Does cognitive behavioural treatment for flight anxiety reduce the degree of other anxiety symptoms?

Trine Livik Haugen, 2008

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Abstract

Aims: To study the impact of a treatment programme for flight anxiety on other anxiety symptoms, and to assess the impact of previous nervous problems and previous contact with a psychiatrist/psychologist on the degree of anxiety.

Methods: The study followed a prospective longitudinal quasi-experimental design. There were 295 women and 128 men included in the study. The subjects for this cognitive behavioural treatment programme for flight anxiety were recruited by an advertisement in the newspaper Aftenposten. The treatment programme was run once a week for six weeks. Each session lasted 4 hours. The participants paid 3-5000 NOK to attend the programme. Assessments were performed before treatment, after treatment, and at follow-up studies after six months and two years. A 19 items 10 cm VAS scale was used as a Flight Anxiety Scale (FAS), six items for other anxiety situations, and the Phobic Avoidance Rating Scale (PARS).

Results: Both women (5.0 vs. 2.1) and men (4.1 vs. 1.7) had a reduction in their mean scores for fear of flying, measured by the FAS. Both genders also showed a reduction of the mean scores for the degree of other phobias (women 2.5 vs. 1.5 and men (1.9 vs. 1.2). Women also had a significantly lower PARS score after treatment (0.5 vs. 0.4) whereas the decrease among men (0.4 vs. 0.3) was not statistically significant. The improvement was rather stable at follow-ups after six months and two years, although women had slightly more flight anxiety after two years.

Those who report to have other nervous problems have significantly different scores compared with those without. They are more afraid when it comes to both fear of flying, other phobias and the PARS. When we compared the change of the scores (Δ-values), for flight anxiety (FAS) there was no significant difference between those who have other nervous problems and those who do not. However, when it comes to "Other phobias" and PARS, the results showed a statistically significant difference in the reduction of the scores between those who have other nervous problems and those who do not, those with other nervous problems have a greater reduction of the scores. There was no statistical difference in the scores for flight anxiety (FAS) between those who previously had been to a psychologist/psychiatrist and those who had not. For other phobias and PARS is there a difference, those who have been to a psychologist/psychiatrist had significantly higher scores both before and after treatment.

Conclusion: Even though the treatment was specifically focused on the treatment of flight anxiety, a significant effect on other anxiety symptoms was also achieved.

Introduction

Phobias are defined as unreasonable fears, associated with the avoidance of objects or situations that interferes with life. Phobias are categorized as specific, social or agoraphobic (1).

Ekeberg et al found that in a random sample of 1000 persons aged 18-75 years 46 % report some degree of flight anxiety (2).

There are a lot of articles on treatment of fear of flying and the effect these treatments have. But there are few articles on other nervous problems and comorbidity among flight phobics.

A search in Ovid Medline with a combination of the phrases “flight phobia” and “comorbidity” gave only one result, “Phobic fear of flying in aircrews: epidemiological aspects and comorbidity” by Medialdea J. et al. They found that the observed comorbid psychiatric disorders (54%) consisted of depressive disorders (22%), anxiety disorders (16%), and personality disorders (7.4%) (3).
When van Gerwen et al looked at the typology of flight phobics they found that the phobic fears that are most specifically associated with high levels of flight anxiety are mainly claustrophobia and fear of water, but also acrophobia (4). Social anxiety and fear of losing control over oneself are more closely related to high levels of other phobic fears. Claustrophobia is also moderately related to agoraphobia. They also found that flight phobics could be divided into four subclasses. The first subtype consists of patients with low to intermediate flight anxiety and no panic attack symptoms. They fear aircraft accidents and are very aware of all sounds and movements of the plane. The second subtype can be characterized by experiencing either fear of loss of control over themselves or social anxiety. They experience moderate levels of flight anxiety and are very aware of any somatic reactions. The third subgroup experiences high anxiety regarding airplanes and has a fear of water and/or claustrophobia and agoraphobia. This group reports panic attacks in connection with flights. The fourth groups’ main phobic complaint is acrophobia. They show medium to high flight anxiety (4).
In another study van Gerwen et al found that participants of cognitive-behavioural treatment programmes for fear of flying with personality pathology, mainly from cluster C (anxiety), report greater fear of flying before treatment than participants without personality pathology (5).

Searches in Ovid Medline do not give much information on how the treatment programmes for flight anxiety affect the degree of other anxiety problems. That is why this has been chosen to be further examined in this study. The treatment programme this study is developed from has some important elements: 1) To make the subjects aware of their conceptions on flying, 2) give them information so their misconceptions are corrected, and 3) exposure of the situations they fear. The idea is that they will be aware of that they have been controlled by negative misconceptions, and this will lead to a more realistic assessment of risk and dangers. When they can manage on a lower anxiety level, the faith in their own ability to cope with situations will increase. Even though the treatment programme is spesifically aimed at flight anxiety, the question is whether a change in the tendency to create images of catastrophes, correcting these and counteract withdrawal also can have an effect on other phobic symptoms as an additional effect.

The aims of this study were therefore to study to what degree flight phobics also have other phobic symptoms, and what impact the treatment programme for flight anxiety have on other phobias. Does this vary according to gender?
And is there a relation between technical or claustrophobic fear and the other phobias?
What impact do other nervous problems and previous contact with a psychiatrist/psychologist have on the degree of anxiety?

Methods

Design

The study followed a prospective longitudinal quasi-experimental design. Assessments were performed before treatment, after treatment, and at follow-up studies after six months and two years. (5)

Subjects

There were 295 women (mean age: 40.6 range: 17-73) and 128 men (mean age: 38.5, range: 18-62) included in the study. The subjects were recruited by an advertisement in the newspaper Aftenposten. None were rejected. The number of participants in each programme ranged from 12 to 16, but the average number was 13 subjects. This study includes course number 28 to 61. Accordingly, the participation rate was 423/442=96%.
The participants paid 3-5000 NOK to attend the programme.

Treatment

The groups in this study were treated during 1994 - 2002. The treatment programme was run once a week for six weeks. Each session lasted four hours. On the first day the participants introduced themselves and were encouraged to try to specify their discomfort. In addition, a short film was shown, demonstrating the procedures for checking various components of airplanes. On the following days, lectures were given by a pilot, an engineer, a cabin attendant, a medical doctor on the physical manifestations of anxiety, and the head nurse on the equipment available for help during flights. After each lecture there was considerable time for questions. A psychiatrist (Ø. Ekeberg) led a group session each day, at which the topic was anxiety and how to cope with it, followed by training in progressive relaxation. On the fifth day the participants were taken on a 15- to 20-minute flight demonstration by the pilot in a cockpit simulator, three at a time. On the sixth day the participants were taken to the control tower and the radar room, where demonstrations were given by the staff. Two other short films were shown, one demonstrating flight procedures as experienced in the cockpit and the control tower and another from the testing of airplanes. Two days after the sixth day the participants went on a regular domestic flight, Oslo- Stavanger-Oslo, with a flight time of about 30 minutes on each lag (6).

