

Fear of Flying-A Singapore Perspective

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Abstract

Fear of flying is a term commonly used in the Aviation Medicine community. However, heterogeneous conditions which can present with fear of flying, demand that a more stringent and systematic approach be made in one's management of the aviator with fear of flying (FOF).

Cases of FOF between 1974 and 1995 presented to the Civil Aviation Medical Board and the Aeromedical Centre of the Republic of Singapore Airforce were studied for their psychopathology, psychodynamics, diagnoses, motivation for treatment, type of treatment and response to treatment, and their eventual outcome in relation to flying. 53.3% of 15 cases had Adult Situational Reaction, 26.7% had phobia of flying, 6.6% had Adjustment Disorder, 6.7% had Anxiety Depressive Disorder and 6.7% had Transient Psychosis. All cases of Adjustment Disorder were returned to flying, compared with 25% of Adult Situational Reaction, 66.7% of Phobia of Flying and none of the aircrew suffering from Transient Psychosis.

Fear of flying is thus a complex phenomenon, where there is interaction of elements of mental health, neurotic roots, real and imaginary threats and life events affecting eventually the flyer's willingness to fly.

Ann Acad Med Singapore 1997; 26:40-5

Key words: Adult situational reaction, Anxiety, Behaviour modification, FOF, Phobia of flying

Introduction

The term fear of flying (FOF) had historically been used to describe a heterogeneous group of conditions. Throughout the World Wars,^{1,2} many authors had grappled with the complexity of the aviator who presented with refusal to fly because he feared his own safety in flight. This paper takes a closer look at the psychopathology of this syndrome in the context of aviators, both civilian and military, inclusive of pilots and other aircrew, who had presented with FOF in Singapore from 1974 to 1995.

Flying and Anxiety

When a flyer presents himself to his Commanding Officer or the Aviation Medical Specialist with refusal to fly for fear of the plane or the consequences of flying, he is manifesting FOF. It is common knowledge that being a flyer attracts a larger insurance premium especially if he flies a military aircraft. Yet when one asks the flyer "what do you think about the dangers of flying", he often responds with "you can get killed even crossing the road". These answers are true but the implied comparison is false. Flying confers an additional risk, not an alternative risk. One may hardly avoid crossing a street but one can easily avoid the dangers of military flying by not volunteering for it. Thus we can safely assume that

prospective student flyers are not overtly afraid to fly.

Young flyers are indeed fearless because they are unaware of the potential dangers associated with flying. As they mature in their flying careers, realities present themselves in the form of near misses, accidents to themselves or their friends, and the deaths of their colleagues and role models. These real threats become a part of their emotional lives and must be dealt with differently. They move from the fearlessness of those who don't understand to the courage of those who understand, and who choose to continue flying. Most flyers would deal with these real dangers by coping mechanisms that include humour, intellectualization, rationalization and denial.

They continue to be motivated to fly, driven by the amount of pure joy of flying" that interacts with the amount of anxiety mixed with the natural fear, the extent to which the flyer's defenses are challenged by life events, and the adequacy and maturity of the flyer's defenses. This can be exemplified by the equation:⁴

$$\text{Joy of flying} = \frac{\text{Motivation to fly} \times \text{Defence mechanisms}}{\text{Anxiety}}$$

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Thus when adversity weakens the flier's defenses, especially when the motivation to fly is weak or pathological, and anxieties get reinforced by primitive anxiety, then the Joy of Flying can easily transform into Fear of Flying.

$$\text{Fear of flying} = \frac{\downarrow \text{Motivation to fly} \times \text{Defence mechanisms}}{\text{Primitive anxiety}}$$

Real fear about real danger must be clearly distinguished from anxiety about flying which arises from a basic, primitive anxiety (i.e. that has neurotic roots). As an example of the difference, contrast the logical and useful fear that we feel when a rattlesnake is set loose in the room with us, with the anxiety experienced by someone with a snake phobia when a snake unexpectedly appears on a movie screen. These two emotional and psychological responses may appear similar but fear is instinctive while anxiety is neurotic. The stimuli define the difference: real danger evolves fear, and a symbolic threat evolves anxiety.

