SOCIAL SKILLS TRAINING IN FLIGHT SCHOOLS: A PROACTIVE TOOL FOR MANAGEMENT THREATS AND RISKS

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ABSTRACT

Safety Management Systems in aviation generate training programs that develop skills needed to perform safety functions. The objective of this study is to show that, in groups, individuals need to have interpersonal skills and, in particular, ability to communicate with others, to listen, and to influence. It is for this reason that Social Skills Training is important in Aviation. Professionals trained in social skills are more likely to identify threats and risks caused by interpersonal situations, be assertive, and take appropriate action. As a contribution, this paper suggests a set of policies, procedures and practices for educating and training future professionals who will work in aviation safety.

Keywords: Aviation safety, communication, interpersonal skills, social skills training

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1. INTRODUCTION

A previous research conducted by Sexton and Helmreich (2000), which covers two decades of the Aviation Safety Reporting System (ASRS), indicates that over 70% of the accidents or incidents that occurred in Aviation were, directly or indirectly, associated with interpersonal communications matters. "Factors related to interpersonal communication have been implicated in up to 80% of accidents in aviation over the past 20 years", concluded Krifka, Martens, and Schwarz (2003, p. 1).

The Federal Aviation Administration – FAA - (2004) confirmed that communication matters have been responsible for approximately 80% of accident and incidents in aviation over the past 20 years. A faulty communication tends to generate fatal errors of understanding. Language misunderstandings, incorrect use of expressions, accents, slang, the tone of voice are pointed as some human communication factors which can interfere positively or negatively on flight operation.

Bühle (2008) presented the results of a research called “Cockpit Human Factor Research Project” on the Trilateral Safety & Mission Assurance Conference, in 2008. According to him, 2100 pilots responded anonymously a questionnaire about their last critical incident. So, over 3.200.000 factors were pointed out and have been analyzed. These amounts could be categorized in nine different categories of factors as such: Design, Construction, Software, Hardware, Maintenance, Dispatch, Air Traffic Control, Flight Planning and Flight Operations. The last two categories regarding flight planning and flight operations were written in red and bold letters by Bühle.

Digging deep into the causes of the reported incidents, it was observed that in 48% of all cases matters that emerged were related to: calls out that have not been made; considerations that have not been made, messages that have not been transferred, were overheard or misunderstood (Bühle, 2008).

Bühle research (2008) stressed that social interaction difficulties within a team may increase the number of critical incidents. Driven by Bühle´s research outcomes, Lufthansa Airline has underlined a requisite program addressing human relationships and interactions development. By establishing social intelligence and interpersonal competences, Lufthansa concluded that 80% of accidents could be avoided if there was an appropriate interaction among the flight team members (Anderson, 2011). However, the responsibility for decisions

made during the flight is restricted to the command of the aircraft, with the support of the on the ground staff. In this way, to reach positive results it is important that the officers involved are able to overcome the most common communication barriers. In this case, it is essential that the information from the cockpit to the aircraft control, and vice versa, is transferred with clarity and completeness.

People whose work activities require continuous interaction with human beings often lack the social skills necessary to perform their job safely, leading to unnecessary escalation of risks. Social Skills Training (SST) can help aviation professionals who are involved in operational duties, such as private pilots, helicopter pilots, flight controllers, flight dispatchers, airport staff, flight attendants, aircraft maintenance professionals, managers, employees and airport security agents; in short, all these professionals should be submitted to a social skill training to foster safe aviation, to deal with difficult interpersonal situations through effective self-control and better understanding of others.

Crew Resource Management (CRM) training was a great success for normal and routine operations bringing change to the aviation industry and increasing the overall level of safety. However, recent accidents and incidents demonstrate that CRM problems remain a source of air accidents. Therefore, continuous improvement of training techniques must take place so that they address the shortcomings of existing approaches: "Although the CRM exert positive and traceable effects on the crew behavior, these effects are of short duration" (Helmreich, Merritt, Wilhelm 1999, p. 10). Furthermore, failure in CRM training remains the main reason found in nearly 30% of aviation accidents" (Wiegmann and Shapell, 2001, p. 28).

