

Abstract

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Within a few years the Scandinavian countries have suffered two large ferry disasters, the fire onboard the “Scandinavian Star” and the capsizing of the “Estonia”. This article reviews all existing studies of victims’ reactions in order to establish a knowledge base for effective intervention. The number of disasters studied is small, but recently two disasters have been thoroughly investigated.

Generally, survivors, and not the bereaved are studied. Survivors as a group are quite severely traumatized. The lack of social support and treatment seems to aggravate the psychological problems. Many victims are tormented for a long time by invasive images, thoughts and feelings relating to the disaster. These intrusive experiences and the pronounced anxiety, which is associated to disaster-like circumstances, are positively related to avoidance behaviour, depression, interpersonal problems, psychosomatic symptoms, guilt feelings, an increased use of alcohol, tobacco and tranquillizers, a continuing state of alertness, and an augmented frequency of disease.

Sailors often choose another kind of job or fight a lasting anxiety in case they continue sailing. Children and adolescents seem to have the same kind of problems as the adults. Only one study investigated differences due to sex. People, who might have been onboard and were not, did not seem to be affected and develop similar, though milder symptoms as that of the survivors. One study investigated personality factors, which were not associated with a special pattern of symptoms; it rather looks like the disaster produces a set of reactions that are relatively homogeneous in survivors and others affected.

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THE PSYCHOLOGICAL REACTIONS AND AFTERMATH IN VICTIMS OF TRANSPORTATION DISASTERS AT SEA: A REVIEW

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Introduction

In recent years the Scandinavian countries have been struck by two major ferry disasters, the fire onboard the "Scandinavian Star" and the capsizing of the "Estonia".

These disasters emphasize the need to accumulate all available knowledge about the psychological aftermath in both survivors and the families. This knowledge would constitute a relevant background for the psychologists assisting the victims.

Disasters at sea differ from a number of other disasters by the mere fact that the ship or the oil rig is situated on the unpredictable sea (cf. Holen, 1990). If these survive the fire, the collision, or the capsizing the survivors have to face the struggle of saving themselves.

Methodology

Sequelae after disasters at sea have been superficially touched upon by Hodgkinson (1988) and Hodgkinson & Stewart (1991), but have never been reviewed. On the basis of systematic literature search on the "Psyc.lit" and reference-to-reference search 28 articles on the subject were identified dealing with a total of 12 disasters at sea.

The earliest investigation dates back to 1907; during the period from 1957 to 1986 there are 8 investigations, whereas the last 18 investigations were made over the years 1989 to 1994. Table 1 gives a survey of these investigations. The number of persons investigated is 940 in 20 investigations, averaging almost 50 per investigation. The number of victims of twelve disasters is 717 in all, corresponding to an average of 60. However, these figures cover various distributions: seven disasters involved from three to twelve dead, and five disasters from 51 to 193 dead.

Only two investigations used control groups. Nine investigations are retrospective, ten prospective, three describe in the form of case-stories the behaviour of a group during the hours or days where it can be observed.

Investigation No. ¹⁾	Population No. ²⁾	Number of dead	Methodological perspective ³⁾	Tools ⁴⁾	Intervals ⁵⁾	Findings
1	?	120+143	R	Psych	?	Nervous conditions are developed in rescue teams
2	?	4	Present	Case-obs.	12 h	Two shock phases
3	27	10	P	Psych.	0 + 4 y	Acutely: 83% have psychological problems. Four years: 76% had received psychiatric treatment. 71% malfunctioned. Only 35% sailed on a regular basis - and then suffered much anxiety.
4	7	3	P	Psych.	0 + 1 -2 y	71% had psychiatric problems.
5	336 (387)	7	R Cp.	Psych.	3 y	Increased number of neuroses. Exclusion from community led to increased psychological problems. 10% had psychiatric problems that demanded treatment.
6	11	12	Present	Case-obs.	1 d	Acutely: Grief, anger, withdrawal, survivor guilt.
7	18	11	Present	Case-obs. Psych. SRRQ	2-12d	Acutely: Shock, anger, grief, guilt.
8	?	193	R	Psych.	1 y	90% had PTSD; 53% were depressed
9	?	"	?	?	1 y	10 findings (see article)
10	73	"	R	IES, GHQ	2-3 y	IES = 35. GHQ = 10
11	73	"	P	IES, GHQ, Q	6m + 2-3 y	Increase in stim. + drugs, followed by slight decrease.
12	73	"	R	IES, GHQ, Q	2-3 y	5 various feelings of guilt in 1/3 to 2/3 in relation to IES + GHQ
13	25	"	P	IES, BDI, STAI	7+19m	IES(7m) → depression + anxiety (19m)
14	20	"	P	IES, GHQ, BDI, STAI Content	3½-7½ +19m	Acceptance of responsibility → increase in psych. problems
15	11a	"	P	IES, BIDI	3-6 m + 1 y	IES = 47. Depression = 83% (a slight decrease)
16	24a	4	P	IES	10 d + 5 m	IES = 36 (stable). Increase in depression.
17	24 a (130)	"	Cp	FSSC, CMAS BIDI, IES	5 m	Increase in trauma-related anxiety, depression and psychosomatic problems.
18	16a	"	P	BIDI, CMAS IES	5 m + 1 y	In case of high level of self-re-proach → high level of depression and intrusion.
19	23	"	P	BDI, STAI, GHQ, IES, CSI	3-6 m + 1 y	GHQ decreases significantly, IES only slightly, soc. support decreases significantly.
20	17	"	P	IES, GHQ, CSI	3-6 y + 1 y + 1½ y	Intrusion decreases, but not avoidance. Social support decreases significantly.

