

Original article

Epidemiology of specific phobia subtypes: Findings from the Dresden Mental Health Study

Eni S. Becker ^{a,*}, Mike Rinck ^a, Veneta Türke ^b, Petra Kause ^b, Renee Goodwin ^c,
Simon Neumer ^d, Jürgen Margraf ^e

^a *Radboud University Nijmegen, Clinical Psychology, Behavioural Science Institute, PO Box 9104, 6500 HE, Nijmegen, Netherlands*

^b *University of Technology Dresden, Clinical Psychology and Psychotherapy, Dresden, Germany*

^c *Columbia University, Department of Epidemiology, New York, NY, USA*

^d *Regionscenter for barne og ungdomspsykiatrie, Oslo, Norway*

^e *University of Basel, Clinical Psychology and Psychotherapy, Basel, Switzerland*

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Abstract

This study determined the prevalence, age of onset, comorbidity, and impairment associated with specific phobia subtypes in the community. Data were drawn from the Dresden Mental Health Study ($N = 2064$), a representative community-based sample of young women in Dresden, Germany. The lifetime prevalence of any specific phobia was 12.8%, with subtypes ranging in prevalence between 0.2% (vomiting, infections) and 5.0% (animals). There were significant differences in the mean age of onset of specific phobias. Significant differences in comorbidity patterns also emerged between subtypes. No significant differences were found in level of impairment associated with the subtypes. The findings suggest that specific phobias are common among young women and that they differ in prevalence, associated comorbidity, and mean age of onset. These data suggest significant differences in the phenomenology and clinical significance of specific phobia subtypes.

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1. Introduction

For a long time, specific phobias (SPs) were considered a common, but inconsequential psychological problem. However, increasing evidence has shown that SPs are clinically significant and relatively understudied disorders. First, epidemiologic studies show that SPs are the most common mental disorders in women [12,17], with lifetime prevalence rates doubling those of men [12]. Second, studies have documented significant rates of impairment, distress, and comorbidity associated with SPs [22]. Although comorbidity rates are assumed to be moderate compared to other mental disorders, there are not enough data to draw firm conclusions. Third, longitudinal epidemiologic studies suggest that SPs have a mean age of onset early

in life, and that they predict the subsequent onset of depressive and substance use disorders in adolescence and adulthood [7].

Specific phobias all share a “marked and persistent fear of clearly discernible circumscribed object or situations” according to the DSM-IV [3]. DSM-IV differentiates among four types of SPs: animal type, natural environment type, blood-injection-injury type, and situational type. There is an additional fifth category, “other”, including phobias with fear of noise and costumes. These categories were arrived at by clustering according to content of fears, but there is little data about the coherence and validity of these clusters. There is some evidence that the various subtypes have different ages of onset. However, data suggest that phobias might be heterogeneous even within DSM-IV categories. Unfortunately, relatively few studies have specifically examined subtypes, and even fewer have differentiated between single SPs. Moreover, interpretation of such comparisons is often aggravated by the

* Corresponding author. Tel.: +31 (0) 24 361 2668; fax: +31 (0) 24 361 5594.

E-mail address: e.becker@psych.ru.nl (E.S. Becker).

inclusion of different SPs in subtypes, e.g. some studies of situational phobias include only claustrophobia [16], others only driving phobia [2]. In sum, previous community-based studies have mainly reported general categories of phobia prevalence and associated morbidity. Yet, relatively little is known about SP subtypes in the community.

Furthermore, several methodological features of previous studies have limited the ability to generalize the findings. First, findings from clinical studies can not be generalized to the population, especially when only a small percentage of those with SPs seek treatment. Second, very few epidemiological studies have looked at comorbidity of SPs [7], and there is even less information available on the comorbidity of SP subtypes. Studies with clinical samples are difficult to interpret in terms of comorbidity, since it is over represented in clinical samples [15,20]. Yet, comorbidity is of great importance, because it informs us of the relations between different disorders, and it may also provide valuable information about differences between subtypes. More importantly, SPs are often the earliest manifestation of psychological disorders, and prevention strategies will benefit from knowing more about comorbidities.

Against this background, the goals of the current study were threefold. First, the study determined the prevalence of SP subtypes in the community among women. Second, the study assessed the mean age of onset of each subtype. Third, the study investigated associations between SP subtypes and psychiatric comorbidity and impairment.

2. Method

The Dresden Study of mental health is a prospective epidemiological study designed to collect data on the prevalence, incidence, course, and risk factors of mental disorders. The results presented here are from the baseline survey, which was conducted from July 1996 to September 1997.

