

Passengers who survived Air Transat flight in 2001 help psychologists uncover new clues about PTSD vulnerability

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An extraordinary opportunity to study memory and post-traumatic stress disorder (PTSD) in a group of Air Transat passengers who experienced 30 minutes of unimaginable terror over the Atlantic Ocean in 2001 has resulted in the discovery of a potential risk factor that may help predict who is most vulnerable to PTSD.

The study, led by researchers at Baycrest Health Sciences, is published online this week in the journal *Clinical Psychological Science* – ahead of print publication. It is the first to involve detailed interviews and psychological testing in individuals exposed to the same life-threatening traumatic event. By necessity, other trauma studies involve heterogeneous events as experienced in different situations.

This opportunity was enhanced by the fact that one of the researchers, Dr. Margaret McKinnon, was a passenger on the plane. Heading off on her honeymoon in late August 2001, Dr. McKinnon's flight departed Toronto for Lisbon, Portugal with 306 passengers and crew on board. Mid way over the Atlantic Ocean, the plane suddenly ran out of fuel. Everyone onboard was instructed to prepare for an ocean ditching, which included a countdown to impact, loss of on-board lighting and cabin de-pressurization. About 25 minutes into the emergency, the pilot located a small island military base in the Azores and glided the aircraft to a rough landing with no loss of life and few injuries.

"Imagine your worst nightmare – that's what it was like," said Dr. McKinnon, who initiated the study as a postdoctoral fellow at Baycrest's Rotman Research Institute. She is now a clinician-scientist at St. Joseph's Healthcare Hamilton and Associate Co-Chair of Research in the Department of Psychiatry and Behavioural Neurosciences at McMaster University in Hamilton.

"This wasn't just a close call where your life flashes before your eyes in a split second and then everything is okay," she said. The sickening feeling of "I'm going to die" lasted an excruciating 30 minutes as the plane's systems shut down.

Following this incident, Dr. McKinnon and her colleagues at Baycrest – including Dr. Daniela Palombo (now a postdoctoral researcher at VA Boston Healthcare System and Boston University School of Medicine) and Dr. Brian Levine (senior scientist at Baycrest's Rotman Research Institute and the University of Toronto) – recruited 15 passengers to participate in the Baycrest study. Using their knowledge of the moment-to-moment unfolding of events in this disaster, the researchers were able to probe both the quality and accuracy of passengers' memories for the AT emergency in great detail along with two other events (Sept. 11, 2001 and a neutral event from the same time period) – and relate their findings to the presence or absence of PTSD in those passengers.

The study produced two key findings. First, the Flight 236 passengers showed tremendously enhanced vivid memories of the plane emergency. Although the Baycrest team was not surprised by this, other research has suggested that memory for [traumatic events](#) is impoverished. Second, neither the vividness nor accuracy of memory related to who developed PTSD, but those with PTSD recalled a higher number of details external to the main event (i.e. details that were not specific in time, or were repetitions or editorial statements) compared to passengers who did not have PTSD and to healthy controls. This pattern was observed across all

events tested, not just the traumatic event, suggesting that it is not just memory for the trauma itself that is related to PTSD, but rather 'how' a person processes memory for events in general.

"What our findings show is that it is not what happened but to whom it happened that may determine subsequent onset of PTSD," said Dr. Levine, senior author of the study.

This inability to shut out external or semantic details when recalling personally-experienced memories is related to mental control over memory recall, adding to a growing body of evidence that altered memory processing may be a vulnerability factor for PTSD.

A second study, in preparation for publication, involves functional brain imaging of 10 of the passengers from Air Transat Flight 236. The aim is to illuminate the brain mechanisms associated with exposure to this traumatic event.

Provided by Baycrest Centre for Geriatric Care

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