21	35	"	R	IES, CSI, CS, Attrib.	1½ y	In case of support, only few intrusion and avoidance symptoms (depending on attributional and coping procedures).
22	"	"	R	Rosenberg GHQ, IES,	1½ y	94% positive change of views.

				JWQ, CSI		
23	27	51	R	IES, GHQ, SCL-90	10 m	IES = 46. GHQ 15,5 (much anxiety, problems with interpersonal relations, psychosomatic depression). SCL corresponding to psychiatric patients.
24	65	159	R	IES, PTSS-10, Q	1½ y	IES = 32. Depression 68% Liability 60%. Tension 52%.

Table 1: Survey of methodology and the findings of investigations of transportation disasters at sea.

1) See numbers in article. 2) A = Adolescents. Figures in () = Control group. 3) R = retrospective, P = Prospective. Cp. = Comparison. 4) See list of abbreviations in annex 1. 5) h = hour, d = day, m = month, y = year(s)

19 different tools of investigations have been used for a total of 58 times. IES has been used in 15, GHQ-28 in 8 investigations; most tools have only been used once or twice. In earlier investigations only one tool is used in each investigations - either psychiatric examination or case observation. During the last 10 years a radical change has occurred: now standardized tests are practically always used, averaging three per investigation.

Among the retrospective investigations the lapse between disaster and investigations is from 50 months to 3 years. Prospective investigations are often made in connection with crisis intervention or assessment for compensation purposes. Only a small number of investigations have been initiated immediately after the disaster; the majority is initiated 3 to 7 months after the event. The average interval between the first and second collection of data is almost two years. Only one investigation between the first and second collection of data is almost two years. Only one investigation has collected data three times from the same population. Two thirds of the investigations are British.

In summing up, it may be concluded that research within this field is increasing/developing. The investigated populations are comparatively small. The technical quality of the investigations is increasing. Self-reporting is the most commonly used method of investigation; only every seventh investigation (and especially the earlier ones) have been based on observation and psychiatric evaluation, while methods as projective testing, phenomenological analyses, and the evaluation of functioning made by significant others have not been used. Recruitment often seems to be a problem as it only describes mortality based on small populations. Seen together, the distribution of retro- and prospective investigations and the existing distribution of time intervals in the various investigations cover a satisfactory range of possible psychosocial consequences in relations to period of time and methodical perspective.

What can we learn from the individual investigations?

1. The Frenchmen **Régis & Laurès** (1907) were the first to describe the psychological after-effects of disasters at sea. The maritime vessel “l'Iena” exploded in the harbour of Toulon in 1907. Four years later the same thing

happened to the vessel “la Liberté” also in the harbour of Toulon. **Hesnard** (1914) has a vivid description of a variety of behaviors right after the explosions and during the next weeks, where many were observed at the military hospital. Hesnard uses the words ‘emotive psychosis’ about the very strong reactions, which he sees as caused by the emotional shock due to the horrors of the explosion.

Hesnard reports about soldiers who right after the disaster were in a semi-somnambulistic state, while others were in a lucid and calm state without amnesia afterwards. We also find a description of intense representations of certain details from the catastrophe, that are equivalent to the contemporary concept of ‘intrusive images’.

The mental state of the military & civil communities was at first nervous, horrified, then after some time it turned angry. The city of Toulon was named ‘a veritable vulcano of anger’ and the community was in a kind of ‘fever state’.

An intense anxiety characterizes the more distressed soldiers, who were present at or did rescue work after the explosions. They acted as if the danger was still there, threatening them with annihilation. There were repressive mechanisms, as feverish occupations which functioned to reduce the acute anxiety. Hesnard distinguishes between normal reactions and more serious reactions, which we today label reactive or transitory psychotic episodes, and Hesnard describes the development of a psychologically conditioned anxiety in members of the rescue team. This nervous condition is in many ways similar to a condition which today we call a post-traumatic stress reaction (ICD-10, WHO, 1994) or PTSD (APA, 1994).