2.1. Participants

The sample was drawn from the Dresden government registry of residents. 5204 women were located and eligible (age 18–24, German) for the study. From this sample, 2064 filled out questionnaires and took part in the structured interview of mental disorders, and 998 filled out questionnaires only, yielding a response rate of 58.8%. The demographic data of these women did not differ from the data of those who did not reply. The response rate is somewhat lower than in other studies. One reason might be that women of that age group usually have the lowest response rate (Wittchen, personal communication). Furthermore, the data were collected shortly after the German reunification, when people were still very mistrustful regarding surveys. And third, participants could not be reimbursed. Data of the 2064 interviewed participants are reported here.

2.2. Diagnostic assessment

The diagnostic assessment was based on the F-DIPS [13]. The F-DIPS is a structured interview allowing the diagnosis of

axis I disorders according to DSM-IV, for lifetime and point-prevalence. The F-DIPS is an earlier, almost identical version of the DIPS [19], based on the ADIS-L [5]. The following disorders can be diagnosed: all anxiety disorders, all affective disorders, the research-diagnosis mixed anxiety-depression, hypochondriasis, somatization disorder, conversion disorder and pain disorder, substance abuse and dependence, bulimia, anorexia, and some children's disorders (separation anxiety, attention-deficit and disruptive behavior disorders, elimination disorders). Furthermore, there is a socio-demographic section, a screening for psychosis, a screening for the general medical condition and medication, a short section on family history of psychological disorders, and a section about treatment for psychological disorders. The F-DIPS has good reliability (Kappa for anxiety disorders 0.64, affective disorders 0.71, somatoform disorders 0.66, Yule for substance abuse 0.85 and for eating disorders 0.94; [9]). Interviewers were either psychologist, physicians, or psychology students in their last years of training. All underwent an extensive one-week training. All interviewers attended supervision bi-weekly. Specially trained supervisors proofread every interview.

In addition to the diagnoses, the severity of the disorders was rated on a scale ranging from 0 to 8 (0 = no severity to 8 = maximum severity). Furthermore, the interviewer rated the degree of distress and of impairment due to the diagnoses on scales ranging from 0 (no distress or impairment) to 8 (severe distress and impairment). Interviewers were extensively trained in administering those scales. There were several questions to pinpoint the onset of the disorder. Due to the early onset of SP, the exact date was hard to determine. Participants not remembering the onset were not included in the onset analyses. If participants claimed always to have suffered from a certain fear, the age of onset was set to 3 years.

2.3. Analytic strategy

Data were analyzed using the Statistical Package for Social Sciences, SPSS, Windows, German Version 8.0. Statistical tests included analyses of variance and Chi-square tests. The bivariate comorbidities were obtained by estimating odds ratios using the "risk" procedure in the SPSS software package. Cumulative incidence (in percent) curves are presented to illustrate age of onset.

3. Results

3.1. Socio-demographic data

The majority of the participants had a partner or spouse (66.6%), but very few were married (4.5%), separated or divorced (0.4%). About half of the women were living with their parents; about a quarter with a partner or spouse and about 14% lived alone. 7% had children of their own. A few women were still attending school (3.6%); about 40% were students at the university. Very few dropped out of school without a degree (0.4%), consistent with mandatory German school law (school-leaving certificate). A minority of the participants

went to a “Hauptschule” (3.7%), the lowest level of school education, approximately one third went to the medium level of schooling (Realschule und Polytechnische Oberschule), and 58% ended schooling with a degree that allows them to attend university (Abitur). Almost half of the young women were working, 31.3% of the whole sample full-time, 16% part time. Approximately 5% were unemployed. There were no differences concerning sociodemographic data between the different SP subtypes or fears.

3.2. Prevalence rates of SPs

As shown in Table 1, 12.8% of the young women fulfilled the criteria of a lifetime prevalence (LP) of at least one SP. The point prevalence (PP; disorder was present in the last 7 days up to the interview) for all SPs amounted to 9.9%, and the 12-month prevalence to 10%. Animal phobias were reported most frequently (PP 4.3%). They were followed by blood phobias (1.8%), physical phobias (fear of seeing a doctor PP 1%, vomiting PP 0.1%, and fears of contagion 0.1%), and heights (1.6%). Heights are usually clustered with other environmental phobias, as storms and water. However, phobias of storms (PP 0.1%) and water (PP 0.3%) occurred rarely. Situational phobias were evident in 1.9% of the women, with driving phobia being the most common (PP 0.9%), followed by phobias of lifts and enclosures (PP 0.5%) and flights (PP 0.4%). The “other” category contains phobias of noise, costumes, and exams and occurred hardly at all. The 12-month prevalence and the lifetime prevalence showed a similar pattern of occurrence. This suggests that SPs are rather stable since prevalence rates do not change much over the different time frames.

