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A Double Taboo? An Exploratory Study of Mental Health Perceptions amongst Black Aerospace Professionals

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This exploratory study delved into the overlooked realm of mental health needs and experiences amongst Black Americans who are also Black aerospace professionals, shedding light on a "double taboo" within a historically marginalized community and stigmatized industry, respectively. Due to the paucity of research focusing exclusively on the mental health of Black aerospace professionals and drastic increase in mental health events in the U.S., the purpose of this study was to ask, "How do Black aerospace professionals characterize their experiences with mental health?" A mixed-methods approach was used to garner the participants experiences and perceptions of mental health through the acquisition of qualitative and quantitative data. The qualitative component resulted in 10 themes emerging: Being a Black American/Aerospace Professional, "Everyday" Struggles, Culture of Fear, Jeopardizing Job Security, Mixed Managerial Messaging, Mental Health Prioritization, Sources of Support (SOS), Representation Woes, Lack of Standardization, and Societal Acceptance, Awareness, and Access. The survey solicited 75 completed responses, and the findings confirmed much of what is already known - the mental health experience for Black Americans and Black aerospace professionals has been largely negative due to fear of reprisal or termination, unsupportive work environments, a lack of access to mental health resources, and a lack of representation in the health services. These results were further supported by the quantitative component. The study adds a renewed sense of urgency by showcasing that when access is not an issue, the work environment is supportive and leadership provides encouragement, and (representative) sources of support are available (e.g., EAP or trusted confidants), mental health challenges are addressed effectively, efficiently, and mitigated. These findings inform several recommendations for policy and practice governmental and industry leadership should consider to improve the mental health experiences of Black aerospace professionals.

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Introduction

Mental health has grown in importance in U.S. society over the past five years with a profound spike in awareness, acceptance, and discussion of challenges stemming from the COVID-19 pandemic. This is evident as seen in the investigation conducted by Panchal et al. (2023), who found that concerns about mental health remain elevated three years after the onset of the pandemic, as 90% of U.S. adults believe the country is experiencing a mental health crisis. Such a statistic provides a staggering backdrop to the gravitas of the issue when one considers that only 20% of adults in the U.S. experienced mental health challenges, including anxiety, depression, and isolation, pre-pandemic compared to the now 80% (Nealon, 2021). These pre-pandemic statistics suggest that mental health was a largely unaddressed and stigmatized issue in the U.S., often approached with a "don't ask, don't tell" mentality in the U.S. There was a similar narrative regarding mental health internationally as adduced by the increase in internet searches for mental health assistance between 2019 and 2021 (Jamshaid et al. 2023). Additionally, there was a 500% increase in the number of individuals who completed a mental health test in 2020 than in 2019, as indicated in the work of Jamshaid et al. (2023). For the purposes of this study, mental health consists of emotional, psychological, and social well-being. These elements impact how individuals think, feel, and act, and they dictate how people interact with others (Centers for Disease Control and Prevention [CDC], 2023).

Although the pandemic may have been what some deem an accelerant to mental health, the reality is that many Americans, at some point in their life, experienced a mental health challenge whether they knew it or not. According to Access (2022) more than one in five U.S. adults live with a mental illness; the most common mental health challenges are anxiety disorders, major depression, and bipolar disorder. When examining the mental health of minoritized[1] individuals and those in Black communities particularly, the narrative only worsens. Black adults in the U.S. are more likely to have feelings of sadness, hopelessness, and worthlessness than their White adult counterparts (Mental Health America, 2023), underscoring their prevalence of mental health challenges. Further, Black adults tend to hold deep-rooted beliefs related to stigma and help-seeking (Mental Health America, 2023), resulting in them opting to not seek mental health services despite the fact they are 20% more likely to experience serious mental health problems (Vance, 2019). Such an attitude towards mental health, especially amongst Black men, stems from the adverse stigma surrounding seeking help and is underpinned by several factors. These factors include, but are not limited to, a lack of trust in the medical system because of historical abuses of Black individuals with a prominent example being the Tuskegee Syphilis Study, a lack of culturally responsive or sensitive mental health providers (Vance, 2019), financial burden, and instances of medical racism (Vance, 2019).

The impact of mental health challenges for minoritized communities is especially prevalent as they face social exclusion, discrimination, and trauma (Macintyre et al. 2018), which leads to compound vulnerability (Rafferty et al. 2015). The "don't ask, don't tell" mentality discussed earlier surrounding mental health in the Black community is not a new phenomenon. Yet, due to the significant increase in mental health crises within the U.S., it is finally receiving the attention it deserves within the community and by health care providers. One reason for the lack of knowledge of mental health challenges plaguing

[1] The term minoritized is used here rather than "minority" because minority is a term that for many DEI practitioners, places the blame for the oppression on the individual being oppressed rather than the oppressors or historical situations that resulted in the marginalization and oppression (Johnson, 2023). Consequently, the term minoritized was derived to indicate the blame for oppression should not be placed upon the oppressed (Morrison, 2023; Johnson, 2023).

the Black community stems from a lack of acknowledgment of psychological challenges by members of the impacted community. Roughly 63% of individuals in the Black community believed that a mental health disorder is a sign of personal weakness (National Alliance on Mental Illness, [NAMI], 2020), which is not true. Such a mentality is exacerbated by socioeconomic barriers that exist for minoritized communities. One such barrier to accessing mental healthcare for Black individuals is the lack of health insurance, which affects 11.5% of U.S. Black adults, according to the Charlie Health Editorial Team (2022). Increased social inequality is linked to a higher frequency of mental illness, and economic downturns have had a catastrophic influence on population mental health. For example, Albelo et al. (2023) looked at mental health problems in underrepresented students pursuing aviation degrees. Albelo and colleagues explained the complexity of mental health in underrepresented communities due to factors involving finances, environmental factors, and social support. Moreover, Albelo et al. (2023) addressed discrimination among underrepresented students, specifically noting that those in the LGBTQ+ community are likely to experience depression, anxiety, and exhibit symptoms of eating disorders. These types of students are more likely to have failing mental health, implying that they frequently have trouble obtaining suitable treatment. Minoritized students are less likely than White students to seek mental health treatments (Lipson et al. 2022), and people in specific socio-demographic groups often encounter comparable hurdles to getting mental health care (Albelo et al. 2023). These barriers to seek treatment include confidentiality concerns, criticism, logistics, costs, how beneficial the therapy may be, and whether the treatment is warranted.

Another latent barrier impacting the willingness of minority individuals, specifically members of the Black community, can be encapsulated in one word: representation. Members of the Black community are less frequently included in mental health research (Charlie Health Editorial Team, 2022). This indicates that they do not see themselves or their issues represented in such a medium (Albelo et al. 2022). For this reason, how can they reasonably be expected to want to obtain help from a system that does not reflect their experiences, issues, or culture? A similar issue exists within the aviation industry as mental health in general, has been a relatively “taboo topic” (Choy, 2023) that has historically quieted the voices of those experiencing mental health challenges in fear of losing their wings forever, being terminated or “grounded”, and/or feeling shame or embarrassment.

There has been an increase in recent literature, with studies like those conducted by Albelo and his colleagues, on aviation mental health, specifically within collegiate programs, to counter the taboo nature of this topic within the past five years. Their first study found that integrating Diversity, Equity, and Inclusion (DEI) into aviation classrooms through a measured approach termed the 4Ts (Talking, Teaching, Tools, and Taking Care) can aid aviation faculty in helping students cope and address their mental health concerns (Albelo et al. 2022). The second study was built upon their previous research; it aimed to understand the perceptions of underrepresented minority students in an undergraduate aviation/aerospace degree program related to mental health. They found the promotion of a healthy environment and education, setting realistic goals, and learning about available resources, were key elements for underrepresented minority students to maintain their mental health (Albelo et al. 2023) and success. The third study by Albelo and McIntire (2023) sought to understand the mental health needs of minority aviation students and found there was a negative stigma surrounding mental health, which prevented some students from seeking help. The authors also found that aviation students were even more likely to refrain from disclosing mental health concerns. The elements of social support, psychological distress, and psychological well-being were prevalent challenges to mental health amongst students (Albelo et al. 2023). To overcome this, the authors recommended aviation education create a sense of belonging through DEI practices, be intentional with inclusive language, and be more proactive with the promotion of mental health well-being across campus.

While the extant mental health research on minoritized aviation students provides great insight on their needs and impact on academic success, there is little research that exclusively centers on the mental health experiences of Black aerospace professionals. Consequently, there are two primary gaps this study aims to fill: 1. An exclusive focus on the mental health needs and experiences within the Black aviation community rather than focusing on minoritized groups as a whole, and 2. Expansion of targeted groups through the inclusion of aerospace professionals who possess industry experience beyond the classroom.

The purpose of this exploratory research is to understand the mental health needs and experiences of Black aerospace professionals. Doing so may inform industry leadership of ways they can improve the work environment to improve the mental health of all aerospace professionals and in particular, Black aerospace professionals. This may also benefit collegiate programs who tend to possess similar training/education environments to that of industry. The central research question (CQ) guiding this study is: How do Black Aerospace professionals characterize their experiences with mental health? There are two sub-research questions (RQs) for this study which include:

- RQ #1: What are the mental health needs of Black aerospace professionals?
- RQ #2: What factors, if any, contribute to the mental health of Black Aerospace professionals?

Literature Review

Racially minoritized individuals and in particular, members of the Black community, are less likely to seek help when experiencing mental health challenges (Vance, 2019). The topic of mental health is something that was not widely or openly discussed within U.S. society until recently; a positive consequence of the COVID-19 pandemic. While individuals are becoming more comfortable discussing and seeking help with their mental health challenges during and post-pandemic (Nealon, 2021; Jamshaid et. al. 2023), a similar trend has now surfaced within the U.S. aviation/aerospace industry. Unfortunately, mental health discourse within the industry is still viewed as "taboo" (Choy, 2023) due to fear of reprisal or termination.

The "Taboos" – The Black Community and Black Aerospace Professionals

By definition, something is considered taboo based on the belief that such a behavior or action is either too sacred and consecrated or too dangerous for ordinary individuals to undertake (Fershtman et al. 2009). In the context of this paper, discussing mental health is a social taboo in the U.S. and something that has been widely understood as a conversation one should not engage in with others primarily due to public stigma, self-stigma, or a social persecutory combination of both (McLean Hospital, 2024). Consequently, a culture of significant reluctance and hesitation has been fostered within the U.S. relative to mental health. This reluctance to discuss mental health, mental illness or struggles, and the like has also afflicted the Black community notably, and has been largely acknowledged as a "cultural taboo" within the community (Shelton, 2019). There are many reasons for this cultural taboo with one being that Black people are uncomfortable with the topic of mental health because it interferes with the ego of the Black community (Shelton, 2019), meaning that to have a mental health challenge or struggle means one has not been in touch with their religion or are misaligned spiritually, and/or have failed in some area of their life. This rationale can be traced back to a darker time in history for Black individuals where they relied on perseverance and resilience to overcome the gross inequality during slavery. Thus, the mentality becomes that if Black individuals could overcome slavery, then they could surely surmount depression, anxiety, and other mental health challenges (Armstrong, n.d.).

With this mentality, unfortunately, anything less would be perceived as spiritual, moral, and/or mental weakness, which is not the case. Such a mentality has been detrimental to the Black community and its members because it has resulted in certain individuals failing to recognize or view mental health as a legit health concern (as one would with high cholesterol), and as a result, there has been little to no discussion or awareness about mental health in Black households. Therefore, the lack of recognition, awareness, and discussion about mental within the Black community constitutes a "double taboo" as there is considerable evidence that racial stigma, discrimination, marginalization, and exclusion are barriers to help-seeking for Black adults with their mental health (Yu et al. 2022). In the context of this study, a double taboo is an act or behavior that is socially unacceptable in two cultural circles, which adversely impacts individuals identifying with or belonging to both those circles. This double taboo is an under-researched area within the aviation/aerospace industry, especially for Black aerospace professionals who are Black AND Aerospace professionals, and is unique to them because of the historic discrimination and marginalization that has occurred to Black individuals within the U.S. in society and in the flight deck (or aviation/aerospace environment).

Mental Health in the U.S.

If mental health is already considered taboo in the Black community and the aviation/aerospace industry, it is not farfetched to state that mental health is becoming a "double taboo" for Black aerospace professionals in the U.S. To understand the impact of mental health in minoritized communities and in particular, within Black communities, there first must be an understanding of how Mental Health Literacy (MHL) impacts decision making. This may help address, in part, why Black communities tend to struggle to seek the desired assistance with mental health challenges. Kutcher et al. (2016) addressed MHL positing Health Literacy (HL) is the ability to acquire, read, comprehend, and use medical information to make informed health decisions and follow treatment procedures. This is similar to how the Canadian Public Health Association and the World Health Organization (WHO) define health literacy to help a patient succeed in the 1990s. Since Black populations have been less likely to seek mental health support (Vance, 2019), education on HL could aid in their decision-making processes. Nowadays, health literacy is crucial for its advantage on health outcomes, reducing health disparities in communities, improving the operation of health systems, and the development of health policies.

As the U.S. continues to normalize mental health, disparities continue to rise, especially in the aviation/aerospace industry (Choy, 2023). It has been reported that increased rates of chronic disease and decreased utilization of health services could be seen in low HL populations (Kutcher et al. 2016). Consequently, Black and other minoritized communities lacking good schools and health services may be prone to accept their health problems due to a lack of adequate resources. Thus, not only is there a barrier to the acceptance of health issues, but the lack of HL resources results in difficulty seeking out information, digesting it, and then acting upon it. This lack of resources is compounded by healthcare disparities as well. For instance, approximately 25% of individuals lacked adequate access to mental health services in 2009 (Safran et al. 2009) and 56% in 2022 (Mental Health America, 2023). Coombs et al. (2021) looked at barriers to mental health access among approximately 50,000 individuals and 95% (or 47,500) of them experienced at least one barrier to mental health access. This was primarily noted in black and Hispanic individuals, and more males than females experienced a lack of mental health access (Coombs et al. 2021). When Black aerospace professionals lack the resources necessary to handle certain challenges, what impact does it have on how they are perceived and judged among their peers and colleagues?

Mental Health Perceptions and Judgements

The importance of perception in mental health, as highlighted by Sabik et al. (2019), is substantial, particularly regarding the correlation between subjective perception and external perceptions, and its potential health implications. One stressor that affects the psychological well-being of adults is the fear of poor social evaluations. According to Abdai and Miklósi (2016), social evaluations are defined as

a mental process during which an individual (1) assigns different values (positive, negative) to particular behavioral patterns (e.g., helping, hindering) that are performed in social interactions (e.g., problem-solving), (2) associates these behaviors with specific individuals (partnership values) and (3) shows different behaviors (e.g., avoidance or preference) toward others based on the overall value which has been associated with them. Within the context of this study, a poor social evaluation would be the assignment of negative values such as weak or feeble, to Black aerospace professionals by others (e.g., peers, family, co-workers, etc.) for seeking help with their mental health. Consequently, the poor perception and rapport that Black individuals and their respective communities have received from non-minoritized individuals and society in general due to systemic implications is compounded.