2. In 1956 two large liners, the Swedish "**Stockholm**" and the Italian "**Andrea Doria**", collided off the coast of Massachusetts.

Onboard one of the ships that hurried to the place were two psychiatrists, **Friedman & Linn** (1957), who for 12 hours were able to observe the shock-reactions of the rescued passengers and to talk with them. They divided the emotional reactions into two distinct phases; during the first phase the passengers were still in initial shock.

Friedman & Linn describe that the passengers acted as if they had been sedated by medication: *"It was as though nature provided a sedation mechanism which went into operation automatically in most cases"* (p. 426). In most cases, the passengers acted passively and compliantly. Their movements were slow, they were emotionally "flat", somnambulistic, and some were unable to remember data of personal identification. Friedman & Linn see this helpless dependency as a state of emotional regression where normal adults become childlike in their feelings of personal inadequacy *and* in their tendency to overestimate the powers of those offering help and leadership.

The two psychiatrists compare the numbness of the passengers to the equivalent numbness described by concentration camp prisoners as a defence against dangers and anxiety. During the initial shock phase no contact or conversation was possible. After a while the initial shock wore off, and it was now possible to talk with the passengers. Many of them had a great need to tell their story, and they told it over and over again to anyone who would listen to them, in an almost compulsory way and each time with identical details and emphases. Through this repetitious story-telling the trauma is psychologically relived, and the stories may be seen as part of the strategy of mastering totally overwhelming experience.

Some of passengers expressed anger towards the "Andrea Doria" which had been pronounced unsinkable and towards the Italian seamen who were held responsible for the disaster. Such a need to find a scapegoat may also be seen as an attempt to master the trauma, as the passengers' sufferings derived from a basic feeling of having been let down. On the basis of a psychoanalytical understanding the two psychiatrists see the passengers as victims of a narcissistic offence, which may be compared to the feelings of a child when s/he discovers that the enormous strength s/he believes her/his father has is an illusion.

Friedmann and Linn criticize the old principle of "women and children first" into the lifeboats, as this may have fatal psychological consequences to the children who are separated from their parents. They refer to the bombings of London during the Second World War where children staying with their parents were not psychologically disturbed, whereas serious disturbances were found in children separated from their parents (cf. Freud & Burlingham, 1945).

The registration of the victims offered a number of psychological advantages. It helped to make the survivors pull themselves together, to re-establish their egos, and it confirmed each individual in being a person. In addition, the registration was of course an important tool in uniting family members and informing relatives.

3. In 1957, **Leopold** and **Dillon** (1963) investigated immediately after the disaster the psychological after-effects in 27 out of 35 survivors from a collision between a tanker and a freighter on the Delaware River. The tanker exploded, and the sides were blown out; the midship section sank immediately, and the four officers, the pilot and five crew members were killed instantly. 25 out of the 27 survivors were examined again approx. four years later by Leopold and Dillon.

This represented an unique opportunity to investigate the effects of a disaster at sea where the outward circumstances were relatively homogeneous, none of the survivors received psychotherapy, and where the conditions regarding compensation were uncomplicated and rather favourable.

The majority of the crew were between 26 and 50 years old, three fifths of them were married, and they had received a relatively short formal education. 72% had sailed for more than 11 years. There were comparatively few physical injuries, although one quarter of the men had had brain concussions in connection with the impact of the explosion, when they had been knocked down.

The immediate symptoms between the second and the thirteenth day related to emotional disturbances (72%), less frequent were restlessness, depression excessive preoccupation with details of the disaster, and phobic reactions. One third of the men had gastrointestinal problems. Almost everybody had many different symptoms, only 17% had no psychological problems. The majority appeared reasonably well-functioning; only very few were quite overwhelmed by the disaster and received psychiatric treatment.

In the follow-up investigation four years later Leopold and Dillon found remarkable increase in physical, psychological and social after-effects.

76% had received psychiatric help, and 35% had been sent to a psychiatric ward. 30% had suffered severe gastrointestinal problems. The number of somatic complaints had quintupled, and the majority of these related to a pain in the back and in the back of the neck without any signs of neurological disturbances.

Everybody except one had emotional disturbances; the rate of restlessness, depression and phobia had increased significantly. New problems had appeared, such as feeling isolated, feeling watched over, feelings of hostility, and mistrust in colleagues. Two thirds of the men had somnambular problems (an increase by 50%). 59% complained of headaches.

The group's work situation had been drastically changed: 12% had never sailed again, 35% had tried but had had to quit entirely, 18% sailed once in a while, only 35% sailed regularly. Of the seamen who still sailed every one of them was tense, anxious, nervous and afraid when onboard a ship, but they felt obliged to stick by their profession.

