PRACTITIONER ARTICLE

The Psychological Effects of Constant Evaluation on Airline Pilots: An Exploratory Study

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Commercial airline pilots are among the most frequently trained, evaluated, and monitored professionals. This study uses the phenomenological methodology to explore the psychological effects of constant evaluation on airline pilots. Interviews were conducted with 7 male airline pilots. The psychological effects of constant evaluation are described through the themes elicited from participants' subjective experiences as: (a) permanent pressure in pilots' professional and private lives, (b) an experiential process that changes as pilots age and gain more job experience, and (c) diminished trust among organizational members. The implications of these findings are discussed and recommendations for further research suggested.

Formal evaluation for airline pilots is an ongoing process throughout their career. Every 6 months, pilots are recurrently trained and tested on flying proficiency and are medically examined. Evaluation results have important implications for pilots. Successful results ensure that the pilot's flying license is renewed, whereas any detected medical problem or flying inefficiency can and usually does lead to the temporary or definitive grounding of the pilot, suspension or loss of flying license, and therefore possible loss of job.

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Pilot evaluation is not limited by the twice-yearly proficiency and medical checks. Pilot performance is monitored and evaluated by operational management, fellow crew members, and on new technology aircraft by an on-board monitoring computer. The airline industry also encourages pilots to use the formal or confidential self-reporting system to report any behavior that can jeopardize flight safety. In addition, pilots are subject to random blood and urine checks before operating a flight.

Evaluation procedures are stressful events for many pilots. In fact it is well accepted within the aviation community that many pilots perceive flight and medical checks with aversion and fear because they represent a threat to their flying license (Beaty, 2001; Butcher, 2002; Johnston, 1985; O'Connor, 1975; Rice, 1991; Sloan & Cooper, 1986). Stokes and Kite (1994) reported that for most pilots, job security and the recurrent checks are stronger chronic stressors than potential personal injury or even death.

Most pilots learn to cope with their working environment and are successful at their recurrent proficiency and medical checks, yet it is often argued that formal examination results may not be giving a realistic picture of the pilot's proficiency, psychological or physical excellence (Butcher, 2002; Helmreich, Wilhelm, Klinect, & Merritt, 2001; Rice, 1991). During flight proficiency checks pilots are in a state of high vigilance and therefore may not be representing their actual behavior when not under supervision. Rice, an authorized aviation medical examiner (AME), confirmed that an AME is expected, in a 1-hr meeting, to determine if a pilot is healthy enough both physically and psychologically to operate an aircraft safely. Whereas physical problems are not easy to conceal from a physician, psychological dysfunction or alcoholism can be easily overlooked by the AME as the airline pilot puts forward his or her best behavior (Rice, 1991).

Woerth (2000) described airline pilots as the most frequently trained, evaluated, and monitored professionals in the world. Many other professionals have firsthand experiences of the psychological effects of being evaluated: the joys of successful personal evaluations, the dreads of failure, and perhaps the actual pain of failure. Yet, when compared to other professionals, airline pilots emerge as experiencing evaluation in quite distinct ways because (a) professional status needs to be reconfirmed every 6 months through evaluations, (b) professional status is never a given even if an individual is very proficient because a medical or psychological problem may inadvertently appear at any time during one's career, and (c) failing an evaluation may mean permanent loss of professional status.

Research in areas of pilot evaluation is extensive and ongoing. However, there are limited qualitative studies that investigate the effects of constant evaluation as a phenomenon in itself on active airline pilots. The research problem

to be addressed is this: What are the psychological effects of constant evaluation on airline pilots?

The fact that universally all pilots are monitored and regularly evaluated is meant to ensure that no matter the age, gender, race, nationality, or airline, commercial pilots are in good health and qualified to do their job. Yet, regular pilot evaluation also produces unintentional negative psychological effects on pilots. Literature shows that these effects range from temporary test anxiety to the development of psychiatric disorders such as anxiety and depression. In addition, the level of supervisory stress that pilots experience has also been indicated as a potential predictor of coronary heart disease (Hendrix, 1985). Supervisory stress is defined as "the extensive organizational control that companies and regulatory bodies exercise over professional pilots, including the 6-month medical and proficiency checks, which, if failed, would automatically result in loss of livelihood" (O'Hare & Roscoe, 1995, p. 176). Indeed, cardiovascular problems are the primary cause for pilots' loss of license; neuropsychiatric disorders are the second most common cause.

In the case of neuropsychiatric disorders, O'Connor (1975) and Johnston (1985) asserted that there is always a period of psychological deterioration before pilots are detected with the disorder or admit impairment. For such reasons, loss of license data imply that at any one point in time a number of active pilots will be experiencing a period of psychological deterioration. These pilots may or may not be aware of the insidious nature of their condition, nevertheless, the probability is that they remain untreated for fear of loss of employment (Cubbin, 2000). Pilots may also use denial when faced with a stress-related problem that might call into question their ability to perform their job safely. Helmreich (in press) reported that universally most pilots maintain that their performance, even in emergency situations, is not affected by personal problems or high levels of stress. Notwithstanding pilots' typical denial of stress-related problems and their declared invulnerability to stress, in a study of British pilots ($N = 272$), Cooper and Sloan (1987) identified depression and anxiety in 20% of the sample.