Pederson (2023) observed that when Black participants were compared to White individuals, Black participants faced more stigma linked to psychological limitations, and were unlikely to seek support for depression. Further, Black participants are skeptical of healthcare institutions and experts (Pederson, 2023; Vance, 2019). It was also noted that the medical racism entrenched within the history of Black individuals impacts how others perceive mental illness and the need for treatment. For example, delayed mental health care and insufficient access to therapy could lead to adverse mental health outcomes. This is evidenced by a study that found that Black children between the ages if five and eleven were more likely to commit suicide than their White counterparts (Pederson, 2023). If Black aerospace professionals fear judgment from peers and the aerospace/aviation industry as a collective, then the perception of mental health in U.S. aviation is not as favorable or positive as some have made it seem. Prior to examining mental health within aviation/aerospace, it is first necessary to explore the literature surrounding the topic in similar, high-stress fields and professions to better understand any parallels that may exist between the two.

Mental Health in High-Stress, High-Stakes Professions

There are some professions and occupations that expose individuals to a higher degree of emotional, psychological, and physical strain or stress than others. Broadly, positions within the areas of criminal justice, medicine, and social work are largely regarded as “high-stress, high-stakes” (Petros, 2019) because of the danger, consequences, and impact those employed within the field(s) can have based on their actions, behaviors, and decisions. The very nature of these positions can have adverse effects on the mental health of the employees functioning within these roles. To explore the impact on their mental health, literature on police officers (criminal justice) and healthcare workers (medicine) will be examined.

Police Officers/Law Enforcement

According to Santre (2024), the number of police officers suffering from mental illnesses is becoming a significant public health concern; these officers are more likely to experience mental health challenges than the general population, which is primarily due to the nature and demand of their job. Previous research linked law enforcement and criminal justice-related work to higher levels of physical, psychosocial, and anticipatory stress. Despite this, police officers are reluctant to seek mental health treatment (Santre, 2024), which is a similar phenomenon that occurs within aviation/aerospace professions, particularly among professional pilots. Research by Santre (2024) identified several risk factors impacting the mental health of police officers with poor social support (from peers and superiors), organizational culture/environment, and managerial instability being amongst the more prevalent. These aforementioned factors bear semblance to those impacting aviation/aerospace professionals, especially the lack of peer support and support networks to help navigate these problems. While this is known, the promotion of mental health presents another area for improvement. Due to stigma, police officers tend to be discouraged from seeking support to overcome their mental health challenges (Santre, 2024) despite the positive outcomes the support (e.g., talking to a therapist) can have on the mental health of these individuals. This is yet another mental health parallel between law enforcement and aviation/aerospace professionals, specifically the stigma that exist which prevents, deters, and stymies individuals from seeking treatment due to perceived weakness (Charlie Health Editorial Team, 2022) and fear of reprisal

(Choy, 2023). Given the pivotal role police officers play in society as essential workers, the stigma surrounding and barriers to mental health treatment needs to be addressed, and the same can be said for those working in medicine.

Healthcare Workers

The mental health of those in the medical field was spotlighted during the height of the COVID-19 pandemic as numerous health care workers and in particular, nurses, were burned out, stressed, fatigued, and ready to strike (Hassan, 2023) over working conditions and inadequate pay. While the U.S. in no longer (officially) in a pandemic, working conditions have been slow to improve within the medical field. Specifically, these working conditions placed over 20 million U.S. health care workers at risk for mental health issues. Commonly cited concerns amongst this demographic of employees included stress, burnout, depression, and anxiety (National Institute for Occupational Safety and Health [NIOSH], 2024), several of which were also adduced by those within the aviation/aerospace industry (Armstrong, n.d.; Vance, 2019) and particularly amongst individuals identifying as Black (Access, 2022; Mental Health America, 2023). Research by NIOSH (2024) found that when comparing data from 2022 (onset of the pandemic) to 2018 (pre-pandemic), nearly 46% of health care workers reported feeling burned out (a 14% increase) and 44% intended to look for a new job (a 11% increase). The primary reason shared for these increases stemmed from the significant emotional and mental toll of their roles as health care workers. To help these workers combat their mental health challenges supportive work environments and trust between management (i.e., leadership) and workers were posited as two pivotal strategies (NIOSH, 2024). These two strategies parallel those recommended within the aviation/aerospace industry. Therefore, while the mental health challenges (e.g., stress, anxiety, and depression) that impact individuals within other high-stress, high-stakes professions are similar to those within aviation/aerospace, the challenges within law enforcement and medicine are more so well-documented and have been studied at a greater frequency than those in aviation/aerospace. Further, the implications of these mental health challenges on a historically marginalized population (i.e., Black Americans/Black aerospace professionals) that is operating within a White-dominated field presents a unique challenge that has essentially been neglected in contemporary scholarship, especially when examining mental health concerns.

Mental Health in Aviation

The taboo surrounding mental health in aviation has been prevalent for years. This mounting taboo and associated stigma led to unfortunate situations where professional pilots who experienced mental health challenges and discussed psychological conditions had their careers cut short (Hubbard, 2016). Consequently, there have been fewer self-reports of mental health challenges by professional pilots in U.S. aviation because of the extreme action by the FAA. Professional pilots have become conditioned to refrain from sharing psychological struggles in fear of losing their wings and being grounded. This stigma is similar to bullying because pilots became conditioned to protect their jobs over safety (Hubbard, 2016). Further, Hubbard (2016), observed that clinical psychologists, psychiatrists, and close friends knew pilots were afraid of exposing their flaws as this could cost them their financial stability, job security, and potentially impact them from working in the aviation/aerospace industry as a professional pilot due to being blackballed.

Despite the negative experiences of pilots and the damage that silence has done to the industry, the progress being made could be improved with the expansion of qualifying treatments and/or medications. Removing the barriers impacting mental health could also help motivate aerospace professionals to seek the care necessary to thrive. Additionally, supporting the cost of care could entice pilots to seek the needed treatments in contrast to breaching trust between their employer and passengers as they seek medical treatments on their own. Alternative measures could also include pilot-centric mental health programs such as: 1. UpLift - This is a mental health program from the John D. Odegard School of Aerospace Science - a peer-to-peer support program for students in aviation and health sciences from the University of North Dakota (Vonasek, 2023). The UpLift program has supported many students

to overcome the struggles they may or have experienced as aviators. The program trains students to support others who may seek mental health support. This approach could help in the normalization of mental health in aviation and continue the conversation of mental health that could save lives and enhance safety. Although mental health is proclaimed to be a relevant topic in aviation, the discourse surrounding it is lacking. The mental health of minoritized aerospace professionals and that of Black aerospace professionals in particular, is a discussion that has been long overdue.

Methodology

Purpose Statement and Research Questions

The purpose of this exploratory research is to understand the mental health needs and experiences of Black aerospace professionals. Doing so inform industry leadership of ways they can improve the work environment to improve the mental health of all aerospace professionals and in particular, Black aerospace professionals. This is paramount in helping combat the "double taboo" associated with mental health that adversely impacts Black aerospace professionals. The combat of this double taboo is necessary to mitigate and remove help-seeking barriers for Black individuals, improve (mental) health outcomes for an already marginalized and historically vulnerable demographic, and destigmatize a topic that has been one avenue for social purgatory in U.S. society and within the aviation/aerospace industry. Further, combatting this phenomenon may prove salient in continuing to diversify the aviation/aerospace workforce through increased access to mental health support and thereby, increased persistence to remain in the industry. The study may also benefit collegiate programs that tend to possess similar training/education environments to that of industry. Given the purpose of this study, the following central (or primary) research question was developed:

CQ: How do Black Aerospace professionals characterize their experiences with mental health?

There are two sub-research questions forming the secondary research questions (RQs) of this study:

- RQ #1: What are the mental health needs of Black aerospace professionals?
- RQ #2: What factors, if any, contribute to the mental health of Black Aerospace professionals?

Data Collection and Analysis

This study employed a mixed methods approach to garner both qualitative and quantitative data through an anonymous survey that was disseminated online. A mixed methods approach was chosen to offset the limitations innate to the exclusive use of quantitative and qualitative approaches (Harvard Catalyst, 2024), allowing for the strengthening of the results/findings relative to mental health to furnish a more comprehensive understanding of the nuanced topic as it pertains to Black aerospace professionals. Additionally, a mixed methods approach was the most apt in bolstering the recommendations and potential resolutions that would be derived through numerical trends and individual experiences to enhance the mental health experiences of Black Americans and Black aerospace professionals. Further, such an approach aided in addressing research questions that may be too complex to be addressed by a single method while also helping overcome the limitations of a smaller sample size given the fact that Black aerospace professionals account for less than 10% of the aviation/aerospace workforce as cited by (Johnson, 2024; Johnson, 2023; Lutte et al. 2023).

To address the identified challenges of gaining access to participants in aviation survey research (Lutte et al. 2023), the authors collaborated with the Organization of Black Aerospace Professionals (OBAP) to conduct a purposive sample survey. The survey was dispersed to individuals who were listed as active or current members in the OBAP database. While the authors recognize the decision to collaborate with OBAP to disseminate the survey and utilize its member base for the study was sound because of the increased access to a niche population that has been significantly underrepresented in aviation/aerospace (Lutte et al. 2023; Johnson, 2023; Johnson, 2024), this decision presents its own challenges, particularly in the forms of limitations and biases. One such limitation stemming from this sampling decision is limited generalizability. Due to context-specific findings from the study, the results may not be generalizable to other populations (e.g., racially minoritized individuals aside from Black Americans) who work as aerospace professionals since OBAP was the only organization sampled. This connects to another limitation: sample homogeneity. By sampling only within OBAP, there is a higher likelihood of fostering a homogenous sample, which is one that lacks the diversity needed to capture a range of perspectives and experiences. As such, the study is limited in its ability to capture various experiences and any differences that may exist between them. For instance, the experiences of OBAP and non-OBAP members likely differ, but because of the sampling decision, the study is limited in its ability to ascertain these differences and in a broader sense, understand the holistic experiences of Black aerospace professionals. Although the aforementioned were innate limitations of the chosen sampling method, the scholastic benefits of collaborating with OBAP outweighed these limitations, especially since this was an exploratory study meant to derive a baseline of the mental health experiences and needs of Black aerospace professionals given the lack of research conducted in this area.

In addition to these limitations, the OBAP sampling choice presents two types of selection bias: non-representativeness and self-selection. Since Black aerospace professionals were recruited through OBAP exclusively, those that participated may not be representative of the broader sample of Black aerospace professionals due to them possessing characteristics that different from the general population of Black aerospace professionals. Additionally, since participation in this study was voluntary, the Black aerospace professionals who participated may differ systematically from those who did not participate, leading to biased results due to self-selection. The survey questions were constructed in a way to mitigate both of these biases, but because of the nature of survey-based research, the associated risks of non-representativeness and self-selection were inevitable, especially when dealing with a demographic of individuals that are difficult to access (Lutte et al. 2023) and historically, have had low participation rates in the aviation/aerospace industry (Johnson, 2023). Based on this, the researchers determined the biases and limitations were acceptable, within tolerances, and mitigated to the best of their ability.

The survey received Institutional Review Board approval from UNO's Office of Regulatory Affairs (IRB # 0795-23-EX) and was distributed by OBAP. Survey research was selected to provide a quantitative description of the experiences and/or perceptions of a specified group (Creswell & Creswell, 2018). The 28-question survey consisted of a combination of 22 closed-ended (e.g., multiple choice and Likert-scale) and six open-ended questions. Questions for the anonymous survey focused on personal information (e.g., demographics), employer/organization, mental health in general, and mental health in the Black community (Appendix A).

These question groups were designed to understand the experience(s) of Black aerospace professionals with mental health issues or challenges within their workplace and in their lives as members of the Black community. Additionally, questions were designed to measure whether some of the identified factors positively or negatively impacted the mental health status of the individual. The open-ended questions provided participants with an opportunity to furnish their own written responses to some

of the more sensitive mental health questions. These questions aided in bringing individual voices to the group of participants and their concerns surrounding mental health (Boyd & Bliss, 2024). Further, the comments provided by the participants helped identify context and themes, potentially highlighting elements or concepts not specifically obtained via the interview protocol (Johnson, 2023; Boyd & Bliss, 2024). Therefore, the use of both question types (closed- and open-ended) helped ensure a more complete understanding of each participant's concerns surrounding mental health issues (particularly anxiety, stress, and depression). As a result, a more representative data set existed, allowing the researchers to derive appropriately guided conclusions and recommendations (Boyd & Bliss, 2024).

The survey questions were developed through previous research that examined contributors or factors to one's mental health status, issues, and/or challenges faced within the aviation/aerospace industry. The lack of focus on the mental health of Black aerospace professionals within previous research also aided in question development since mental health tends to be a taboo topic in Black communities (McLean Hospital, 2023) and the aviation industry (Barajas et al. 2022). For example, Albelo and McIntire (2023) identified unique challenges minoritized students in aviation experienced in a small STEM university, in which finding a sense of belonging, overcoming institutional inequalities, traversing cultural differences and microaggressions, and being subjected to an unhealthy campus climate all had an impact on students' mental health. Given the parallels between the collegiate aviation training environment and that of the aviation/aerospace industry, one could reasonably presume that there are similar issues and challenges in the industry. These factors also informed further research specifically targeted at underrepresented minoritized students in aviation/aerospace, but at a larger university across various aviation/aerospace programs (Albelo et al. 2023). For this survey, both aforementioned studies were reviewed, and questions were drafted using some of the previously identified factors as a basis to create a survey specifically targeted to the research questions. The remainder of the questions were drafted based upon the scarcity of research exploring the mental health of Black aerospace professionals.

Study Participants

The researchers targeted 100 completed surveys. This was determined to be an appropriate sample size that accurately reflected the OBAP membership and minimized sampling error (Boyd and Bliss, 2024; Sheppard, 2019, p. 111-112). After the researchers' initial email invitation, follow-up reminder emails were promulgated every two weeks – all email correspondence included the study's informed consent form (Appendix B) for potential participants to review prior to completing the survey. The survey was closed for responses at the conclusion of 70 days. In total, 110 survey responses were received; of the 110, 75 were completed by individuals who identified as Black aerospace professionals. Due to the survey being anonymous, the geographic dispersion and other potentially identifying information of completed surveys is unknown. The only known demographic data collected through the survey: race/ethnicity, age, aviation/aerospace occupation, and number of years in the aviation/aerospace industry.

Validation Process

The reliability of the 28-question survey was ensured through the incorporation of several measures. The questions comprising the online survey and their order were carefully considered so the survey's length was appropriate, easy to understand, and connected to the research questions. Each survey question was written to mitigate the potential for misunderstandings or perceived ambiguity by the participants, and follow-up questions were included so participants could expound further.

The validity of survey questions was established by conducting a pre-test of the survey. This entailed inviting roughly 10 aerospace professionals known to the researchers to take the survey (Lutte et al. 2023). They were asked to examine the survey questions, confirm question connection to the topic at-hand, verify question clarity regarding wording and instruction, and inform the researchers of any issues or errors they experienced while taking the survey. Consequently, their comments and suggestions resulted in minor revisions to improve the survey.