71% were estimated to function at a psychologically far less adequate level than before, whereas 21% functioned better than before the disaster. 9% were unchanged. On the whole, seamen more than 36 years old functioned less adequately than younger seamen. Earlier war-sailing experience and possibilities of compensation had no influence on the extent of psychological problems.

In their discussion Leopold and Dillon emphasize that the survivors had no possibility of foreseeing the disaster and so of preparing themselves for it. The survivors have to live with the risk of a new disaster as a constant and horrible possibility. Repression of the danger is of no avail. There is a constant feeling of being in danger. The similarity of the reactions makes Leopold and Dillon consider the nature of the disaster to be more influential on

the psychological after-effects than the personalities and personal backgrounds of the seamen.

4. **Henderson & Bostock** (1975, 1977) describe the survival behaviour in seven Australian seamen surviving a shipwreck in October 1973. They spent nine days in a rubber raft and four days ashore before they were rescued. Three men died before help could reach them.

Certain behavioural features were observed in all survivors:

- a) constant thoughts about the person closest attached to them (wife, mother, children, girlfriend)
- b) a determination to live and not die
- c) imitation of the captain who was a model in regard to seamanship and leadership
- d) prayer, practised by six out of seven although none of them had previously been religious, and
- e) a constant hope

During the days following the rescue the seamen were examined by the two authors, who contacted them again for a new examination between one and two years later. Five out of the seven men (71%) now had substantial psychiatric problems (depression, anxiety, insomnia, impotence), whereas the remaining two managed well.

The findings of the investigation support the hypothesis that a psychological disorder developed from a life-threatening trauma will continue to become aggravated unless intervention is received.

5. On the 22nd November 1975 an American carrier the "**Kennedy**", collided with another naval vessel, the "**Belknap**", during training in the Mediterranean. Seven men onboard the "Belknap" died of burns, whereas 46 were burnt, injured or asphyxiated. After the collision the "Belknap" was towed to Italy and six weeks later back to the USA. Some men were allowed to fly home, whereas others stayed onboard. Three years after the collision **Hoberg and McCaughey** (1981, 1984) examined the "Belknap" crew and compared it to the crew of a similar naval vessel, the "Yarnell". They found out how many in each crew had received psychiatric therapy during the last three years prior to the collision and during three years after the collision.

There was an enormous increase in the number of psychiatric patients onboard "The Belknap" after the collision and in comparison with the "Yarnell". The majority of the patients had no previous history of psychological problems. The majority were diagnosed "neurotic" or as having a temporary, situational disorder. In McCaughey (1986) the psychiatric data of 13 seamen

are commented. Avoidance and a sincere wish to leave the naval forces were very widespread.

An interesting detail of the analysis is the question of evacuation and return to the ship. To have stayed aboard the ship or to have returned and sailed a short stretch with it before flying back to the USA meant either total absence or low occurrence of the two diagnoses mentioned. On the other hand, the group of uninjured, who were flown to the USA at once or came onboard, again for a short while and then flown to the USA, showed by far the large number of the psychiatric problems.

Hoiberg and McCaughey argue that this accumulation is due to the fact that the crewmen's teamwork and friendships were broken; they were not offered any joint possibility of processing the disaster together, and many of those who had been returned home at once experienced a feeling of having failed their dead or injured friends. This shows an example of how the treatment of persons having experienced a disaster may lead to serious aggravations of their psychological condition.

6. **Carlton** (1980) has described the survivors' psychological reactions within the first 24 hours after an explosion onboard the tanker "**Claude Conway**" in 1977. Eleven survivors were brought to one of the Navy's psychiatric wards on the first day. At first, they mainly expressed grief over their dead mates and anger towards the captain and the ship owners. During the first 24 hours there was a certain withdrawal and denial of feelings when some of the survivors were together, but separately, the men still wanted to express their feelings. Before they left the survivors participated in a group meeting where it became apparent that feelings of survivor guilt were strong in many of them. The mutual sharing of feelings led to a strong feeling of group cohesion.
7. On the 20th October, 1978 the American coast guard cruiser the "**Cuyahoga**" collided with an Argentine freighter. The "Cuyahoga" sank within two minutes, eleven were drowned. **McCaughey** (1985) has described the immediate reactions in the 18 survivors. Shock, anger, grief, and guilt were the most prominent reactions.
8. On the 6th March, 1987 the ferry "**Herald of Free Enterprise**" capsized without warning outside the Belgian harbour Zeebrügge, and within 45 seconds it turned the side up. 193 passengers and crew members were drowned. All victims of the "Herald of Free Enterprise" disaster who were assessed for compensation purposes during the first 12 months after the disaster had provable psychological disturbances. 90% suffered PTSD; 53% were moderately to severely depressed (**Gunn**, 1989).

