

Increased risk of multi-crew operations: examining the effect of group polarisation on perceived invulnerability in general aviation pilots

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Abstract: *According to the theory of group polarisation, perceived invulnerability could be greater in multi-crew operations than for single pilots. The purpose of this study was to measure the level of perceived invulnerability among general aviation pilots in New Zealand and to examine whether the level of perceived invulnerability was influenced by the presence of other pilots. Whilst it is of some concern that the majority of the pilots exhibited perceived invulnerability, no evidence was found to suggest that the level of perceived invulnerability is affected by a group polarisation effect, although further replication of this study is recommended.*

Introduction

It is important to accurately perceive risk, as subsequent behaviour is often determined by the perception of risk involved (Gilbey, Fifield & Rogers, 2006). Numerous studies (e.g., Hoorens, 1996; Pulford & Colman, 1996) have suggested that people's general perception toward most situations is not accurate; that is, people tend to believe negative events are less likely than average to occur, yet positive events are more likely than average to occur.

In aviation, the phenomenon of perceived invulnerability has been studied with the view to minimise risk-taking attitudes in pilots' judgements and efforts have been made to teach the pilots how to recognise and take an appropriate countermeasure in order to minimise the number of irrational pilot judgements. However, research (e.g., Lester & Bombaci, 1984; Lester & Collony, 1987) suggests that perceived invulnerability remains widespread in aviation and could increase the probability of being involved in an accident/incident. More interestingly, O'Hare and Smitheram (1995) argued that although a pilot may assess a given situation accurately, they may not realise the risks involved in continuing with the flight due to personal overconfidence and excessive optimism, thus leading to instances of what aviators sometimes refer to as 'press-on-itis'.

Group Polarisation

It is often the case that important decisions are made by groups as opposed to individuals. The common belief is that a decision made by more than one person is a better decision because groups are less likely to make errors than individuals (Baron & Byrne, 2000) and may be more cautious and less daring than individual decisions (Myer & Lamm, 1976).

Interestingly, research by Stoner (1961) originally suggested that group decisions may be riskier than individual decisions, which he called the 'risky shift'. However, later studies clarified that whilst items which elicited relatively risky initial tendencies from individuals generally elicited further shifts toward the risky extreme after groups discussion, items with relatively cautious initial means were more likely to elicit further shift in the cautious direction when discussed by groups (Myers & Lamm, 1976). In

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view of this observation, further research suggested that the phenomenon of 'risky shift' may be better described as one of 'group polarisation' (Moscovici & Zavalloni, 1969).

Polarised perceived invulnerability

In the context of aviation, it is possible that if each flight-crew member in a multi-crew environment demonstrates perceived invulnerability, then their level of perceived invulnerability may increase through group polarisation. Consequently, the chances of perceiving risk inaccurately or taking unnecessary risk or combination may be greater. Thus, the present study was conducted to measure the level of perceived invulnerability among general aviation pilots in New Zealand and to examine whether the level of perceived invulnerability was affected due to an effect of group polarisation.

Method

Seventy-eight pilots participated in the study. Each participant completed a two-part questionnaire. Each part of the questionnaire contained 10 items, each item tapping a different aspect of perceived invulnerability. Responses were measured using a 9-point Likert-type scale (e.g., 1 = almost certain, 5 = average & 9 = never happen). Responses that differed from the mid-scale point would indicate the presence of either perceived invulnerability or perceived vulnerability. The first part of the questionnaire was completed by participants individually to provide a baseline measure of the individual's level of perceived invulnerability. The second part of the questionnaire was completed in the presence of another participant, and after discussion of each person's answer of each of the 9 items, to measure whether individual's level of perceived invulnerability was affected after discussion. A within-subjects comparison was then conducted on participant's responses to the two parts of questionnaires to investigate whether there was any shift in individual's level of perceived invulnerability before and after discussions.

Results

Using the mean score of the first questionnaire, one-sample *t*-test (two-tailed, test value = 5) showed strong evidence of perceived invulnerability; $t(77) = 8.54, p < .05$. A further one-sample *t*-test (two-tailed, test value = 5), using the mean score of the second part of questionnaire, was performed and the result again showed strong evidence of perceived invulnerability; $t(77) = 8.92, p < .05$.

The mean score of perceived invulnerability for the first part of the questionnaire was compared with the mean score of perceived invulnerability for the second part of the questionnaire to examine whether the level of perceived invulnerability was affected due to group interaction. Paired sample *t*-test was performed and the result showed that there was no evidence that group interaction affected the level of individual's perceived invulnerability; $t(77) = 1.09, p > .05$.

Conclusion

The findings from the present study found no evidence that the level of perceived invulnerability increases after group interaction. However, feelings of perceived invulnerability seem to be persistent and widespread. Thus, the need to be aware that perceived invulnerability may occur is highly important if it is not to affect decision making and lead to behaviours such as 'press-on-itis'.

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