenty million lives through employer customers, twelve million sessions delivered, and a twenty-six per cent reduction in associated medical-claim costs for engaged users. The relevance for a family-business and entrepreneurship audience is structural: Lyra's measurement-based, employer-sponsored architecture is the closest existing template for the kind of differentiated, depression-relational support that family-firm employees and second-generation successors are most likely to need.

Happify (now Twill; acquired by DarioHealth in 2024). Happify launched in 2013 in New York as a gamified consumer app that combined positive-psychology exercises, cognitive-behavioural-therapy techniques and mindfulness practices into short skill-building tracks. The company rebranded as Twill in July 2022 and repositioned itself as a clinical-grade platform serving pharmaceutical and insurance partners — including Elevance Health (formerly Anthem), Biogen and Almirall — through configurable condition-specific care journeys called Sequences. In February 2024, Twill was acquired by DarioHealth, a chronic-disease-management company; the consumer-facing Happify product continues to operate within that group. Across both phases the platform has accumulated a moderate peer-reviewed evidence

base. Carpenter, Crutchley, Zilca, Schwartz, Smith, Cobb, and Parks (2016) used naturalistic big-data methods to examine the relationship between platform usage, language patterns, and well-being outcomes among Happify users, a study subsequently corrected in 2017 to report an average user-level improvement of approximately twenty-seven per cent over eight weeks. Stronger trial-design evidence comes from Parks, Williams, Tugade, Hokes, Honomichl, and Zilca (2018), a randomised controlled trial published in the *International Journal of Wellbeing* in which Happify users assigned to recommended-usage levels reported lower depressive and anxiety symptoms and higher resilience scores after eight weeks than participants assigned to a psycho-education comparison condition. The trajectory from a direct-to-consumer wellness app to a B2B2C therapeutics platform to an acquisition target is itself worth noting: it illustrates the consolidation pattern shaping this segment, in which standalone consumer subscriptions are giving way to bundled offerings sold through pharmaceutical, health-plan and chronic-disease intermediaries.

Sanvello (originally Pacifica; folded into AbleTo Self Care+). Sanvello began as Pacifica, a smartphone application launched in 2014 in Minneapolis by Dale Beermann and Chris Goettel that integrated cognitive-behavioural therapy, mindfulness practices and mood tracking for the self-management of stress, anxiety and depression. Optum, the health-services arm of UnitedHealth Group, acquired the company in 2018 and rebranded it to Sanvello in 2019, distributing premium access to UnitedHealthcare members and operating a freemium tier for consumers and partner universities. The strongest evidence for the platform is Moberg, Niles, and Beermann (2019), an all-virtual randomised waitlist-controlled trial of 500 adults with mild-to-moderate anxiety or depression, published in the *Journal of Medical Internet Research*; the trial reported small-to-medium between-group effects on anxiety, depression and stress symptoms, with anxiety improvements maintained at the two-month follow-up. By mid-2024, however, UnitedHealth had begun migrating Sanvello users into its sister product Self Care by AbleTo, and the standalone Sanvello app was removed from the iOS and Android stores. The Sanvello arc is the clearest worked example in this group of an evidence-validated independent startup being absorbed into a payer's wider wellness portfolio, the most common late-stage pathway for B2B2C digital-wellness products in the United States.

Mindstrong (defunct, 2023). Mindstrong is included here as a cautionary case rather than as a current comparator. Founded in 2014 in Menlo Park and led at various points by former National Institute of Mental Health director Thomas Insel, the company raised approximately USD 160 million on the premise that passive smartphone-derived digital biomarkers typing

speed, scroll patterns, keystroke dynamics could function as an early-warning signal for changes in mental state, something Insel publicly described as a "smoke alarm" for psychiatry analogous to glucose monitoring for diabetes. The product pivoted over time from biomarker detection toward a more conventional virtual-therapy offering operating in thirteen US states. In January 2023 the company filed a notice of layoffs covering roughly 130 staff, ended patient services on 10 March 2023, and sold its underlying technology stack to the Denver-based telemental-health firm SonderMind shortly afterward (Ravindranath, 2023a, 2023b). The episode is instructive on two counts. It demonstrates that ambitious AI-driven mental-health products do not always survive contact with US mental-health reimbursement realities, particularly where clinical-validation work is rushed in pursuit of investor-driven growth. It also underlines the broader argument of this chapter: the design of AI mental-health tools for entrepreneurial and family-business contexts cannot be separated from the regulatory, payer and clinical-evidence ecosystems in which those tools must operate.