Assessments

Questionnaires with:

- A 19-item Flight Anxiety Scale (FAS) to measure the degree of flight anxiety (examples: fire in the engine, flying in strong wind, the feeling of having no control, afraid of being ill while aboard...). Each item was measured on a 10 cm visual analogue scale (VAS) (0 = no anxiety, 10 = maximum anxiety).
- A 7-item 10 cm VAS to measure the degree of anxiety in other situations (riding elevators, being in large crowds, being in enclosed spaces, crossing open spaces, heights, to faint)
- A 14-item Phobic Avoidance rating Scale (PARS). Avoidance is rated to the following criteria: 0 – no avoidance; 1 – does not avoid the situation, but has avoidant tendencies within it; 2 – sometimes avoids and sometimes not, depending on how one feels at that specific time; 3 – avoids the situation regularly, but is able to expose oneself to it inn

- The 14 items are:
  1. Walk away from home alone
  2. Walking on the street alone
  3. Walking across open spaces, town squares or fields alone
  4. Travelling by bus, train or other public transportation alone
  5. Theatre, cinema unaccompanied
  6. Shopping, standing in lines unaccompanied
  7. Going to meetings
  8. Going to parties
  9. Having guests at home
  10. Riding elevators
  11. Heights, towers
  12. Crossing bridges
  13. Being in enclosed spaces
  14. Being home alone

A seven step scale was used to obtain a measure of the degree of Global Flight Anxiety (GFA) ranging from:
"not afraid at all" = flight anxiety 0
"sometimes a little afraid" = 1
"always a little afraid" = 2
"sometimes very afraid" = 3
"always very afraid, but never cancel flights because of it" = 4
"always very afraid, and sometimes avoid flying because of it" = 5
" never fly because of flight anxiety" = 6

They who answer 4, 5 or 6 are defined as flight phobics.

Among the subjects 257 (87 %) of the women and 100 (78 %) of the men were characterized with flight phobia. There was no difference according to age.

Statistics

SPSS 13.0 for Windows was used for all calculations.
P<0,05 was considered significant in all the calculations. Paired-samples t-tests were run to compare the results for before and after treatment. To estimate the effect size, eta squared was calculated. Eta squared= $t^2/(t^2+N-1)$. Independent-samples t-test were conducted to compare the scores between different groups.
One-way repeated measures ANOVA was used to measure if it was a change in the scores over time with more than two time points. Principal component analysis was performed with varimax rotation.
Pearson product-moment correlations were used to investigate the relationship between variables, and following guidelines to interpret the correlation coefficient were used:

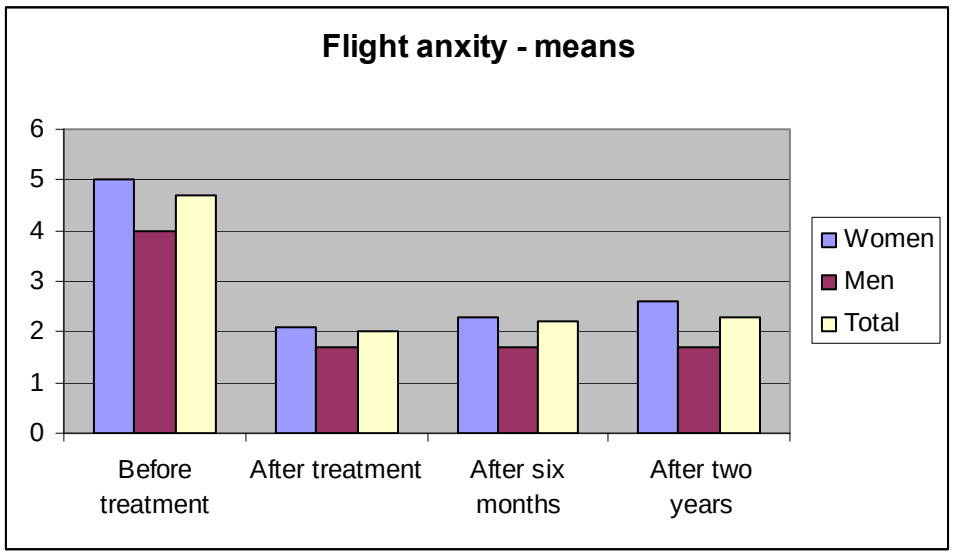
r	< 0,29	small correlation
r	0,30-0,49	medium correlation
r	> 0,50	large correlation

Results

Flight anxiety

For the entire population the mean scores for flight anxiety are 4.7 (SD 2.0) before treatment, 2.0 (SD 1.6) after treatment, 2.2 (SD 1.5) after six months, and 2.3 (SD 1.7) after two years.

Figure 1



Both women and men had a reduction in their mean scores for fear of flying. The mean value for women before the treatment is 5.0 (SD 2.0). After the treatment the score is 2.1 (SD 1.6). For men the mean score before treatment is 4.0 (SD 1.9) and after treatment 1.7 (SD 1.5). After six months these figures were 2.3 (SD 1.6) for women and 1.7 (SD 1.3) for men

respectively. After two years the figures were 2.6 (SD 1.7) for women and 1.7 (SD 1.3) for men.

Paired-samples t-tests were conducted to evaluate the impact of the intervention on flight anxiety by comparison of the mean values before and after treatment.

Flight anxiety (the entire population):
There was a statistically significant decrease in flight anxiety scores from before treatment (M=4.7, SD=1.9) to after treatment (M=2.0, SD=1.56, t(350)=25.431, p<0,000).
Eta squared=0,65**.** The eta squared statistics indicated a large effect size. A one-way repeated measures ANOVA was conducted to compare scores on flight anxiety at the times before treatment, after treatment, after six months and after two years. There was a significant effect for time (Wilks' Lambda = 0.33, F = 159.97, p<0.000, multivariate partial eta squared = 0.67)

Flight anxiety (Women):
There was a statistically significant decrease in flight anxiety scores from before treatment (M=5.0, SD=1.9) to after treatment (M=2.1, SD=1.6, t(256)=2.582, p<0,000), a 58% decrease.
Eta squared=0.67**.** The eta squared statistics indicated a large effect size.