Statistical Analysis

Quantitative - Close-Ended Questions. The collected data was analyzed using a variety of common statistical methods to identify trends and other pertinent factors. Identification of these details allowed the researchers to provide a detailed findings section, as well as evidence to support logical conclusions. The six multiple-choice questions that focused on demographic-related information were examined using descriptive statistics. According to Dunn and Clark (2002), "With descriptive statistics, we summarize data, making calculations, tables, or graphs that can be comprehended easily" (Dunn & Clark, 2002). The 13 Likert scale questions, as well as the five short-answer questions, were also analyzed using descriptive statistics, in addition to statistical inference. There are several categories of measurement classified as descriptive statistics, including, measures of variability (or spread) and frequency distribution. Frequency distribution was the best method for review of the collected data, as it focuses on expressing the number of times a data point was chosen. As a result, "a frequency distribution allows one to easily see the most popular answers for all types of questions within the survey, through the use of percentages and other figures" (Dunn & Clark, 2002). These distributions were useful in guiding the researchers' determination of conclusions from the research questionnaire and proffering recommendations. Statistical inference, also known as inferential statistics, is also relevant when creating conclusions that are supported by fact. Statistical inference is based on the mathematical theory of probability and involves drawing conclusions from the data (Dunn & Clark, 2002).

The researchers analyzed all participant survey responses using data analysis completed within the Qualtrics XM software. This software helped ensure the strongest integrity in data translation and application to support the study's central and sub-research questions (Boyd & Bliss, 2024). The Qualtrics software provided outputs to several statistical tests that are commonly used to derive descriptive statistics. To analyze the survey, chi-square tests were conducted for 12 closed-ended survey questions to determine if responses differed significantly among various groups (different age groups, commercial airlines vs. other areas, pilots vs. other positions, and years worked in the aviation industry). The results and interpretations from the statistical analysis of the collected data are provided in the findings.

Qualitative - Open-Ended Questions. For the open-ended survey questions, the data explication technique used was adapted from a five-step process commonly used within phenomenological research. It should be noted that the term "data explication" is used instead of "data analysis" because of the adverse connotations the term has for the phenomenological approach (Groenewald, 2004; Johnson, 2023). The term "analysis" insinuates "breaking into parts", which diminishes the phenomenon being explored whereas the term "explication" denotes exploring the phenomenon without losing paramount context relative to the themes derived (Groenewald, 2004; Johnson, 2023). This explication process was assisted through the use of Nvivo software (Lutte et al. 2023; Johnson, 2023), which the researchers utilized to compile, categorize, and review the responses to each of the open-ended questions. The data collected via Nvivo was explicated by way of open coding the data line-by- line to identify themes the various themes that emerged from participant responses (Johnson, 2023) to facilitate the five-step process below.

Step 1 – Bracketing. All the preconceived notions, pre-existing knowledge, and personal experiences associated with the phenomenon were notated in an excel file for each open-ended question to bracket the information. This was conducted prior to the data explication process, during the explication of each question, and after explication of each question (Groenewald, 2004; Johnson, 2023). Prior to transitioning to the next step, the imported open-ended questions were reviewed and cleaned to ensure accuracy of the information contained within each question.

Step 2 – Units of Meaning Delineated. Once bracketed, the units of meaning were delineated. This step was done in two phases to ensure accuracy, diligence, and objectivity. The first phase consisted of isolating key phrases, statements, and/or statements that spoke to the participants' experiences with mental health for each open-ended question. This was repeated for each question until all six were completed, effectively creating a "bank" of isolated statements (i.e., codes) that were categorized by nodes in the Nvivo system. The second phase consisted of thoroughly reviewing this bank to eliminate any redundant codes in terms of content and significance (Groenewald, 2004) or create sub-categories within primary codes, if necessary (Johnson, 2023).

Step 3 – Units of Meaning Clustered to Formulate Themes. After the units of meaning were delineated in Nvivo, the codes were clustered to formulate themes. Codes with similar meaning were grouped together based on topical significance, which effectively formulated the associated theme for each category. By the end of this step, there were 10 themes formulated; this process aided in the development of central themes, underscoring the essence of the clusters (Groenewald, 2004; Johnson, 2023)

Step 4 – Summation of Data. The summation of each open-ended questions consisted of a summary that incorporated all the emergent themes from the data to render holistic context of the experiences (Groenewald, 2004; Johnson, 2023). The code bank created in the earlier steps were referenced to assign the recently formulated themes to the posited research questions. Typically, this is the step where "member-checking" would occur to help ensure validity of the themes derived, but since interviews were not conducted and the survey responses were anonymous, this was not possible. Instead, triangulation, which entails using multiple methods or data sources in qualitative research to develop a comprehensive understanding of the phenomenon being explored (Carter et al. 2014), was used to bolster the validity, credibility, and reliability of the findings/results. For the context of this study, a hybrid triangulation method was used, specifically leveraging the online survey results (data triangulation), multiple researchers to explore the phenomenon (researcher/investigator triangulation), and multiple methods – quantitative and qualitative (methodological triangulation) to validate the data.

Step 5 – General Themes Derived and Composite Summary Drafted. After the first four steps were completed, the general themes for all the interviews were derived and a composite summary of the phenomenon was drafted. This summary was included in the findings section and shared in a more holistic manner within the discussion and conclusion sections. The purpose was to transform the essence of the participants' responses into digestible experiences for readers via language commensurate with scientific discourse (Groenewald, 2004; Johnson, 2023). The general themes were derived by examining the list of themes that were validated during step four.

Findings

Participant Information:

There were 110 total survey responses received, 86 of which were complete responses. Of the 86, only 74 respondents identified as Black, thereby meeting the inclusion criteria for the study. Table 1 shows the detailed participant demographic information which includes - age range, number of years in industry (i.e., general aviation/aerospace experience), and the number of participants with x years of industry experience. Those within the 35–44-year-old range comprised the largest number of respondents at 33% (25 participants). The next largest groups were ages 25-34 years at 23% (17 participants) and 45-54 years at 20% (15 participants). These age ranges also had the largest variation of career fields. The smallest groups were participants within the ages of 55-64, 18-24, and 65-74 years old at 16% (12 participants), 4% (3 participants), and 3% (2 participants), respectively.

Table 1

Characteristics of the Sample - Age and General Aviation/Aerospace Experience (n=74)

Age Range	Years in Industry						
	< 1 year	1-3 years	3-5 years	5-10 years	10-15 years	15-20 years	>20 years
18 - 24	1	2					
25 - 34	1	4	3	7	1	1	
35 - 44	4	2	2	1	7	8	1
45 - 54				3	2	2	8
55 - 64						1	11
65 - 74	1						1

Table 2

Characteristics of the Sample - Age and Aviation/Aerospace Sector Experience[2] (n=74)

Table 2 shows detailed participant demographic information as well, but focuses on age range, specified sectors of the aviation/aerospace industry, and the number of years of experience participants have in a specific sector. Those within the 35–44-year age range comprised the largest number of respondents across the five sectors with 17 participants (23%) working as professional pilots, 3 participants (4%) working in management/administration, 2 participants (3%) working in aviation education, 1 participant (1%) working in the military, and 1 participant (1%) falling into the N/A category. working in the military 33% (25 participants). The smallest group was the 75–84-year-old range, which consisted of 1 participant (1%) who worked in the aviation education sector.

[2] Due to the vast number of occupations reported by the participants, the positions/occupations were grouped into five main categories or sectors of the aviation/aerospace industry to enhance manuscript readability. These sectors consist of: commercial/business/cargo, management/administration (e.g., airport management, federal government, air traffic control, etc.), aviation education, military, and not applicable. It should be noted that the N/A category was provided for participants who either did not respond with an occupation or self-input N/A in the survey.

Age Range	Aviation Sector	Years in Industry						
		< 1 year	1-3 years	3-5 years	5-10 years	10-15 years	15-20 years	>20 years
18 - 24	Commercial/Cargo/Business	1						
	Management/Administration		1					
	Aviation Education		1					
25 - 34	Commercial/Cargo/Business			2	5			
	Management/Administration		1	1			1	
	Aviation Education		3					
	Military				2	1		
	N/A	1						
35 - 44	Commercial/Cargo/Business	1	2	2	1	5	6	1
	Management/Administration					1	2	
	Aviation Education	2						
	Military					1		
	N/A	1						
45 - 54	Commercial/Cargo/Business				3		1	7
	Management/Administration						1	1
	Aviation Education					2		
55 - 64	Commercial/Cargo/Business							8
	Management/Administration							2
	Aviation Education							1
	Military						1	
65 - 74	Aviation Education		1					1
75 - 84	Aviation Education							1

Table 3

General Theme(s) Overview

Theme	Name	CQ/RQ Addressed
1	Being a Black American/Aerospace Professional	CQ
2	"Everyday" Struggles	CQ
3	Culture of Fear	CQ & RQ #2
4	Jeopardizing Job Security	CQ, RQ #1, & RQ #2
5	Mixed Managerial Messaging	RQ #1
6	Mental Health Prioritization	RQ #1
7	Sources of Support (SOS)	RQ #1 & RQ #2
8	Representation Woes	RQ #2
9	Lack of Standardization	RQ #2
10	Societal Acceptance, Awareness, and Access	RQ #2

Thematic Overview

Table 3 outlines the general themes that emerged from the participants' responses to the open-ended survey questions. Traditionally, themes are ranked or presented based on the frequency with which they are mentioned by participants or their prevalence in the research (Johnson, 2023). However, such a ranking system was not utilized for this study because the richness of the themes resides in their detailed, contextual nature, which may be lost or overlooked if categorized in a hierarchical manner. Further, this is an exploratory study, which aims to uncover patterns and generate insights into an under-researched topic. As such, ranking the themes might suggest a level of precision and finality that is not appropriate given the exploratory nature of the research. However, due to the pervasiveness and gravitas of the information shared and knowledge gleaned, it was determined that certain words or phrases

should be explicitly numerated and stated. That said, it should be noted the word "fear" was mentioned explicitly 23 times in the six open-ended questions.

Themes could alternatively be presented in the order in which the research questions were posited. This means themes one through four address the central research question, which asked, "How do Black Aerospace professionals characterize their experiences with mental health?". Themes five and six explicitly address the first sub-research question (RQ #1), which asked, "What are the mental health needs of Black aerospace professionals?". Themes six through ten address the second sub-research question (RQ #2), which asked, "What factors, if any, contribute to the mental health of Black Aerospace professionals?". The findings below provide in-depth detail about each of the emergent themes as conveyed by the participants as well as their connection to the aforementioned research questions.

Being a Black American/Aerospace Professional

The *Being a Black American/Aerospace Professional* theme effectively addresses the central research question guiding this study and serves as an excellent introductory theme into the underpinnings of mental health experiences for Black Americans, who are also aerospace professionals. This is because of the extensive insight provided into understanding how these professionals characterize their experiences with mental health in the aviation/aerospace industry through the functional lens of their race/ethnicity, which is described in an extremely pervasive manner.

Participants explained the profound impact of being "Black," whether that be a Black American in the U.S. or Black aerospace professional in the industry, on their mental health. Often, this impact was described in a negative manner, meaning the two identities were one and the same in the type of perceived respect (or lack thereof) they were given by others, specifically by non-minoritized colleagues in the industry. This is eloquently expressed by one participant who shared, "[There were] consistent attempts at marginalizing my contribution and almost never given the benefit of the doubt. Most of the time [I am] second-guessed in many ways." Such a statement underscores the lack of respect, collegiality, and professionalism one would not expect from colleagues and/or leadership in any industry, let alone an industry predicated upon camaraderie, highly touted credentials, and qualifications. When asked to identify some of the mental health struggles they experienced as Black aerospace professionals, approximately 81% of respondents cited stress, anxiety, and depression as common challenges. Of note, there were 20% of those respondents who mention racial anxiety, which presumably stems from an environment or culture that exists within the aviation/aerospace industry that is highly critical of the performance, actions, or presence of Black or other minoritized professionals. Evidence of such an environment was alluded to by two participants who stated, "A little stress. Sometimes uncomfortable with being The ONLY One" and "Every black aerospace professional has to deal with people that think the black pilot only got the job because of a diversity program." Both statements point to mental health challenges stemming from functions of race while discrediting and diminishing the knowledge, skills, and abilities (KSAs) of these professionals. When factoring in gender, the mental health narrative surrounding Black Americans/Aerospace Professionals only worsened as posited by one participant who said, "As a Black woman, I have experienced a heavy amount of racism and misogyny. This has created training hiccups, increased financial stress, and lack of upward mobility as an instructor."

"Everyday" Struggles

The *"Everyday" Struggles* theme also effectively addresses the central research question guiding this study and complements the *Being a Black American/Aerospace Professional* theme. This is because the theme yields pivotal insight into the common or general struggles these professionals experience in

their everyday life that impact their mental health (often in an adverse manner). This is in addition to whatever negative experiences they experience as a function of their racial identity as Black Americans/aerospace professionals. Some of the most commonly shared mental health characterizations by participants centered anxiety, stress, and depression. This was supported by one participant who stated, "Stress due to extended/complicated work schedule changes due to weather, maintenance issues, etc.". While describing their mental health experiences, another participant expressed issues with work-life balance and its impact on their mental health, stating, "Work-life balance, rest concerns, and the impact of not getting rest". It should be noted, in response to one of the open-ended questions that inquired about the types of mental health struggles experienced, the words "stress", "anxiety" and "depression" were explicitly mentioned by 47%, 29% and 25% of respondents, respectively (Figure 1). The frequency and prevalence of these terms demonstrate the pervasiveness of mental health struggles in the lives of Black aerospace professionals. However, 19% of respondents also indicated they did not believe they experienced any mental health struggles solely based on being Black, but from being in the aviation/aerospace profession (Figure 1). There were also other sources of mental health struggles mentioned such as family issues, concerns for finances, self-doubt, fatigue and work-life balance, though less frequently (Figure 2).

