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MENTAL HEALTH PROBLEMS AMONG AIRCREW

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ABSTRACT

This article has discussed individual differences in personality and mental health, and common ways in how people react to different stressors in life. We have established that when the experienced level of stress exceeds the amount the person is able to cope with, various emotional, cognitive, and physiological reactions emerge. These reactions are of significance to one's general health condition, work achievements, performance, and job satisfaction. Stress has both short-term and long-term effects on the individual, and it is important to be familiar with these effects for one's own sake and because most aviation professions demand significant cooperation with colleagues and others. The article has mostly related to persons working in aviation; however, passenger issues have been described to a certain extent.

KEYWORDS: *Stress, Aviation Personnel, Mental Health Problems, Disorders, Flight Safety, Aviation Psychologist, Human Factor, Risk And Protective Factors, Environmental Influences.*

I. INTRODUCTION

An important part of psychology is the study of variations in how we think, feel, and react. Although it is important to be aware of such variations, there are a number of commonly shared patterns in terms of reactions to dramatic and stressful events. Hence, mental health problems and disorders among pilots, ATCOs, and other types of personnel in aviation may impair performance and therefore be a threat to flight safety. Following the German wings Flight 925 accident¹ where a pilot deliberately flew a commercial aircraft into the ground, the topic has been discussed by many including the European Cockpit Association (ECA), the European Association for Aviation Psychologists, and also the European Aero medical Association. These

¹BEA (Bureau d'Enquetes et d'Analyses pour la securitel'aviationcivile). 2016. Final Report of the March 2015 Accident of Airbus A320, D-AIPX. Retrieved from: https://www.bea.aero/uploads/tx_elydbrapports/BEA2015-0125.en-LR.pdf

three organizations have collaborated and issued a joint statement in order to promote mental health and openness and to support pilots who need help to deal with mental health issues (see, e.g., eaap.net). The Aerospace Medical Association (AsMA) has twice issued recommendations related to mental health among pilots following accidents attributed to severe mental health problems and with updated recommendations after the German wings accident in 2015². The expert group stated that serious mental health disorders (e.g., psychosis) are relatively rare and their onset is difficult to predict, and that preventive efforts should be aimed at more common mental health problems such as depression, anxiety, and substance misuse. They have also stated that barriers toward discussions about mental health problems between the aero medical examiner and the pilot should be recognized, and the awareness should be raised about the topic among aircrew, their families and flight organizations. They have also suggested that mental health should be assessed as part of the initial pilot selection and recurrent for pilots who have a history of mental health problems but that routinely screening for serious mental health disorders is probably not effective. There may be many reasons why a pilot may be reluctant to discuss mental health problems with the examining physician during the annual medical assessment, including fear of losing his or her license with both personal and financial costs as a result. This may prevent the pilot from receiving adequate and timely help, and this could potentially make the problems worse and prolong the time for recovery. More could probably be done to increase knowledge about mental health problems and reduce stigma so that more pilots and other professionals working in aviation report mental health problems, get treatment, and return to work. This would probably increase individual well-being, but also promote safety. Stigma has been seen as composed of three aspects:

-knowledge (ignorance),

-attitudes (prejudice),

- behavior (discrimination)³. Perceived stigma may prevent help-seeking and also put an additional burden on the person experiencing mental health problems. As a preventive measure, peer support programs (PSPs) have been suggested. These programs may include a safe zone where pilots can receive confidential counseling and support from peers, and if needed be referred to treatment.

II. MAIN PART

The FFM traits measure normal variations in important personality traits where people differ in terms of how extroverted or conscientious they are. Personality traits are related to many important outcomes including training and work performance. Personality traits are also linked to mental health problems such as depression, anxiety, and substance use disorders⁴. This applies

²Aerospace Medical Association (AsMA). 2012. Pilot mental health: Expert working group recommendations. *Aviation, Space and Environmental Medicine* 83:1184–1185. Aerospace Medical Association (AsMA). 2016. Pilot mental health: Expert working group recommendations—Revised 2015. *Aerospace Medicine and Human Performance* 87: 505–507.