Johnston (1985) asserted that pilots as a group have the tendency to communicate stress-related problems such as supervisory stress in ways that may appear surprising and illogical to the observer. Pilot impairment is often projected in behaviors such as disturbed social relations in the flight deck, degradation of flying skills, unprofessional conduct, early retirement, absenteeism, defensiveness, arrogance, and fatigue (Johnston, 1985; O'Connor, 1975; Raymond & Moser, 1995).

The purpose of this research was to study the perceived effects of being constantly evaluated by obtaining airline pilots' verbal descriptions of their perceptions and experiences of being regularly monitored and assessed.

METHOD

Participants

The participants in this research were 7 male airline pilots working for three major national airlines on three different continents. Middle-aged experienced pilots were chosen because of their long exposure to the phenomenon under study; female pilots represent a small minority (3%) of this population, thus for safeguarding anonymity this choice was abandoned. The average age of the pilots was 51 years; the average length of flying experience was 30 years.

Many months before interviews were due the first author, together with a contact person, contacted 15 pilots and asked if they would like to participate in a study about how they are affected by being constantly evaluated in their professional life. The eventual selection of 7 pilots was based on chance and convenience of time and country for the participants and the first researcher. Interviews took place in different countries over a span of 6 months.

Important ethical considerations in this study included (a) explaining the rights of the participants and the obligations of the researcher, (b) consolidating a mutual agreement through signing the consent letter, (c) taking a humanistic approach to interviewing where dignity and unconditional positive regard for the individual was more important to getting data at all costs, (d) safeguarding the participants and their jobs through confidentiality and anonymity, and (e) remaining as faithful as possible to the participants' experiences in the analysis of the results. To further protect the participants, no details were revealed to the participants with regards to who was participating in this study. This decision was based on the awareness that although the aviation community worldwide seems like a huge body, in reality there exists quite a familiarity within this community.

The Interview As the Method

During the semistructured interviews, three major topics were explored: (a) the medical evaluation, (b) the proficiency check, and (c) peer relationships. The sequence of these topics was not predetermined; it was spontaneous and each topic was pursued according to the participant's answers. The following question was structured, carefully worded, and posed to all participants before the tape was turned on: "Please describe for me how being constantly evaluated affects your life, and how you deal with these effects."

The main objectives in the interviews were (a) gaining an understanding of how constant evaluation as a distinct phenomenon affects the pilot, (b)

identifying the area of evaluation that most affects the participant, and thereafter, (c) gaining an understanding of how the participant is psychologically affected by each specific area.

The interviews were all audio-recorded and transcribed by the first author word for word. Each taped interview lasted 1 hr, but untaped conversations continued for a period of time in different settings such as a coffee shop or restaurant. This time was used as debriefing during which important new data emerged as professional conversation changed to casual conversation.

The Research Paradigm: A Phenomenological Approach to the Problem

Paradigms are analogous to tools in research: Before we can choose our tools, we need to fully understand our problem and work out how we think it is best to get knowledge about the problem. This is an exploratory study that seeks to investigate the meanings airline pilots give to the phenomenon of being constantly evaluated. The research paradigm chosen as the most appropriate to reach this aim is the phenomenological approach.

Burrell and Morgan (2003) classified phenomenology as a school of thought that falls within the interpretive paradigm. The interpretive paradigm is informed by "a concern to understand the world as it is, to understand the fundamental nature of the social world at the level of subjective experience" (Burrell & Morgan, 2003, p. 28). Therefore the ontological and epistemological assumptions that guide this study are that reality is objective inasmuch as it is personal and the product of one's mind. However, reality is also subjective and multiple: "Multiple realities exist, such as the realities of the researcher, those of individuals being investigated, and those of the reader or audience interpreting a study" (Creswell, 1998, p. 77).

"Phenomenology is the study of human experience and of the way things present themselves to us in and through such experience" (Sokolowski, 2000, p. 2). The phenomenological attitude involves being in the "here and now." The task of the researcher is to connect to the world of the participant as it is lived and experienced, to describe a lived experience rather than to explain or attribute causes to the experience. Phenomenology is not concerned with theory building and the generalization of findings from a sample to a population. Its main concern is not to make judgments but to describe, understand, and point out the implications of a phenomenon. Van Manen (2002) asserted that:

> The practical significance of phenomenological knowledge is formative in nature: It enhances our perceptiveness, it contributes to our sense of tact in human relations, and it provides us with pathic [i.e., general mood, sensibility, felt sense

of being in the world] forms of understanding that are embodied, situational, relational and enactive.

Phenomenology demands that we understand intentionality, and practice bracketing. *Intentionality,* a core concept in this tradition, refers to being open to both the objective as well as the subjective component of a phenomenon. *Bracketing* requires that we put aside our preconceptions, biases, theories, religions, and assumptions and allow the phenomenon to appear without passing judgments. Through analysis the essential structure of an experience is then extracted.