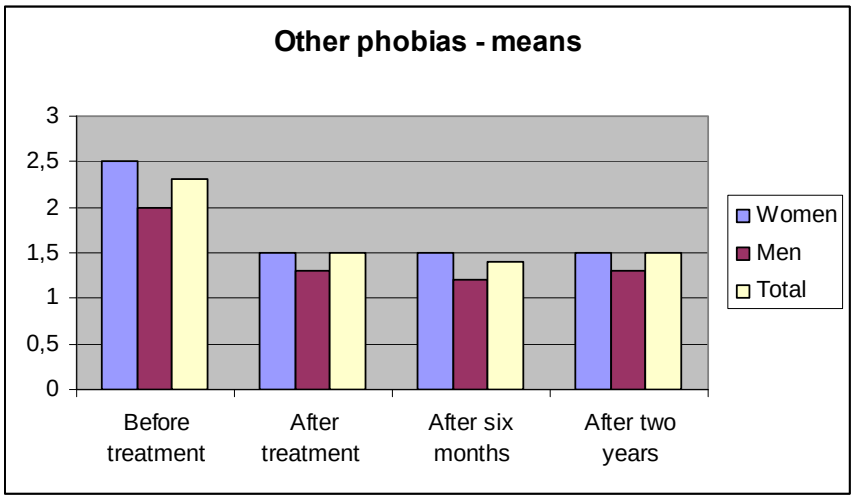
Flight anxiety (Men):
There was a statistically significant decrease in flight anxiety scores from before treatment (M=4.1, SD=1.8) to after treatment (M=1.7, SD=1.5, t(93)=11.975, p<0,000), a 59% decrease.
Eta squared=0.61. The eta squared statistics indicated a large effect size.

Other phobias

A one-way repeated measures ANOVA was conducted to compare scores on other phobias at the times before treatment (M 2.3, SD 1.7), after treatment (M 1.5, SD 1.3), after six months (M 1.4, SD 1.4) and after two years (M 1.5, SD 1.4). There was a significant effect for time (Wilks' Lambda = 0.60, F = 51.72, p<0.000, multivariate partial eta squared = 0.40)

Both women and men have a reduction of the mean scores for the degree of other phobias.
The mean scores for other phobias for women are 2.5 (SD=1.8) before treatment, 1.5 (SD=1.4) after treatment, 1.5 (SD=1.3) after 6 months, and 1.6 (SD=1.4) after 2 years.
For men the mean scores are 2.0 (SD=1.6) before treatment, 1.3 (SD=1.3) after treatment, 1.2 (SD=1.1) after 6 months, and 1.3 (SD=1.1) after 2 years.

Figure 2



Paired-samples t-tests were conducted to evaluate the impact of the intervention on other phobias.

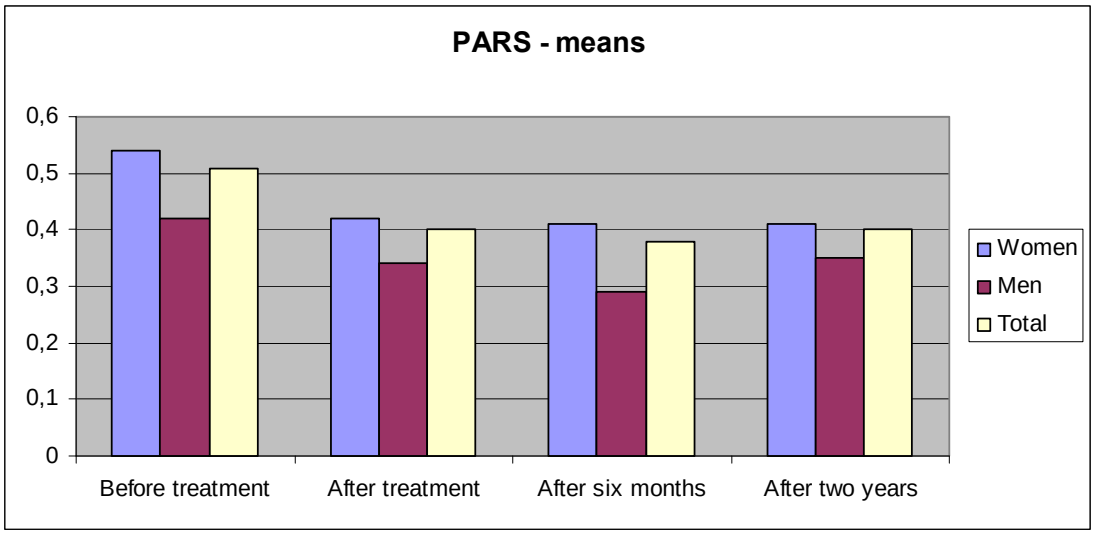
Other phobias (women):
There was a statistically significant decrease in the scores for other phobias from time 1 (M=2.5, SD=1.7) to time 2 (M=1.5, SD=1.4, t(257)=11.129, p<0.000), a 40% decrease. Eta squared=0.33.The eta squared statistics indicated a large effect size.

Other phobias (men):
There was a statistically significant decrease in the scores for other phobias from time 1 (M=1.9, SD=1.5) to time 2 (M=1.2, SD=1.0, t(93)=6.40, p<0.000), a 37% decrease. Eta squared=0.31.The eta squared statistics indicated a large effect size.

Phobic Avoidance Rating Scale (PARS)

The mean values for the scores on the Phobic Avoidance rating Scale are 0.5 (SD 0.5) before treatment, 0.4 (SD 0.4) after treatment, 0.4 (SD 0.3) after six months, and 0.4 (SD 0.4) after two years.

Figure 3



A one-way repeated measures ANOVA was conducted to compare scores on other phobias at the times before treatment, after treatment, after six months and after two years. There was a significant effect for time (Wilks' Lambda = 0.83, F = 15.75, p<0.000, multivariate partial eta squared = 0.17).

Paired-samples t-tests were conducted to evaluate the impact of the intervention on the items measured with the Phobic Avoidance Rating Scale (PARS).

PARS (women):
There was a statistically significant decrease in PARS scores from before treatment (M=0.54, SD=0.44) to after treatment (M=0.41, SD=0.38, t(247)=6,86, p<0.000), a 19% decrease.
Eta squared=0.16. The eta squared statistics indicated a moderate to large effect size.

PARS (men):
There was no statistically significant decrease in PARS scores from before treatment (M=0.37, SD=0.33) to after treatment (M=0.33, SD=0.37, t(89)=1.319, p=0.191), an 11% decrease.
Eta squared=0.019. The eta squared statistics indicated a small effect size.

Since there was a significant difference in the PARS-scores for the women, but not for the men, an independent-samples t-test was conducted to see if there was a significant difference in the scores before the treatment for women and men. The test showed that there was a statistical difference between the two genders (women: M=0.54, SD=0.44, men: M=0.42, DS=0.50) with a p-value 0.013.