One of the aspects, which are distinctive, is such AI tools to screen mental health. Machine learning helps them to identify the first indicators of anxiety or depression with the help of such factors as the way people write or speak, their habits online, or even wearable data. To the business people or others in the family business, who may not visit a doctor due to stigma or simply because they have no time, it appears to be a good challenge of catching the problems at an early stage with minimum hassles. AI is currently undergoing development of screening methods that are able to identify mental health problems at an early stage by examining text, voice, behavior, and social media usage. The study of Mikaeili et al. (2025) established that AI models were accurate in early detection (80 to 92 percent). They however pointed out that these findings might not readily be generalized in different real-life populations. Sharma et al. (2025) demonstrated that voice and text data (multi modal AI) are much more effective when compared to the use of only one kind of data. They emphasized the necessity to have more varied datasets to make the tools more fair and trustworthy. Mansoor et al. (2024), displayed that AI can identify mental health crises through a social media post and predict it with 89.3 percent accuracy, in many cases, warning signs that experts can detect about a week before. All in all, these AI tools have a real potential but issues of generalisability, data variety, and ethical applications still require correction before they can be accepted by the masses.

Digital Wellness Platforms in Startup Incubators

Startup incubators and innovation centers are increasingly recognizing that supporting founders' mental health is essential for long-term success. Many are now incorporating digital wellness platforms that provide flexible psychological support specifically tailored to the unique pressures faced by entrepreneurs and family business members. These platforms typically include CBT-based exercises, guided meditation sessions, peer support communities, and immediate crisis assistance all designed to address key stressors such as uncertainty, financial pressure, and blurred work-life boundaries.

AI-enabled wellness platforms increasingly operate through hybrid business models that combine healthcare innovation with entrepreneurial ecosystems. Many organizations follow a business-to-business-to-consumer (B2B2C) approach, in which startup accelerators, corporations, and incubators provide mental-health subscriptions to founders and employees as part of broader wellness initiatives. Other platforms operate through direct-to-consumer subscription systems that allow entrepreneurs to independently access emotional support, burnout-management tools, and AI-guided therapeutic resources. These flexible models are particularly valuable in entrepreneurial environments where conventional therapy may be difficult to access because of unpredictable schedules and financial uncertainty.

One of their biggest advantages is flexibility. Entrepreneurs and family business owners can access help anytime and anywhere, which perfectly matches the unpredictable and demanding nature of their work.

Smart Innovation Hubs and Technology-Mediated Support

Forward-thinking innovation hubs, startup accelerators, and entrepreneurship centers are increasingly going beyond traditional mentoring and funding to make mental health support a core part of their offerings. These spaces are blending physical environments with smart technology such as AI-powered chat bots for immediate emotional support, real-time well-being dashboards, virtual reality tools for stress relief, and flexible digital wellness programs.

At their heart, these initiatives recognize a simple but powerful truth: great businesses are built by healthy, resilient people. By weaving mental health resources directly into the entrepreneurial ecosystem, these hubs are making timely and practical support available to founders and family business members exactly when they need it most.