³Evans-Lacko, S., Little K., Meltzer H., Rose, D., Rhydderch, D., Henderson, C., and Thornicroft, G. 2010. Development and psychometric properties of the Mental Health Knowledge Schedule. *Canadian Journal of Psychiatry* 55: 440–448

⁴Kotov, R., Gamez, W., Schmidt, F., and Watson, D. 2010. Linking “big” personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychological Bulletin* 136: 768–821.

especially to neuroticism and conscientiousness where the largest differences between groups diagnosed with a mental health disorder and control groups were detected. Scoring high on neuroticism and low on conscientiousness may be seen as risk factors associated with many mental health disorders. Meta-analyses of longitudinal studies⁵ have indicated that neuroticism represents a risk that exists prior to the development of common mental health disorders. Certain constellations of personality traits may therefore be seen as constituting a vulnerability factor for developing mental health problems rather than stemming from the same underlying cause. Mental health has been defined by WHO⁶ as "...a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community." This means that everyone has a mental health, and that it is more than the absence of mental disorders or problems. For an individual, it may vary over time, and it is a vital part of a person's health in general. There are many different types of mental health problems and disorders. They differ in terms of severity, how common they are, and also in terms of causes. Around 20% of the world's population has some form of mental health problem or disorder, and only a small percentage receive professional help from mental health services for their problems. Mental disorders are characterized by abnormal behavior, thoughts, and feelings, which may result in problems at work and in relation to other people. In most cases, mental health problems are caused by many contributing factors including genetic, biological, and environmental influences and stressors. Some of these influences or factors may have a negative impact on mental health and may be labeled risk factors whereas others have the opposite impact and are called protective factors. Risk and protective factors may be both individual and environmental, and may interact in different ways. Individual factors could include personality traits and intelligence, lifestyle, and the use of alcohol, and environmental factors could include family- and work-related factors. Having a family may be protective as social support is in most cases a protective factor, but family life can also be a cause for worry and conflicts and thus constitute a risk factor. Correspondingly, having a meaningful job may contribute to an individual's self-esteem and coping, but also sometimes be a source of stress and burden. Environmental influences may together with an individual vulnerability cause mental health problems, and there are also some environmental influences, for example, exposure to trauma, that may cause mental health problems without any individual vulnerability. In most cases, mental health disorders and problems result from a complex interplay between individual and environmental influences.

Different types of treatment for mental health problems exist depending on the nature of the problem. It may include medications as well as more psychosocial treatments such as cognitive therapy or behavioral therapy. The choice of therapy should rely on the best available research evidence of what actually works. Ideally, there should be studies documenting that a certain type of treatment is effective in reducing symptoms in groups of patients compared to control groups;

⁵Jeronimus, B.F., Kotov, R., Riese, H., and Ormel, J. 2016. Neuroticism's prospective association with mental disorders halves after adjustment for baseline symptoms and psychiatric history, but the adjusted association hardly decays with time: A meta-analysis on 59 longitudinal/prospective studies with 443 313 participants. *Psychological Medicine* 46: 2883–2906.

⁶World Health Organization (WHO). 2013. *Mental Health Action Plan 2013-2020*. Geneva, Switzerland: Author. Retrieved from: http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1 World Health Organization (WHO). 2016. *ICD-10: International Statistical Classification of Diseases and Related Health Problems*. Geneva, Switzerland: Author.

for example, that cognitive therapy is effective in reducing depression among patients suffering from major depression compared to a control group or to other types of treatment. If there are many studies supporting the effectiveness of a certain type of therapy, then these can be summarized either through systematic reviews or meta-analyses. The Cochrane Collaboration (www.cochranelibrary.com) is an international organization that conducts systematic reviews that may be used as the basis for selecting the best available therapy. In many countries, these types of reviews are used as the basis for forming guidelines for what type of treatment should be offered for both medical and mental health problems. For some types of mental health problems, there is solid evidence, whereas for other types of illnesses there is less convincing evidence. The term evidence-based practice is frequently used by both psychiatrists and clinical psychologists and means that the treatment offered should be based on research evidence, clinical expertise, and the clients or patients' wishes, values, and needs⁷. In addition to different types of treatment for mental health problems, there is also an increased focus on prevention and health promotion. Mental health promotion refers to activities or interventions that aim at strengthening protective factors such as resilience and coping skills but also creating supportive environments⁸. Different types of prevention exist, and may be directed at everyone; for example, everyone working in the aviation industry where the purpose is to prevent a specific problem (e.g., alcohol abuse). This strategy is labeled universal prevention, and instead of targeting a specific group, the intervention is for everyone. One universal preventive measure related to alcohol would be to restrict access to alcohol. There are other types of prevention, labeled selective and indicated where the intervention is targeted either toward people at risk (selective prevention) or people who have symptoms or early signs of a problem (indicated prevention). Ideally, there should be a system that covers health promotion, prevention, and treatment, as indicated in Figure 1.