9. **Hodgkinson et al.** (unpublished) investigated a number of survivors and bereaved from the "Herald of Free Enterprise" during the first year after the disaster and found the following:
- a) The bereaved showed many signs of depression, whereas the survivors mainly showed signs of PTSD.
 - b) Those who had lost more than one relative were more anxious, but not more depressed than those who had lost one relative.
 - c) There were no differences of sex in connection with depression, anxiety, reliving, anger, avoidance, and numbing of feelings.
 - d) Those who experienced the social support as a good help did not differ, as far as the range of symptoms is concerned, from those who were more ambivalent towards the support received.
 - e) Those who had experienced family conflicts immediately after the disaster suffered comparatively more from depressions and phenomena of re-experiencing.
 - f) Crisis intervention helped to lower the level of anxiety, to revive numbed feelings and to reduce avoidance, but only when anxiety and the degree of numbness and avoidance was not too high. Crisis intervention had no effect on depression.
 - g) The degree of injuries did not relate to the extent of symptoms.
 - h) Those who thought they had managed according to own expectation had few symptoms of intrusion. Low level of anger was related to managing better than expected or the feeling of having let yourself or others down.
 - i) Those who had thought they were going to die (78%) showed less tendency of depression.
 - j) Those who had seen their relatives' bodies (19% showed more depression and anxiety.
10. **Joseph, Yule, Williams and Hodgkinson** (1993a) using a.o. the Impact of Event Scale investigated the degree of traumatization of 73 adult survivors two to three years after the disaster. 46 were male, 27 female. 23 lost relatives in the "Herald" disaster. The total IES-score of the group was 35, which indicates a higher degree of traumatization. The average score of the GHQ-28 was 10, and more than two thirds had a score of ≥ 4 , indicating an increased risk of acquiring a psychiatric disturbance.
11. The same group of researchers (**Joseph et al.**, 1993b) found in the same group an increase in consumption of alcohol, tobacco, sleeping pills, anti-depressants, and tranquillizers. Two and a half years after, consumption was still increased but decreasing in comparison to the level after 6 months. A higher consumption of the substances mentioned was related to a high level

of psychological problems. The group of researchers think that the use of the substances mentioned contributes to maintaining the level of distress.

12. In an article **Joseph, Hodgkinson, Yule and Williams** (1993) described the existence of various kinds of feelings of guilt in 73 survivors, approx. 3 years after the "Herald" disaster. 61% had feelings of guilt for being alive when so many died, approx. one third had feelings of guilt for something they had done, and approx. two thirds had feelings of guilt for something they had failed to do in connection with the disaster. Almost one third reported a feeling of having let themselves down, and almost half of them felt that they had let others down in the disaster.

All five forms of guilt were connected with high scores in the GHQ-28. Survivor guilt was related to high intrusion and avoidance scores in the IES. Feelings of guilt because of something the survivors *failed* to do gave high intrusion values, whereas feelings of guilt because of something the survivors *did*, or because of a feeling of having let others down, gave high avoidance values.

According to this study, feelings of guilt is a very widespread phenomenon in survivors, even a long time after a disaster. It is worth noticing that feelings of guilt for something you *failed* to do are twice as common as feelings of guilt for something you did.

The findings show that the extent of feelings of guilt is related to the extent of symptoms, and that a certain kind of guilt is related to certain trauma symptoms. According to the authors, the feelings of guilt can be seen as a factor that obstructs the emotional processing of the whole disaster. Other studies (cf. Brewin et al., 1989) show that feelings of guilt often make people withdraw from other people and avoid coping strategies that involve other people.

13. In a follow-up analysis comprising 25 survivors of the same disaster **Joseph, Yule & Williams** (1994) found that the degree of intruding images, thoughts, and feelings in the IES questionnaire seven months after the disaster could predict the degree of depression and anxiety 12 months later.

After 19 months the group as a whole was characterized by depression and anxiety to a medium degree. High degree of exposure to death meant greater anxiety. The loss of a relative did not affect the measured symptoms, whereas having been close to death did not affect the degree of depression, intrusion or avoidance.

An important finding of this study is that avoidance is not related to symptoms but is primarily a consequence of the degree of intrusion. In analyses of regression, the degree of intrusion may explain 30-40% of the variation with depression and anxiety, but there are still other factors, such as factors of

personality, that have to be considered in order to explain and understand the psychological problems arising from a disaster.

The authors mention the possibility that some forms of intrusion may not be harmful but even important as far as adaptability is concerned (cf. Creamer et al., 1992). An important consequence resulting from this investigation is that crisis therapy will have to focus on the phenomena of intrusion and seek to minimize them (cf. Foa et al., 1991).