Materials and Method

A search through medical records and reports was made between 1974 and 1995 to look for aviators who presented with fear of flying. This data search included both military and civilian aircrew licensed by the Aeromedical Centre and the Civil Aviation Medical Board.

After the cases were identified, the clinical notes were studied for the following information (Table I):

- Type of aircrew – civilian versus military
– pilot versus aircrewmen
- Presence of past history of a traumatic event
- Diagnosis
- Motivation for treatment
- The type of treatment instituted
- The outcome

Clinical Presentation of Fear of Flying

53.3% (Fig. 1) of the study population were diagnosed as having Adult Situational Reaction, 26.7% with phobia of flying, 6.6% with Adjustment Disorder, 6.7% with Anxiety Depressive Disorder and 6.7% with Transient Psychosis.

Adult Situational Reaction (ASR)

Eight out of 15 cases were diagnosed as having Adult Situational Reactions that presented with fear of flying. Four had FOF as the only symptom. They usually presented with refusal to fly because of the fear that an accident would occur while flying or that the flying would cause them deleterious effects. They were all

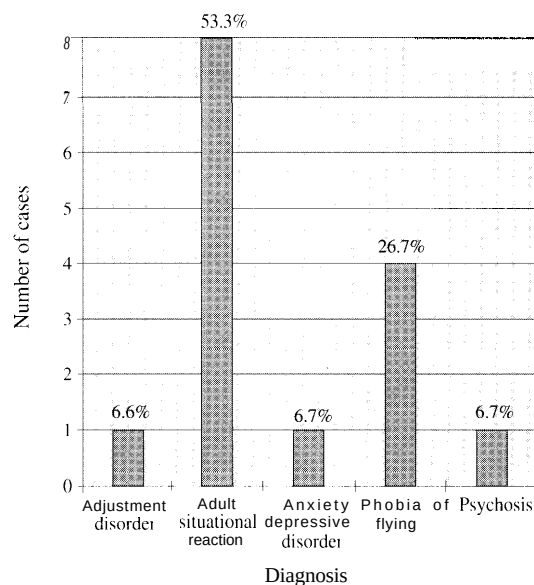


Fig. 1. Distribution of cases presenting with fear of flying

found to be physically and mentally normal and therefore fit to fly.

In general, the Aviation Medicine specialist has flown a bit and has enjoyed the experience. He has also visited crash sites and has a keen appreciation of the undeniable dangers involved in Aviation. Thus when an aviator presents himself with fear of flying, it would have been logical to ascribe the emotions to fear of the hazards of flying. In certain circumstances, the expression of this "fear" may not be direct but somatised as symptoms which are clearly psychophysiologic, e.g. motion sickness, chest pains or self-perceived poor tolerance to the "G" forces of flight.

Two (25% of ASR) of these 8 ASR cases were associated with motion sickness. Both were cadet pilots. One of them was so severely affected by his fear of landing his aircraft, that he became reactively depressed. Four out of these 8 presented with associated psychophysiological symptoms (Table I) like motion sickness (2 cases), belief of having a sick heart (1 case) and low G tolerance (1 case).

A Reservist fighter pilot (Case 11) presented to his Commanding Officer requesting for reassignment because he was not tolerating the accelerations forces of flight (G-forces) well. Furthermore he became increasingly aware of bodily changes during flying which was a manifestation of increasing anxiety over having to fly.