3.3. Age of onset of SPs

Table 2 shows the age of onset (median and mean) and the duration of SPs. The number of participants is sometimes higher in the aggregated groups than in the specific groups

(e.g., situational phobias). This is due to some participants reporting situational phobias that did not fit into the given subgroups (e.g., fear of ships). Animal phobia (mean 6.2) and environmental phobia (mean 6.4), start early in life. Interestingly, phobia of heights (mean 9.1) has a later onset than the other environmental phobias. Most SPs begin around the age of 8, although situational phobias (mean 13.4) start much later. Here phobia of lifts starts earlier around the age of 9 years. A closer look at physical phobias shows that phobia of infections starts later than phobia of doctors or of vomiting. Fig. 1 shows the age curves for SP subgroups. The age curve for the category “other” shows a discontinuity. This is due to phobias of noise and costumes starting very early in life, whereas the other phobias like exam phobia start much later. The curves show that animal and environmental phobias cluster together; blood phobia being just slightly later. Phobia of heights lies in-between, and situational phobias start much later.

Duration needs careful interpretation, since the participants are still very young and therefore phobias starting later in life will necessarily have shorter durations. Nevertheless, the mean durations show that most phobias are persistent. They begin while the women are still children and persist into adulthood.

3.4. Comorbidity of SPs

Comorbidity is illustrated in Table 3. Comorbidity was defined as the occurrence of disorders at a lifetime prevalence level. The lifetime prevalence of the disorders were: 28.3% for anxiety disorders, 13.7% for affective disorders, 3.2% for somatoform disorders, 2.2% for substance related disorders, 4% for eating disorders, and 9.8% for disorders usually occurring in childhood. An odds ratio (OR) larger than 1 indicates a positive relationship between SP and other mental disorders. As the confidence intervals (CIs) show, however, not all of these relationships are reliable. Furthermore, the *N* of some cells were so small that the CIs are very wide. Thus, only ORs that are significant with *N*s bigger than 4 are interpreted and printed in bold in

Table 1
Prevalence rates in percent and *N* for specific fears and specific phobias

	Life time prev. phobias (<i>N</i> = 326)	12 month prev. phobias (<i>N</i> = 264)	Point prev. phobias (<i>N</i> = 243)
Animals	5.0 (110)	4.5 (93)	4.3 (89)
Heights	1.9 (39)	1.7 (35)	1.6 (34)
Environment (except heights)	0.7 (15)	0.6 (13)	0.5 (10)
Storms	0.3 (7)	0.3 (6)	0.1 (3)
Water	0.3 (7)	0.3 (7)	0.3 (7)
Blood, injuries and shots	2.4 (50)	1.9 (39)	1.8 (38)
Situational	2.6 (53)	2.2 (45)	1.9 (39)
Flights	0.4 (9)	0.4 (9)	0.4 (8)
Lifts	0.7 (17)	0.6 (13)	0.5 (11)
Driving	1.1 (23)	1.0 (20)	0.9 (18)
Physical	2.2 (46)	1.5 (31)	1.3 (27)
Doctors	1.7 (37)	1.1 (23)	1.0 (21)
Vomiting	0.2 (4)	0.2 (4)	0.1 (3)
Infections	0.2 (4)	0.2 (4)	0.1 (3)
Others	0.6 (13)	0.4 (8)	0.3 (6)
All	12.8 (265)	10.0 (206)	9.9 (204)

Table 2
Mean age of onset and mean duration of specific phobias

	N	Age		Duration	
		Median	Median	Median	Median
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Animals	107	4	6.25 (4.62)	16	14.24 (5.28)
Heights	36	8	9.17 (5.88)	10	11.14 (6.02)
Environment	15	3	6.47 (5.05)	14	13.27 (5.12)
Storms	7	3	4.86 (2.67)	14	14.00 (4.04)
Water	7	8	8.57 (6.50)	14.5	12.63 (6.12)
Blood	48	6	7.39 (4.87)	12.5	12.42 (5.15)
Situational	50	15.5	13.44 (7.03)	4	6.64 (6.41)
Flights	9	15	14.67 (6.10)	6	6.33 (4.77)
Lift	15	4	9.53 (7.11)	9	9.60 (7.35)
Driving	22	19	16.27 (5.95)	2	4.55 (5.65)
Physical	46	7	9.13 (5.18)	11	10.39 (5.97)
Doctors	37	7	8.73 (5.20)	11	10.51 (5.98)
Vomiting	4	8.5	7.50 (5.20)	13.5	12.75 (6.85)
Infections	4	15.5	15.50 (1.29)	7	5.67 (2.31)
Others	13	5	8.77 (6.86)	7.5	9.40 (7.21)