Table 1 Descriptives - PARS

	N	Minimum	Maximum	Mean	Std. Deviation
Walk away from home alone	409	0	3	,10	,384
Walking on the streets alone	411	0	3	,11	,412
Walking across open spaces, town squares or fields alone	411	0	3	,13	,493
Travelling by bus, train or other public transportation alone	411	0	4	,32	,734
Theatre, cinema unaccompanied	410	0	4	,50	,915
Shopping, standing in lines unaccompanied	410	0	2	,09	,331
Going to meetings	407	0	3	,27	,655
Going to parties	410	0	3	,28	,678
Having guests at home	410	0	4	,20	,625
Riding elevators	407	0	4	1,12	1,330
Heights, towers	405	0	4	2,18	1,418
Crossing bridges	405	0	4	,70	1,060
Being in enclosed spaces	408	0	4	,74	1,268
Being home alone	407	0	4	,28	,735
Valid N (listwise)	395				

As we can see from the mean values of the PARS items, they are relatively low. All the items have a median on 0, except from “heights and towers” which has a median on 2 and “elevators” which has a median on 1.

Table 2 PARS frequencies

	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	NA (%)
Walk away from home alone	89.6	5,2	1,4	0,5	0	3,3
Walking on the street alone	89,1	5,2	2,6	0,2	0	2,8
Walking across open spaces, town squares or fields alone	89,1	4,3	2,6	1,2	0	2,8
Travelling by bus, train or other public transportation alone	77,1	13,2	4,3	1,4	1,2	2,8
Theatre, cinema unaccompanied	66,4	20,3	5	2,6	2,6	3,1
Shopping, standing in lines unaccompanied	89,8	5,7	1,4	0	0	3,1
Going to meetings	79,4	9,5	5,4	1,9	0	3,8
Going to parties	81,3	5,9	8,3	1,4	0	3,1
Having guests at home	86,3	3,8	5,4	0,9	0,5	3,1
Riding elevators	43,3	23,4	14,9	3,8	10,9	3,8
Heights, towers	14,2	18,9	25,3	9,9	27,4	4,3
Crossing bridges	57,7	20,6	10,2	3,5	3,8	4,3
Being in enclosed spaces	64,3	13,2	7,1	3,3	8,5	3,5
Being home alone	81,1	7,6	5	1,4	1,2	3,8

NA= Not answered

If we take a closer look at the 14 items, we can see that no one has answered 4 and that the majority of the subjects have answered 0 on following items: “Walk away from home”, “Walking on the street alone”, “Walking across open spaces, town squares or fields alone”, “Shopping, standing in lines unaccompanied”, “Going to meetings” and “Going to parties”.

The item “Shopping, standing in lines unaccompanied” has 2 as its highest score.

The items that some of the subjects have scored 4 are “Travelling by bus, train or other public transportation alone” (1.2 %), “Theatre, cinema unaccompanied” (2.6 %), “Having guests at home” (0.5 %), “Heights, towers” (27.4 %), “Crossing bridges” (3.8 %), “Riding elevators” (10.9 %), “Being in enclosed spaces” (8.5 %), and “Being home alone” (1.2 %).

As we can see the items “Heights, towers” (27.4 %), “Riding elevators” (10.9 %), and “Being in enclosed spaces” (8.5 %) stand out from the others by having the highest frequencies of 4.

Do they with the most reduction of flight anxiety also have the most reduction of other phobic symptoms?

There was a significant correlation between the reduced level of flight anxiety (T2-T1) and other phobias (T2-T1)(Pearson’s r= 0.25, p =0.000. The corresponding correlation between delta FAS and delta PARS (T2-T1) was r=0.17. p=0.002.

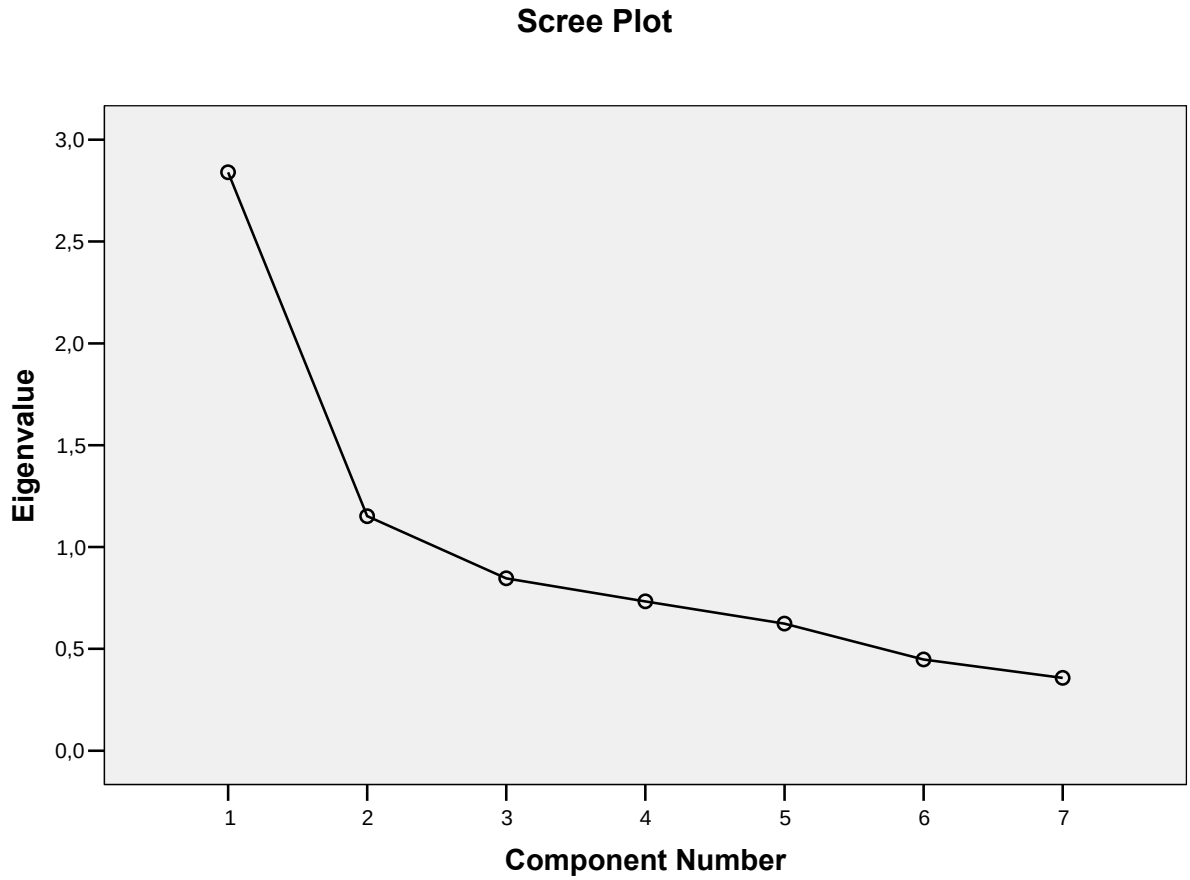
Factor analysis

Other phobias:

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,840	40,573	40,573	2,840	40,573	40,573	2,115	30,207	30,207
2	1,152	16,453	57,026	1,152	16,453	57,026	1,877	26,818	57,026
3	,846	12,091	69,116						
4	,733	10,474	79,591						
5	,624	8,912	88,503						
6	,447	6,393	94,895						
7	,357	5,105	100,000						

Extraction Method: Principal Component Analysis.



