

Case Report

Spatial disorientation and fear of flying

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ABSTRACT

Various methods have been described how an aviator can develop the fear of flying syndrome. This case report looks at spatial disorientation (SD) as one of the probable causes. A previously normal flyer developed frank fear of flying when exposed to certain weather conditions. It is more probable that he developed fear of flying because of repeated experiences of SI) during such meteorological conditions. The paper discusses how this can happen.

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Man, being a terrestrial animal, was never meant to fly. Nevertheless, because of his intense desire to fly, he used his intellectual prowess to achieve mechanized flight. He then incorporated flying into his repertoire of normal activities through the use of compensatory mechanisms against the natural instinct of self-preservation. So, fear of flying is generally, psychically compensated, so that this activity may be accomplished without discomfort.

Ironically, before man invented flight, the desire to fly was considered abnormal, but now we are in an age when fear of flying is considered abnormal. Fear of flying basically develops due to the decomposition of the psychological compensatory mechanisms. One of the factors, which undisputedly contributes to this decomposition is, anxiety. In this case report we look at this mechanism wherein, the anxiety generated as a consequence of repeated episodes of spatial disorientation, led to fear of flying in a young fighter pilot.

Brief Narrative

A 27 yr old fighter pilot, with 463.15 hrs of flying experience, reported to his Station Medicare Centre

(SMC) in Aug 2001, with the complaint of lack of confidence in solo flying, especially in cloudy weather. On 29 Jun 2001, while flying on a procedure sortie in cloudy weather conditions, he reported that he was disoriented and was talked down by the CO of his unit who was also flying at that time. Thereafter, he was counseled by his CO, briefed comprehensively on the use of autopilot, and taken up in trainer sorties where he performed satisfactorily. Again, on 20 July 2001, while waiting for a procedure sortie on the tarmac, with the weather being cloudy, he taxied back and did not

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proceed for the sortie. Following this episode, the pilot was again taken up in trainer sorties wherein his performance was satisfactory. However, even after this, when the pilot admitted to his inability to fly solo, he was referred to the SMC and) subsequently to the Institute of Aerospace Medicine (IAM) for medical evaluation.

As per the pilot, there were two particular episodes of disorientation, which unnerved him completely. He describes that in the first episode he was to go on a procedure sortie in a MiG-29 aircraft (on which he had 55 hrs of flying experience). The weather was cloudy. He got airborne with a feeling of apprehension. Subsequently, in flight, once he entered the clouds, he got disoriented and was unsure of his position with respect to the base. Being unable to see the ground because of the clouds, his disorientation kept on increasing till he found from the instruments that what he thought was wings level was in reality not so. The instruments showed a 20-degree bank to the right. He then switched over to instrument flying and corrected his attitude, but the feeling of anxiety increased. After sometime he noticed that his instrument were again showing a bank to the right. He corrected again but was now thoroughly confused and apprehensive. He realized that he was holding the control stick too tightly and the aircraft did not seem to respond to his commands correctly. He reported this, asked for a priority rejoin, and started descending. The moment he broke clouds and saw the ground features, orientation returned and he landed safely.

The second episode was during a pair-maneuvering sortie on a MiG-21 (T-77) aircraft. The weather was partly cloudy. During rejoin, for a conventional approach and landing this pilot felt that he was too close to the No. 1. To correct this he turned left and reversed to the right. Subsequently, while looking for his No.1 he entered clouds. After sometime when he saw his instruments, they showed that his aircraft was pitched up, banked to the right, speed was dropping and height was increasing. He was disoriented again. He took corrective action as per the instruments. He broke clouds at 700 m and leveled off at 500 m AGL. On seeing ground and the horizon, his orientation returned but his apprehension increased. During the time he was in clouds, he had radioed the ATC that he was disoriented (the ATC called him twice after that, which he does not remember and did not reply). Both these incidents led to his becoming very apprehensive and anxious about flying solo, and eventually resulted in his refusal to fly solo and to admitting his fear.

The pilot reported to IAM in August 2001. At IAM, he was thoroughly evaluated by the medical specialist, the ENT specialist, the ophthalmologist, and the psychologist. The medical, ENT and Eye examinations were normal while the psychological evaluation revealed features like perceptual over generalization, overdeveloped effectual need, emotional over reactivity and situational anxiety. It also showed his preponderance for need affiliation, need achievement, and need power. He was finally evaluated by the aerospace medicine specialist who found him to be a case of lack of confidence in solo flying with no organic cause.