The strength of this research design is that the chosen phenomenon is explored in depth and as experienced from the subjective or first-person point of view. This in-depth analysis should leave the reader with a better understanding of the phenomenon explored. However, this research design poses challenges just like any other design, some of which are described by Creswell (1998) as (a) the need for the researcher to have a solid understanding of the philosophical concepts of phenomenology, (b) the choice of participants who need to have experienced the phenomenon, and (c) the difficulty for the researcher to maintain objectivity and to bracket personal experiences.

The phenomenological tradition of inquiry is desirable to study the psychological effects of constant evaluation on airline pilots inasmuch as it offers the appropriate conceptual frameworks and tools for understanding the human condition in all its diversities and as it manifests itself in the here and now. In addition, most empirical studies conducted on the active airline pilot population are situated in the positivist paradigm and the quantitative research tradition. The paradigm chosen in this study can therefore contribute to knowledge by exploring the phenomenon under study from an alternative worldview perspective.

Generalizability, Validity, and Reliability

We make no claim to the generalizability of the findings. Qualitative research, unless replicated by different researchers in different settings, can never be generalized. Our aim in this study is to explore the topic of constant evaluation by bringing out the uniqueness of the individual person and his or her feelings. Thus from this point, when we refer to pilots, we are referring only to the participants, unless we specify otherwise.

The validity of this study is in that it was piloted and the pilot interview was carefully analyzed both in content and process. Content analysis ensured that the questions asked were relevant to pilots' experiences of regular evaluation, and process analysis focused on the interview relationship.

Issues of reliability were considered throughout the research process: (a) In interviewing, the attempt was to provoke thought, rather than to influence answers; (b) in the transcribing process, quality recording helped to capture the words spoken and to revive the interview situation; and (c) the procedures followed in the analysis process are clearly defined.

Analysis of Data

Although there exists no consensus for the analysis of qualitative data (Creswell, 1998), many authors emphasize the need for transparency of method as one analyzes the large amount of data generated in qualitative research. The method used in this study borrowed concepts from the process of phenomenological analysis of Sokolowski (2000). This analysis involved a circular process of (a) understanding the wholeness of the phenomenon, (b) identifying and concentrating on a part, (c) reflecting on the articulation of the part, and (d) moving back to the wholeness of phenomenon on a new level of meaning.

The data generated from the interviews were analyzed by finding themes that answer the research problem: How are airline pilots influenced by being constantly evaluated?

The process used to analyze the data followed a number of steps: (a) reading through transcriptions while listening to tapes until familiarity with the text was gained, (b) marking meaningful statements that provided information to the research question, (c) forming participant's profile by highlighting important themes and repeating this process for each participant, (d) examining the data collectively—participants' perspectives and differences were noted and color coded. The process was repeated until core themes were elicited. A core theme constituted bringing together different perspectives of the same component in the explored phenomenon. As an example, the first core theme is permanent pressure in pilots' professional and private lives. All pilots spoke of permanent pressure as an effect of being regularly evaluated, yet, as presented and discussed shortly, participants experienced this pressure in different ways.

RESULTS

All interviews were conducted in English and transcriptions remained as faithful as possible to the expressed language except in cases where anonymity was jeopardized. According to the participants (from now on called P1, P2, … , P7) the psychological effects of being constantly evaluated are:

1. It is a permanent pressure in pilots' professional and private lives.
2. It is an experiential process that changes as pilots mature in age and gain more job proficiency.
3. It results in diminished trust among organizational members.

A Permanent Pressure in Pilots' Professional and Private Lives

Evaluation in the pilot profession is an ongoing process. All pilots talk of permanent pressure as the end result of being regularly evaluated and describe such pressure as something that is always in the back of their minds. This pressure goes beyond pilots' professional lives and influences their personal lives. One of the pilots said that he has problems adjusting from work to home life because he feels that he needs to prove himself to everybody all the time, even to his own family.

Pilots say that prior to and during evaluation events they feel a degree of anxiety, fear, and stress. When evaluation is completed and the results are positive, participants experience a temporary relief from mental pressure and higher self-esteem. When results are not positive, pilots say that they go through very difficult times. One of the pilots failed a medical test due to a faulty machine. He described this time as highly stressful not only on himself but also on his family. Another pilot once failed a flight check and he had to remain at home for 2 weeks until the recheck.

P2:   You are getting more and more nervous and it is affecting you more and more. You are increasing your learning lessons. You have to because you have to do the recheck and you are getting more nervous and you are not so relaxed anymore—stress level is now higher because you are losing your job if you fail the second time.

Most pilots agreed that the long-term positive effect of this pressure is that pilots are kept motivated to follow a healthy lifestyle and to study. On the other hand, as the following quotes show, the fear of being judged and the fear of losing one's social status emerge as negative effects of the phenomenon being studied.