A principal component analysis was performed on the seven questions on other phobias showing the presence of two factors with eigenvalues above 1 (2.84 and 1.15), explaining 40.6 % and 16.5 % of the variance. With varimax rotation, the two components explain 30.2 % and 26.8 % of the variance. The scree plot shows one clear break between the first and second component and one minor break between the second and third component, which indicates two factors, but the screeplot is not convincing.

Component Matrix[a]

	Component	
	1	2
Riding elevators	,618	-,599
Being in large crowds	,772	,145
Being in enclosed spaces	,761	-,396
Travelling by tram/bus	,746	,024
Crossing open spaces	,525	,391
To faint	,593	,229
Heights	,314	,639

a. 2 components extracted.

Rotated Component Matrix[a]

	Component	
	1	2
Riding elevators	,860	-,048
Being in large crowds	,488	,616
Being in enclosed spaces	,834	,200
Travelling by tram/bus	,548	,507
Crossing open spaces	,140	,639
To faint	,298	,562
Heights	-,182	,688

a. Rotation converged in 3 iterations.

As we can see from the rotated component matrix, factor 1 consists of the items "Riding elevators", "Being in enclosed spaces", and "Travelling by tram/bus". The latter one loads approximately equally on both factors, but since it is clearly a part of factor 1 in the unrotated component matrix, it is chosen to belong to factor 1.

Factor 2 consists of "Being in large crowds", "Crossing open spaces", "To faint" and "Heights".

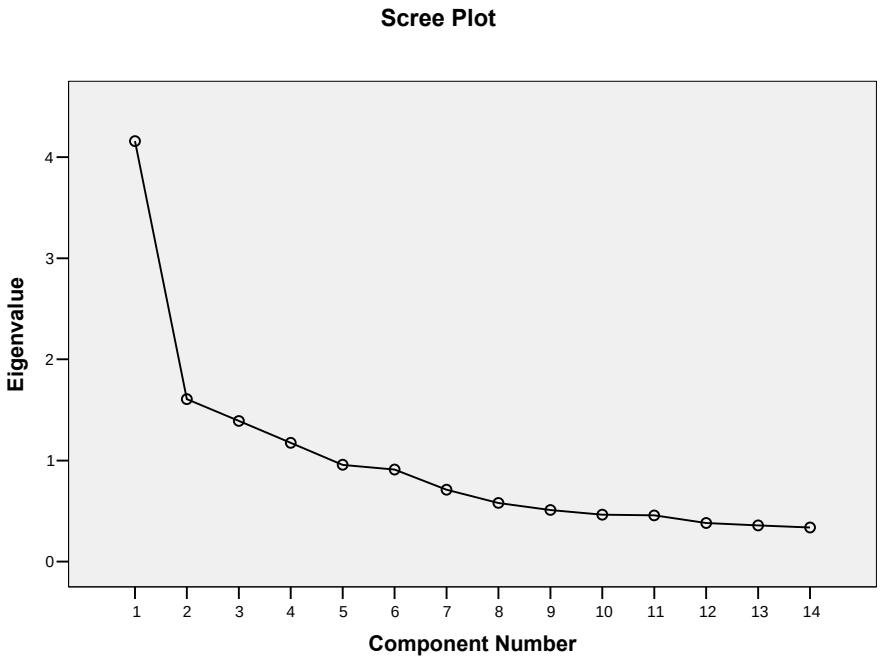
Cronbach's Alpha is 0.723 for the three items of factor 1 and 0.510 for the four items of factor 2.

PARS:

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,158	29,702	29,702	4,158	29,702	29,702	2,384	17,031	17,031
2	1,607	11,475	41,178	1,607	11,475	41,178	2,319	16,565	33,596
3	1,391	9,935	51,113	1,391	9,935	51,113	2,171	15,506	49,103
4	1,175	8,392	59,505	1,175	8,392	59,505	1,456	10,402	59,505

Extraction Method: Principal Component Analysis.



A principal component analysis was performed on the PARS-items and that revealed the presence of four factors with eigenvalues above 1 (4.16, 1.61, 1.39 and 1.18), explaining 29.7 %, 11.5 %, 9.9 %, and 8.4 % of the variance respectively. With varimax rotation, the four components explain 17.0 %, 16.6 %, 15.5 % and 10.4 % of the variance respectively. The scree plot on the other hand is not convincing, and shows only one strong break, which indicates one factor.

Component Matrix(a)

	Component			
	1	2	3	4
Walk away from home alone	,650	-,011	-,487	-,054
Walking on the street alone	,600	-,153	-,520	,181
Walking across open spaces, town squares or fields alone	,583	-,089	-,425	,236
Travelling by bus, train or other public transportation alone	,649	,223	-,005	-,367
Theater, cinema unaccompanied	,664	,173	,009	-,286
Shopping, standing in lines unaccompanied	,567	-,132	,008	-,221
Going to meetings	,626	-,396	,259	-,187
Going to parties	,534	-,479	,388	-,009
Having guests at home	,515	-,533	,329	,044
Riding elevators	,393	,591	,332	-,073
Heights, towers	,362	,231	,320	,637
Crossing bridges	,542	,137	,099	,589
Being in enclosed spaces	,523	,587	,212	-,148
Being home alone	,240	,201	-,333	-,007

a 4 components extracted.

Rotated Component Matrix(a)

	Component			
	1	2	3	4
Walk away from home alone	,178	,764	,215	-,015
Walking on the street alone	,196	,793	-,019	,136
Walking across open spaces, town squares or fields alone	,174	,710	,017	,223
Travelling by bus, train or other public transportation alone	,273	,331	,643	-,091
Theater, cinema unaccompanied	,309	,340	,585	-,023
Shopping, standing in lines unaccompanied	,452	,305	,295	-,061
Going to meetings	,768	,153	,196	,003
Going to parties	,799	,018	,048	,154
Having guests at home	,792	,063	-,038	,166
Riding elevators	-,027	-,075	,730	,281
Heights, towers	,085	,009	,154	,813
Crossing bridges	,165	,291	,142	,734
Being in enclosed spaces	,010	,090	,795	,214
Being home alone	-,142	,398	,175	,005

a Rotation converged in 7 iterations.