Figure 1

Mental Health Struggles for Black Americans/Aerospace Professionals

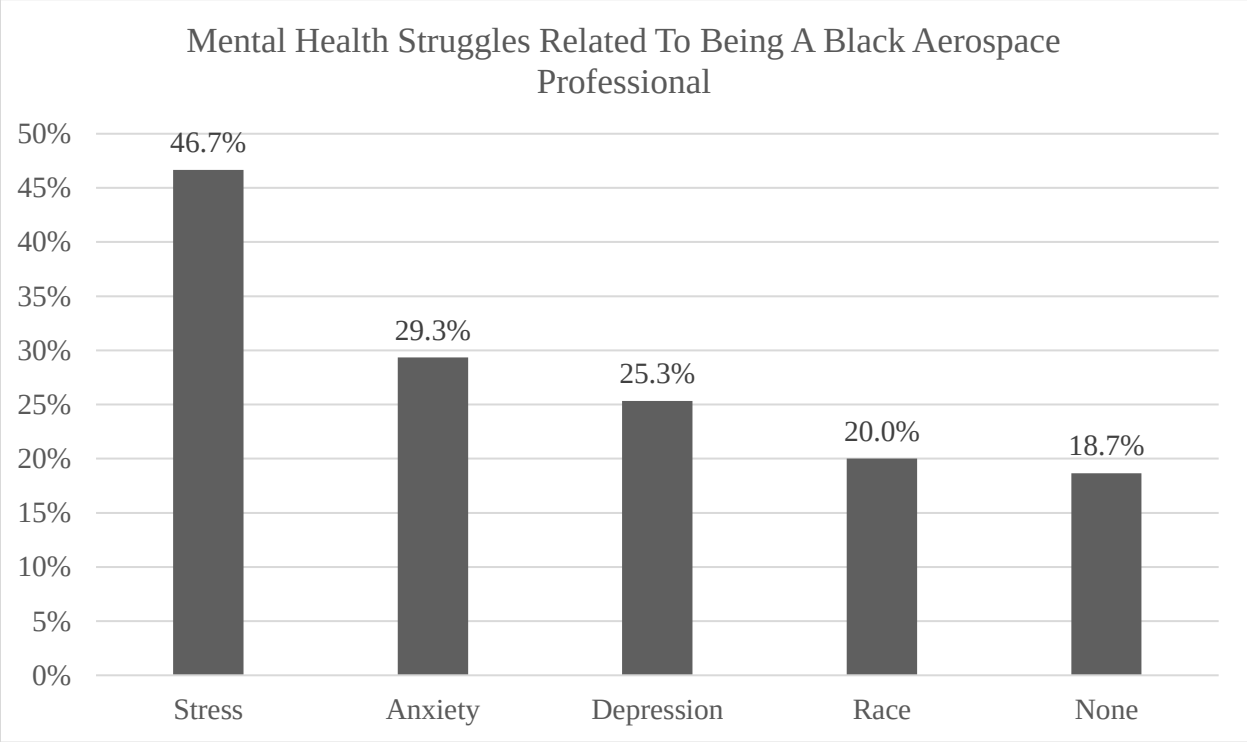
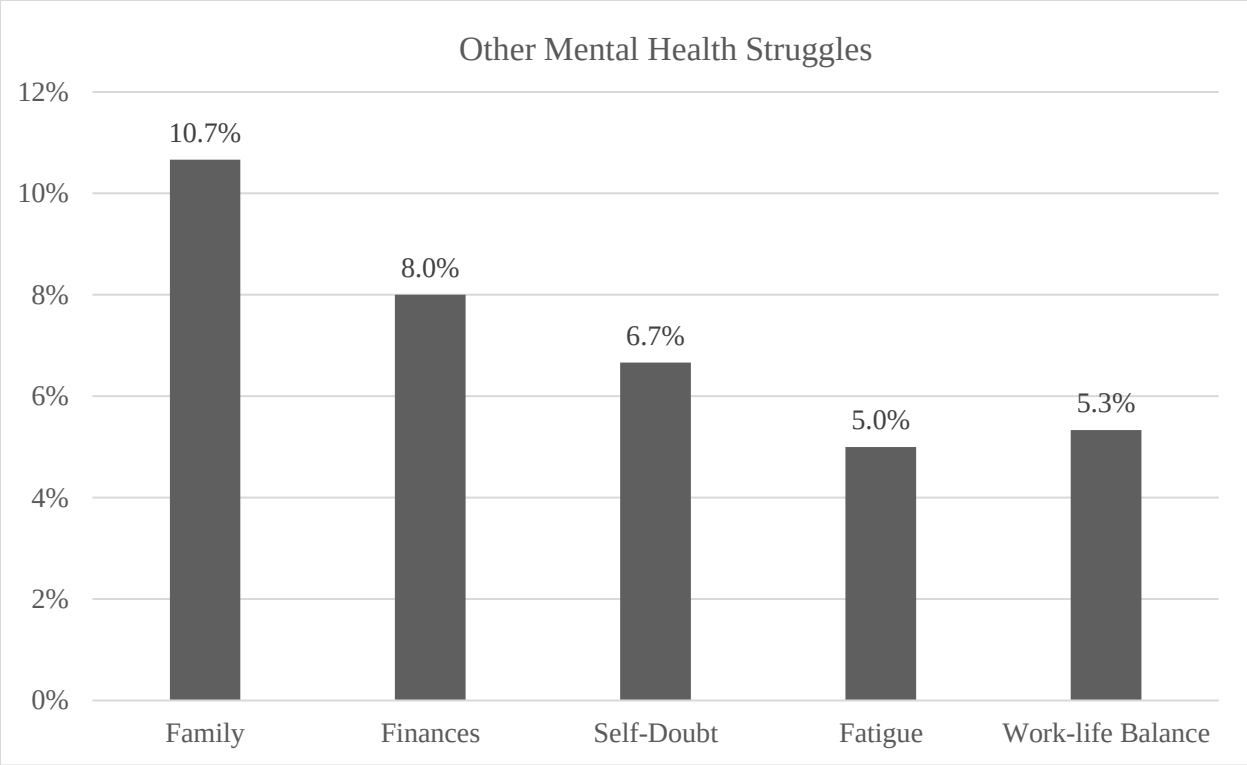


Figure 2

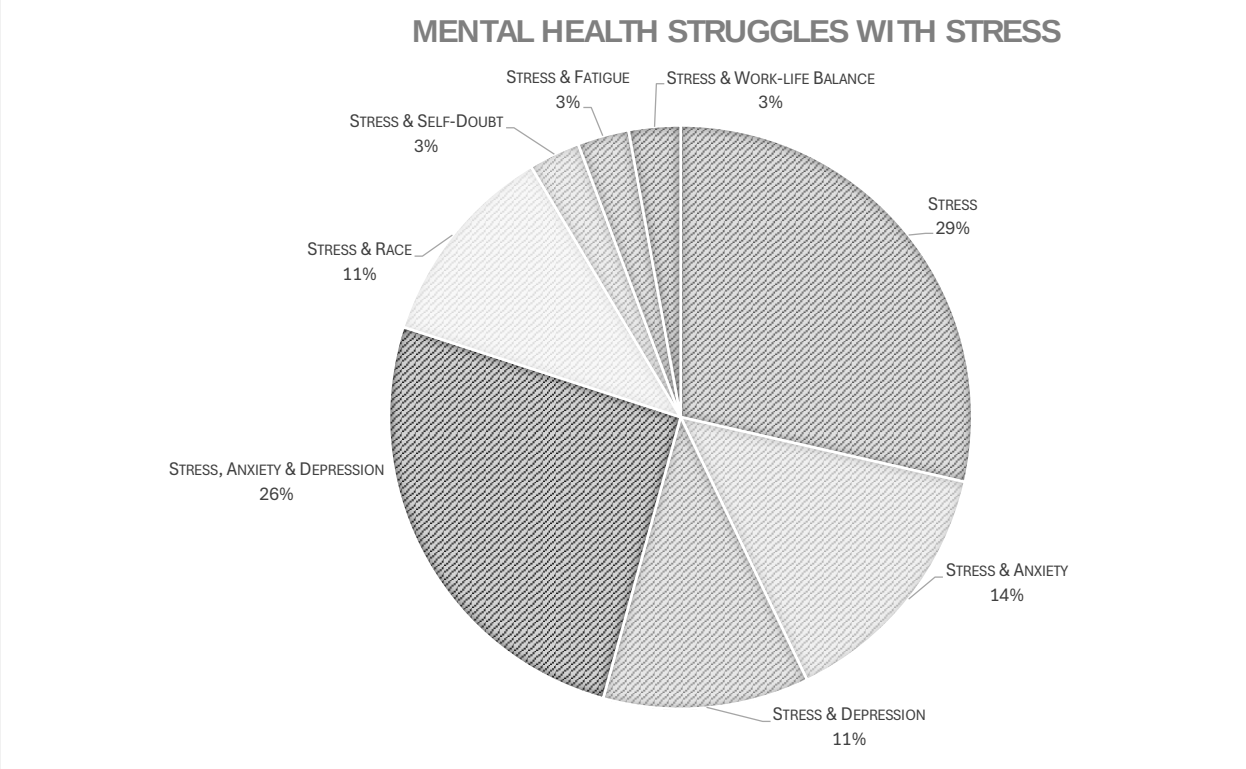
Additional Sources of Mental Health Struggles



The remaining 81% of participants who indicated they had mental health struggles (Figure 1) mentioned stress most frequently - both alone and in conjunction with one or more other struggles. This can be seen in Figure 3, which shows these frequencies by percentage. Stress was mentioned 47% of the time, exclusive of other frequently cited mental health struggles (e.g., anxiety, depression, and race) as seen in Figure 1, or less frequently cited struggles (e.g., family, finances, self-doubt, fatigue, and work-life balance) as depicted in Figure 2. Regarding their work experiences, the combination of stress, anxiety and depression were mentioned by 26% of participants, stress and anxiety by 14%, stress and depression by 11%, and stress directly related to their race by 11%. When combined with the less frequently cited struggles, each was mentioned by 3% or less of the participants.

Figure 3

Mental Health Struggles Stemming from Stress



Culture of Fear

The *Culture of Fear* theme relates to both the central research question and RQ #2 because of the potential ramifications these professionals may experience if they are candid or transparent about any/all mental health struggles they experience. The fear of repercussions, such as losing their medical or being "grounded" from their employer or the Federal Aviation Administration (FAA), respectively, prevents them from being open about their mental health. Such a fear is supported by 56% of participants who expressed they were reluctant to share their concerns with their employer. When asked why they were reluctant to share and/or seek help with their mental health concerns, participants posited: "[I am] nervous about the repercussions that could result from speaking up about the issues.", "I'm not sure what repercussions I would face if I were to talk about my mental health candidly." and, "Because I fear that my employers will see me as a liability rather than an asset." Further preventing participants from sharing details about their mental health is an apparent "culture of fear" that is incumbent to the FAA as described by one participant. This fear-mongering culture was directly supported by the fact that 43% of participants believe the FAA and other agencies committed to the promotion of aviation safety show far too little concern for their mental health. This is evident in the statements of several participants who, when expressing their reasoning for not being forthcoming about their mental health, shared: "Always fear FAA repercussions.", "Time and fear of FAA.", and "The FAA will not work with you for the best solution." It should be noted the word "fear" was explicitly mentioned 11 times by participants in their responses to two of the open-ended questions that inquired about their hesitancy to share and seek support for their mental health.

Jeopardizing Job Security

The theme of *Jeopardizing Job Security* directly addresses RQ #1 and RQ #2 and complements the previously discussed theme: *Culture of Fear*. The culture of fear causes participants to strongly

believe that transparency about their mental health challenges could inevitably jeopardize their job security. When asked why participants were hesitant to share their mental health challenges and/or what has prevented them from seeking help, the commonality amongst the responses stemmed from an immense fear of losing their ability to fly and thereby, losing their job. Such a fear was expressed by numerous participants; one participant stated, "Fear of losing medical [certificate]." In a similar vein, a different participant elaborated upon several reasons that factored into their decision to not seek help, specifically positing, "Stigma, fear of being dismissed, fear of being viewed as unfit to train for a profession in aviation." While the previous two participants shared their mental health concerns as professional pilots, the needs of and factors contributing to the mental health of professionals on the administration/management side are extremely similar. This similarity is evident as one participant expressed, "If I discussed my mental health, management would hold back on company/professional progression." It should be noted participants directly or indirectly expressed a fear of losing their medical (e.g., deferral or revocation), being "grounded", and/or being deemed "unfit to fly" 29 times in their responses.

Mixed Managerial Messaging

The *Mixed Managerial Messaging* theme directly addresses RQ #1 because there was a dichotomous response, namely a lack of concern or support exhibited by organizational leadership. This was expressed by 43% of the participants relative to the messaging they received from their respective employers surrounding mental health needs and concerns. When asked why participants were reluctant to share their mental health concerns with organizational leadership, several participants cited a clear lack of concern or care by their leadership (e.g., direct supervisors or upper-level leaders). Such lackluster concern was explicitly expressed by one participant who stated, "[I] felt like management didn't care." This was underscored by another participant who exclaimed, "It seems as if they do not care, like you are talking to a brick wall. I am a student pilot. There is a lot on my plate however, they do not genuinely care as long as the crew arrives and the plane gets out."

Alternatively, approximately 57% of participants had completely different experiences with their organizational leadership and received the mental health support they wanted and needed. This was eloquently encapsulated by one participant who shared, "My employer has emphasized the options available and that my employment would not be in jeopardy." The alignment of words and actions surrounding mental health support provided to employees was a salient need expressed and appreciated by participants. As conveyed in a succinct manner by one participant, "My employer makes it clear through words and behavior that they highly value our mental health and stand ready to assist if you desire help." Such supportive management was accentuated by a different participant who said:

> My current employer, NetJets, is very aware of mental health issues and has a robust program to address these issues in a non-punitive way. If I had any serious mental health issues today I would feel very comfortable talking to the union at my employer about it since they are the ones that manage the program.

Mental Health Prioritization

The *Mental Health Prioritization* theme also directly addresses RQ #1 since participants know their mental health is a priority, recognize what they need to manage it, and take action to ensure those needs are met and that resources remain to continue prioritizing mental health. The responses to the questions that alluded to prioritizing mental health, internal and external to the workplace, demonstrated participants were not reluctant to share their mental health concerns. The responses also suggested participants were aware of mental health resources that could help. Specifically, outside of the workplace,

56% of participants believe their mental health is extremely important, 35% believe it is very important, and only 8% believe it is moderately important. With respect to inside the workplace, 57% of participants believe their mental health is extremely important, 29% believe it is very important, and 9% believe it is moderately important. Still, some participants expressed strong sentiments about keeping personal matters such as mental health separate from work-related matters due to privacy concerns. One participant shared, "Because mental health has a privacy aspect to it, I don't allow my employer into my personal life beyond the job. My employer should leave enough flexibility for me to be human and handle my affairs outside the workplace." This, however, was not a sentiment shared by all. On the contrary, another participant boldly described their reasoning for not being hesitant to share their mental health concerns while also showcasing how their mental health is a priority:

> I wasn't reluctant to share because I don't think I have done anything wrong or something that my employer could hold against me. I actively participate in maintaining my mental health. It is very important to me and it's something I wouldn't waver on. I also believe that what I do enhances the safety and wellbeing of my company and all my colleagues as well. And I believe my employer sees it as such.

Such a profound statement about mental health prioritization was further supported by another participant who boldly shared, "My mental health is extremely important to me and I am unwilling to sacrifice that for a job."