P4:   I'm, I'm, I'm, I am affected quite strongly … I had a very critically judgmental father and so I've always had a big fear of being judged … When I am in situations of being assessed and judged I feel very uncomfortable and I find it very stressful … I always want to please somebody because I was always trying to please my parents.

> P6:   I feel pressured, a pressure to conform … to what society wants out of me. If that image is shattered because I am grounded, so people will think of you in the past, that you *were* a pilot, you are just another human being … If that image is shattered that is what will hurt me more. It will take its toll on myself, my friends, my family.

For most pilots the effort to control their weight is a major stress. Pilots describe a persistent pattern of putting on weight, and then dieting and exercising to reduce the weight again.

> P6:   One of the major problems I had in my life was that I ate a lot and as soon as the medical day approached I used to go on strict diets, when it was over I would start binging again. My work was a big part of my world and so I tried to lose weight … I used to be very frightened because now I had a family … losing your license because of a medical check was frightening. I was afraid and yet I could not control my compulsive attitudes.

Participants described their job as their childhood dream, and without exception, all participants said they love to fly. Yet, paradoxically, most pilots regret their career choice, and are dissatisfied or disillusioned with their job. The fear of failing an evaluation lingers throughout participants' narrations as they lament that unlike other professionals, pilots are at a constant risk of losing their license, and thus their right to practice their profession. Pilots' main concern is that they do not know how to do anything else besides fly.

> P7:   I regret that I chose this job. There are people who after many years decide to change careers … As a pilot that does not happen, you are stuck in your job, you cannot do anything else, you are stuck, and you are afraid. Afraid that if you fail you are in deep, deep shit.

P4 said that the only way he deals with this pressure without becoming "totally mentally unstable" is by compartmentalizing his life: emotions, his job, and his family are put in separate compartments. This pilot described "extreme mental pressure" as widespread among pilots.

> P4:   Five pilots committed suicide in about 5 years. Some are quite recent and I knew three of them. The pressure of our job has increased … I think pilots are very reluctant to go and seek help.

P3 knows what it means when a pilot loses his job. He once lost his job due to company bankruptcy; at the same time he also lost his family and all his life

savings. Today, he is grateful to be employed and thus his job is almost his whole life. He avoids turning into a nervous wreck by simply inhibiting job-related pressure.

All the pilots declared that they have learned to live with this pressure in their life. One pilot claimed that what distinguishes pilots from the "normal person" is that whereas other people normally break down under stress, pilots perform; pilots are trained to be at their peak when they are under a high degree of pressure.

An Experiential Process That Changes As Pilots Age and Gain More Job Experience

The way pilots perceive evaluation in their profession changes as they mature in age and grow in technical expertise. In contrast with the fluidity inherent in the psychological process of aging and maturing, six pilots described the aviation evaluation system as a very rigid system that at times does not consider that pilots are human beings who are also subject to age.

The temporal dimension of the phenomenon under study is very present in this theme as participants talk about two major areas of evaluation: the proficiency check and the medical check. Pilot proficiency and expertise are enhanced by time, although as middle and late adulthood approach, physical agility declines and there is a possible deterioration of health.

The proficiency check.   Participants declared that as young pilots, proficiency checks used to create a lot of test anxiety for them. Today, notwithstanding these pilots' increased proficiency, checks are still perceived by most pilots as highly stressful. However, most pilots say that their fear during these checks is now related to the assessor, rather than to their ability. Pilots say that in spite of their experience their expertise is many times undermined when they are checked on their proficiency. These pilots fear the checks because although they are highly experienced pilots, an instructor can find any reason to make them fail an evaluation.

P3:   You can be the greatest pilot in history, if the guy wants, he can find something to flunk you on.

P5:   I make sure that he likes my face … if they don't like you … they will look for reasons to sack you. This is threatening. I conform and brace to allow the stones to pass.

Six pilots talked of their frustrations as they conform to what they perceive as instructors' unrealistic demands based on highly standardized "flawed flying models." These pilots described proficiency training and checks as exer-

cises in which pilots' energy is spent on high vigilance not to make a mistake and to please the instructor. One pilot said that he has acquired his expertise by making mistakes and learning from his and other pilots' mistakes. He describes the state of affairs today as very sad because removing his capacity to make mistakes means removing his capacity to learn.

P4 described his internal state during evaluation as highly agitated; this is a useless stress because when he flies he has his own flying model, which is not the one imposed on him during training. He says that through the years he learned to shield any external manifestation of this distress:

> P4:   Over the years I learned to control the stress … my hands don't shake, I don't sound stressed. I have been told and I also watched myself on the video … I'm surprised at how calm I do appear but internally I am extremely stressed. There are huge physical things going on but there is no actual outward manifestation of that stress … it's purely internalized but if you put me on monitors my heart rate would be up, my blood pressure would be up … you learn over the years to shield and that comes with experience.