The rotated factor matrix shows that factor 1 consists of the items “Shopping, standing in lines unaccompanied”, “Going to meetings”, “Going to parties” and “Having guests at home”. We consider this factor social phobia. Factor 2 consists of the items “Walk away from home alone”, “Walking on the street alone”, “Walking across open spaces, town squares or fields alone”, and “Being home alone”. We consider this factor agoraphobia. Factor 3 consists of the items “Travelling by bus, train or other public transportation unaccompanied”, “Theatre, cinema unaccompanied”, “Riding elevators”, and “Being in enclosed spaces”. We consider this factor claustrophobia. Factor 4 consists of the items “Heights, towers” and “Crossing bridges”. We consider this factor social acrophobia.

Cronbach’s Alpha is 0.72 for the four items of factor 1, 0.58 for the four items of factor 2, 0.71 for the four items of factor 3, and finally 0.61 for the two items of factor 4.

Is there a relation between technical or claustropobic fear and the other phobias?

One aim of this study was to see if there was a relation between technical or claustrophobic fear and the other phobias. To examine this, a principal component analysis was performed on the 19 items of flight anxiety and the result was four factor with eigenvalues above 1 (7.14, 2.30, 1.17 and 1.06) explaining 37.6 %, 12.1 %, 6.2 % and 5.6 % of the variance. With varimax rotation, the four factors explain 21.3 %, 16.0 %, 12.2 % and 11.9 % of the variance.

Component Matrix[a]

	Component			
	1	2	3	4
Fire	,739	-,032	,088	-,211
The engine stops	,712	-,147	,228	-,141
The engine falls off	,656	-,223	,530	-,171
Foreign objects in the engine	,735	-,094	,043	-,175
The wings break	,646	-,189	,503	-,029
Pressure decrease in the cabin	,627	,304	,043	,017
Collision in the air	,671	-,077	-,114	-,004
Turbulence	,572	-,106	-,055	,665
Stroke of lightning to the aircraft	,694	,036	-,066	,422
The pilot looses control	,691	,053	,090	,022
Foreign sounds	,616	-,052	,065	,373
Wheels puncture	,765	,065	-,333	-,261
Trouble with the landing wheels	,763	,106	-,389	-,218
The aircraft does not get up	,597	-,115	-,259	,053
The aircraft does not hit the runway	,753	,033	-,273	-,148
Feeling enclosed	,030	,801	-,069	-,093
The feeling of having no control	,270	,386	-,137	,138
Afraid of getting ill	,131	,767	,245	-,027
Afraid of panic/loose control	,052	,812	,234	,090

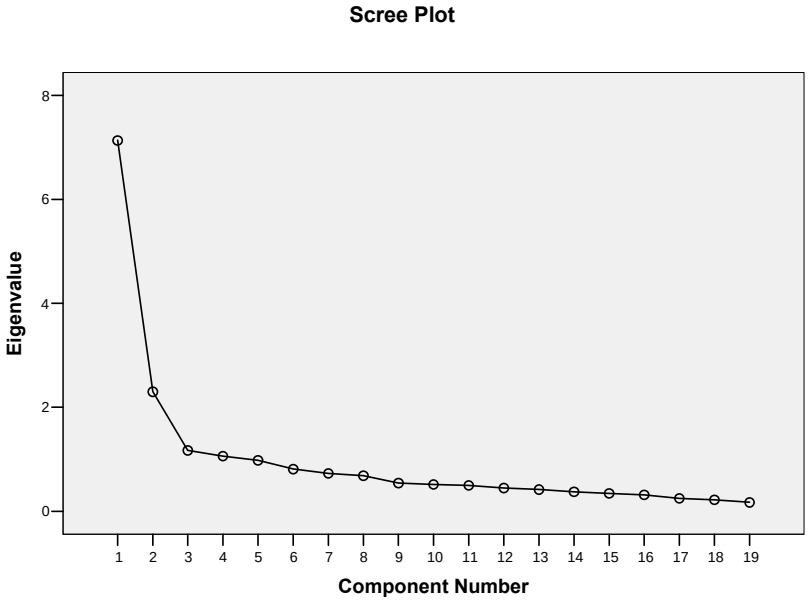
a. 4 components extracted.

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Fire	,542	,533	,063	,134
The engines stops	,407	,633	-,028	,182
The engine falls off	,194	,858	-,056	,116
Foreign objects in the engine	,550	,501	-,006	,171
The wings break	,150	,792	-,026	,238
Pressure decrease in the cabin	,414	,317	,375	,274
Collision in the air	,535	,300	-,021	,305
Turbulence	,171	,142	-,039	,856
Stroke of lightning to the aircraft	,361	,229	,107	,686
The pilot looses control	,420	,438	,144	,317
Foreign sounds	,243	,316	,035	,604
Wheels puncture	,837	,214	,086	,123
Trouble with the landing wheels	,854	,151	,117	,162
The aircraft does not get up	,547	,142	-,091	,334
The aircraft does not hit the runway	,747	,234	,066	,217
Feeling enclosed	,127	-,173	,773	-,108
The feeling of having no control	,231	-,064	,386	,231
Afraid of getting ill	-,019	,118	,807	-,023
Afraid of panic/loose control	-,111	,029	,842	,045

a. Rotation converged in 5 iterations.

The unrotated component matrix indicates that there are two components, while the rotated component matrix indicates four components. The scree plot indicates two components.