14. Two years after the disaster **Joseph, Brewin, Yule and Williams** (1991) found in 20 adult survivors (10 men and 10 women) from the "Herald of Free Enterprise", that those who took upon themselves a responsibility for something that had happened during the disaster had far more psychological problems than those who did not.
15. Between 3 and 6 months after the disaster, **Yule and Williams** (1990) investigated 11 children who were aboard the "Herald of Free Enterprise". According to parent's evaluations in standardized questionnaires, more than half of the children had significant psychological problems. 83% were depressed, and the degree of intrusion and avoidance in the IES-questionnaire was 47, which indicates a high degree of traumatization. According to teachers, however, only 25% of the children had problems at school. A little more than 12 months later the number of depressed children had dropped to 56%, and the IES score had dropped to 34 for the boys and 44 for the girls.

Yule and Williams arranged a number of group sessions for eight of the children, and this initiative was very positively evaluated.

16. On the 21st October, 1988 the chartered ferry "**Jupiter**" collided with a tanker a few kilometres from the harbour of Piraeus. The "Jupiter" sank within 45 minutes. 400 British 14-16 year old school children and 60 teachers were saved under dramatic circumstances in increasing darkness, where many jumped from the upper deck into the oil-filled and debris-filled water. Four died.

Ten days after the disaster **Yule and Udwin** (1991) investigated 24 surviving schoolgirls in connection with a psychological crisis intervention, a so-called debriefing session (cf. Dyregrov & Mitchell, 1988). The girls' IES-score was 36, almost as high as that of the children aboard the "Herald of Free Enterprise". The level of anxiety was normal and the level of depression significantly increased compared to British standardizations.

Participation in a therapy group at the school was offered to those of the girls who wanted it. Five months after the disaster the IES score was still the same, and both anxiety and depression levels had increased significantly.

Those with the highest score after 10 days had five months later extremely high scores of IES, anxiety, and depression, despite the fact that this group

consisted mainly of "high risk" girls. Participation in the therapy group did not lead to any noticeable reduction of symptoms.

17. Five months after the disaster, **Yule, Udwin and Murdoch** (1990) compared the above-mentioned group to pupils from another school, pupils from the same school who had not wanted to go on the cruise, and pupils from the same school who had wanted to go but did not get places.

In general, the 24 survivors had not become more fearful, but they had developed more anxiety towards things unknown and significantly more fear towards stimuli related to the disaster.

This study, comprising very relevant comparison groups, showed significantly increased anxiety, depression and psycho-somatic reactions in the surviving girls. The pupils from the same school who just missed the cruise had an increased level of anxiety and depression, compared to those not interested at all or from another school. To have a special link to the disaster seems to have a symptom-provoking effect (cf. Elklit, 1994b).

18. **Joseph, Brewin, Yule & Williams** (1993) investigated 16 young girls from the above-mentioned group in order to ascertain to which extent they blamed *themselves* for negative or uncontrollable events during the disaster. Those with a high degree of self-reproach showed many post-traumatic symptoms (especially depression and reactions of intrusion) a year after the disaster. This finding can be related to Janoff-Bulman's (1979) theory on and investigation of the difference between characterological and behavioural self-reproached.

19. **Joseph, Andrews, Williams and Yule** (1992) investigated how 23 adult survivors from the "Jupiter" managed for the first 12 months after the disaster, and how much social support they received. 19 out of the 23 were women, and the majority were teachers.

The GHQ-28 score of the group, which indicates the range of psychiatric problems, decreased significantly within the first 12 months, whereas the IES score only decreased slightly. The crisis support received from relatives and friends diminished significantly during the year and so did satisfaction with the support received.

Both a couple of months and a year after the disaster a high degree of satisfaction with crisis support led to a decrease in intrusion images, thoughts and feelings. In case of much support both the degree of intrusion and the GHQ-28 score were low. A high degree of satisfaction after a year also meant a low GHQ-28 score, whereas much received support meant that also the level of anxiety and depression was significantly lower.

A regression analysis showed that it was the crisis support received rather than satisfaction that could explain a very large proportion (44%) of the variance of symptoms. According to the study, the psychological crisis support

from the victim's own network has a decisive influence on the development of a number of vital symptoms.

20. 18 months after the disaster, **Joseph, Yule, Williams and Andrews (1993)** continued the above-mentioned investigation with 17 of the 23 adults. The symptoms of intrusion had then decreased significantly, whereas the degree of symptoms of avoidance had not changed. The degree of crisis support received had also decreased significantly. In case of crisis intervention throughout all the first 12 months, the degree of avoidance was low after 18 months; even when crisis support had only been received in the beginning was it indeed of importance since the degree of avoidance also in that case had decreased after 18 months.
21. 18 months after the disaster, **Joseph, Williams and Yule (1992)** found in 35 adults that crisis support in itself could lead to a decrease in psychological stress, measured at a low degree of symptoms of intrusion and avoidance - regardless of the persons' strategies of coping and feelings of guilt. A high degree of crisis support meant that the person to a higher degree took the responsibility of the good things that had happened, and that the coping strategies were directed towards emotional coping rather than practical problem-solving or avoidance.
22. In the same group of survivors mentioned above, **Joseph, Williams and Yule (1993)** found that 94% reported numerous positive changes in their views on life. Almost everybody did no longer take life for granted, and then valued their relations to other people higher. More than 70% described themselves as more understanding and tolerant, and that they took each new day as a gift. Approx. 50 % had developed more faith in the human nature and were more set on doing well in life; a little under 50% said that they no longer worried about death.