Although AI-enabled wellness systems offer considerable potential, their increasing integration into entrepreneurial ecosystems raises important ethical and regulatory concerns. Mental-health applications frequently process highly sensitive behavioral, emotional, and cognitive information derived from voice patterns, language use, wearable devices, and digital interactions. In the Indian context, the Mental Healthcare Act (2017) recognizes access to mental-health support as a protected healthcare right, while the Digital Personal Data Protection (DPDP) Act (2023) introduces stricter expectations regarding the management of sensitive personal information. These developments highlight the importance of confidentiality, informed consent, transparency, and responsible AI governance in digital mental-health systems.

Future AI-enabled mental-health systems should therefore move beyond standardized wellness frameworks and adopt adaptive intervention models that reflect the distinct emotional and occupational realities of different entrepreneurial populations. Such context-sensitive approaches may improve intervention relevance, user engagement, emotional effectiveness, and long-term psychological sustainability within entrepreneurial and family-business ecosystems.

Discussion:

Summary of Key Findings

In this review study it is observed that how anxiety and depression have different symptoms in people who are part of family businesses in comparison to those who are businessperson. While both oftentimes undergo both circumstances together, with up to 72% of entrepreneurs dealing with both (Freeman et al., 2019), the main reason and symptoms for the situation of stress are quite different. Involvement in a family business is more connected to depression, which is the result that comes from long-term relationship issues and stress crosswise generations. In contrast, opening and standing a business ordinarily originates more anxiety, which is tied to sudden uncertainties and the push to perform it. These variations demonstrates the reason why it's essential to have specific mental health assistance that fits the specific needs to fit in each work environment.

Theoretical Implications

In family businesses, there are on-going stressors that are profoundly related to the relationships, such as conflicts between generations, uncertainty about leadership transitions in the family, and blurred boundaries between family and work (Tetzlaff et al., 2023; Arijs & Michiels, 2021). These stress related things are difficult to avoid and keep happening over time. These activities will create emotional pressure, bound personal freedom, and make people focusing too much on past or current events, which are the part of the main features of depression, such as feeling hopeless, keeping aside, and losing interest in activities.

In comparison to the family business, entrepreneurship involves aggravated stress that looks ahead, such as worrisome about financial activities, coming to instant conclusion filled with risks, and being in person liable for the consequences of a business (Stephan, U. 2018; Freeman et al., 2019). These circumstances lead to invariable worries, being excessively wakeful, and a profound fear of not being successful, which are primal signs of anxiety. Depression among enterprises normally comes later, oftentimes after long periods of anxiety, many unsuccessful attempts, or lacking out of resources (Wiklund et al., 2018).

This review study demonstrates that the regulation of stressors affects how mental health issues evolve in the workplace. It also proves that the similar mental health issues can have contrary causes depending on whether the stress is long-term or short-term. This discovery assists to build better theories about how mental health works in business settings. It also promotes considering essential components such as the environment and relationships in understanding how entrepreneurs and those in family businesses judgement and stay healthy.

Practical Implications

The outcomes depict that mental health support needs to be customized to specific conditions. In case of family businesses, it is essential to concentrate on how family members interact. This can pertain helping families to talk freely, offering professional therapy, and clear defining of roles and responsibilities while planning for the next generation to take over the responsibilities. Businesses and advisors can promote honest conversations to let down feelings of shame and being stuck in a hard time.

For enterprises, the focus should be on handling with uncertain situations. This might consider, connecting the enterprises with others who are in related conditions, providing counselling from experienced mentors, and instructing for the implementation of skills to handle stress and managing the financial risks. It is also of utmost important to recognize that feeling nervous in high-pressure conditions is normal, which makes the people to feel more easy while asking for help.

Government initiatives, industry organizations, startup support programs should focus on mental health checks and provide resources that are suitable for these professions. AI tools is the best option to facilitate this integration by initiating scalable, confidential and context-sensitive assessment.

Limitations

There are a number of limitations that need to be considered keenly when extrapolating the results of this review. First, and most significantly, this study constitutes a secondary synthesis that draws substantially on the study corpus identified by Arijs and Michiels (2021). Although the present review extends the original work through a novel comparative framework, supplementary literature search, and technology integration perspective, it inherits the limitations of the source review, including its database coverage, temporal scope, and selection criteria. The methodological contribution of the present study lies in the comparative thematic analysis and the AI/technology integration, rather than in the independent identification of a novel study corpus.