P7, a previous flight instructor and checker, said that he feels very frustrated because the proficiency check is just a well-rehearsed "theatrical performance." P6, a current flight instructor, abides strictly to company rules and regulations when he is training other pilots, and when he is being checked. When he works, he follows his own flying model, which he says is surely not the one he teaches. This pilot compares himself with the medical doctor: The medical doctor gives valuable advice to his patients, but this does not mean that he follows the advice he gives. This participant's perceived fear of the flight check has changed through the years.

> P6:   I used to be terrified, terrified, not about the check … you know the procedures well [and you] have done engine failure a hundred times. The fear came from who does the check. Since I became involved in instruction my fear is gone … So, ha, ha, ha, now I am checking the checkers … if you give me a hard time I can show you a hard time when it is my time.

The medical check.   Six pilots said that as young pilots the medical check was only a formality; today as middle-aged individuals they experience a high level of stress and they are expected to demonstrate that they are as physically fit as when they were young pilots.

> P3:

It is good because if you have signs of prostate cancer they will pick it up … but they also want you to be 25 years old … Hell, I am not 25 years old, sorry. They gave me a sonogram and told me "captain, you have fatty liver" … at this age I have fatty everything!

Findings show that pilots consistently strive to avoid the negative effects of regular evaluation. Their first attempt to deal with these effects is to study and follow a healthy lifestyle; thereafter, if this attempt is not sufficient, some pilots seek private medical help, administer self-medication, seek psychological help in secrecy, or simply inhibit their negative psychological condition. Some pilots reach a point where they even become overconcerned with their health. One pilot was upset because he feels healthy, he knows he is healthy, and yet, he always worries about his health.

P6 described the medical evaluation at length and insisted that it is unethical for pilots to hide their medical problems from the medical examiner. This flight instructor said that although a medical problem may cost him his license and also his pride, he will only fly when he feels fit.

P6:   Unless I am 100% fit I will not fly because I am very conscious of the fact that I am carrying lives with me and this is something that I feel deeply about.

As this pilot was asked to talk about psychological problems, a major behavioral change occurred. He was no longer assertive, his rhythm of speech slowed down, and his voice became softer and turned shaky.

P6:   Psychological problems? I, I, I mean, I mean, psychological problems happen all the time. At my age, I am passing through the process of individuation, and it is taking the hell out of me because I still have to find who I am. Coping with the family creates stress, a certain amount of anxiety and a lot of psychological problems … My job is demanding, my family is demanding and in the meantime I am doing some other full-time work. Psychological problems? One of the things I do, and I do not mind disclosing this, is that I seek psychological help, because I believe that my reality at times might not be the true reality or the true perspective … it might not be reality at all … And so I have been consulting with the psychologist, I have been for some time … about 4 years now, but it's, it's not the kind of thing that you have to go every week … Sometimes once a month, and sometimes twice a month.

The narratives told by these pilots reveal a distrust in the AME that stems from the assumption that AMEs do not have pilots' well-being as their main objective. P4 said that doctors do not care about the causes of his high cholesterol levels; they do not care about his health. Doctors' concern is to protect themselves by making sure that if a pilot goes and crashes an aircraft they will not get the blame. This pilot claimed that he does his own research to cure his problems. Two other pilots consult their own private doctor before their medical check.

> P5:   I was told that I had high cholesterol … I went and did all sorts of tests on my own … my private doctor told me that I am very healthy. Every time a doctor tells me that there is something wrong … it is a threat to my license. It is causing stress … Now I consult my doctor and I feel safer.

Findings show that the duration and intensity of the negative effects of the phenomenon under study that are experienced by the individual pilot vary according to the coping strategies used. For example, a pilot who has to go on a strict diet because the 6-month medical check is fast approaching, experiences more stress prior to evaluation and for longer duration than a pilot who keeps his weight stable. On the other hand, pilots who consult their own private doctors prior to their biannual medical check reported feeling less stress before a formal medical evaluation.

Participants who spoke openly of bypassing the aviation evaluation system also spoke of experiencing regular feelings of anger, frustration, and distrust on their job. And pilots who described themselves as trusting and open did not report experiences of negative attitudes or cheating behaviors. However, in presenting this finding, one has to consider that all individuals may not openly express cheating behaviors and negative emotions such as frustration and anger.

What emerges from this study is that problems such as alcoholism, weight problems, fear, anxiety, and stress-related psychological problems started very early in pilots' careers when they were still copilots. The long exposure to these problems seems to have trained pilots to develop strong and deep defenses to mask their problems. In the following quotation P7 attempted to justify his own and other pilots' behaviors when hiding their conditions from the AME.

> P7:   I have had asthma since I was a little kid. I am allergic to dogs. I have never, never, never mentioned it in any medical report. You can be a thoroughly alcoholic and write: No, I don't drink. I was an alcoholic myself. If you say the truth you have to take the risk of being elimi-

> nated, losing your job, losing your license, not being able to perform your profession … The guy who goes and says the truth in the medical is suicidal, nuts or else he really wants to be kicked out.

The basic emotions that surfaced consistently in this theme were fear, anxiety, frustration, annoyance, and resentment. These emotions were mainly internalized as participants' behaviors were described as being relatively submissive toward the demands of their evaluator. In the next theme, these emotions find outlets for expression and relief as participants narrated their experiences during normal flight operations.