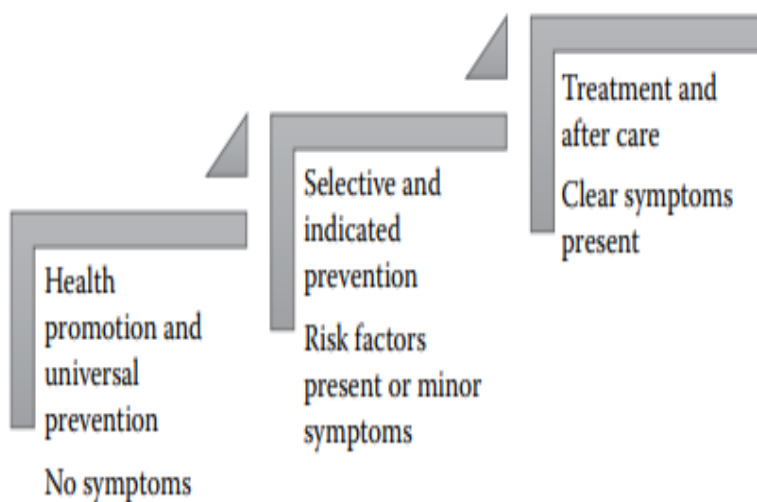


Figure 1. How to promote good mental health

⁷Sackett, D.L., Rosenberg, W.M., Gray, J.A., Haynes, R.B., and Richardson, W.S. 1996. Evidence based medicine: What it is and what it isn't. *British Medical Journal* 312(7023): 71–72.

⁸Barry, M. and Jenkins, R. 2007. *Implementing Mental Health Promotion*. New York, NY: Churchill Livingstone.

III. RESULTS AND DISCUSSIONS

There are several systems for diagnosing and classifying mental disorders such as the DSM-5 (American Psychiatric Association 2013), which is probably the most widely used system in addition to the ICD-10 (International Statistical Classification of Diseases and Related Health Problems) developed by the World Health Organization⁹. The DSM-5 system includes a list of diagnostic categories: depressive disorders, schizophrenia and other psychotic disorders, trauma and stressor-related disorders, personality disorders, and substance-related and addictive disorders. Many of these diagnostic categories have several symptoms that need to present over a certain time period and result in a lowered level of functioning before the diagnosis can be determined. In addition, significant psychosocial and contextual features also need to be considered when diagnosing a person. This is usually done by conducting a clinical structured interview, and it may sometimes be supplemented with specific tests for assessing, for example, depressive symptoms or neuropsychological tests to examine cognitive impairment. A precise diagnosis requires cooperation from the person being interviewed, and unless the person is willing to discuss symptoms and report problems, assigning a correct diagnosis becomes very difficult for the clinician. When determining if a person suffers from a mental health disorder, it is important to rule out alternative explanations such as the symptoms being caused by a medical condition or the use of substances/medications. A person may, after losing a loved or going through a difficult breakup, display many different symptoms including depressive symptoms, anger, sleeping problems, and loss of appetite, without this constituting a disorder. Pilots, like most people, are not immune to life stressors and hardship and may experience reactions to life events and also experience mental health problems and disorders. Another way of classifying mental health disorders is between severe mental health disorders versus minor mental health problems. Psychotic disorders such as schizophrenia or bipolar disorders are more severe and are associated with a loss of contact with reality, lack of insight in the disorder, and many other symptoms including reduced functioning in major areas such as work and family life. These types of disorders are relatively rare, and the estimated lifetime prevalence for schizophrenia is between 0.30% and 0.70% and for any type of psychotic disorder is 3.5%¹⁰. For major depression, the prevalence is much more common, and in a year, almost 7% of the population may experience a major depressive disorder.