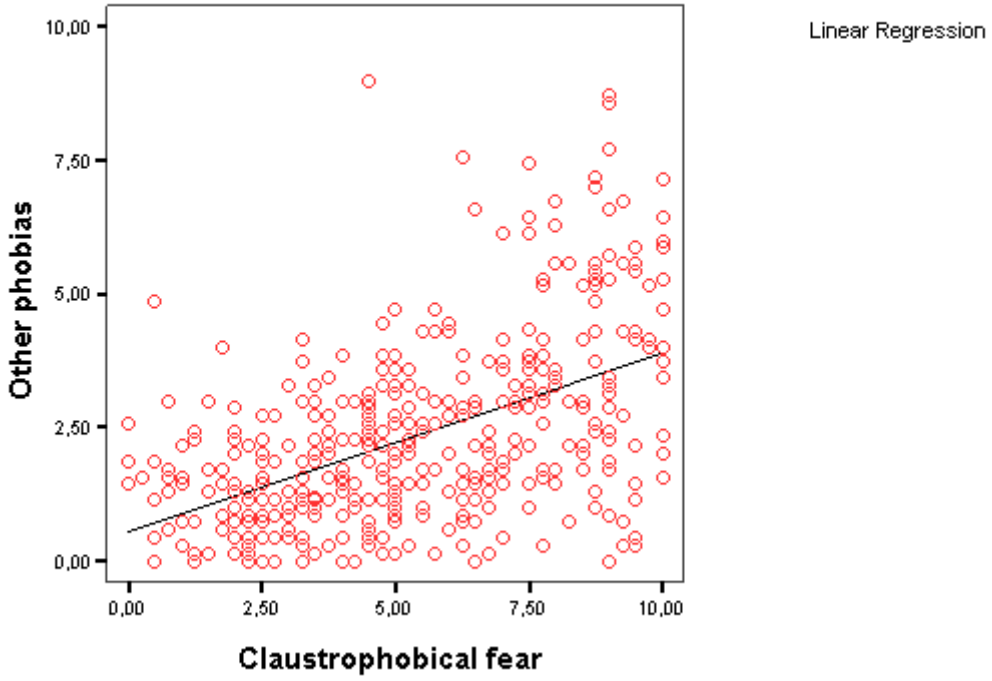
Because of the scree plot, the unrotated matrix is chosen, and we get factor 1 consisting of the items “Fire”, “The engine stops”, “The engine falls off”, “Foreign objects in the engine”, “The wings break”, “Pressure decrease in the cabin”, “Collision in the air”, “Turbulence”, “Stroke of lightning to the aircraft”, “The pilot looses control”, “Foreign sounds”, “Wheels puncture”, “Trouble with the landing wheels”, “The aircraft does not get up”, and “The aircraft does not hit the runway”. Factor 2 consists of “Feeling enclosed”, “The feeling of having no control”, “Afraid of getting ill” and “Afraid of panic/loose control”.

We call factor 1 ”Technical fear” and factor 2 ”Claustrophobical fear”.

The relationship between technical fear and other phobias was investigated using Pearson product-moment correlation coefficient. There was a very weak correlation between the two variables (r=0.09, N=375, p=0.071).

When the relationship between claustrophobical fear and other phobias was investigated, we see that there was a strong positive correlation between the two variables (r=0.51, N=408, p=0.000) at the 0.01 level.

The scatter plot for these two variables looks like this:



Other nervous problems

52 % report that they have other nervous problems in addition to the flight anxiety. Among those who have answered yes on this question. 45.6 % had been in contact with a psychologist/psychiatrist. 48 % report no other nervous problems, and among these, 18.8 % had been in contact with a psychologist/psychiatrist.

Do subjects with other nervous problems have statistically different scores from subjects who do not? Independent-samples t-tests show that they who report to have other nervous problems had significantly different score from those who do not. They are more afraid when it comes to both fear of flying, other phobias and the PARS.

What about the difference in the change of the scores after treatment?

The table shows the difference in the scores before and after treatment (Δ-values):

Other nervous problems		Δ flight anxiety	Δ other phobias	Δ PARS
No	Mean	2,8	0,6	0,07
	N	160	161	154
	Std. Dev.	2,1	1,07	0,2
Yes	Mean	2,8	1,2	0,13
	N	176	176	171
	Std. Dev.	1,95	1,46	0,34
Total	Mean	2,8	0,9	0,1
	N	336	337	325
	Std. Dev.	2,02	1,33	0,28

Independent-samples t-tests were conducted to compare the change of the scores for flight anxiety, other phobias and the items measured with the Phobic Avoidance Rating Scale (PARS) for those who report to have other nervous problems and those who do not.

Flight anxiety:
There was no significant difference between those who report to have other nervous problems (M=2.8, SD=1.95) and those who do not (M=2.8, SD=2.10), p=0.897.

Other phobias:
There was a significant difference between those who report to have other nervous problems (M=1.2, SD=1.46) and those who do not (M=0.6, SD= 1.07), p=0.000.

PARS:
There was a significant difference between those who report to have other nervous problems (M=0.13, SD=0.34) and those who do not (M=0.07, SD=0.20), p=0.049.

What impact do other nervous problems and previous contact with a psychiatrist/psychologist have on the degree of anxiety?

Mean values for those who have other nervous problems and have been in contact with a psychologist/psychiatrist

The mean values for flight anxiety before and after treatment for those who report to have other nervous problems and have been in contact with a psychologist/psychiatrist are respectively 4.9 (SD 1.9) and 2.1 (SD 1.5). After six months the mean value is 2,4 (SD 1.5) and after two years it is 2.3 (SD 1.5).

For other phobias the values are 3.2 (SD 1.7) and 1.9 (SD 1.5) before and after treatment. The mean values are 2.0 (SD 1.5) after six months and 1.9 (SD 1.4) after two years.

Mean values for those who have other nervous problems, but have not been in contact with a psychologist/psychiatrist

The mean values for flight anxiety before and after treatment for those who report to have other nervous problems but have not been in contact with a psychologist/psychiatrist are respectively 5.0 (SD 2.1) and 2.2 (SD 1.6). After six months the mean value is 2.3 (SD 1.6) and after two years it is 2.6 (SD 2.1).

For other phobias the mean values are 2.9 (SD 1.9) and 1.8 (SD 1.4) before and after treatment. The mean values are 1.7 (SD 1.2) after six months and 2.0 (SD 1.6) after two years.

Is there a difference in the degree of anxiety between those who have seen a psychologist/psychiatrist and those who have not?

An independent-samples t-test was conducted to compare the scores for flight anxiety, other phobias and the items measured with the Phobic Avoidance Rating Scale (PARS) for those who have seen a psychologist/psychiatrist and those who have not.

Flight anxiety:
Before treatment: There was no significant difference in the scores. (p=0.408)

After treatment: There was no significant difference in the scores. (p=0.709)

Other phobias:
Before treatment: There was a significant difference in scores for those who have seen a psychologist/psychiatrist (M=2.8, SD=1.7) and those who have not (M=2.1, SD=1.7). (p=0,000)

After treatment: There was a significant difference in scores for those who have seen a psychologist/psychiatrist (M=1.7, SD=1.4) and those who have not (M=1.3, SD=1.3). (p=0,034)

PARS:
Before treatment: There was a significant difference in scores for those who have seen a psychologist/psychiatrist (M=0.63, SD=0.50) and those who have not (M=0.44, SD=0.41). (p=0,000)

After treatment: There was a significant difference in scores for those who have seen a psychologist/psychiatrist (M=0.53, SD=0.46) and those who have not (M=0.34, SD=0.31). (p=0,000)

There is no statistically significant difference in the scores for flight anxiety between those who have consulted a psychologist/psychiatrist and they who do not. For other phobias and PARS, there is a difference, those who have consulted a psychologist/psychiatrist have significantly higher score both before and after treatment.