For instance, CRM failures were identified in nearly one out of every five air carrier accidents examined. Even more interesting, the nature of the CRM failure differed between the two commercial operations. That is, while over 60% of the CRM failures associated with air carrier accidents involved "inflight" CRM failures (e.g., inflight crew coordination, communication, monitoring of activities, etc.), over 80% of the CRM failures observed during commuter operations involved "pre-flight" activities such as planning and briefing (Shappell et al., 2006).

The causes for these failures are believed to be mostly related to language, interpersonal communication and social skills. One could ask if CRM should include emphasis on SST to improve safety performance even further (FAA, 2004). In fact, researchers have shown that

SST in teams is tightly linked to the development of individual skills (Mohrman, Cohen and Mohrman, 1995; Dickson and Hargie , 2004; Sexton and Helmreich, 2000; Segrin and Flora, 2000; Krifka, Martens and Schwarz, 2003; Caballo, 2006). This is because, if the individual does not develop or assimilate SST, the result will be difficulties in the ability to think and interact in a team. In other words, individuals need to recognize their own strengths and limitations and strive to overcome weaknesses through the use of SST.

> *"Before working in groups, individuals need to develop interpersonal skills and, in particular, the individual capacity to relate to others, listen to them, influence them, and so on" (Mohrman, Cohen and Mohrman, 1995, p. 21).*

According to the Flight Safety Foundation (FSF, 2009) the technical and non-technical aspects of flight operations are like two sides of the same coin that cannot be evaluated separately. So the first rule is to consider technical and non-technical skills as elements of a set of integrated skills. And for that to happen, it is important to change the traditional teaching method to a more holistic approach. Thus, there is a clear need to review the curricula of aviation schools with this in mind.

Based on our literature review the study proposes a reflection on current practices to encourage new holistic training environments pushing aviation safety one step forward. The article seeks to demonstrate the relevance of the SST to mitigate safety threatening communication errors.

2. SOCIAL SKILLS

The terms "social skills", "interpersonal skills" and "communication skills" are often used interchangeably. The latter, however, may cover writing skills. In academic and professional areas, the most common concept used is "interpersonal competence" or "social skills" (Dickson, 2004). Social skills include interpersonal relationships, assertiveness (expression of negative feelings and defending own rights), and communication, interpersonal problem-solving, and cooperation.

Social skills involve the ability to establish and maintain productive and satisfactory interactions (Del Prette and Del Prette, 2004) in both routine and non-routine situations. According to Pestana (2006), interpersonal communication is the process by which information is exchanged and understood by two or more persons, usually with the intent to

motivate or influence behavior. The communication process occurs when two people interact involving a merger of mutual roles and mutual empathy.

In safety situations, assertive behavior is generally appropriate and generates better reinforcement of appropriate procedures than other types of behavior: an individual has more opportunities to express himself freely and to achieve his goals without harming himself and others. An aggressive stance will stir up feelings of opposition in others, leading to criticism and rejection. Non-assertiveness prevents the achievement of goals, submission to the will of others, and loss of respect for own rights.

The Social Skills Training (SST) consists of providing technical instruction, behavioral rehearsal, simulation, verbal and video feedback, housekeeping, cognitive restructuring, problem solving, relaxation (Caballo, 2006) and the use of experiences according to Del Prette and Del Prette (2004). Segrin and Flora (2000) concluded that social skills can generate significant benefits in people's lives, especially those subjected to work in unsafe and stressful conditions.

Professionals with higher levels of social skills deal with stress more easily and cope better in risky situations, while individuals with less social skills aggregate problems when confronted with stressful events: So in the field of aviation, there are significant advantages in acquiring social skills. When socially skilled these professionals can contribute significantly to improve the organizational environment, as well as the quality of intra- and intersectoral relationships, and the relationship with suppliers, customers and the public.