As he was having no organic disability he was recommended to continue in medical category A1G1 and the final disposal was considered an administrative matter.

Discussion

The fear of flying syndrome is described as a complex reaction occurring among previously adjusted flying personnel and characterized by various defensive and maladaptive processes which express excessive anxiety over various external or internal conflicts, frustrations, insecurities and dangers. The core symptom of the fear is anxiety and not realistic fear associated with flying. The

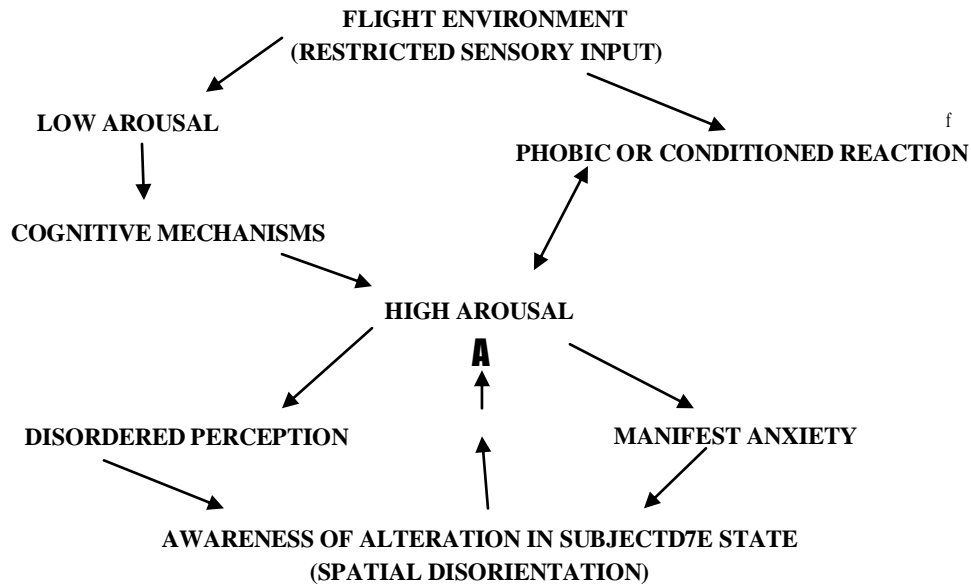


Fig 1. Relationship between anxiety, arousal and spatial disorientation

anxiety in this case was caused by the episodes of disorientation that the pilot experienced in cloudy weather conditions, two of which have been described earlier. These incidents presumably increased his apprehension of flying solo in cloudy weather conditions. Each time he saw the clouds, his anxiety rose, with the fear of being disoriented again. This may have led him to the fear of death that culminated into his developing complete phobia of flying solo. As per the available literature, there have been similar incidents in the past where the pilots developed fear of flying as sequelae to disorientation. In almost all such cases, there have been associated acute anxiety attacks when asked to fly solo. Such attacks associated with flying are the manifestations of latent fear of flying which later expresses as a true phobia of flying.

The fact that he was not afraid of flying with a co-pilot indicates that he was more afraid of getting spatially disoriented than flying as such. The precise mechanism underlying the development of fear of flying

as a result of disorientation is not clearly understood, but some relationship can be established between anxiety, state of arousal, and spatial disorientation which may have contributed to the fear of flying (fig-1). The restricted sensory input as seen in cloudy weather conditions, leads to phobic reactions as we have documented in this case. The presence of a closed loop, a vicious circle mechanism, in which the individual's awareness of dissociative sensations (SD) heightens arousal, illustrates that SD can contribute to phobic anxiety and lead to anxiety reactions which may manifest as fear of flying.

The psychological evaluation did show up certain features like situational anxiety, preponderance for need affiliation and emotional over-reactivity. Though these may be considered normal among the general population, these have proved to be detrimental to this pilot. The situational anxiety in this case developed from flying solo in clouds and it was out of proportion to the situation. Need

affiliation resulted in his doing well in multi-crew sorties. Psychiatric evaluation, which in this case was not done, could have revealed the cause of the phobic anxiety in the pilot for solo sorties.

Conclusion

It is concluded that spatial disorientation can lead to phobic anxiety to the extent that frank fear of flying may develop in a pilot.

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