Six months prior to this, he suffered from his first inflight G-LOC (G-induced loss of consciousness) caused by the higher gravitational forces during Air Combat Manoeuvres, which acting in a head to toe direction, would cause pooling of his blood volume in the peripheries. This lowers the available blood volume significantly enough to cause loss of consciousness as a result of inadequate cerebral perfusion. This precipitating event reminded him of his own mortality

TABLE 1: CHARACTERISTICS OF AIRCREW PRESENTING WITH FEAR OF FLYING

Case	Year	Age	Vocation	Traumatic Hx	Diagnosis	Ppt	M	Treatment	Outcome
1	1974	21	Trainee	Nil	Phobia of flying	?	?	Flooding and tranquilisers	?
2	1976	22	Pilot	Nil	Adult Situational Reaction	Nil	N	Not interested	Medically grounded
3	1980	20	Trainee	Nil	Adult Situational Reaction	Nil	N	Psychotherapy	RTF
4	1980	22	Pilot	Nil	Adult Situational Reaction	Nil	N	Psychotherapy	Tranferred to transports
5	1981	30	Pilot	Nil	Adult Situational Reaction & Chest pains	Yes	N	Not interested	RTF
6	1989	20	Trainee	Nil	Adult Situational Reaction, Motion Sickness,	Nil	N	Not interested	Medically grounded
7	1990	20	Trainee	Nil	Adult Situational Reaction, Motion Sickness	Nil	N	Poor progress	Medically grounded
8	1990	20	Trainee	Nil	Adjustment Disorder	Yes	Y	Supportive psychotherapy	RTF
9	1990	30	Aircrew man	Nil	Phobia of Flying	Yes	Y	Graded exposure	RTF
10	1990	26	Pilot	Yes	Phobia of Flying Air Combat Manoeuvres	Yes	Y	Graded exposure & relaxation	RTF
11	1991	37	Pilot	Yes	Adult Situational Reaction	Yes	N	Not interested	Administrative grounding
12	1992	18	Aircrewman	Nil	Phobia of Flying, and Heights	Nil	N	Not interested	Medically grounded
13	1994	30	Aircrewman	Yes	Adult Situational Reaction	Nil	N	Not interested	Administrative grounding
14	1995	39	Civilian pilot	Nil	Anxiety Depressive Disorder	Yes	Y	Drugs and psychotherapy	Treatment in progresss
15	1995	40	Civilian pilot	Nil	Schizophrenia	Yes	Y	Antipsychotics	Medically grounded

Ppt: precipitating factor; M: motivation to fly; RTF: return to fly; Y: yes; N: no

and subsequently he became more acutely cautious and aware of mild visual symptoms produced by high G-forces.

A few months after this incident, the fighter aircraft that he was flying experienced engine problems on the ground just before takeoff. This event precipitated anxieties about flying. The anxiety was further reinforced by his wife who believed fighter flying was more dangerous than commercial flying. His status as the family's only breadwinner became more important when she was recently diagnosed to have cervical dysplasia. This pilot had no problems flying commercial aircraft and he did not show any evidence of a psychiatric or physical disorder. He recalled that all he wanted to do in his life was to fly a commercial aircraft and not become a military pilot. He did not want any treatment since he had rationalized the dangers involved in flying, and all he wanted was to stop flying fighters. He continued to fly commercial jet-liners without any problems.

In 2 of these ASR cases, there were preceding traumatic events. One pilot had experienced inflight G-LOC whilst 1 helicopter aircrewman (non pilot aircrewman who looks after the cabin in the helicopter) was involved in an aircraft accident. The 30-year-old aircrewman was involved in a helicopter winching accident in which he was the only survivor. Both the pilot and the aircrewman experienced these traumatic events 6 months and 5 years respectively, before the onset of their symptoms, and both went back to flying before finally deciding to give up flying. Life events, whether traumatic or significant enough, can affect one's original motivation to fly especially if the motivation is weak to begin with.