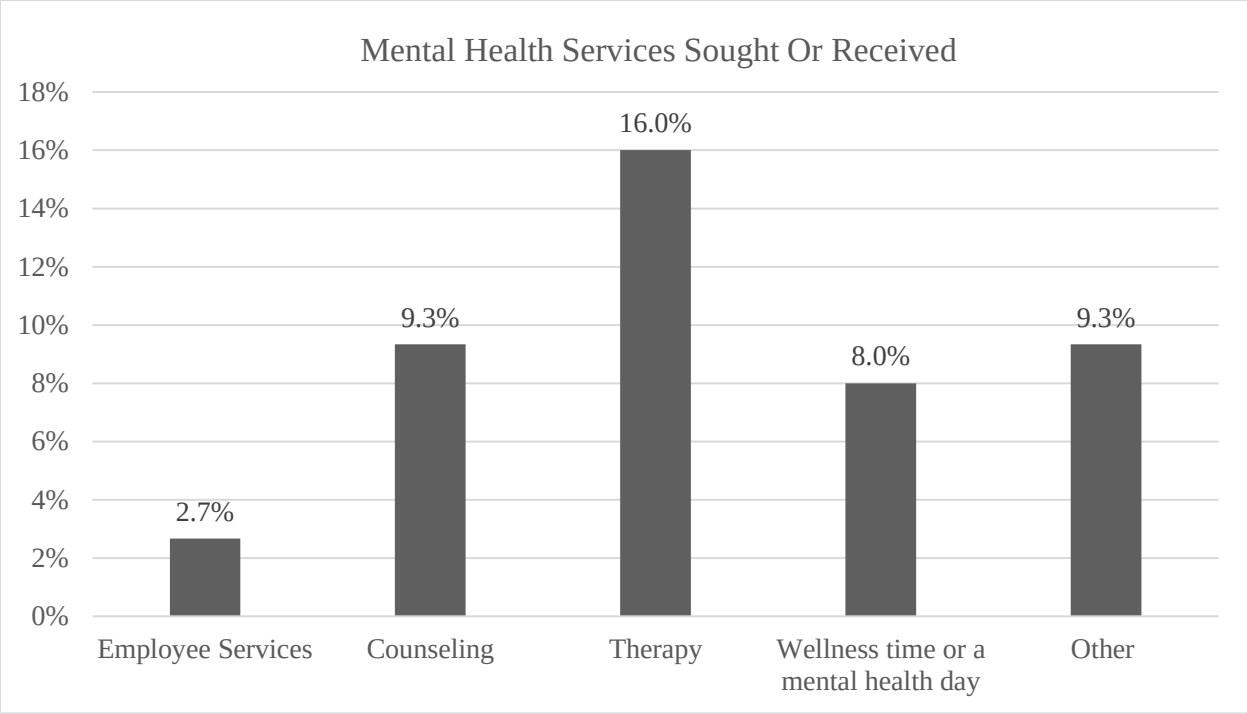
Sources of Support (SOS)

The *Sources of Support (SOS)* theme directly addresses RQ #1 and RQ #2 because the theme focuses on the participants' various support systems they leveraged to help them navigate their mental health needs. While also understanding the factors that either positively or negatively contributed to their mental health. The notion of having access to support programs and/or people one could depend on, especially when experiencing challenging times or adversity, was a common undertone amongst the responses. The primary sources of support for participants consisted of their friends/peers, family members, and/or counseling services (e.g., therapy or Employee Assistance Programs). The reliance on various sources of support such as counseling, therapy, and/or from peers/colleagues (represented in Figure 4 as other), was prevalent in participant responses and described as extremely beneficial for their mental health as expressed by one participant who shared:

> I sought out the support from friends that I safely determined also navigated mental health. As I cannot afford a therapist right now while my finances are tight, seeking out support from friends has been my go-to method of navigating anxiety, burnout, etc.

Figure 4

Sources of Mental Health Support



Approximately 3% of participants who worked for organizations that offered Employee Assistance Programs (EAPs) or specialized mental health support groups/services took advantage of these programs and found them beneficial. Such a benefit was eloquently outlined by one participant who shared, “That period when I had access to a therapist was invaluable. I wish companies took such services seriously.” However, some participants described how they lacked access to mental health services (e.g., a therapist) due to financial limitations and lack of EAP services from employers. As an alternative, they sought support from their friends, family, or self-managed based on the mental health challenge at the time.

Representation Woes

The *Representation Woes* theme directly addresses RQ #2 because not having adequate racial and/or gender representation within the participants’ place of employment impacted their inclination to share their mental health challenges and made them more reluctant to seek mental health support. Consequently, the lack of representation directly contributed to their mental health in an adverse manner since 53% of participants felt as if they had no one who looked like them or they could identify with who would understand the underpinnings of their mental health challenges. When asked what type(s) of support participants possessed to assist in handling their mental health, the beneficence of having representation was underscored. This benefit was highlighted as one participant stated, “Just good old brotherhood and sisterhood from other Black aerospace professionals.” Such racialized peer-support showcases the positive contribution to mental health for individuals since those who were sought out for support shared similar racial and professional identities and, likely similar experiences and mental health challenges due to the shared identities of operating in akin spaces.

Of the participants who felt they had no one they identified with to confide in, 31% of them felt they did not have anyone (regardless of racial or gender identity) to confide in. The lack of representation contributed negatively to the mental health of participants in two ways. First, they were more reluctant to be transparent about their mental challenges. This resulted in participants feeling alone and worried about

being stereotyped. As noted by one participant, “Feeling alone as there are very few Black aviators on the same base as me,” and another shared, “I don’t want to be labeled or stereotyped when sharing my thoughts and feelings with my superiors who don’t share my ethnicity.” Secondly, participants were hesitant to seek mental health resources or help with various challenges because they felt uncomfortable sharing information with mental health professionals who were not racially similar or of the same gender. Such a feeling was elegantly encapsulated by one participant who postulated, “I would be most comfortable talking with a Black woman therapist, but the effort to find candidates, spend time with each one to see if they are both trustworthy and knowledgeable, etc., [has proven difficult].”

Lack of Standardization

The *Lack of Standardization* theme addresses RQ #2 because not having a standardized process or streamlined information available in one place users (i.e., participants) can easily navigate to utilize mental health resources during their time of need, adversely contributes to their mental health. While providing reasoning for their reluctance to share information about their mental health challenges, participants expressed what appeared to be dissatisfaction with the lack of clarity and immense subjectivity surrounding the evaluation standards on mental health. This was best described by one participant who stated, “The FAA doesn't seem to have any clear standards on mental health, so that makes the standards subjective.” A different participant shared similar sentiments that underscored the earlier statement, specifically saying, “[My] employer tries to address mental health concerns, but the FAA does not have a real plan for addressing it appropriately without impacting someone’s career.”

The feeling of being overwhelmed and stressed due to the lack of a streamlined database for mental health resources was a commonly cited factor participants described as a negative contributor to their mental health. Specifically, participants shared they were less inclined to seek support services to handle their mental health challenges because they did not know where to start the process. This was described by one participant who said, “Not knowing where to start. At times the stress feels overwhelming to the point where it's hard to figure out the first step to get relief.” Another participant accentuated this feeling of being overwhelmed when seeking help, stating, “[I] wouldn’t even know where to begin if I were seeking those resources.”

Social Acceptance, Awareness, and Access

The *Social Acceptance, Awareness, and Access* theme directly addresses RQ #2 because the lack of acceptance and awareness in larger societies, within cultural upbringing (e.g., households) of many Black aerospace professionals, and a lack of access to mental health resources brought about by financial constraints are factors that negatively contribute to their mental health. When participants were asked about their reluctance to share their mental health struggles and/or seek help to resolve them, they shared sentiments about the notion of mental health not being something that was accepted or acknowledged in their home(s). Instead, mental health was stigmatized and not discussed. These sentiments were best described by two participants. One shared,

> Culturally, mental health wasn’t really discussed in my household, or if it was, it came with stigmatization. Due to this reason, it took me a long time to normalize seeking help and support from mental health professionals when facing difficulties and on a regular basis.

A different participant stated:

> I grew up in a household that did not really discuss mental health, it was off limits. So I would read books and learn from school. It was once I was an adult that I was able to reach out into my community to learn more about it and use some services for myself and for family members.

The lack of acceptance or acknowledgement of mental health in U.S. society, coupled with lacking discussions in the homes of participants, resulted in many of them lacking awareness about mental health resources that could have been beneficial when needed. Consequently, participants expressed that as adults, they were more reluctant to seek help for mental health and were not sure where to start since mental health was a topic not discussed in their households as youth. This lack of awareness, stigma, and reluctance was emphasized by one participant who said, "In the past, mainly due to lack of awareness and due to the fact seeking mental health was stigmatized in my household."

The access, or lack thereof, to mental health support or resources (e.g., counseling, therapy, EAPs, etc.) was a frequently shared reason by participants as to why they did not seek assistance when experiencing mental health challenges. A key reason expressed by participants stemmed from financial constraints. The financial burden of seeking mental health support was posited by one participant who simply stated, "[Mental health support was] not accessible due to financial reasons" and another who said, "The limited resources available for me, made by the company and limited income while pursuing the pilot career path." Such difficulty accessing these resources was succinctly encapsulated by one participant who propounded:

> Not everyone has the same privileges in accessing and creating the space for mental health, let alone learning what helps or realizing there is a mental health issue. I feel like that's what a lot of communities are special to start creating especially for people of color.

Table 4

Results of the Chi-Square Test

	Q7	Q8	Q9	Q10	Q12	Q14	Q15	Q16	Q17	Q18	Q20	Q24
Age Groups[3]	-	-	-	-	-	-	-	-	-	-	-	-
Commercial Airlines vs. Others	-	-	-	-	-	-	-	-	-	**	-	-
Pilots vs. Others	-	-	-	*	*	-	-	-	-	-	-	-
Years Worked in the Aviation Industry[4]	-	-	-	-	*	-	***	*	-	***	**	-

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

As mentioned earlier, to analyze the survey, chi-square tests were conducted for 12 of the closed-ended survey questions to determine if responses differed significantly among various groups (different age groups, commercial airlines vs. other areas, pilots vs. other positions, and years worked in the

[3] Age groups include 34 years old and below, 35 to 44 years old, 45 to 54 years old, and 55 years old and above.
[4] Years worked in the aviation industry include less than one year, one to three years, three to five years, five to 10 years, 10 to 15 years, 15 to 20 years, and 20 years or more.

aviation industry). From those analyses responses from different age groups did not show significant differences. However, there were significant differences shown in Commercial Airlines v. Others, Pilots v. Others, and Years Worked in the Aviation Industry.

For question 10, “Were there times you were hesitant or reluctant to share your mental health concerns, if any, with your employer?”, we found that for pilots, more respondents answered "no" than expected.

For question 12, “Did you ever feel or receive support from your employer when/if you experienced instances of stress, anxiety, depression, fatigue, or burnout?”, we found that for pilots, more respondents answered "yes" than expected. Additionally, respondents with more working experience may be more likely to feel or receive support from their employer when experiencing stress, anxiety, depression, fatigue, or burnout.

For question 15, “How often, if at all, did you ever share the state of your mental health or any mental health concerns, challenges, or issues with family, friends, and/or colleagues?”, we found that among respondents with 5-10 years of working experience, more respondents than expected always or usually shared their mental health status or concerns with family, friends, and/or colleagues. Conversely, among respondents with more than 20 years of working experience, more respondents than expected never shared their mental health status or concerns with family, friends, and/or colleagues.

For question 16, “If you felt the need, how likely would you utilize mental health services on your own (e.g., therapy or counseling)?”, we found that among respondents with 1-3 years of working experience, more respondents than expected were unlikely to utilize mental health services on their own.

For question 18, “Have you ever felt as if the safety culture of your workplace/environment could be jeopardized due to any mental health challenges you experienced?”, we found that among respondents who work in commercial airlines, more respondents than expected had felt as if the safety culture of their workplace/environment could be jeopardized due to mental health challenges they experienced. In contrast, among respondents with more than 20 years of working experience, more respondents than expected had never felt as if the safety culture of their workplace/environment could be jeopardized due to mental health challenges they experienced.

For question 20, “What is your understanding or knowledge of mental health within the Black community?”, we found that among respondents with 5-10 years of working experience, more respondents than expected believed they were very knowledgeable about mental health within the Black community.

Discussion

Central Research Question (CQ)

The CQ sought to understand how Black aerospace professionals characterize their experiences with mental health. An analysis of the survey data, interviews, and emergent themes revealed that most Black aerospace professionals characterize their experiences with mental health in a negative manner due to a litany of factors whereas some had a more positive experience because of the (representative) support they received that empowered them to prioritize their mental health. Some of the more prominent factors adversely impacting their mental health include: 1. Merely being a Black American and/or aerospace professional in a White-male dominated society and industry, respectively, 2. Working in an unsupportive

environment due to mixed messaging from organizational leadership, and 3. Living in a state of constant trepidation because of the culture of fear that has been cultivated within the aviation/aerospace industry. This fear stems from worry about medical certificate deferral or revocation, "grounding", and ultimately, job security. These negative experiences are then compounded by general struggles or stressors one encounters in everyday life (e.g., commuting or familial issues). Therefore, the emergent themes of Being a Black American/Aerospace Professional, "Everyday Struggles", Culture of Fear, and Jeopardizing Job Security were the most apt to address the posited CQ.

It should be noted that the prominent factor listed first earlier in this paragraph, namely being a Black American and/or aerospace professional, underscores the "double taboo" discussed throughout the study. This is because the mental health of these professionals is being doubly impacted due to their race/ethnicity in society and in the workplace, yet they are reluctant to seek help as a result of the stigma surrounding mental health in U.S. society and the aviation/aerospace industry. Such a phenomenon has been documented in the public sector, particularly for those in leadership positions that identify as part of the Black, Indigenous, and Person of Color (BIPOC) community so it is no surprise there are instances within private sector industries as well. According to research by Du Bois (1897) and Gingras (2010), the double taboo these BIPOC professionals experience connects to the notion of "double consciousness", which is a concept innate to Critical Race Theory (CRT). This double consciousness is described as the struggle African-Americans face to remain true to Black culture while at the same time conforming to the dominant White Society (Gingras, 2010). In the context of this study, the Black aerospace professionals shared challenges such as those relative to mental health, some everyday struggles, and even just being Black in a White-dominated space. These challenges compounded one another, causing internal mental/emotional dissonance as the Black professionals attempted to remain true to Black culture (by preserving and being resilient much like individuals did during slavery (Armstrong, n.d.)) while still performing well enough to avoid scrutiny in the predominately White industry of aviation/aerospace. Further, these professionals were well aware that remaining true to their Black culture (i.e., adhering to one conscious) meant handling mental health challenges without help or support, reinforcing the double taboo and opposing their other conscious.

At the core of this factor and unfortunate phenomenon is racism and discrimination, from which these professionals experience in society and the industry despite being qualified, highly trained, experienced, and credentialed. Due to the historical underpinnings of marginalization, Black Americans and professionals have essentially become used to such inequitable treatment and recognize that how they present physically/racially will impact how they are perceived by society, particularly by non-minoritized individuals. This unfortunately impacts those within in the BIPOC community the most and is well-documented and discussed within CRT literature. In fact, one of the six tenets of CRT asserts "racism is ordinary", meaning that racism is an ordinary and everyday experience for most minoritized individuals and that it is not uncommon for BIPOC individuals to experience racism (Delgado & Stefancic, 2017). Based on the shared experiences of some participants, this tenet was underscored and exemplified by the *Everyday Struggles* theme, in which the Black aerospace professionals expressed that their race/ethnicity contributed negatively to mental health experiences by compounding some of the struggles or challenges they experienced in "everyday life" whether that be in society or on the job. Furthermore, this tenet was experienced more profoundly by some participants than others with one participant sharing how consistent attempts were made to marginalize their contribution, how they were never given benefit of the doubt, and were second-guessed with decisions in the workplace. The aforementioned constitute instances of racial microaggressions, which are subtle insults (verbal, nonverbal, and/or visual) directed towards BIPOC individuals (Solórzano, 2000). These microaggressions, regardless if used consciously or subconsciously, is a form of racism that has been shown to adversely impact the mental health of BIPOC

individuals (Pfizer, n.d.). Due to pervasive nature of racial microaggressions and the overall lack of understanding of what constitutes one, how they impact the BIPOC community, and how frequently they are used in the U.S. (Sue et al. 2007), these microaggressions have essentially become an everyday occurrence for BIPOC individuals, thereby connoting the racism is ordinary CRT tenet (Delgado and Stefancic, 2017) and further accentuating the impact being Black has on aerospace professionals as well as their everyday struggles. Therefore, it is not uncommon for these Black aerospace professionals and those in the BIPOC community, generally speaking, to experience racism via microaggressions or other means in their everyday life and/or on the job.

