Witness to Disaster: Acute and Long-term Effects of Seeing the Fatal Mid-air Collision at the 2005 Saskatchewan Centennial Air Show

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Introduction

- A great deal of research has been conducted regarding the prevalence and predictors of PTSS and depression in the aftermath of sexual assault, combat, and natural disasters.
- An Air Show disaster provided an opportunity to investigate this issue further, specifically in the context of a spectator event.
- This event occurred in Moose Jaw, Saskatchewan, Canada on July 10, 2005, at the Saskatchewan Centennial Air Show.
- The purpose of this study was to determine the prevalence of acute distress—clinically significant posttraumatic stress symptoms (PTSS) and depression—and to identify predictors of each in a sample of people who witnessed the fatal aircraft collision.

Method

- Participants were 158 people who attended the Air Show and agreed to complete an Internet-based assessment. One participant was excluded for not completing most of the questionnaires.
- Participants were recruited through media announcements and completed the Internet-based assessment battery within 5 weeks of the Air Show disaster (*M* = 15 days; *SD* = 5 days; range 10 to 33 days).
- They were classified into four groups, based on whether or not they reported clinically significant PTSS (PTSS+ vs. PTSS-) and whether or not they had clinically significant depressive symptoms (Depr+ vs. Depr-).
- The Internet-based assessment included a measure of demographic details, exposure details (direct exposure, exposure to interpersonal aspects, indirect exposure), and the measures of the constructs listed in Table 1.

Results

- 22% of the 157 respondents had clinically significant PTSS and 24% had clinically significant depressive symptoms
- 15% were PTSS+/Depr+, 7% PTSS+/Depr-, 10% PTSS-/Depr+, and 69% PTSS-/Depr-. Due to violations of assumption of conventional multiple comparison procedures, we used the paired-comparisons information-criterion (PCIC).
- Table 1 shows comparisons of four groups on measures of functional impairment and variables that have been found to be correlates of PTSS and/or depression in previous studies.
- Table 2 shows standardized discriminant function coefficients (loadings) for 3 discriminant function analyses conducted to gauge the relative importance of the putative risk factors for PTSS and/or depressive symptoms.

Discussion

- Being witness to a disaster can lead to clinically significant acute distress in approximately one third of witnesses. Additional research is required to determine whether these findings generalize to other disasters involving onlookers or spectators.
- It may not be degree of exposure but, instead, vulnerability factors that are most relevant to experiences of post-trauma acute distress. Negative responses of others, rumination, and anxiety sensitivity appear most significant for comorbid PTSS and depressive symptoms.
- Given the prevalence of acute distress in the aftermath of events such as the Air Show disaster, empirically-supported interventions for acute distress are clearly warranted. There is evidence that cognitive-behavioral interventions and particular pharmacotherapies can be useful in alleviating acute distress in such cases.

Table 1. Descriptive features of groups (mean (SD) or %) and group differences based on the paired-comparisons information-criterion.c

	1. PTSS-/Depr- (n = 108)	2. PTSS+/Depr- (n = 11)	3. PTSS-/Depr+ (n = 15)	4. PTSS+/Depr+ (n = 23)	Group differences
Variables used to classify participants into groups					
PTSS	20.8 (3.4)	34.5 (6.7)	24.9 (2.5)	40.5 (8.9)	1 < 3 < 2 < 4
Depression	6.6 (4.6)	11.6 (3.4)	20.6 (2.7)	26.5 (9.0)	1 < 2 < 3 < 4
Demographics					
Age (years)	38.2 (13.1)	31.0 (10.3)	35.1 (12.1)	34.7 (12.8)	(1, 3, 4) < 2
% Women	56	82	73	61	(1, 4) < (2, 3)
% Single, divorced, or widowed	30	36	40	43	None
Impairment					
Work activities	1.2 (0.5)	2.0 (1.1)	1.5 (0.6)	1.9 (0.8)	1 < 3 < (2, 4)
Leisure activities	1.2 (0.4)	1.6 (0.7)	1.5 (0.6)	2.3 (1.1)	1 < (2, 3) < 4
Romantic relationships	1.1 (0.3)	1.5 (0.5)	1.3 (0.6)	2.2 (1.1)	1 < (2, 3) < 4
Family relationships	1.1 (0.4)	1.2 (0.4)	1.6 (0.5)	2.2 (1.0)	(1, 2) < 3 < 4
Friendships	1.1 (0.2)	1.2 (0.4)	1.5 (0.5)	2.0 (1.0)	1 < (2, 3) < 4
Air Show trauma variables					
Direct exposure	8.1 (1.9)	8.5 (2.0)	8.6 (1.2)	8.0 (1.9)	None
Exposure to interpersonal distress	2.2 (1.1)	3.0 (1.0)	2.7 (1.1)	2.8 (1.1)	1 < (2, 3, 4)
Indirect exposure	3.9 (1.2)	3.6 (1.2)	4.1 (1.1)	3.8 (1.3)	None
Prior trauma exposure	3.7 (2.2)	3.3 (1.8)	3.0 (2.6)	4.5 (2.6)	(1, 2, 3) < 4
Negative responses by others	13.2 (2.7)	13.7 (4.5)	17.7 (7.5)	22.6 (6.2)	1 < 2 < 3 < 4
Anxiety sensitivity	22.5 (19.2)	28.3 (15.0)	40.0 (23.3)	43.9 (27.3)	(1, 2) < (3, 4)
Intolerance of uncertainty	24.3 (7.4)	30.9 (5.5)	32.1 (11.9)	31.4 (11.4)	1 < (2, 3, 4)
Rumination about the trauma	12.8 (3.0)	16.4 (4.3)	14.9 (2.2)	16.3 (3.2)	1 < 3 < (2, 4)
Dissociative tendencies	16.5 (8.9)	25.4 (10.4)	22.5 (8.1)	23.3 (10.9)	1 < (2, 3, 4)
Absorption	34.3 (23.2)	46.9 (22.5)	43.9 (22.3)	43.8 (23.1)	1 < (2, 3, 4)

Table 2. Standardized discriminant function coefficients (loadings) for 3 discriminant function analyses.

Discriminant variable	PTSS- vs. PTSS+	Depr- vs. Depr+	PTSS+/Depr+ vs. other participants
Air Show trauma variables			
Direct exposure	.01	.03	-.04
Exposure to interpersonal distress	.33*	.22	.19
Indirect exposure	-.08	.03	-.03
Prior trauma exposure	.12	.05	.16
Negative responses by others	.72*	.82*	.83*
Anxiety sensitivity	.38*	.44*	.36*
Intolerance of uncertainty	.39*	.37*	.26
Rumination about the trauma	.58*	.38*	.37*
Dissociative tendencies	.41*	.28	.23
Absorption	.23	.17	.13

* Salient (≥.30) loading.

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