Diminished Trust Among Organizational Members

Findings show that as a reaction to being persistently watched, technologically monitored, tested, and evaluated, pilots' trust in other organizational members suffers greatly. Most pilots expressed professional insecurity and personal distrust in their copilots as well as anger toward management.

All participants spoke at length about copilots. This is not surprising when one considers that for the most part, pilots' professional lives are spent in the restricted space of a flight deck shared with copilots. In this space, crew members are in a position to observe each other's real flying behaviors and psychological states. Pilots described copilots as potential threatening flying evaluators who closely monitor their captains' behaviors and then secretly or openly make reports against them. The following quotation is the most descriptive of this concern:

> P5:   The copilot is now trained to be assertive and to speak up … It is now becoming more common that the copilot reports his captain … the mentality of "I will tell on you" … not to improve anything but it is good for career purposes. Now captains are careful.

P1 spoke of a stressful event when his own behavior was called for evaluation because of a mistake committed by his copilot.

> P1:   It was the first officer who made the mistake but we are two and I had to clear that. In my company we have a forgiving system where if you explain on a special report what happens normally there is no penalty, which is a very good system. But do not think that we have done something wrong: We were not going to crash: We were going to land in the wrong airport!

Other participants said that as copilots increasingly monitor and judge their behaviors, they respond to this real or perceived threat by limiting communication with copilots. These pilots also experience a sense of professional isolation in knowing that they cannot fully rely on the competency of copilots. One participant said that he systematically will not allow the copilot to fly in the most critical phases of flight. Although these pilots are aware that copilots need to gain experience for their promotion to captaincy, they very rarely allow copilots to do landings and takeoffs to avoid the potential stress of having their own behavior questioned if copilots commit mistakes. One of the pilots claimed that as a consequence of such practice, copilots are asking captains to sign for landings and takeoffs that these copilots have not performed.

Results show that although participants conform during proficiency tests, in normal flight operations, when allowed the opportunity, these pilots revert to their personal preferred practices. In such cases pilots risk being judged and reported by the copilot as not following the book. P7 said that now he flies strictly by the book because he experienced a lot of stress when a copilot made a report against him in secret. As a reaction to this report, P7 said that he now refuses to share his expertise with copilots.

> P7: First officers are learning nothing from nobody. Captains trust them less and less. Some time ago a first officer reported me … it was a shock because nothing was said during the flight … it caused me a lot of stress … I had to call at the office, make a report, explain etc. etc.

P2 said that he is rational in dealing with job pressures. He does not trust management, and "steams out" against the company by wasting fuel and not allowing the first officer to fly. He knows that at work he is constantly being watched, so at all times he is on alert to ensure that he remains within the limits of acceptable behavior. In this manner, his performance cannot be questioned.

DISCUSSION

This study examined what constant evaluation means to airline pilots and how this phenomenon affects pilots psychologically. The simple mention of the term *constant evaluation* elicited an array of emotions from the participants in this study: It brought nostalgic memories, future insecurity, and present pride and struggles. Results show that the positive effects of constant evaluation on pilots such as being kept on their toes, gaining expertise, and aging gracefully are manifested and present no inhibition for pilots to disclose. The negative psychological effects of the phenomenon under study are relatively ambiguous, mainly latent, and rather secretive. Yet, these la-

tent effects are among the most salient and involuntary effects on the participants.

The act of being repeatedly and similarly evaluated over a span of many years may have turned pilots into clever test takers. Because the structure and content of proficiency and medical checks are heavily standardized, through years of practice pilots know in detail the skills, attitudes, behaviors, and medical criteria that secures their flying license. Most participants are well informed and familiar with psychology and medical jargon, human factors research, different personality tests, and signs and symptoms of stress-related disorders. Furthermore, pilots in this study presented themselves as excellent high self-monitors and impression managers. However, in the course of the interviews, as participants started to feel relatively safe, the level of self-monitoring kept shifting.

Findings in this study are congruent with speculations that active pilots hide stress-related psychological problems during their medical evaluation not to jeopardize their flying license. It was found that pilots who spoke of experiencing past or current psychological problems do not disclose these problems during medical evaluation. This research has shown that during medical evaluation pilots do not feel any moral or professional obligation to report problems of a psychological nature to the AME. As a consequence, pilots experience little cognitive dissonance when they hide a medical or psychological condition from the AME. Conversely, during proficiency checks as pilots conform to the demands of the flight instructor, they experience a high level of stress, dissonance, and frustration, yet there is no outward manifestation of this distressed internal state.

It was observed that pilots' perception of test anxiety during proficiency checks becomes increasingly more complex as they gain more job experience. Over the years, the stress of failing a proficiency check due to performance inadequacies is increased by the fear of committing "stupid" mistakes and being negatively judged by the evaluator and corrected in the presence of the copilot. Participants are middle-aged, highly experienced pilots with declared flawless flying safety history, most of whom have flight instructing or pilot management experiences. These hierarchy power dynamics add to pilots' pressure of being evaluated. One pilot said, "Who can fail me at this stage?" Another pilot said that it is becoming increasingly difficult for him to find a flight checker who matches his experience, yet he has to pretend to heed a "kiddo's" suggestions on how to fly better and safer.