The *Culture of Fear* and *Jeopardizing Job Security* themes add to previous research and support a study by Choy (2023) because they demonstrate the nearly palpable fear participants exhibit when considering being candid about their mental health. Research by Choy (2023) found that mental health discourse within the aviation/aerospace industry is still relatively perceived as something one should not engage in because it could be perceived as taboo (Choy, 2023), due to fear of reprisal or termination. However, these themes also underscore the gravitas of the associated fear stemming from being transparent about mental health. The results show mental health is still a very "taboo" topic for aerospace professionals regardless of how much advocacy or support is provided within the workplace. This sentiment is reflected in Figure 3 as less than 4% of participants utilized employee services as a support source. For Black aerospace professionals in particular, it is evident they feel they must hide their mental health challenges because of the duality of fear: fear of being stigmatized by others in the workplace (Mental Health America, 2023; Rafferty et al. 2015) and fear of repercussions that would lead to unemployment (Choy, 2023). Consequently, they suffer in silence and deal with these challenges the best way they know how, which may not be healthy. The topic of mental health can be characterized as having somewhat of a "paralysis" effect on Black aerospace professionals. This paralysis stems from knowing they need mental health support and want to seek it, but become paralyzed in doing so because of various factors such as viewing it as a weakness (Charlie Health Editorial Team, 2022), deep-rooted stigma (Pederson, 2023; Hubbard, 2016; Albelo and McIntire, 2023), a lack of ease of navigation when searching for mental health resources, and a rather impermissible environment connected to their job security.

There was one response from the open-ended question, "Is there anything else you would like to share regarding your experiences as it pertains to this study?", which eloquently encapsulated the contentious dilemma aerospace professionals and in particular, Black aerospace professionals, encounter when dealing with mental health in the industry today:

> The FAA has a long way to go to really create a permissive environment where pilots and other aviation professionals are free to seek mental health services and relief without jeopardizing their operational status. The FAA is still utilizing the banner of "safety" to perpetuate antiquated ideas of what mental health is and isn't. Hopefully we can continue to move the needle in shifting the culture to make it more acceptable for aviation professionals to seek mental health services without fear for their livelihoods, which is what will in fact make the industry safer.

Based on the shared sentiments of the participants through the open- and close-ended survey responses, it is clear that the culture of fear within the aviation/aerospace industry is pervasive and profound. Unfortunately, this has deterred and stymied many in their pursuit of seeking mental health resources to overcome certain challenges. While pervasive, there are some strategies that organizational leadership can adopt to address and mitigate the ramifications of such a culture of fear. For the purposes of this discussion, three will be outlined. The first is the creation of a positive organizational culture that supports mental health. According to Wu et al. (2021) the creation of such a culture is an opportune way to help reverse the impact of a fear culture. A culture embracive of mental health entails building mental health into the organization' human capital strategy and leadership emphasizes employee wellbeing (Wu et al. 2021).

The second is the provision of mental health resources by organizational leadership, which reinforces a positive culture that supports mental health. This can be accomplished by addressing organizational issues that cause stress, providing mental health training to employees, adopting robust EAPs that address the needs of a diverse workforce population, and reducing stressors in the work environment a culture (Wu et al. 2021). Given the fact that only 3% of Black aerospace professionals worked for organizations that offered EAPs used and actually found these programs beneficial, this mitigation strategy seems paramount, underutilized, and may prove beneficial in improving one's mental health. The provision of the aforementioned resources sends a strong signal to employees that their mental health and wellbeing is a priority for the organization. It also demonstrates transparent communication about the resources employees can utilize if they need support and how they can access resources (McPeck, 2024), which aids in mitigating the fear culture that exist particularly around mental health.

The third is genuine support from organizational leadership/management. It is imperative that leadership lead by example (i.e., visibly and vocally) in their support of mental health initiatives, which may entail leaders demonstrating empathy to employees (McPeck, 2024), participating in mental health training (Wu et al. 2021), using supportive supervision techniques (Wu et al. 2021), and modeling healthy behaviors (Wu et al. 2021). These strategies help reduce stigma, encourage employees to seek help when they need it, and empower them to support others in the work environment, which in turn helps create additional layers of support and protection for the employees and the organization. Overall, having supportive leadership at the helm of an organization is salient in fostering a culture that can permeate a positive mental health subculture throughout the organization, allowing for the displacement of a fear culture with one that is embracive of mental health.

Research Question #1

The first research question centered on the mental health needs of Black aerospace professionals. There were several open-ended questions leveraged to help address this RQ, which revealed themes consistent with the survey. The emergent themes that were most suitable to address this research question include: Jeopardizing Job Security, Mixed Managerial Messaging, Mental Health Prioritization, and Sources of Support (SOS). In the context of the question, the findings demonstrate participants need to know their job, especially those in professional pilot positions, will not be jeopardized or threatened if they choose to seek mental health support or express candid sentiments about their mental health. The sense of fear, worry, and angst that stems from the possibility of losing their job or being grounded (impacting their income), and thereby having their career cut short, is a significant stressor (Figure 3) that adversely impacts one's mental health, supporting research by Hubbard (2016). In a similar vein, Black aerospace professionals need to know they will not be perceived as a liability or judged negatively by their peers for sharing details about mental health challenges. This connects to the Mixed Managerial Messaging theme because organizational leadership will tell employees to be transparent about mental health and seek help, but when they are or do, they are essentially punished for doing so through grounding and/or social isolation in the workplace. Inconsistent support from leadership through mixed messaging (or the lack of a unified message) is detrimental to the mental health of employees in general (Wiley, 2020), but this is especially true for Black aerospace professionals who work in an industry that has never been embracive of mental health. Further, mixed messaging can worsen the stigma surrounding mental health and prevent individuals from seeking support services (Hauschild, 2022), thereby exacerbating mental health issues for Black aerospace professionals. To ensure more consistent and effective support, organizational leadership within the aviation/aerospace industry should adhere to and/or implement the three strategies discussed at length earlier to eradicate the culture of fear that exist within the industry regarding mental health. By having aviation/aerospace leadership lead by example with

mental health initiatives (Wu et al. 2021) and providing mental health resources (McPeck, 2024) for aerospace professionals, a positive organizational culture that is supportive and advocative of mental health can be created. Such a culture can mitigate mixed messaging from management, especially if organizational leadership models healthy (mental health) behaviors and participate in the mental health training furnished by the organization. Consequently, unified messaging can be disseminated to aerospace professionals and they can experience a consistent, effective, and efficient culture of support whenever they need to handle their mental health challenges.

Such a phenomenon of social punishment through this theme supports research by Pederson (2023), who found the fear of poor social evaluations is a stressor that impacts the psychological well-being of adults, especially Black Americans who tend to face more stigma (Pederson, 2023). This fear naturally begs the question: If Black aerospace professionals fear judgment from peers and the aerospace/aviation industry as a collective, then where can they go for help without judgment? Therefore, it can be surmised that Black aerospace professionals essentially need a "safe space" in the industry to express and just be themselves without the looming fear of consequence for following the messaging of industry leadership. Such need for a space free of scrutiny to express mental health concerns, particularly for pilots, is further supported by the statistical analysis of question 12. The chi-squared results indicated a marginally significant result for the Pilots v. Others category ($p = 0.08$) and the Years Worked in the Aviation Industry ($p = 0.07$). Based on these results, it can be speculated that pilots who possess more years and/or experience in the industry reported receiving more support from their employer when dealing with mental health concerns (e.g., stress and fatigue) because they are more familiar with the resources available, the organization, and know who (e.g., peers/colleagues and leaders) they can trust with sensitive information as opposed to those who are newer (or more junior) in the organization. These individuals they can confide in with the sensitive information effectively constitute a safe space for the more senior pilots and as such, it is understandable why there were more senior pilots, who expressed feeling supported from/by their employer than expected.

The ability to prioritize one's mental health, specifically in the workplace, was another need expressed by participants. There were only a few participants who stated their company was supportive of them taking time off for mental health or provided them with processes or resources to handle their mental health challenges. In contrast, there was a significant number of participants who shared opposing sentiments about their employer. Currently, the only way these participants, especially those in professional pilot occupations, can obtain reprieve and take care of their mental health is by claiming "fatigue" under their company's fatigue policy. Participants described this policy as an all-encompassing umbrella that could be used to cover various ailments or illnesses if one was not feeling "fit to fly" on a given day. The issue this policy poses is that having to claim fatigue when one truly needs a mental health day provides a "cop-out" for aviation/aerospace entities, allowing them to claim they care about and help their employees with mental health challenges, when in actuality, they do not. The other, more pressing issue posed by such a policy is that employees working in administration or management roles cannot necessarily claim "fatigue". Consequently, they must use their PTO, sick leave, or some other type of leave to handle mental health challenges provided they have the time accrued. If they do not, then it is presumed they must call-off and/or use voluntary leave (if offered by the entity) and ultimately, miss out on a day's worth of pay. This is not only inequitable, but signals the lack of mental health prioritization that exists in the industry, which adversely impacts those in the industry and, in particular, those identifying as Black aerospace professionals.

The Mental Health Prioritization theme adds an important element to the extant literature, specifically about the priority placed on mental health by commercial aviation entities. It helps refute the

"mental health matters" mantra touted by commercial aviation entities and casts doubt on the mental health policies these entities claim to have or are planning to implement by modeling university programs such as those at the University of North Dakota (Vonasek, 2023). Lastly, the Sources of Support (SOS) theme underscores and accentuates what is already known when it comes to minoritized individuals' ability to persist through adversity and difficult situations such as mental health challenges. By leveraging socioemotional support from various sources, including friends, family, colleagues, faith-based groups, etc., participants shared they were able to navigate and overcome their mental health challenges in a positive manner. The salience of SOS for Black aerospace professionals was further supported by the statistical analysis of question 15, which indicated a statistically significant result for the Years Worked in the Aviation Industry ($p = 0.0008$) category. This means there were more professionals, specifically, those with five to 10 years and those with more than 20 years of working experience in the industry, than expected who shared their mental health concerns, challenges, and/or issues with family, friends, and/or colleagues. A significant result such as this showcases strong evidence regarding the importance of having support systems professionals can utilize to vent, decompress, or be candid about their mental health. Additionally, it is not surprising that professionals with five or more years of work experience are more likely to share information about their mental health because they have been around long enough to know what organizational resources exist (e.g., peer support programs) (Vonasek, 2023) and have formed relationships with trusted peers/colleagues who constitute their SOS.

Albeit not specifically cited in the literature review, a study by Johnson (2023) found that Black Americans in aviation relied on socioemotional support from the "3Fs" (friends, family, and faculty) to overcome certain issues, some pertaining to mental health challenges stemming from the pandemic, lack of belonging, inadequate representation, and other elements innate to the aviation/aerospace industry. Thus, the findings from this study support those stated by Johnson (2023) and demonstrate just how pivotal having sources of support are for Black aerospace professionals to handle mental health challenges, and more importantly, illuminates the need for support these professionals require. For this need to be met and these sources to be cemented within the industry, drastic change must occur at the macro-level by industry leadership. A great first step towards lasting change was eloquently stated by one participant who shared, "We must stop looking at mental health as an abomination in the industry."

Research Question #2

The second research question focused on understanding what factors, if any, contributed to the mental health of Black aerospace professionals. Two chi-squared results that pointed to the safety culture of aviation/aerospace workplaces being a factor in the mental health of aerospace professionals, which was somewhat surprising. The tests indicated a significant result for the Commercial Airlines v. Others category ($p = 0.03$) and a marginally significant result for the Years Worked in the Aviation Industry category ($p = 0.08$). For the Commercial Airlines v. Others category, there were more respondents than expected who felt as if the safety culture of the workplace/environment could be jeopardized due to any mental health challenges they experienced. This particular result was not as surprising, assuming that most of these respondents worked as professional pilots, air traffic controllers, or in a role where the individual had a direct impact on the safety culture or specific safety outcomes for the organization. What was surprising, however, was the result for the Years Worked in the Aviation Industry category because there were more respondents than expected who never felt as if the safety culture of workplace/environment could be jeopardized due to any mental health challenges they experienced. It should be noted that the respondents who stated this possessed more than 20 years of working experience. There may be several reasons for them feeling like this, with the most obvious and likely being that they work or worked in positions that did not necessarily impact the safety culture of their organization. A

more nuanced reason could be rooted in complacency in that if they did experience mental health challenges and continued to work through them without there being repercussions or adverse outcomes (e.g., an accident or incident), then their perceived level of safety could be raised to a false level of security/safety (Tolleson, 2007).

For this RQ, the emergent themes of Representation Woes, Lack of Standardization, and Social Acceptance, Awareness, and Access were most adept at addressing the question. The lack of racial and gender representation in the aviation/aerospace industry emerged as a clear factor that negatively impacted the mental health of Black aerospace professionals. By not having peers, colleagues, or leadership these professionals can identify with racially, culturally, and/or in terms of gender within their organization, participants felt isolated, alone, and that they did not belong. The lack of racialized peer-support compounded their already extant fear of being judged, labeled, and stereotyped by those external to their demographic identifiers. Consequently, Black aerospace professionals were less inclined to express challenges they experienced with their employer (e.g., managers or EAP therapists) and delayed seeking mental health care. This supports research by Pederson (2023) and Vance (2019), who found the cultural backdrop of Black individuals impacts their perception of mental illness and the need for treatment, resulting in delayed treatment and the potential to lead to adverse mental health outcomes. These adverse mental health outcomes stem from individuals "suffering in silence" and keeping their challenges bottled up because they do not possess an appropriate "outlet" (e.g., peer/colleague) to express themselves without the fear of being judged, misunderstood, or not having their challenges heard. The salience of representation and its contribution to the mental health of Black aerospace professionals was elegantly encapsulated by one participant who said, "Representation matters. We are less likely to bring our concerns to someone who doesn't look like us, who can understand the issues as they pertain to us." It is important to note that professionals who possessed racialized peer-support in their respective organizations, which one participant referred to as "good old brotherhood and sisterhood", was a positive contributor to their mental health. Simply, those that get it (the struggles or woes of being Black in aviation/aerospace), get it, and those that don't, don't.

The Lack of Standardization theme contributes negatively to the mental health of Black aerospace professionals because of unclear and/or conflicting guidance for individuals seeking mental health support from aviation/aerospace regulators and entities. There is a clear lack of standardization or sense of uniformity with much of the information surrounding mental health, which is presumably due to how contentious and "taboo" the topic has been. This results in individuals who are seeking help to become confused on what action steps they should take to resolve their mental health challenges. The consequence is two-fold: 1. A cyclic process of mental health challenges that do not get resolved and 2. The diminishment of the confidence of aviation/aerospace professionals, particularly Black aerospace professionals, in a system meant to help them. The hope is that the recommendations made by the Mental Health Aviation Rulemaking Committee (ARC) (FAA, 2024) aimed at standardizing mental health resources are adopted and codified by the FAA as soon as practical. This would make the process of searching, navigating, and obtaining mental health support easier than what it is currently. Further, it would be another great first step in providing aerospace professionals with the reprieve they need while actively reducing some of the extant barriers that prevent professionals from seeking help, and ultimately, improving mental health for vulnerable populations such as Black aerospace professionals in the industry.