We use the definition of Caballo (2006) in which social skills are a set of behaviors of an individual in an specific interpersonal context, expressing feelings, attitudes, desires, opinions or rights adequately to that situation, respecting others and solving the immediate problems of the situation while minimizing the likelihood of future problems. And, we will include in this definition, verbal behavior, nonverbal behavior (body expression, gaze and gestures) and written communication.

The “theory”, if one can call it, behind SST is to teach the trainee those ways of interacting that will be pleasing and attractive to others (to enhance affiliations with them) and to interact in ways that are effective (to enhance the attainment of instrumental goals through interaction with others). It is generally assumed that enhancement of these skills will

ultimately lead to greater personal happiness and success, as well as to more positive and less negative effect in those who interact with the trainee.

The offering of a SST course in flight (and related to flight operations) schools is primarily intended to make communication a skill that must be developed and exercised by future professionals. We argue that technical skills are not enough to make a fully effective professional. Candidates need to have strong interpersonal skills in order to work effectively in teams. Personality factors may be a limitation on the effectiveness of CRM training (Helmreich et al., 1996). Clearly, we need to devote much energy to create new strategies to improve social skills for future aviation professionals, on air or on the ground.

2.1. Social Skills and Aviation Safety

What ordinary individuals say and do in a routine situation can rarely affect, in a decisive way, the lives of hundreds of people. However, in an emergency, a late message, misinterpreted or not carried out could lead to disastrous results. It is therefore important that workers exposed to situations of extreme risk are well trained in technical and non-technical skills.

Getting a mutual understanding among all those who are involved with flight operations, seeking to articulate interests and monitoring communication conflicts, one can avoid situations as shown in the excerpts below taken from the confidential forms Aviation Safety Reporting System (ASRS) in which problems are voluntarily reported with no punitive consequences to make sure that situations that could have caused an accident or incident are reported.

Ultimately better interpersonal communication between the CA and FO is needed. A strong factor in this loss of radio communication with ATC was a high level of animosity between the CA and FO. Throughout this rotation the FO was consistently hesitant/slow to perform her duties and when she did so she was often "inaccurate" and defensive. On this final leg of a multi-day day trip, this less than professional performance by the FO began to wear on the Captain. There was minimum communication between the two by this point and when the FO was not willing to update the FMS as the CA requested the CA became very frustrated (ASRS, 2009).

Poor CRM and communication between the First Officer and Captain was a significant factor. I was timid based on past history with this Captain and I never clearly and confidently told the Captain to stop the plane when I saw him taxiing without a clearance. Certain hazardous attitudes, including get-home-it is and aspects of anti-authority, invulnerability, and macho definitely affected the Captain's decision making [...]. The result is a breakdown of proper teamwork and open communication between pilots in the cockpit, and an operation that decays toward a single-pilot operation by the Captain (ASRS, 2009).

Call the dispatcher 15 minutes prior to departure to amend the release. He asked me why the fuel-load changes and I told him I had added the fuel. He said that was unacceptable and not going to agree to it and hung the phone up. So I called back and talked to the duty mgr and explain why I added the fuel and expressed my dissatisfaction with the dispatcher's interpersonal skills. Synopsis: A B737 captain increased the flights fuel load by 1000 lbs for enroot WX. His dispatcher strongly disagreed and threatened action against the pilot (ASRS, 2008).

This is not the first NASA report I have submitted, but it is the first one that I have submitted where the problem I believe was entirely due to a lack of communication on the flight deck. I am a female captain and have had some problems in the past with attitudes towards me. But it has never been this pronounced and never resulted in any real problem event. I arrived at the aircraft and met my first officer, whom I had never met before. He seemed reserved and did not say much. I was not sure why but hoped that he was just nervous or uncomfortable for some reason and that he would loosen up. Sometimes I have found that men are at first uncomfortable with women pilots. But usually I can overcome that by being relaxed and friendly. I attempted to strike up conversation, asking about his family, where he lived - the usual. He answered with one word responses and never pursued conversation further. [...] in normal circumstances I will communicate to my first officer a reminder that we will need an amendment to our release before departure as a way of reminding him and myself. I thought of this, but did not say it. I felt as though words would be wasted and that he would not probably even acknowledge my remarks so I did not verbalize my thoughts. Synopsis: interpersonal relationships and CRM issues result in enough distress to cause operational and performance problems on a crew (ASRS, 2000).