Most participants expressed lack of trust in flight instructors, medical doctors, management, and other crew members. Indeed, distrust within this population is readily acknowledged in the literature. Helmreich and Merritt (2001) declared their results as shocking when the highest percentage of pilots surveyed in four airlines that said they trusted management was 28%; at an-

other airline, 1.3% responded that they trusted their management. These authors suggested that as pilots become more experienced they may reject any and all forms of authority and control that come from management. These authors speculated "as to whether a lack of respect for Management might not be another indicator of professional culture" (p. 113). Yet, as already stated, results from this study indicate that participants' distrust is not limited only toward their management. In fact, some pilots expressed distrust even in their cabin crew. One might therefore put forward the hypothesis that as pilots mature and become more experienced, distrust may become more generalized in their lives.

Major proponents of air safety insist that unless pilots are able to trust, the real problems within this population will remain largely speculative with major implications for air safety (Dismukes, 2001; Helmreich, 1998, in press; Helmreich et al., 2001; Tullo, 2002). Yet, the concept of trust in a flying environment context turns out to be a paradox. On one hand, pilots are expected to trust their management, evaluators, crew members, ground engineers, and flight controllers. On the other hand, pilots are trained to doubt, question, and not to rely even on their own perceptions to deal with the unnatural environment of flight (O'Hare & Roscoe, 1995). Pilots are also trained to doubt and question to deal with terrorism, and perhaps even with possible pilot suicide ideation as in the case of the ill-fated Egypt Air Flight 990 (1990), the investigation of which led to the confirmation of the pilot suicide theory. Moreover, because traditionally pilots have been consistently assigned blame for air incidents and disasters (Beaty, 2001; Dismukes, 2001; Fakoussa, 1999), the subtle message that pilots receive is, that in practice, aviation still embraces the blame-the-pilot paradigm. Lack of trust might therefore become pilots' automatic state of being as a perceived precaution to protect their own lives and their jobs.

Participants' distrust in management stems from the perceived reality that people in management need to protect their own jobs and in so doing they end up not protecting line pilots' interests. Participants' professional distrust in copilots is based on personal adverse experiences such as almost landing at the wrong airport. Participants described the industry's strategy as "economy first, safety next." Pilots said that training is expedited in simulators, and they are left to carry added responsibility and to compensate for copilots' lack of proper and costly training. Some pilots experience a sense of professional loneliness in knowing that they cannot fully rely on the competency of copilots. Others intentionally isolate themselves as a defense measure against potential reports from copilots. In the final analysis, pilots declare that the only person who can protect the pilot is the pilot himself.

Literature and present findings indicate that most pilots are regularly reassured of their good health and proficiency through positive evaluation feedback. Yet this study has shown that at times positive feedback to the

participants may not have been appropriate because it was not based on a complete and honest medical history of the pilot. These situations may create a fake environment that shows only positive aspects such as good health, success, and prestige. Previous studies confirm that the lowest level of self-esteem is found among those who perceive their liked characteristics to be quite common and their unliked characteristics to be relatively rare (Ditto & Griffin, 1993). Unliked characteristics such as anxiety or depression are also a part of the aviation environment even though they may be relatively rare, kept well protected by the sufferer, or simply ignored by significant others who observe and turn a blind eye. Through social comparison, such circumstances may even become a breeding ground for gossiping, lowered self-esteem, and guilt feelings within this population. Furthermore, this state of affairs does not allow for the normalizing of pilots' fears and concerns when faced with a debilitating sadness, anxiety, or perhaps even an internal anger that cannot be expressed. The fact that a pilot can successfully hide his depression, alcoholism, anxiety, or a strong internal anger from significant others may help the pilot secure his job but it will do nothing to help that pilot address his issues. In such a situation, although the pilot license is renewed and the pilot's image remains untarnished, in his own eyes he will still feel inferior if he knows that he has passed because he managed to cheat the system.

Another finding is the fact that most of the pilots' current psychological and medical issues have a long history. Throughout the years, pilots have resolved some issues on their own (e.g., alcoholism). Yet, there are other issues such as the fear of failure, medical conditions like asthma, and eating disorders, that some pilots had to learn to live with. When a personal issue is addressed and change is successful, self-esteem is enhanced. On the other hand, trying to change and not succeeding may create a sense of inferiority and perhaps feelings of guilt in knowing that one is incapable of change. The implications are that as a reaction to these psychological situations that dictate that the pilot has to suffer his condition in silence and in hiding, other issues such as frustration, anger, and hostility develop. This study has shown that as a result, there are times when copilots are used as scapegoats and as targets for the anger of their pilot in command.