A person may suffer simultaneously from several different disorders, for example, both anxiety and depression or having an eating disorder in addition to a personality disorder. This phenomenon is referred to as comorbidity and may make the diagnosis and treatment more difficult. The advantage of such classification system like DSM-5 or other similar systems is that a correct diagnosis is a necessary requirement for choosing the best treatment. One disadvantage is that people may feel stigmatized by being assigned to a diagnostic category as mental health problems are still associated with a lack of knowledge and misconceptions about the cause and treatment options.

⁹World Health Organization (WHO). 2013. Mental Health Action Plan 2013-2020. Geneva, Switzerland: Author. Retrieved from: http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1 World Health Organization (WHO). 2016. ICD-10: International Statistical Classification of Diseases and Related Health Problems. Geneva, Switzerland: Author.

¹⁰Perälä, J., Suvisaari, J., Saarni, S.I., Kuoppasalmi, K., Isometsä, E., Pirkola, S., Partonen T., et al. 2007. Lifetime prevalence of psychotic and bipolar I disorders in a general population. *Archives of General Psychiatry* 64: 19–28

We are continually bombarded with influences, expectations, and demands placed on us by our surroundings. Work commitments or the lack of time and resources to complete tasks are typical examples. Both paid work and unpaid work (e.g., caring for family members) are applicable factors in this regard. To meet social demands or solve work-related tasks, the individual relies on different sets of resources, including knowledge, experience, and personal attributes. Some theories describe stress as the result of factors or elements that have a negative impact on the individual; for example, distracting noise or pressure at work (stimulus-based theories), while other theories are concerned with the consequences of stress, such as various emotional and physical reactions (response-based theories). The latter tradition is exemplified by Selye¹¹. He describes a general stress response that is valid for everyone and consists of three phases: the alarm phase, the resistance phase, and the exhaustion phase. A more modern understanding requires stress to be regarded as the interaction between demands and the resources available to the individual. When demands placed on an individual exceed his or her resources, stress develops. In these interaction models, an important point is that the person must evaluate the demands and consider whether or not these demands exceed his or her resources. Due to this cognitive evaluation, what one individual considers a stressor is not necessarily considered a stressor by someone else¹². Balance between external demands and personal attributes is perceived as challenging and satisfying to the individual¹³, whereas imbalance is a precursor to emotional, physical, and behavioral consequences. Frankenhaeuser's biopsychosocial model (depicted in Figure 2) delineates the relationship between stress and health. In that model, the person is subjected to various demands, such as intense workloads, time constraints, shift work, problems, or conflicts. The person relates this to his or her resources, including experience, physical and mental health, personal abilities, and, potentially, external support. If demands surpasses the person's resources, stress ensues, accompanied by both psychological and physiological reactions. Immediately, various stress hormones are released into the body (adrenaline, noradrenaline, and cortisol). These hormones produce a number of advantageous effects in precarious situations; however, problems may arise if the individual is exposed to these effects for an extended period of time. If a person is continually stressed, or if there is not enough time to rest, the body is unable to normalize the physiological reactions in time for the next work session. Stress is also an unpleasant experience, with short-term and long-term consequences for the affected person's productivity.

¹¹Selye, H. 1976. *The Stress of Life*. New York, NY: McGraw Hill
Lazarus, R. 1976. *Pattern of Adjustment*. McGraw-Hill: New York.

¹²Lazarus, R. 1976. *Pattern of Adjustment*. McGraw-Hill: New York.

¹³Frankenhaeuser, M. 1991. The psychophysiology of sex differences as related to occupational status. In Frankenhaeuser, M., Lundberg, U., and Chesney, M. (Eds.), *Women, Work, and Health. Stress and Opportunities* (pp. 39–61). New York, NY: Plenum Press.