Adjustment Disorder

A 20-year-old pilot trainee (Case 8) presented with fear of flying, nightmares about airplane crashes, anhedonia and

mild reactive low mood 2 weeks after his mother was discovered to have relapsed leukaemia. He realized his mother was terminal and he had great difficulty resolving this issue. His symptoms qualified for a diagnosis of an Adjustment Disorder with mild anxiety and depressive symptoms.

His treatment included a few sessions of supportive psychotherapy coupled with some environmental manipulation. It was discovered that his flying instructor was giving him a difficult time in training. After liaison work with his instructor, the cadet was returned to flying in a more conducive training environment. With reassurance, his symptoms improved significantly and resolved completely a few weeks after his mother's funeral. He continued with his flying training thereafter.

This case would be similar to those described in the previous World Wars, where aircrew who were fatigued presented with FOF.^{2,5,6} Most of these cases were managed with the provision of brief, immediate, simple therapy (provision of food, water, and a blanket) with the expectancy of return to duty.

Phobia of Flying

Four (26.6%) of the cases had phobia of flying.

One of the 4 cases (Case 12) had preexisting phobia of heights prior to flying training and he had attempted to overcome his problem in a counterphobic manner, by becoming an aircrewman. He remained petrified and frozen to his seat throughout the 3 flights that he managed to attempt. Thereafter he requested to be permanently grounded from flying, refusing any form of therapy.

A 22-year-old aircrewman (Case 9) who had survived a helicopter crash, presented 1 month after the accident with fear of flying, during his post accident follow-up with the Aviation Medicine specialist. There were no fatalities nor significant mortality to the rest of the crew on the crashed

helicopter and he himself escaped physically unscathed. His symptoms were egodystonic and he could not understand why he was so afraid to fly. He wanted treatment to get rid of these symptoms. He was supported psychologically and treated with individual psychotherapy with an emphasis on progressive graded exposure to flying in the same helicopter type which had crashed. After 4 exposures under supervision, he was successfully returned to flying without further symptoms.

A 26-year-old qualified fighter pilot (Case 10) who had just returned from studies at a local university presented with FOF one month prior to his legal divorce. His fear was that the fighter aircraft that he flew would go into uncontrolled spinning during air combat, and that he would then perish from the flight. These ruminations of impending doom provoked anxiety and palpitations which left him drenched in perspiration. When the symptoms were too much to tolerate, he opted to avoid having to fly the aircraft despite the possibility of dire consequences to his career. He presented to his Commanding Officer, insisting that he be reassigned to another type of fighter aircraft. He had a past history of ejection from this aircraft several years prior to this presentation.

One year prior to this presentation, his wife had left him for another man. Their marriage was interrupted by frequent conflicts over his attachment to his mother, a marriage that his mother had originally disapproved of.

There were significant counter phobic elements in his personality, for e.g. his love for risk taking-driving fast cars at 160 kph or flying fighter aircraft, and his thrills in becoming the typical glamorous fighter pilot. These and other traits suggested that his motivation to fly may have stemmed from deep seated anxieties about his self image and therefore the need to constantly prove himself through counterphobic "macho" behaviour. Thus, when his wife left him for another man, the event probably reactivated anxieties about his self image, something he had not yet resolved.

Initially, he refused treatment and insisted on being removed from this aircraft type. He did not think that he needed treatment. Motivation for treatment had to be garnered after a period of rest and introspection. Specific psychotherapy for the phobia was instituted when he had recovered his will to participate in therapy, and was ready to work on removing his symptoms and returning to the aircraft type that he feared.

Temporarily grounding from flying removed the pressure to quickly return him to fly, and allowed him time to rest and recover from the traumatic divorce.

Thereafter he was treated with an individualised psychotherapeutic programme composed of the following elements:

- a) Deep muscle relaxation technique;
- b) Supportive psychotherapy;
- c) Behaviour modification via graded exposure through the use of aircraft simulators and a flying graded exposure programme.

Eventually he was returned to fighter flying. This was a true phobia: egodystonic, symbolic in nature representing anxieties from a recent event (his wife leaving him for another man) and (at a primitive level) his anxieties about himself and his relationship with his mother.