In the same group a number of persons had developed negative feelings about life and other people, but this phenomenon was less marked than the positive changes.

Changes in a negative direction were associated with many symptoms (somatic, anxiety, insomnia, depression) in the GHQ-28 and many reactions of avoidance in the IES. Furthermore, negative changes were often co-existing with lower self-esteem, lack of belief in justice in the world, acceptance of responsibility for negative events, and reduced crisis support from relatives and friends.

This investigation is important for two reasons: Firstly, it appears that to many survivors the disaster means personal development over the years. Secondly, the survivors' cognitive schemes are linked with their psychological conditions. This makes it possible to influence the victims' psychological

conditions through a psychological intervention and thus change or eliminate a number of straining symptoms.

23. On the 20th August, 1989, around midnight, a small British riverboat, the "**Marchioness**", was hit when sailing on the river Thames near Tower Bridge, and it sank within two minutes. Onboard was a young birthday party consisting of many people involved in fashion and art; 51 were drowned and 80 survived. Ten months later 27 survivors were examined by **Thompson, Chung and Rosser** (1994).

The average age was 28 years, and 22 of these 27 survivors were male. Most of them knew each other. 25 of the 27 survivors had lost more than one personal friend.

As a whole, the group was severely traumatized (IES=46). The degree of psychiatric disturbances measured by the GHQ-28 was high (15.5) and indicated much anxiety, many problems with interpersonal relations, many psychosomatic problems and much depression in the survivors.

A symptom checklist (SCL-90) showed a level of symptoms and stress equal to that of hospitalized psychiatric patients. The survivors were also assessed by means of a questionnaire measuring personality factors such as extroversion, degree of neurotic and degree of psychotic tendencies. In these three areas the group scored considerably higher than the normal population. The questionnaire also measures whether the respondents are inclined to lie; it appeared that the survivors were significantly less inclined to lie - they were open about their feelings and attitudes.

An analysis of the interrelations between the various symptoms shows high, positive correlations. The personality factors did not correlate with the symptoms and they were only intercorrelated in one point: high degree of neurotic tendencies meant a low lie score.

24. On the 7th April, 1990 a vehement fire broke out aboard the ferry "**Scandinavian Star**" sailing between Oslo, Norway and Frederikshavn, Denmark. 159 persons died. 18 months later 65 Danes, 24 survivors and 41 bereaved, participated in an investigation by Arctander (1992). The findings are described and analysed in **Elklit and Andersen** (1994).

The investigation showed that the victims have developed a significant increase in anxiety in connection with collective transportation, at the thought of losing one's family, and the risk both of being alone and together with many people. There were drastic changes in security behaviour, media habits concerning accidents and similar events and in the ability to master the daily life. The last problem was totally new to 22% of the victims.

The emotional life and the social relations of the majority of the victims had changed in the direction of more openness and intimacy, but to another and

smaller part of the victims, in the direction of withdrawal and a sense of powerlessness.

The average IES score was 29. A large number (68%) suffered infrequent or frequent depression; emotional lability was seen in 60%, tension in 52%, whereas 39% suffered from increased alertness and sleeping problems, 37% from feelings of guilt and irritability; 34% suffered from nightmares.

The survivors showed comparatively many reactions of avoidance and alertness, expressed more anger, but also experienced more unmotivated joy than the group of bereaved, who was characterized by many reactions of re-experiencing, and comparatively more grief and powerlessness. On the other hand, the bereaved had more often managed to establish new qualities in their relations with other people.

Two demographical factors: womanhood and older age, were connected with relatively more symptoms. Distressing life-events before and after the disaster led to a marked increase of symptoms. 22% had increased their consumption of medicine and/or alcohol.

Practically all received support from family and friends, but 19% were not satisfied with this support. 26% were visited by clergymen, doctors, or other professionals. Satisfaction with the support from clergymen was very high, but medium with the support from doctors, and rather modest with the support from psychologists and lawyers.