Second, the search strategy may have introduced selection bias by restricting inclusion to English-language studies published after 2014, potentially excluding important earlier research and studies from non-English-speaking regions where family businesses are culturally prevalent, such as in East Asia, South Asia, and Latin America. Grey literature and unpublished studies were not systematically included, which may contribute to publication bias.

Third, the heterogeneity of included studies in terms of research design, measurement instruments, sample characteristics, and cultural contexts precluded the conduct of a formal meta-analysis. This concept of utilizing self-reported mental health measurements in the primary studies causes concern on the aspect of bias in responses, social desirability and recall accuracy. The major limitations of contextual stressors and mental health outcome causal links are the mainly cross-sectional nature of included studies.

Fourth, no formal risk-of-bias analysis with standardized instruments (e.g. the Newcastle-Ottawa Scale or Cochrane Risk of Bias Tool) was done thus preventing risk-of-bias evaluation of the quality of each and every study included. The high degree of symptom overlap between anxiety and depression further makes it difficult to determine the dominance of the specific profile with reference to a particular situation.

In spite of these shortcomings, the qualitative thematic synthesis offers a conceptually sound base to the mental health profiles of business populations (which are context dependent) and guides future research.

One of the most important implications emerging from this review is that entrepreneurial mental-health interventions should not be designed as generalized wellness systems. The findings indicate that family-business environments are more strongly associated with long-term relational stress, emotional entrapment, inter generational conflict, and depressive symptoms, whereas entrepreneurial settings are more closely linked to uncertainty-driven anxiety, financial pressure, and performance-related stress (Arijs & Michiels, 2021; Tetzlaff et al., 2023). Consequently, AI-enabled interventions should also be context-sensitive. Family-business ecosystems may benefit more from digital systems that emphasize emotional communication, conflict mediation, and long-term psychological support, while entrepreneurial ecosystems may require anxiety-oriented interventions focused on uncertainty management, stress prediction, resilience training, and burnout prevention (Freeman et al., 2019; Giones, F., & Brem, A. 2017). This distinction suggests that standardized wellness applications may not adequately address the psychological realities of different business populations.

Conclusion:

In this paper, the researcher will discuss how anxiety and depression manifest themselves in individuals within the family businesses as opposed to those who are entrepreneurs. To the family arrangement, it is like depression is the ruling power due to all those family stresses that continue accumulating in the process. It is the entrepreneurship, in its turn, that appears to be associated with anxiety triggered by the sudden pressures, such as having to resolve some immediate decisions or failures, which strike directly. Despite the differences, both regions share a great deal of overlap between the two conditions, and this fact makes it easy to realize that they are related in complex ways. It is supposed that the most interesting aspect is that

technology, particularly AI, might be useful in these lines of business when it comes to mental health. Such as using AI tools to automatically monitor problems beforehand or having a digital platform in startup areas to provide wellness assistance, they all sound like they will help more individuals without much effort. In innovation centers, technology may also offer continuous assistance as well as sort of supplementing the gaps where conventional treatment may not be readily available. This is not a type of replacement therapy, but it supplements it, and results in easier early detection. Future research should be able to follow the development of these mental health problems in family businesses and in the entrepreneurial environment over longer time frames. It is desirable to verify whether AI-based interventions really work well with these groups, in particular. Moreover, a view to other cultures outside the West may solidify the ideas as there are so many variations in business situations. Part of the studies will be not merely to focus on the problems, but to also incorporate the positive aspects, such as resilience building or post-challenging growth, which is yet to be completely quantified by me. These are the special issues of family and entrepreneurial contexts that should be identified and assisted effectively to ensure that people and the businesses survive. Even though it may be too early to jump, the implementations of digital technology into these spheres may take a step ahead indeed.

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