The Captain, it's not a democracy, it's a dictatorship, and that really is just the way it is. [...] This Captain is on a hair trigger regarding Captain's authority. My "insubordinate act" caused

him to lose control in the cockpit, act verbally and physically aggressively with me, and endanger the operation. Had I been on a similar hair trigger, the situation might have easily evolved even further. 2) In spite of his statement during the initial brief that he flies the aircraft as the company wants us to fly it, I think the numerous events of this sequence do not bear that out: the non-standard take-off briefing, non-inclusion of the First Officer during FMC edits, requesting non-FMC or flight plan altitudes, exclusion of the First Officer during planning, and entirely disregarding First Officer's input or concerns. In fact, I cannot think of a single time that any of my suggestions, offers to help, or input, were accepted. They were usually completely ignored. 3) I generally disregard other pilot input regarding eccentric Captains, as my experience is that I am able to fly with most anyone. That said, during this sequence, no fewer than four pilots said "sorry" or something to that effect, when they found out that I was flying with this Captain. Clearly this Captain has established a reputation, and it isn't good (ASRS, 2010).

Typically, emotional reactions generate irrational behaviours that can place people in a bad mood to the point of refusing support. A poorly handled communication often results in taking contradictory positions, and, in aviation, where teamwork is an important tool, it represents a serious flaw. Assertive communication is essential for good teamwork, it is a means of attracting attention and respect of others without being submissive or aggressive. Pilots and airline staff should be helped to identify their weaknesses and strengths and should be trained to exercise discernment ability, flexibility, style and ability to handle different types of conflicts.

According to Caballo (2006), social skills training enables to develop cognitive abilities that enable the development of more accurate expectations about one's behavior, more positive expectations of consequences, more tolerance for conflict, more positive personal communication, view situations from multiple perspectives, and greater knowledge of assertive content.

Kellermann (1992) argues that in shaping the future professional the fusion of communication with social skills is intentional and necessary so that the communicators are able to recognize their needs and motivations and realize they can choose to conduct special communication to meet such needs and motivations. To adapt communication means that communicators must adapt what they say and what they do on an on-going basis in response to the goals they pursue and within operational limitations.

The crew when trained with the ability to properly communicate a problem, besides having the facility to apply objectively the information that could help them, are able to communicate clearly their intention to act, ensuring that other members of the crew and flight controllers are successful in determining corrective actions.

Hawley, administrator of the Transportation Security Agency, USA, in an article published in the New York Times, stated that the evolution of security in airports these days focuses on social skills training of agents (New York Times, 2008). The training is geared towards the maintenance of mental serenity, to ensure an environment of organization, reducing occurrences of aggressive talk and behaviors, thereby neutralizing disruptions that could result in incorrect or sarcastic answers, which hamper the resolution of problems and facilitate the creation of a hazard.

The Federal Aviation Administration (FAA) and the Airport Consultants Council (ACC) published a list of Best Practices to encourage improvement of interpersonal communication:

Common to all activities, and perhaps most important of all, are the personal relationships that exist among the individuals of the organizations involved. Recognizing the importance of this, the list of best practice opportunities begins with Relationships/Communication and Conflict Resolution (FAA /ACC, 2008).

However, a list of a short duration workshop, despite being a positive step, cannot be considered a sufficient initiative to promote good interpersonal relationships. According to SMS, professionals in aviation training should develop and maintain a training program that offers the professional the necessary abilities to perform their functions of safety.