The implications of these findings are very complex. The nature of the pilot's job dictates that sometimes, indeed in big airline companies many times, two complete strangers are given the responsibility of a flight. Their only points of reference to trust each other are their gut feelings, reputations, their own experiences, and the reliability of their airline's training and evaluation system. When the reliability in the authority of the formal aviation evaluation system is put into question, this system is damaged. Such a situation adds stress to the same pilots who may be contributing to weakening the evaluation system. When pilots are consistently reassured by positive results that their own issues can be hidden from people who should be there to help them overcome them, pi-

lots lose trust in the proficiency and perhaps integrity of their evaluators. Furthermore, pilots become wary of their fellow crew members, to whom they need to entrust their lives during normal flight operations: "I am hiding my depression, what might the person next to me be hiding?"

It is not possible to say if pilots develop their apprehension toward regular evaluation as a reaction to experiencing personal and professional problems, or if the stress of constant evaluation contributes to problems such as alcoholism, eating disorders, and anxiety. In human development, causation is usually a circular process rather than linear—what may be an effect in the beginning will eventually turn into a cause (Csikszentmihalyi, 1997). Thus, one might say that if pilots' stress level increases when they mask their real physical or psychological state, the very act of hiding and being continuously suspicious of other organizational members may in itself become a cause for chronic stress.

As stated elsewhere, this study does not, at any point, claim any universal truth or the generalization of its results. Indeed, the sample size, like in all qualitative studies, is small; generalization to the population is not its aim.

It is hoped that a follow-up quantitative study can be conducted to confirm these initial findings. Follow-up survey research might help generate new findings on a phenomenon that remains relatively unexplored within the active pilot population. However, to obtain meaningful data, such a study would need to consider the fact that pilots' defensiveness in test taking, and the tendency to present only positive self-portrayals and to deny any weakness is well noted in the literature (e.g., Butcher, 2002). Nevertheless, pilots may be less defensive when assessed in a nonthreatening situation.

The pilot population is well researched, yet literature indicates that very limited aviation research is dedicated specifically to copilots. The findings reported here provide a number of insights to reinforce the need to follow up with this population and its younger members. Many of the psychological issues that emerged from this study date back to participants' early days of civilian commercial flying. It would be very interesting to launch a longitudinal study that follows pilots in the course of their career so as (a) to better understand the process of how pilots' perception of being evaluated changes through the years, and (b) to identify the milestones in the pilot profession and investigate their effect. Furthermore, such a study might provide important insights on the long-term effect of the flying environment on pilots' mental and physical health.

This study has shown that the novice or the most experienced airline pilot is not immune to the positive and negative effects of being constantly evaluated. Situations that contribute highly to participants' emotional stress include: (a) harsh attitudes of flight instructors and insensitivity of medical doctors, (b) fear of punishment for mistakes, and (c) perceived unrealistic medical criteria.

The message that comes from 5 participants is that, although a harsh reality for many to accept, psychological distress among active airline pilots is a reality. One of the participant's pleas is for airlines to normalize this reality by making professional psychological help more available, and removing the stigma on pilots who may need such help by accepting the fact that certain psychological problems, albeit temporary, may be inherent to this profession. One of these pilots even proposed a study on how to induce pilots to go for help without endangering their license.

The implications of this research in its wholeness point to two interrelated directions: air safety and pilots' psychological health. Air safety is beyond the scope of this study but it cannot be ignored because it represents the rationale behind regular pilot evaluation. Some people may reach the conclusion that these findings are a threat to air safety and thus stricter measures of pilot assessment need to be implemented. Stricter measures of assessment will probably increase stress on all pilots and may increase the potential of creating or exacerbating problems, such as anxiety, depression, and heart problems, that the same tests are trying to detect. When employees perceive organizational demands as too unforgiving, a possible implication is that even high committed and efficient workers may feel impelled to cheat the system (Kramer, 1999). Learning to anticipate, prevent, accept, and address the concerns, anxieties, and fears of this population may be more productive in the long term for both air safety and pilots' mental and physical health.

CONCLUSIONS

The phenomenon explored in this study is of great importance to the airline industry, but not only to them. In a direct manner this phenomenon touches all of us who use air travel. We, as air travel consumers, entrust our own lives in the hands of individuals whose experience, fear, and emotions are many times standardized by a dark tailored uniform, a cap, multiple stripes, a wide smile, and an airline's advertisement strategy.

One aim of this work was to move this topic of study from speculation to actual active pilots' testimonies. In some interviews the first author was led to the understanding that she was offered to share but a small part of these pilots' internal turmoil. This does not diminish the value of this study; rather it reinforces the need for further research, and it confirms that participants were left the freedom to guide the researcher as to how far they wished to disclose.

This research illustrated that beyond the people with "the right stuff" (Wolfe, 1979) and the projected pilot image of invulnerability there is a fragile human being; a human being who can be approached; a human being who

wants to be approached. One of the pilots said, "The pilot is a proud person who braves storms, strong winds, and emergency situations." As the literature clearly acknowledges, these everyday perhaps even heroic achievements are hardly ever written about, talked about, or even noted, except in the form of statistics and pilots' own memories.

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