Non Military Aviators

There were only 2 non military aviators who had presented with fear of flying in the database of the Civil Aviation Medical Board. Both cases occurred during stressful periods of their working lives.

Anxiety Depressive Disorder

One case (Case 14) presented with fear of flying after he was discovered to have a retinal band in one eye that was causing fluctuating visual acuity while he was undergoing a pilot upgrading course. Despite full correction of his visual acuity, he continued to have attacks of panic, shortness of breath and palpitations that led to demoralisation and eventually depression, early morning awakening and anhedonia. He was suffering from Anxiety Depressive Disorder-with equal combination of anxiety and depressive symptomatology.

After nine months of anxiolytics and antidepressants therapy, he had recovered enough confidence to attempt an individualised psychotherapeutic programme designed to provide him with graded exposure combined with deep muscle relaxation. The graded exposure was done after he had been taken off all medications. He eventually completed the psychotherapeutic programme and the simulator checks required by his Airline to certify him fit to fly. He was returned to fly in the airline and he remained in remission of his symptoms 3 months after being returned to fly. He would require long term follow-up by a psychiatrist.

Schizophrenia—Psychosis

The last case (Case 15) presented to the Civil Aviation Medical Board after he had jumped out of his pilot seat when the aircraft was making its approach to Singapore Airport. He did this in response to a delusion, in which he believed he was being persecuted by his superiors via spiritual means. In the midst of somatic hallucinations whereby he felt extreme coldness on the left side of his body, he left the seat and stood behind for fear that the entity which was causing him the coldness, could control the actions of his body and cause flying control difficulties. He believed, as a result of a passivity delusion, that the entity could cause an accident by controlling his movements. Hence he was afraid to fly the aircraft. He was also actively hallucinating but he had been able to hide his symptoms until that particular flight.

He suffered from Schizophreniform Psychosis and was permanently medically grounded for this condition. Six months after this grounding, his symptoms recurred despite a previous spontaneous remission and he eventually required maintenance antipsychotic treatment.

Treatment of Fear of Flying

The majority of cases who presented with fear of flying are likely to be ASR with no psychiatric disorders. In this group of conditions, early psychological intervention is important for early detection of anxiety, and appropriate management of the cases can avert the erosion of motivation to fly. When this motivation is weak to begin with, the aviator easily relinquishes his license to fly so as to pursue other careers with no regrets. In such circumstances, it was not unusual for the flyer to reject treatment.

Adjustment disorders are best treated with rest and reassurance, supportive psychotherapy, temporary environmental manipulation and persistent exposure to the flying environment.

Phobia of flying responds to individual therapy with predominant elements in behavioural modification techniques. The key element is the technique of mustering motivation in the flier for treatment.

Anxiety depressive disorders and psychosis would require a psychiatric referral for very specific psychiatric treatments.

Discussion

The data for Cases 1 to 4 (cases from 1976 to 1981) were not as thorough as the other cases who were seen by the author himself. These older records included medical reports written by the Aeromedical Centre to the Airforce but not the casenotes. The other cases included medical reports and the casenotes of the patients.

It would appear that there were more military aviators that had presented with fear of flying in the years from 1974 until 1995 than there were civilian aviators. It could be postulated that military flying is more difficult and demanding than commercial flying in a jetliner. There is also evidence to support the danger involved in military flying, since there has been more fatal military aviation accidents than civilian aviation accidents in Singapore.

However, the severity of the psychopathology appeared to be worse amongst commercial pilots. However, the sample size is very small and it is possible that the civilian aircrew could have stopped flying voluntarily and hence this data would not have been captured by the Civil Aviation Medical Board.