It is imperative to monitor and anticipate undesirable situations that may occur during flight and properly communicate the hazards and risks in an adequate time, and take appropriate measures to solve the problems encountered. This is the reason why we need to train people on interpersonal communication skills to act in these organizations in order to avoid situations that pose a risk to flight safety as shown in the example below.

SAO PAULO - The Air Force and Fligh Protection Service in Sao Paulo, Brazil, investigate a dispute between a pilot and a controller in midair. The two disagreed on a manoeuvre. The discussion took place at 6am.

Controller: You can fly the way you want, make it around wherever you want. No need to call me to fly over this area like the way you are flying. OK?
Pilot: I think it is an absurd you send me one back flying for standing by at Six o clock in the morning, waking everybody up there, is absurd!
Controller: You do not even know how to fly and now wants to be a flight controller, commander? Who is in control is me, I know what I'm doing, the way you wanted to would lead you to a final resolution.
Pilot: You do not even know what is a final resolution, I'm almost five miles away and you talk about the final resolution, this is absurd, waking up everyone there.
Controller: Learn how to fly, commander!
Pilot: I know how to fly, I have over 27 years of flying. And you do not know how to control. You should control something else, not a plane or a helicopter. This is absurd!
Controller: I'll let this registered here and we'll see what is absurd!
Pilot: Let it be recorded, then.
Controller: Learn how to fly, sir.
Pilot: I have been a licensed pilot for the last 27 years, you must be very young. Six o'clock in the morning and here I am stressing myself with a controller! You want to kill us all!
(Globo News, 2008)

Flight controllers and pilots must be skilled communicators, people who develop an ability to capture the widest range of signals available. They should be flexible enough to quickly change their own attitude, in order to avoid deterioration of communication that can cause an accident. In fact, unskilled communicators tend to remain within a narrow band of behaviours.

The social skills training uses techniques designed to encourage individuals to become more aware of their egos and analyse the communication between people. This will allow them to consider alternative responses when interactions are not successful.

3. SST IN AVIATION COURSES

The main recommendation of this study is that SST should provide a secure platform for the development of social skills, taken as a key resource for future professionals to act properly in managing the risks incurred during communication, rather than react to them. SST needs to become the essential link that will integrate social skills with technical skills. The combination of "technical and social skills" appears here as a fundamental tool for the

qualification of instructors of aviation schools and all who participate in the training and evaluation of future professionals performance.

The program of the Social Skills Training (SST) should provide techniques and activities that capitalize on three types of mechanisms: acquisition, refinement and strengthening of these skills. It's important to point out that the process of learning social skills is not the same used in learning other skills, it is a phenomenon closely linked to the issue of self-esteem. Students may perceive, for example, some suggestions of change as a threat. To support and ensure a safe environment, there is the need, therefore, of additional reinforcements, for example, positive comments and compliments.

In the early stages of interaction with others, participants may be affected by insecurity. It is therefore important that SST takes place right from the beginning. Thus, at the end of SST, they will have learned to control anxiety and be able to experiment with this ability on other aspects of the training course.

Individuals cannot watch their own behaviour, however, observing the behaviour of others provides a mental image of how behaviour can and should be performed, arousing feelings as "this task can be accomplished" or "something can be done to solve this problem or achieve this goal." When people have no sense of effective response, they may perceive a situation as hopeless and without a solution.

The basic format recommended for Social Skills Training (SST) is summarized below. This format is based on the "Handbook of assessment and training of social skills" developed by Caballo (2006), in "Psychology of Interpersonal Relations" developed by Del Prette and Del Prette (2004), with additions provided by the authors of this paper.

3.1. Basic Format of Social Skills Training (SST)

3.1.1 Objective

To develop skills for interpersonal communication, verbal, nonverbal, written, as well as effective listening, adopting discursive styles that best benefit the productive relationships necessary to Aviation Security, given the stressful nature of this relationships, the rapid pace and the large amount of information that characterize the Aviation environment.