The Social Acceptance, Awareness, and Access theme emerged as a negative factor contributing to the mental health of Black aerospace professionals for three main reasons. The first reason is a lack of acceptance of mental health within U.S. society until recently due to implications of the COVID-19 pandemic as cited by Panchal et al. (2023) and Nealon (2021). There is also a lack of recognition in the

homes, upbringing, and communities of Black aerospace professionals (Pederson, 2023), which connects to acceptance, links to and compounds awareness, or a lack thereof, which is the second reason. These first two reasons go hand-in-hand and as such, will be discussed in tandem.

Several participants expressed how mental health was never up for discussion in their household while growing up or was "off limits" as stated by one participant. Such a mentality towards mental health effectively made it an "alien" concept for the participants, which carried over into their adulthood. The consequence of not normalizing mental health conversations in the home during one's rearing bore negative impacts, presumably, on the participants' mental health. As a result, some participants were forced to suffer in silence, bottle their emotions, and/or learn how to cope with their struggles because their parents/guardians made it clear they were unable to discuss anything related to mental health (e.g., student stress or common teenager issues) that may have been negatively affecting them. The mere lack of acceptance of an individual's mental or emotional health challenges, especially those of school-aged children, poses a barrier in and of itself. It was not until these professionals' entered adulthood when they could use their own agency to obtain the Mental Health Literacy (MHL) necessary to acquire, comprehend, and use medical information to make informed decisions for treatment (Kutcher et al. 2016).

This MHL was accomplished via their willingness to self-educate, explore, and/or seek mental health support from their community, clinicians, or other sources. MHL is a pivotal concept for many, especially Black Americans and Black aerospace professionals, who lacked MHL as children because of household or cultural barriers that did not permit, allow, or encourage mental health conversations to occur. In other words, it was only as adults these participants gained awareness of mental health resources to help resolve their mental health challenges. The issue with this awareness being gained later in one's life is that the damage has already been done with relatively little healing and coping strategies are likely to have been formed, which may not necessarily be healthy for handling akin situations in the future. Since these strategies of self-reliance have enabled participants to overcome challenges in the past, they possess a "if it ain't broke, don't fix it" type of mentality regarding mental health care. The result is increased skepticism of healthcare institutions, clinicians, experts, and other resources (Pederson, 2023; Vance, 2019) that may be offered to truly help resolve their mental health challenges instead of leading to worse mental health outcomes. Thus, a lack of awareness of mental health and associated resources in the households and communities of Black Americans and Black aerospace professionals has posed a significant barrier to addressing mental health concerns and proven problematic for both the industry and community.

The chi-squared results for question 20 were surprising in that there were more respondents, who possessed 5-10 years of working experience, than expected who reported believing they were knowledgeable about mental health within the Black community. In contrast, there were more respondents, who possessed 10-15, 15-20, and more than 20 years of working experience, than expected who reported they were less knowledgeable about mental health within the Black community. These results were interesting because of the moderate evidence based on the marginal statistical significance ($p = 0.03$) regarding the mental health knowledge within the Black community, which varied based on respondents' work experience/tenure. The fact that the professionals who are more junior (i.e., have less time in the industry) are more knowledgeable about mental health than their senior counterparts almost seems counterintuitive since longevity usually equates to more (institutional) knowledge. However, since the topic of mental health has become a more socially acceptable area of discussion, particularly within the past five years largely due to the pandemic (Panchal et al. 2023; Jamshaid et al. 2023) it is understandable why those with less working experience (i.e., 5-10 years) may be well-versed in it. Compared to their senior counterparts, the amount and types of mental health resources, in-house

programs, and increased conversations about mental health occurring contemporarily provide a stark contrast to the "don't ask, don't tell" mentality that was prevalent when those with 10-20 plus years of experience likely experienced. The temporal difference of five years may not seem like much, but for some professionals, it is clearly a significant difference maker in their mental knowledge and has likely positively impacted their ability to help others navigate mental health issues as well as themselves. Such mental health knowledge also connotes the importance and growth of MHL in Black communities and for Black individuals (Pederson, 2023), which has empowered them to amass knowledge, know how and where to seek mental health treatment, and share that with others to essentially work towards a "critical mass" compared to those professionals within the older generations who are not as knowledgeable and likely possessed a lower MHL.

The third reason is a lack of access; participants expressed strong sentiments about lacking access to mental health support and resources, including counseling, therapy, and EAPs. The lack of access was primarily attributed to financial constraints, specifically the high cost of mental health support/services, in addition to there being a lack of mental health professionals that were representative of the participants with respect to race and/or gender. Therefore, lacking access to mental health support poses a notable barrier in and of itself. However, when considering the additional barriers of financial burden to retain services, the lack of acceptance or recognition of mental health, and the resulting lackluster awareness of where to begin to obtain mental health support, overcoming mental health challenges seems nearly impossible. Such barriers, unfortunately, are commonplace to mental health access. This phenomenon accentuates research by Coombs et al. (2021) who found that out of 50,000 individuals, roughly 95% (or 47,500) experienced at least one barrier to mental health access. Further, research by Coombs et al. (2021) also noted these barriers were more prevalent in Black and Hispanic communities, emphasizing the disproportionate access to mental health support that exists in the U.S. due to barriers that can be removed, such as those that are access (e.g., financial) or exposure/awareness related. Fortunately, these barriers are ones that can be redressed, but serious, intentional effort must be put forth for that to occur. The recommendations below provide an opportune platform for this necessary work to begin so mental health can transition from being taboo topics to comfortable conversations in the industry and households across the country and hopefully the world.

Recommendations for Policy and Practice

Based upon the findings and discussion, the following recommendations around policy and practice should be considered:

Policy

1. Call-to-Congress: Make the current Mental Health Aviation Rulemaking Committee a permanent body of the Federal Aviation Administration.
2. Call-to-Congress: Enhance the accessibility to mental health resources for professionals seeking help to streamline the process and lessen financial obstacles that impede mental health service(s) retention.
3. Call-to-Congress: Mandate employers to offer health insurance coverages that include mental health and substance use disorders to enhance the affordability of and access to mental support services. Such a recommendation is timely and necessary since only 43% of U.S. employees reported that their employer offered such health insurance coverage (American Psychological Association [APA], 2023).

Practice

1. Create explicit mental health policies (e.g., allowance of mental health days) employees can utilize when experiencing mental health challenges rather than relying on an all-encompassing fatigue policy.
2. Implement mental health "safety stand-downs" to add a source of support for employees, demonstrate mental health prioritization within the organization, and to clarify any mixed messaging occurring between various leadership levels.
3. Aviation/aerospace employers should adopt mandatory mental health training for managers at all levels (including those in the C-Suite) to mitigate mixed messaging and complement the recommendation pertaining to safety stand-downs. More importantly, this recommendation adds another level of safety to the organization and support for employees by equipping managerial personnel with the knowledge and tools necessary to be able to assist others experiencing mental health challenges.
4. Aviation/aerospace employers should implement anonymous mental health reporting systems to improve organizational transparency and cognizance of mental health challenges. Such a system could also facilitate "temperature checks" within the organization, especially around certain social, political, economic, and/or environmental issues that may arise and impact employees. A good first step to accomplish this may be implementing an anonymous safety reporting system within the organization that can be used to receive general safety items, but include specific questions or a section relative to employee mental health and/or well-being.

Limitations

Limitations are inherent to any study being conducted, especially exploratory studies and this manuscript is no exception. The first limitation stems from the lack of a gender identification question within the survey that was disseminated to OBAP members. While the goal of this study was to obtain a baseline understanding of the mental health experiences and needs of Black aerospace professionals, which constitute racial and occupational demographics that have been under researched in the literature, differentiating between males and females is important. This differentiation is important because gender is one of many factors that has been notably understudied in health in general (McLean Hospital, 2024) and mental health challenges impact women differently than men (Mental Health Foundation, n.d.). Given the differential impacts between men and women, examining the nuances of these differences is critical in helping derive a more robust understanding of the mental health experiences and needs of Black male and female aerospace professionals in addition to developing more pointed, implementable recommendations (that are inclusive of gender considerations) for aviation/aerospace industry leadership to improve mental health within the industry and hopefully, within society at-large. Therefore, the exclusion of a survey question that asked respondents how they identified hindered the ability to accomplish the aforementioned.

The second limitation of this study was the sample size obtained. While 110 completed surveys were received, exceeding the target number of 100, only 75 of these surveys were completed by individuals who identified as a Black aerospace professional. As a result, only 75% of the target sample size was achieved for the study. Given the extremely low participation rates of minoritized individuals and in particular, Black Americans within the aviation/aerospace industry (Johnson 2023; Johnson, 2024), the number of participants that could be recruited for the study was low. This is especially true for female respondents (and albeit not tracked in this study as noted in the first limitation) since women comprise less than 20% of the aviation/aerospace occupations (Lutte, 2021) and constitute less than 5% of professional pilots (Johnson, 2023), and when factoring in race and gender, Black women account for only 0.5% of professional pilots (Johnson, 2023). Consequently, recruiting participants who identified as Black aerospace professionals was an inordinate task with a high level of difficulty despite utilizing

OBAP as an organizational medium to disseminate the survey. Therefore, increasing the sample size of the study may garner more holistic perspective and insight into the experience(s) of Black aerospace professionals, bolster the findings of the study, and enhance the rigor of the posited recommendations.

Future Research

Given the exploratory nature of this study, the first recommendation for future research centers on extending the crux of this study. The aim of this research was to understand how Black aerospace professionals characterized their mental health experiences, learn what their mental health needs were, and ascertain what factors contributed to their mental health. What was not inquired about nor assessed was the effectiveness of the mental health services they sought from their employer (e.g., EAPs), were referred to, or received from their communities of support (e.g., friends and family). As such, future research may benefit from analyzing the effectiveness of mental health services Black aerospace professionals seek, utilize, or are offered to determine if they are helping or harming the mental health of an already vulnerable population of people.

Since the participants in this study generally identified as Black aerospace professionals, the second recommendation is to conduct a similar study, but the focus should be on specific occupations or sectors of Black professionals such as Black managerial/administrators or Black cargo pilots, to ascertain if there are any parallels or differences between the mental health experiences, factors, or needs when the specific sector or occupation is taken into consideration. Similar to the second recommendation, the third recommendation is to conduct a comparative study between Black aerospace professional and other minoritized groups within the aviation/aerospace industry. The responses provided about the needs of and factors contributing to the mental health of Black aerospace professionals expressed by the participants within this study were robust and informative, yielding salient insight into how these professionals characterize their experiences with mental health. However, future research focusing on how other minoritized groups within the aviation/aerospace industry (aside from Black aerospace professionals) characterize their mental health may be beneficial in obtaining a broader understanding of the mental health needs, wants, and experiences of women and other racially minoritized professionals in the industry.

The fourth recommendation seeks to address one of the limitations of this study, specifically the lack of gender identification included within the survey. The goal of this research was to obtain a general sense of the mental health experiences of a racial and occupational demographic that has been under researched in the literature, and while gender differentiation is important, the need to establish a baseline first was salient. Thus, it is recommended a study be conducted that explores and compares/contrasts the similarities and differences of the mental health experiences, needs, and wants of male Black aerospace professionals to that of females. The fifth recommendation is akin to the fourth and aims to further analyze mental health outcomes, needs, wants, etc., As such, it is recommended that longitudinal studies be conducted within the aviation/aerospace industry, beginning with Black aerospace professionals given the nature of the double taboo explored in this study, to track mental health outcomes over time. Doing so would add more depth and potentially furnish paramount insight into the effectiveness of mental health services sought by these professionals, especially those offered by employers (e.g., EAPs and peer-support programs).

Conclusion

This exploratory study's overarching goal was to understand the mental health needs and experiences of Black aerospace professionals. Due to extant research on the mental health needs and experiences of these professionals being an under-researched area, the study aimed to fill two primary gaps in the contemporary literature while building upon research already conducted on minoritized students' mental health in collegiate aviation programs. This was accomplished by exclusively focusing on the mental health needs and experiences within the Black aviation/aerospace community and

expanding the targeted group(s) by including aerospace professionals in possession of industry experience beyond the classroom. Additionally, the study informs industry and government leadership of ways they can improve the work environment, specifically through pointed recommendations and participant testimony, to enhance the mental health of all aerospace employees and in particular, Black aerospace professionals. This may also benefit collegiate programs who tend to possess similar training/education environments to that of industry.

The study found the overall experience with mental health for most Black aerospace professionals was negative due to a function of their race/ethnicity within the (aviation/aerospace) work environment, constant worry about losing their job, and living in a culture of fear cultivated by the looming medical certification process governed by the FAA. Those with a positive mental health experience cited racially representative support (services), which enabled them to prioritize and manage their mental health in a positive manner.

Based on this study, it is clear Black aerospace professionals need industry and government leadership to create a more permissive environment where mental health can stop being a taboo topic and be more of a comfortable conversation. Such a shift will help combat the "double taboo" that is unique to Black individuals who are also aerospace professionals and unfortunately, characterizes many of their negative experiences with mental health. Additionally, this shift may allow aerospace professionals to feel their job(s) are not in jeopardy when being candid about mental health challenges, aid in the dismantling of the extant culture of fear that has plagued the industry, and help align messaging about mental health from organizational leadership with positive actions being taken to properly address such a salient topic in the industry and society at-large. Further, there is an urgent need for there to be increased racial and gender representation within the aviation/aerospace industry and amongst mental health professionals. This prevalent lack of representation also emerged as a factor that adversely contributed to the mental health of Black aerospace professionals. The lackluster representation presented as an adverse factor because these professionals did not have peers or colleagues, they could confide in nor did they have access to mental health professionals that shared a similar race or gender identity as them when seeking treatment. Consequently, participants were less inclined to proactively seek treatment and/or resources to manage their mental health. The lack of racial representation was compounded by another factor that negatively contributed to Black aerospace professionals: the absence of acceptance, awareness, and access to mental health (resources and support). By not accepting or acknowledging the topic of mental health during the participant's childhood, awareness of mental health resources and support was extremely limited. As a result, participants' access to resources and/or support was also stymied, which may have been exacerbated if they also possessed financial constraints.

At its core, the study confirms what is already known - the mental health experience for Black Americans and Black aerospace professional has been largely negative because of fear of reprisal or termination, unsupportive work environments (due to judgment from peers or mixed messaging from leadership), a lack of access to mental health resources (e.g., financial and ease of navigation), and when they are sought - a lack of representation in the health services. However, the study adds a renewed sense of gravitas by showcasing that when access is not an issue, the work environment is supportive and leadership provides encouragement, and (representative) sources of support are available (e.g., EAP or trusted confidants), mental health challenges are addressed effectively, efficiently, and mitigated – individuals learn coping strategies and have shown they are not a "liability" or "unfit for duty" contrary to popular belief.

References

Abdai, J., & Miklósi, Á. (2016). The Origin of social evaluation, social eavesdropping, reputation formation, image scoring or what you will. *Frontiers in Psychology 7*, 1772. https://doi.org/10.3389/fpsyg.2016.01772.

Access to Care Data 2022. Mental Health America. (n.d.). https://mhanational.org/issues/2022/mental-health-america-access-care-data#:~:text=Adults%20with%20Ami%20Who%20Did%20Not%20Receive%20Treatment%202022&text=Over%20half%20(56%25)%20of,mental%20illness%20are%20going%20untreated.40(2),197-204.