Table 3. Animal phobias are significantly associated with all other disorder groups except eating disorders. Interestingly, the eating disorders show no relation to any specific phobia. Environmental phobias (of water and storm) might be associated

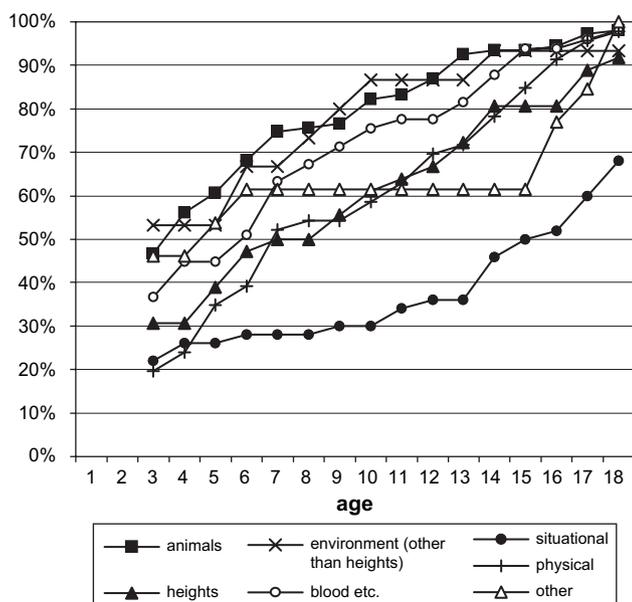


Fig. 1. Cumulative age for specific phobia subtypes.

with substance use disorders and childhood disorders, but the wide CIs have to be taken into account, and therefore the significant associations have to be interpreted with caution. Height phobia, the other environmental phobia, is only associated with anxiety disorders, showing a different pattern from the other environmental disorders. Phobia of blood and injury is related to anxiety disorders, too, and also to disorders usually occurring in childhood. Physical phobias are also related to the anxiety disorders. The situational phobias show significant associations with affective disorders, disorders usually occurring in childhood, and probably also with substance use disorders.

3.5. SPs and their effect on quality of life

Table 4 shows indicators of the severity of SP and of the degree of impairment in everyday life. All ratings were provided by interviewers. As the results show, there were almost no differences concerning the severity ratings between the different SPs. On average, all disorders displayed moderate severity (values slightly above 4 on a scale ranging from 0 to 8) with comparable standard deviations, and an analysis of variance revealed no differences between them ($F(6/307) = 0.28$, n.s.). The same was true for the impairment caused by the SPs ($F(6/324) = 0.56$, n.s.). However, differences emerged regarding the ratings of distress in everyday life ($F(6/324) = 2.47$, $p = 0.02$), with phobias of heights being the least distressing and “other” SPs the most. To aid interpretation, the current ratings may be compared to those of a group of women who had other mental disorders than SP at the time of the interview ($N = 155$; all other diagnoses included). These women showed similar ratings, with mean severity of 4.00 (SD 1.38), mean impairment 3.41 (SD 1.81), and mean distress 4.20 (SD 1.74).

4. Discussion

Specific phobias are a common problem for young women. The prevalence rates of SPs in our sample (12.4%) are consistent with several previous studies (e.g. 10.2% [11]), 14.9% [12], and 10.1% [17]) with others report slightly higher rates (e.g. 22.7% [6]), 25.9% [18], or 20.2% [10]). Comparison of prevalence rates reported here to those of other studies is difficult as studies differ with regard to the classification methods used. Age, gender, and a varying number of feared objects or situations included in the survey also vary. Our findings show animal phobias (LP 5.0%) to be the most prevalent, followed by blood phobia (LP 2.4%) and phobia of heights (LP 1.9%). This finding is consistent with those of Agras et al. [1] and Curtis et al. [6] who also found animal fears to be the most prevalent. Taken together, situation phobias were prevalent among 2.6% of the young women, with fear of driving being the most common.