The main purpose of this training is to help students develop social skills for effective communication in order to mitigate interpersonal problems that may affect Aviation Safety.

3.1.2 Methods

Use real situations observed in aviation to determine the inadequacies in communication, in order to:

- Distinguish the difference between assertive responses from non-assertive and from aggressive responses.
- Correct the non-assertive modes of communication.
- Help students to recognize that everything they say or write can influence feelings and behaviours.

3.1.3 Training Techniques

i. Role playing: students represent short scenes that simulate real life situations. Through this procedure, they can develop appropriate and effective ways to address problematic situations in the aviation environment. In summary, the role playing technique will enable the student to:
   a) practice social skills in simulations;
   b) be informed about their performance, through audio or recorded video; and
   c) discuss their performance with instructors and other students.

   The purpose of Role Playing Training is to learn to modify non-adaptive response modes, replacing them with new responses.

ii. Modelling: Student exposure to a model that demonstrates a correct way to address a particular situation, enabling observational learning. Modeling can occur live or via recorded video. This technique has the advantage of showing verbal, non- verbal and paralinguistic components.

iii. Feedback: procedure which "returns" to the student all the information about playing the role assigned to it. It is a regulatory mechanism of performances. Feedback allows the correction, maintenance and improvement of the relationship between performance and results, allowing students to observe how they behave and how their behaviour can affect other people.

iv. Experience: Use of experience allows the instructor and the students not only to see more clearly communication difficulties but also to redefine general objectives clearly (Del Prette and Del Prette, 2004).

3.1.4 Evaluation of SST

Caballo (2006) calls "generalization and transfer" the assessment phase of training with

regard to retention, application, and behaviour change. The main aim of any training program is not classroom performance; rather, it must demonstrate its power, stability and usefulness in real life.

SST in Aviation, generalization and transfer are observable features through the practice of technical exercises, such as simulator training, training of board service, first aid, sea and land rescue, plus other technical training programs developed for each function in Aviation.

The instructor observes all forms of social interaction that the student uses during technical exercises and how communication affects performance. At the end of the first year of practice, he examines technical results in order to identify failures or successes. Depending on the results achieved a certificate will be issued. Pointing out deficiencies or interpersonal communication skills used by the student and how that communication contributed to his performance, always emphasizing that the good result of technical manoeuvres depends on good communication skills.

4. CONCLUSIONS

In this paper we emphasized the relevance of the role of social skills in aviation. Moreover, we aimed to develop awareness of communication processes and their implications to aviation safety. We offer the following conclusions:

1. Aviation schools need to offer content related to the development of social skills in order to match the needs of airlines operations.
2. Training Social Skills because 80% of all "Human Errors" in complex situations can be avoided with proper social interaction.
3. The program of the Social Skills Training (SST) should provide techniques and activities that capitalize on three types of mechanisms: acquisition, refinement and strengthening of these skills.
4. A complete training process in aviation and flight operations must focus both on technical and interpersonal issues.
5. Theoretical knowledge of communication skills is not enough to directly influence performance: formal training in communication skills requires active learning. It must be intentional, systematic, specific and also experimental.
6. The development of personal skills is a relevant tool, significant to the effectiveness of CRM training, and offers the opportunity for each individual to analyse her/his

own attitudes and to promote appropriate changes in order to improve teamwork ability.

7. The SST is complementary and aims to improve students' performance, helping them not only to understand the appropriate communication skills, but also to learn and incorporate appropriate behaviours in their daily practices.
8. Supporting aviation professionals to develop their social skills can be seen as a proactive strategy to develop an appropriate communication process and improve the decision making process, especially in situations of danger or imminent risk. And finally, the developmental process will gradually increase the aviation safety.

We have argued the importance of training social skills in the aviation community to improve aviation Safety. We based our theses on the recurrent incidents of communication breakdown between the various actors in aviation leading to accidents and incidents. We hope to raise awareness in the aviation community and hopefully stimulate further research on the role of SST, in the belief that such measures may move aviation safety one imperative step forward.

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