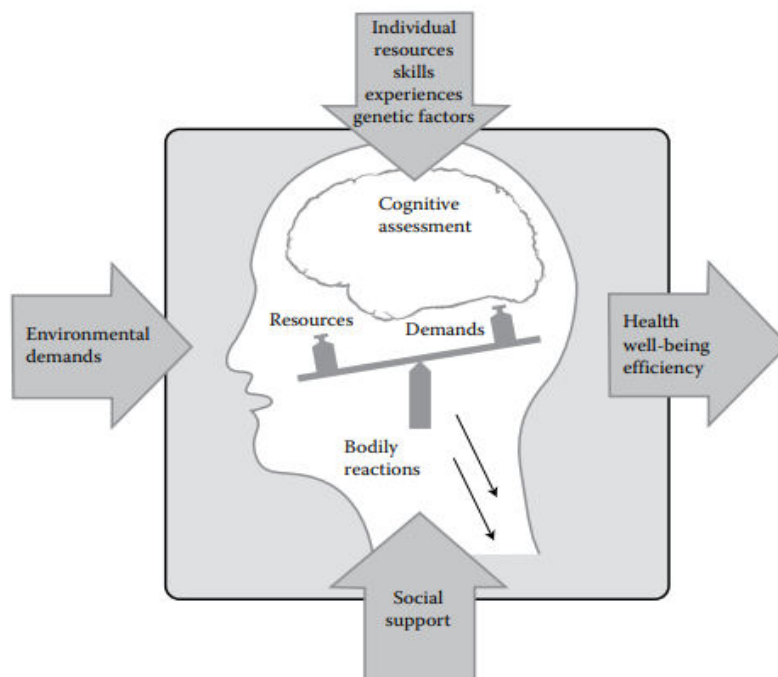


Figure 2. The biopsychosocial stress model. (With kind permission from Springer Science + Business Media: *Women. Work and Health. Stress Opportunities*, the psychophysiology of sex differences as related to occupational status, 1991, pp.39-61, Frankenhaeuser, M., New York: Plenum Press)

IV. CONCLUSION

There are other models that describe work-related stress, such as Karasek's demand-control model¹⁴, which describes how stress relates to various consequences such as health risks and behavior within the organization. In this model, work-related demands are described as "high" or "low," and, similarly, the individual's ability to affect or control the situation is deemed "high" or "low." Combining high demands with low levels of control increases the risk of psychological impacts and physical illness, such as cardiovascular diseases¹⁵. On the other hand, combining high demands and a high level of control encourages learning and has a motivational effect. Later expansions on this model have pointed out that social support, such as assistance and encouragement by colleagues, may reduce stress and minimize risks associated with negative consequences of stress. There are several forms of social support, such as care and empathy, as well as assistance of a more practical nature, and being applauded for doing a good job. Keeping in mind that stress results from an appraisal process, and that the same situation may result in stress for one person but not for another, there are some Environmental demands Health well-being efficiency Bodily reactions Resources Demands Cognitive assessment Individual resources

¹⁴Karasek, R.A. and Theorell, T. 1990. *Healthy Work: Stress, Productivity, and the Reconstruction of Working Life*. New York, NY: Basic Books.

¹⁵Yoshimasu, K. 2001. Relation of type A behavior pattern and job-related psychosocial factors to non-fatal myocardial infarction: A case-control study of Japanese male workers and women. *Psychosomatic Medicine* 63: 797-804

skills experiences genetic factors Social support Figure 2. A comprehensive review by Albuquerque and Fonseca¹⁶ lists a number of stressors that may be a factor for pilots but also for other types of personnel in aviation. These include physical/physiological stressors, and job-related stressors such as difficult working conditions including pressure toward reducing costs in the aviation industry and a typical employment. The third group of stressors is individual stressors related to managing family life, shift work, and other responsibilities. Different types of stressors may add up, especially if they occur simultaneously, and the combined impact may be too much to handle for the individual. Different coping strategies for managing stress among pilots have been outlined by Eriksen and Bor¹⁷ and include individual strategies for reducing stress such as living healthy, sleep hygiene, exercise, relaxation techniques, and having interests outside work. In addition, they describe work-related strategies that may be used to manage workload and establish boundaries between paid work and private life.

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