Discussion

Both women and men have a reduction in their mean scores for fear of flying, measured by the FAS. Both genders also show a reduction of the mean scores for the degree of other phobias.
When it comes to phobic symptoms measured by the PARS, women have a statistically significant decrease of their scores, whereas the 10% decrease among men was not statistically significant. Since the mean values of the PARS items are relatively low, we took a closer look at the descriptives of the PARS-items. Most of the items have a highest frequency of 0 and 1, but the items “Heights, towers”, “Riding elevators”, and “Being in enclosed spaces” stand out from the others by having the highest frequencies of 4, respectively 27.4 %, 10.9 % and 8.5 %. Even though about half of the subjects had previous psychiatric problems and/or had been to a psychiatrist/psychologist, most of them were currently actively working and functioning well. Accordingly, they had sought help for the specific flight phobia. One explanation that the PARS did not detect a significant decrease after treatment for men may be that men generally had less symptoms than women and that the level of symptoms measured by PARS was so low as a “floor effect” may be one reason.

The effect on other phobic symptoms are also in keeping with many subject reporting that they were able cope with other situations like driving through tunnels, take the elevator or go by the subway.

Even though the treatment programme was specifically aimed at flight anxiety, the question was whether a change in the tendency to create images of catastrophes, correcting these and counteract withdrawal also could have an effect on other phobic symptoms as an additional effect, and that can be an explanation on how the mean scores for other phobic symptoms are reduced.

Another aim of the study was to see if there was a relation between technical or claustrophobic fear and the other phobias. The relationship between technical fear and other phobias was investigated and there was a very weak correlation between these two variables. When the relationship between claustrophobical fear and other phobias was investigated, there was a strong positive correlation between the two variables. The similarities between claustrophobia and other phobias may reflect a general tendency of misinterpreting stimuli

and make fantasies about catastrophe. The technical fear may be more related to lack of knowledge about flying. Accordingly, we had a hypothesis that it would be easier to correct technical fantasies than the claustrophobic. On the other hand, the improvement was about the same for these two factors.

The main focus of the treatment programme was on flight anxiety. Accordingly, the treatment effect was greatest for these problems. Even though there were only minor focus on how to cope with other phobic challenges, there was also a significant, but somewhat lower effect on such problems. Most likely, this is because the subjects achieved a generally better ability to assess threats more realistically, and the importance of not withdrawing from fears that are based on negative phantasies.

On the question of other nervous problems, it must be taken into consideration that people can have very different opinions on what ”nervous problems” are. Since this is self-reported, the ”diagnostics” can vary from what a clinician would call nervous problems. Neither do we know what kind of nervous problems the subjects really have. Is it anxiety conditions, depression or other problems? The underlying diagnoses can affect the flight anxiety, particularly when it comes to coping strategies. One aim of this study was to find out whether subjects with other nervous problems have statistically different scores from subjects who do not have other nervous problems. Independent-samples t-tests showed that those who report to have other nervous problems had significantly different score from those who report not to have other nervous problem. They are more afraid when it comes to both fear of flying, other phobias and the PARS. Independent-samples t-tests were conducted to compare the change of the scores (Δ-values), and for flight anxiety (FAS) there was no significant difference between those who report to have other nervous problems and those who don’t. This corresponds with the results Ekeberg et al (6) found. However, when it comes to “Other phobias” and PARS, those who have other nervous problems had significantly more symptoms than those who have not.

Another aim of the study was to see what impact previous contact with a psychiatrist/psychologist have on the degree of anxiety for those who have other nervous problems. Independent-samples t-tests were conducted, and the result showed that there was no statistical difference in the scores for flight anxiety (FAS) between those who have been to a psychologist/psychiatrist and those who don’t. For other phobias and PARS is there a difference, those who have been to a psychologist/psychiatrist have significantly higher score both before and after treatment. It must be taken into consideration that we do not know the reason *why* these subjects have been in contact with a psychologist/psychiatrist, and we do not know *when* they had this contact.

Since the subjects of this study have voluntarily signed up for the course and have paid money to attend, they must be assumed to be very motivated to reduce their flight anxiety. We must therefore take into consideration that this is a self-selected group, and that parallels to a normal population not necessarily can be drawn. On the other hand, the findings are considered representative for Norwegian subjects with flight anxiety who actively seek treatment.

Strengths and limitations

A strenght of this study is that the sample is self selected and that none were excluded. The participation rate was high, also at the follow-up measures after six months and two years.

The VAS scale was composed by Ekeberg (6), and measure main concerns that cause discomfort. The PARS is also used in international studies (7). A limitation is that no formal diagnostic assessment was made before treatment.

Conclusion

The main conclusion of the study is that even though the treatment was specifically focused on the treatment of flight anxiety, a significant effect on other anxiety symptoms was also achieved. The treatment significantly reduces the flight anxiety for both men and women, and this is also the case for other phobic symptoms. Only women experience a decrease of the symptoms measured by the Phobic Avoidance Rating Scale. The subjects with other nervous problems report higher degree of anxiety for both flight anxiety, other phobias and the PARS, but they experience the same reduction of the flight anxiety as those with no other nervous problems. When it comes to other phobias and the PARS-items they have a significant larger reduction of their degree of anxiety.

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References

1. American Psychiatric association. Diagnostic and statistical manual of mental disorders. 4rd ed. Washington, D.C.: APA,1994
2. Ekeberg et al. The prevalence of flight anxiety in Norway. Nord Psykiatr Tidsskr 1989;43:443-448.
3. Medialdea J. et al. Phobic fear of flying in aircrews: epidemiological aspects and comorbidity. Aviat Space Environ Med. 2005;76(6):566-8
4. Van Gerwen LJ et al. People who seek help for fear of flying: Typology of flying phobics. Behaviour therapy 1997;28:237-251.
5. Van Gerwen LJ et al. Personality pathology and cognitive-behavioural treatment of fear of flying. J. Behav. Ther. & Exp. Psychiat. 2003;34:171-189.
6. Ekeberg Ø, Seeberg I, Ellertsen BB. A cognitive/behavioural treatment program for flight phobia, with 6 months' and 2 years' follow-up. Nord Psykiatr Tidsskr 1990;44:365-374.
7. Hoffart A, Friis S, Martinsen E W. The Phobic Avoidance Rating Scale: A Psychometric Evaluation of an Interview-Based Scale. Psychiatric Developments 1989;1:71-81.