A Theoretical Comment on the Field of Research

Only few of the studies are based on an explicit, theoretical model. From their choice of methods, many researchers show their affiliation to Horowitz' information processing model (1976/86), and psycho-dynamic theories are also applied. It is suggestive that only one study makes direct use of the PTSD diagnosis, although it would have made an obvious basis. The current situation within trauma research is that there are approx. ten competing paradigms (cf. Peterson, Prout and Schwarz, 1991), each of them well suited to explain a number of individual findings, but none of them able to integrate the many heterogeneous and upsetting changes experienced by the victims of disasters. A good theory should integrate physical, psychological, and social factors, but in practice the task is difficult.

A central point of departure and focus could be to see the experienced threat of extinction as the regression-releasing factor, and then to view the individual symptoms, self-evaluations and actions from there.

In regression the self-image and self-esteem are threatened; the functions of the ego are weakened, and a new openness and vulnerability to the person's early

experiences (cf. Horowitz et al., 1980) and the reactions of the surroundings are seen.

Many victims regress to a state of 'structural deficit' (cf. Balint, 1968, Kohut, 1977, Killingmoe, 1989), where the support from others can be seen as a decisive factor when elements of the Self are (re)evaluated in the face of the risk of extinction, when the goodness and sanity of the world and fellow human beings are (re)evaluated, when matters of guilt are to be settled, when the personal meaning of the trauma is to be found, and when the zest for life is to be re-established.

An object relation approach (cf. Brende, 1983, Parson, 1984, Elklit, 1994a) seems today to be the theoretical anchorage best suited to integrate a number of the findings within disaster psychology. The social processes of assessment may be integrated in an object-relation approach (cf. Epstein, 1990, Westen, 1991), whereas integration of the molar physical reaction patterns in a psycho-dynamic theory does not seem to have developed much since Wilhelm Reich (1949).

Summary

The studies comprise a variety of disasters at sea. It makes a difference whether the people onboard are all crewmen or whether the majority are passengers, perhaps children. It makes a difference how fast the disaster develops (explosion, time of sinking), how the possibilities of life-saving are, and whether the disaster starts with or is complicated by a fire. The proportions between casualties and survivors differ considerably from one disaster to another. It makes a difference to what extent private or public support are given afterwards.

All these factors are of importance to the survivors and the bereaved in their psychological procession of and coping with a disaster. And yet, cutting across the disaster factors mentioned, each individual investigation yields much valuable knowledge that illustrates some aspects of the many psychological problems arising from a disaster at sea. In general, the investigations focus on how the survivors experience a disaster, and only a few focus on the reactions of the bereaved. The general impression is a rather massive degree of traumatization in the majority of the survivors. Lack of crisis intervention and treatment seems to aggravate the physical, psychological, and social problems. Many are haunted for a long time by intruding images, thoughts, and feelings about the disaster. These experiences of intrusion and the marked anxiety in connection with circumstances similar to a disaster are connected with much avoidance behaviour and depression, many problems with interpersonal relations and psychosomatic problems, an increase in alcohol, tobacco, and medicine consumption, strong feelings of guilt, constant alertness, and increased frequency of illness. Seamen often choose another occupation or have to fight a constant anxiety in case they continue their present occupation.

Children and adolescents seem to have the same kind of problems as the adults. Only one investigation found differences due to sex. Persons who might have been present also seem to be influenced by disasters and develop symptoms similar to those of the survivors - although to a lesser degree. Based upon one of the investigations, personality factors do not seem to relate to a specific symptomatology; on the contrary, the disaster seems to trigger a series of comparatively uniform reactions in survivors and bereaved.

The social support from family and friends is of the utmost importance to the psychological health of the victims. The extent and scope of psychological problems indicates the necessity of a much more comprehensive and persistent professional intervention. It is a weakness in some of the investigations mentioned that process variables in connection with the traumatization have practically never been investigated, just as a strong tendency to ignore personality variables has been shown. Treatment initiatives have only been described in three cases, and then as having either no measurable effects or having a contingent effect. Today it is possible to identify high-risk groups (cf. Holen, 1990) and on an authoritative, professional basis to offer treatment in order to minimize the psychological damage that will otherwise certainly occur.

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Annex: Abbreviations for the applied tests

Attrib	Attributions of responsibility
BDI	Beck's Depression Inventory
BIDI	Birleson Depression Inventory
Case-obs	Caseobservation
CMAS	Revised Children Manifest Anxiety Scale
Content	Content analysis
CS	Coping Style
CSI	Crisis Support Items
FSSC	Fear Survey Schedule for Children
GHQ	General Health Questionnaire-28
IES	Impact of Event Scale
JWQ	Just World Questionnaire
Psych	Psychiatric Interviews
PTSS-10	Posttraumatic Stress Scale-10
Q	Questionnaire constructed for the specific study
Rosenberg	Rosenberg's Self-esteem Questionnaire
SCL-90	Symptoms Check List-90
SRRQ	Social Readjusment Rating Questionnaire
STAI	Spielberger State and Trait Anxiety Inventory