Treatment Outcome (Table II)

When the data were analyzed for treatment outcomes, 66.7% (2 out of 3 cases) of phobia of flying were returned to flying as opposed to only 25% of ASR (2 out of 8 cases). The outcome of Case 1 is unknown because the early psychiatric records were incomplete, failing to reflect the outcome of his treatment. This difference in outcome was subjected to a Pearson Chi-square test. How-

ever the difference was found to be not significant.

The one case of Adjustment Disorder was eventually returned to flying. Psychological treatment prescribed for phobia of flying were predominantly behaviour modification⁷ techniques (by graded exposure) coupled with deep muscle relaxation and supportive psychotherapy.

Assessment of Fear of Flying

All aircrew who present with overt fear of flying or chronic symptoms which appear not to have a physical basis should be thoroughly assessed with a comprehensive history, physical and mental state examination. Formal psychiatric disorders would have symptoms or signs suggestive of the specific disorder, but the group with FOF masquerading as psychophysiological symptoms may be the most difficult to assess. The situation becomes even more complicated when the aircrew have no insight to the anxiety that he perceives, and insists on the severity of his symptoms. When a flyer with such symptoms report for medical evaluation and treatment, he is usually temporarily grounded. If the symptoms do not abate, the flier may end up with an extensive investigative work-up and permanent grading for the physical symptoms with little or no attention paid to the underlying psychodynamics.

Under these circumstances, three questions can give the Aviation Medicine practitioner an insight into the underlying motivation:

- What do you think will happen to you if you fly with this problem?
- Will you fly if your symptoms are removed?
- What do you think about this symptoms?

The first question taps the flyer's motivation to fly. A highly motivated pilot generally tends to minimise or deny his symptoms and may go to extremes to avoid being grounded. Such a flyer would show concern that the disease is getting worse and may cause him real damage and permanent grounding, or seriously threaten his health. If the answer is along the lines of "I can't fly because I might get an accident from this pain I have" or "I'm not safe to fly feeling this way", the flier is seeing his disorder in terms of flying rather than his or her own health and this is a clue as to where the real anxiety lies.

The second question "Will you fly if your symptoms are removed" will seem silly to the highly motivated flyer, who will probably spontaneously ask how long you think he will be grounded, since he has such a heavy schedule to keep up with. The way in which the reply is made can also very informative. If the reply is an indignant "Of course" or unconditional "Sure!", then underlying anxiety about flying is unlikely. If the answer is given after hesitation, or with any equivocation, then suspect anxiety. If the reply is "No" or if other

TABLE II: TREATMENT OUTCOME OF CASES WITH FEAR OF FLYING

Condition	Return to flying (%)	Grounding (%)
Adult Situational Reaction Phobia	25 66.7 (of 3 cases)	62.5" 33.3 (of 3 cases)
Psychosis	0	100
Adjustment Disorder	100	0

* Outcome of Case 1 is unknown

symptoms are quickly introduced, then anxiety is clearly manifest.

Finally, the last question "What do you think about these symptoms" taps one's true concerns. If the answer is indifferent or unworried and yet, he has just revealed that he is too sick to fly or has doubts about the therapist's abilities to cure him of his symptoms, he may be implying unconsciously that he does not want to fly anymore. Someone who believes that his own symptoms are significant is likely to show serious concern about his health. One who believes subconsciously that his symptoms arise from anxiety is likely to be less concerned.

Conclusion

The flyer who presents with fear of flying needs to be thoroughly evaluated so that underlying psychiatric disorders may be treated in the first instance. When no disorder is present, then the aim of the therapist is to assist the aviator in working towards mental health and maturity. Often anxiety about flying masquerades as a physiological symptom and under such circumstances,

therapy aimed at insight would help.

Fear of flying is thus a complex phenomenon, mixing elements of mental health and neurotic roots, real and imaginary threats, interacting with life's experiences and events as the aviator ages. The health professional who has to managed such problems would have to sensitively unravel the underlying complexities and blend sound judgment with an understanding of flyers, why they fly and why they do not want to fly.

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