Ackland, C. A., Molesworth, B. R. C., & Grisham, J. R. (2023). Pilot mental health during the COVID-19 pandemic: prevalence rates from semi-structured interviews, and associated vulnerability and protective factors. *Frontiers in psychology*, *14*, 1073857. https://doi.org/10.3389/fpsyg.2023.1073857

Ackland, C. A., Molesworth, B. R. C., & Grisham, J. R. (2023a). Pilot mental health during the COVID-19 pandemic: prevalence rates from semi-structured interviews, and associated vulnerability and protective factors. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1073857

Ackland, C. A., Molesworth, B. R. C., & Grisham, J. R. (2023b). Pilot mental health during the COVID-19 pandemic: prevalence rates from semi-structured interviews, and associated vulnerability and protective factors. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1073857

Albelo Ph D, J. L., & McIntire, S. (2022). Mental Health Needs Among Minority Aviation Students. *Collegiate Aviation Review Inter*, *40*(2), 217.

Albelo Ph D, J. L., O'Toole Ph D, M. F., & Bowyer, S. (2022). Implementing DEI in Aviation Education: Coping and Addressing Mental Health Concerns.

Albelo, J. L., McIntire, S., Dubois, S., Tisha, T., Matsumoto, K., Ho, J., & Jones, L. (2023). Exploring Minority Underrepresented Aviation/Aerospace Students' Mental Health and Success in Higher Education. *International Journal of Aviation Research*, *15*(1).

American Psychological Association (APA). (2023). 2023 Work in America survey. *APA.* https://www.apa.org/pubs/reports/work-in-america/2023-workplace-health-well-being#:~:text=Only%2043%25%20reported%20that%20their,offers%20an%20employee%20assistance%20program.

Armstrong, V. (n.d.). Stigma regarding mental illness among people of color. *National Council for Mental Wellbeing.* https://www.thenationalcouncil.org/stigma-regarding-mental-illness-among-people-of-color/.

Barajas, A. Withrow, S., & Boatman, J. (2022). Why Pilots don't want to talk about mental health – and why they should. *FLYING Magazine.* https://www.flyingmag.com/author/ashley-sara-julie/.

Bor, R., & Hubbard, T. (2016). Aviation mental health: An introduction. In *Aviation mental health* (pp. 1-9). Routledge.

Boyd, G. & Bliss, T. J. (2024). Understanding collegiate flight students' perceptions and realities of depression and anxiety. *Collegiate Aviation Review International*, 42(1), 57–74. Retrieved from https://ojs.library.okstate.edu/osu/index.php/CARI/article/view/9723/8590.

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The Use of triangulation in qualitative research. *Oncology nursing forum*, *41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547.

Centers for Disease Control and Prevention (CDC; 2024). About Mental Health. Centers for Disease Control and Prevention.

Coetzee, J. (2016). Aviation Psychology in a Developing Country: South Africa. *Aviation Mental Health*, 303.

Coombs, N. C., Meriwether, W. E., Caringi, J., & Newcomer, S. R. (2021). Barriers to healthcare access among U.S. adults with mental health challenges: A population-based study. SSM - population health, 15, 100847. https://doi.org/10.1016/j.ssmph.2021.100847

Charlie Health Editorial Team. (2022). Improving Your Mental Health. Charlie Health.

Choy, N. (2023). Breaking silence: Shattering the taboo of mental health. Air Force Medical Service.

Creswell, J.W. and Creswell, J.D. (2018) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Sage Publications.

DeHoff, M. C., & Cusick, S. K. (2018). Mental health in commercial aviation-depression & anxiety of pilots. *International Journal of Aviation, Aeronautics, and Aerospace*, *5*(5), 5.

Du Bois, W. E. B. (1897). Strivings of the Negro people. *The Atlantic.* https://cdn.theatlantic.com/media/archives/1897/08/80-478/131953250.pdf.

Delgado, R., & Stefancic, J. (2017). Critical race theory: An introduction (Third edition). New York University Press.

Dunn, O.J. & Clark, V.A. (2002). Basic statistics: A primer for the biomedical sciences (3rd ed.) Wiley-Interscience.

Federal Aviation Administration (FAA). (2024). Mental Health & Aviation Medical Clearances. *Federal Aviation Administration.* https://www.faa.gov/newsroom/faa-statement-mental-health-and-aviation-medical-clearances-rulemaking-committee-0.

Fershtman, C., Gneezy, U., & Hoffman, M. (2008). Taboos and identity: Considering the unthinkable. *American Economic Journal: Microeconomics*, *3*(2), 139–164. https://doi.org/10.1257/mic.3.2.139.

Gingras, B. (2010). “Double Consciousness” and the Racial Self in Zitkala-Ša’s American Indian Stories. Undergraduate Review, 6(1), 83–86.

Groenewald, T. (2004). A Phenomenological research design illustrated. *International Institute for Qualitative Methodology (IIQM)*, 3(1): 42-55. DOI: 10.1177/160940690400300104.

Harvard Catalyst. (2024). Mixed methods research. *Community Engagement Program.* https://catalyst.harvard.edu/community-engagement/mmr/.

Hauschild, V. (2022). Army experts: Mixed messaging can fuel stigma, prevent Soldiers from accessing behavioral healthcare. *U.S. Army.* https://www.army.mil/article/262525/army_experts_mixed_messages_can_fuel_stigma_prevent_soldiers_from_accessing_behavioral_healthcare.

Hassan, C. (2023). Under pressure that hasn’t eased since the pandemic, some health care workers are preparing to strike. *CNN.* https://www.cnn.com/2023/09/25/health/health-care-workers-under-pressure/index.html.

Hubbard, T. P. (2016). Stigma and pilots with mental health issues. *International Journal of Aviation Sciences (IJAS)*, 1(2), 6. https://repository.fit.edu/cgi/viewcontent.cgi?article=1014&context=ijas.

Jamshaid, S., Bahadar, N., Jamshed, K., Rashid, M., Imran Afzal, M., Tian, L., ... & Zong, M. (2023). Pre-and post-pandemic (COVID-19) mental health of international students: Data from a longitudinal study. *Psychology Research and Behavior Management*, 431-446.

Johnson, T. W. (2024). Quieted voices: A Phenomenological analysis of the experiences of Black/African-American collegiate aviation students. *Collegiate Aviation Review International*, 42(1), 148–179. https://ojs.library.okstate.edu/osu/index.php/CARI/article/view/9756/8610

Johnson, T. W. (2023). Siloed voices with a resounding Experience: A Phenomenological analysis of the experiences of Black HBCU aviation students. ProQuest Dissertations Publishing.

Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. The Canadian Journal of Psychiatry, 61(3), 154-158.

Lipson, S. K., Zhou S., Abelson, S., Heinze J., Jirsa, M., Morigney, J., Patterson, A., Singh, M., Eisenberg, D. (2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national healthy minds study, 2013-2021. Journal of Affective Disorders, 306,138–147. https://doi.org/10.1016/j.jad.2022.03.038

Lutte, R. K. (2021). Bridging the Gap: Improving diversity and inclusion in the U.S. aviation workforce. *United State House of Representatives Committee on Transportation and Infrastructure.*

Lutte, B., Johnson, T., & Liao, W. J. (2023). In plain sight: An Analysis of factors that influence the recruitment and retention of Black aviation professionals. *International Journal of Aviation Research*, *15*(1).

Macintyre, A., Ferris, D., Gonçalves, B., & Quinn, N. (2018). What has economics got to do with it? The impact of socioeconomic factors on mental health and the case for collective action. *Palgrave Communications*, *4*(1), 1-5.

Martin, J. M. (2009). Stigma and student mental health in higher education. Higher Education Research & Development, 29(3), 259–274. https://doi.org/10.1080/07294360903470969

McLean Hospital (2023). Black Mental Health: What You Need To Know. *McLean Hospital.*

McLean Hospital (2024). Let's face it, no one wants to talk about Mental Health. *McLean Hospital.* https://www.mcleanhospital.org/essential/stigma.

McLean Hospital (2024). The impact of age and gender on mental health. *McLean Hospital.* https://www.mcleanhospital.org/essential/impact-age-and-gender-mental-health.

McPeck, W. (2024). Employee wellbeing and future fear. *Medium.* https://williammcpeck.medium.com/employee-wellbeing-and-future-fear-0382532dbb64#:~:text=Strategies%20to%20Address%20Employee%20Fear&text=They%20include%3A,can%20reduce%20uncertainty%20and%20fear.

Mental Health America (MHA; n.d.). Depression in Black Americans. https://mhanational.org/depression-black-americans

Mental Health Foundation (n.d.). Men and women statistics. *Mental Health Statistics.* https://www.mentalhealth.org.uk/explore-mental-health/statistics/men-women-statistics.

Morrison, S. M. (2023). *Women of color in the aviation industry.* New York: Routledge.

National Alliance on Mental Illness (NAMI). (2020). Mental health in Black communities: Challenges, resources, community voices. *Mental Health America.* https://namica.org/mental-health-challenges-in-african-american-communities/

National Institute for Occupational Safety and Health (NIOSH). (2024). Health worker mental health. *Center for Disease Control (CDC).* https://www.cdc.gov/niosh/newsroom/feature/health-worker-mental-health.html.

Nealon, M. (2021). The pandemic accelerant: How COVID-19 advanced our mental health priorities. *UN Chronicle*, *10*.

Panchal, U., Salazar de Pablo, G., Franco, M., Moreno, C., Parellada, M., Arango, C., & Fusar-Poli, P. (2023). The impact of COVID-19 lockdown on child and adolescent mental health: systematic review. *European child & adolescent psychiatry*, *32*(7), 1151-1177.

Pederson A. B. (2023). Management of Depression in Black People: Effects of Cultural Issues. Psychiatric annals, 53(3), 122–125. https://doi.org/10.3928/00485713-20230215-01

Petros. (2019). High risk roles, high risk for mental health. *Petros.* https://petros.org.uk/high-risk-roles-mental-health.

Pfizer. (n.d.). Understanding racial microaggression and its effect on mental health. *Pfizer.* https://www.pfizer.com/news/articles/understanding_racial_microaggression_and_its_effect_on_mental_health.

Pilot Mental fitness. (n.d.). Federal Aviation Administration. https://www.faa.gov/pilot-mental-fitness

Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *Lancet (London, England), 370*(9590), 859–877. https://doi.org/10.1016/S0140-6736(07)61238-0

Rafferty JA, Abelson JM, Bryant K, Jackson JS (2015) Discrimination. In: Compton MT, Shim RS (ed) The Social Determinants of Mental Health. American Psychiatric Publishing, Washington

Rafferty, A. (2020). Skill underutilization and under-skilling in Europe: the role of workplace discrimination. *Work, Employment and Society*, *34*(2), 317-335.

Reinert, M, Fritze, D. & Nguyen, T. (October 2022). "The State of Mental Health in America 2023" Mental Health America

Sabik, N. J., Geiger, A. M., Thoma, M. V., Gianferante, D., Rohleder, N., & Wolf, J. M. (2019). The effect of perceived appearance judgements on psychological and biological stress processes across adulthood. *Stress and Health*, *35*(3), 318-329.

Safran, M. A., Mays Jr, R. A., Huang, L. N., McCuan, R., Pham, P. K., Fisher, S. K., ... & Trachtenberg, A. (2009). Mental health disparities. American journal of public health, 99(11), 1962-1966.

Santre, S. (2024). Mental disorders and mental health promotion in police officers. *Health Psychology Research, 12*, Article 93904. https://doi.org/10.52965/001c.93904.

Shelton, S. (2019). In the Black community, mental illness is seen as a cultural taboo. *The Channels: Santa Barbara City College.* https://www.thechannels.org/top-stories/2019/11/08/in-the-black-community-mental-illness-is-seen-as-a-cultural-taboo/.

Sheppard, V. (2019). An Introduction to research methods in sociology. Creative Commons. https://pressbooks.bccampus.ca/researchmethods/chapter/probabilistic-and-non-probabilistic-sampling-techniques/

Solórzano, D. (2000). Critical Race Theory, racial microaggressions, and campus racial climate: The Experience of African American college students. *The Journal of Negro Education*, 69(1-2): 60-74.

https://academicaffairs.ucsc.edu/events/documents/Critical%20Race%20Theory%20Racial%20Microaggressions%20and%20Campus%20Racial%20Climate-The%20Experiences%20of%20African%20American%20College%20Students-JNE.pdf.

Sue, D. S., Capodilupo, C. M., Torino, G. C., Bucceri, J. M., Holder, A. M. B., Nadal, K. L., & Esquilin, M. (2007). Racial microaggressions in everyday life. *American Psychological Association, 62(4): 271-286.* DOI: 10.1037/0003-066X.62.4.271.

Tolleson, T. (2007). The curse of complacency. *AviationPros.* https://www.aviationpros.com/aircraft/maintenance-providers/mro/article/10381353/the-curse-of-complacency.

Vance, T. A. (2019). Addressing Mental Health in the Black Community. Columbia University Department of Psychiatry.

View of Implementing DEI in Aviation Education: Coping and Addressing Mental Health Concerns. (n.d.). https://ojs.library.okstate.edu/osu/index.php/CARI/article/view/9404/8439

View of mental health needs among minority aviation students. (n.d.). https://ojs.library.okstate.edu/osu/index.php/CARI/article/view/9513/8473

Vonasek, J. (2023). *Suicide prevention starts with Better Mental Health Awareness*. University of North Dakota's Official News Source. https://blogs.und.edu/und-today/2023/10/suicide-prevention-starts-with-better-mental-health-awareness/

Wiley, C. (2020). How mixed messaging undermines all of our mental health. *Talkspace.* https://www.talkspace.com/blog/coronavirus-mixed-messages-mental-health-impact/.

Williams, S. L. (2020). Understanding whiteness: A multicontextual overview of whiteness in campus climate. The Journal of Educational Foundations, 33(1-4), 95-105. https://files.eric.ed.gov/fulltext/EJ1299785.pdf

Wu, A. C., Donnelly-McLay, D., Weisskopf, M. G., McNeely, E., Betancourt, T. S., & Allen, J. G. (2016). Airplane pilot mental health and suicidal thoughts: a cross-sectional descriptive study via anonymous web-based survey. *Environmental Health*, *15*(1). https://doi.org/10.1186/s12940-016-0200-6

Wu, A., Roemer, E. C., Kent, K. B., Ballard, D. W., & Goetzel, R. Z. (2021). Organizational Best Practices Supporting Mental Health in the Workplace. *Journal of Occupational and Environmental Medicine*, 63(12), e925–e931. https://doi.org/10.1097/JOM.0000000000002407.

Wu, A. C., Donnelly-McLay, D., Weisskopf, M. G., McNeely, E., Betancourt, T. S., & Allen, J. G. (2016). Airplane pilot mental health and suicidal thoughts: a cross-sectional descriptive study via anonymous web-based survey. *Environmental health*, *15*(1), 1-12.

Yu, Y., Matlin, S. L., Crusto, C. A., Hunter, B., & Tebes, J. K. (2022). Double stigma and help-seeking barriers among Blacks with a behavioral health disorder. *Psychiatric Rehabilitation Journal, 45*(2), 183–191. https://doi.org/10.1037/prj0000507.