The mean age of onset for SPs was 7.9. Lindal and Stefansson [11] found a slightly later onset of 9.6 years in their sample. In our study, animal phobias started early in life (5.5 years). Similarly, Öst [16] found the mean age of onset to be 6.9, while Starcevic and Bogojevic [21] found

Table 3
Lifetime comorbidity of specific phobias with other mental disorders: *N*, Odds ratios, and 95%-CIs

Lifetime comorbidity <i>N</i> , OR, 95%CI	Anxiety disorders	Affective disorders	Somatoform disorders	Substance disorders	Eating disorders	Childhood disorders
Animals	25 2.36 (1.44–3.88)	22 3.07 (1.83–5.15)	8 3.99 (1.83–8.74)	5 4.00 (1.51–10.58)	3 1.04 (0.32–3.40)	13 2.38 (1.28–4.43)
Heights	10 2.72 (1.23–5.99)	6 2.07 (0.83–5.19)	0	0	0	3 1.39 (0.42–4.69)
Environment	1 0.92 (0.11–7.94)	0	1 6.59 (0.76–57.38)	1 11.04 (1.25–97.24)	1 4.94 (0.57–42.85)	2 5.58 (1.01–30.71)
Blood, injuries and shots	17 5.24 (2.59–10.60)	5 1.34 (0.51–3.52)	0	1 1.78 (0.24–13.45)	3 2.56 (0.76–8.59)	10 5.07 (2.36–10.91)
Situational	8 1.54 (0.69–3.46)	8 2.42 (1.07–5.45)	0	3 5.71 (1.66–19.72)	0	6 2.57 (1.04–6.35)
Physical	9 2.31 (1.03–5.19)	5 1.65 (0.62–4.40)	1 1.27 (0.17–9.51)	2 4.42 (1.00–19.45)	2 1.98 (0.46–8.51)	4 1.94 (0.66–5.69)
Others	3 2.31 (0.58–9.29)	5 9.07 (2.42–34.02)	1 4.12 (0.51–33.52)	1 6.90 (0.84–56.82)	0	3 5.58 (1.38–22.53)

The reference group for determining the OR was “no specific phobia”.

a somewhat later onset at 9.7 years. In the Starcevic and Bogojevic study [21], blood phobias started quite late with 21.1 years, whereas Öst [16] found a much earlier age of onset for blood phobia, 8.8, which is comparable to our finding of 7.0 years. In contrast, situational phobias started later in life around 15–17 years. Consistent with this, Starcevic and Bogojevics [21] found a mean of 23.6 years.

In terms of age of onset, our data show that there is wide variation in specific situational phobias, with fear of elevators starting much earlier than fear of flying, and fear of driving being the latest phobia. The fear of infections appears to begin much later than the phobias of other physical illnesses and may be related to an early start of hypochondria rather than specific fears. Overall, phobias concerning situations or physical fears appeared to be acquired in young adulthood rather than during childhood. Phobias appear relatively stable and have a long duration. Taken together, this study found somewhat earlier onset of SPs than other surveys. But since the data are retrospective (as in most studies), the exact age of onset is hard to determine.

This study also assessed specific relations between SP subtypes and other mental disorders. Almost all subtypes were associated with other anxiety disorders, except the environmental phobias. These phobias are probably related to substance use disorders and disorders occurring in childhood, but these relations have to be interpreted with care because of the low number of cases. Interestingly, no specific phobia subtype was related to

eating disorders, and animal phobias were related to all other mental disorders. Otherwise, all subgroups showed a different pattern of comorbidity. Overall, phobias start early in life, and pose a risk for developing a second mental disorder. This, and the rather long duration, make the need for treatment of SP in childhood and adolescence obvious.

In addition, this study investigated how strongly women were impaired by their specific phobia. Specific phobias are often considered less impairing than other disorders, since the feared object or situation is circumscribed and therefore its avoidance is much easier than, for example, in social phobia or agoraphobia [14]. Regarding ratings of severity, impairment, and associated emotional stress, however, SPs did not differ from other mental disorders. Moreover, there were no differences between the SP subtypes regarding impairment, and only small differences regarding distress. Impairment in everyday life seems to be as high as for other mental disorders in this young sample, thus there is no hint that SPs are a smaller problem. Overall, the majority of the disorders in this young sample is not extremely impairing.

Some limitations regarding the generalizability of this study should be noted. First, only women were included in this survey. Women usually show higher rates of SP [8]. Second, our sample consisted of young women. Therefore, no conclusions can be drawn for males or for an older sample. Although phobias start early in life, this study showed that some start much later than others (e.g., situational phobias), and therefore some SPs might be underrepresented. Furthermore, all participants lived in Dresden, Germany. The ECA study showed that prevalence rates vary across cities [4]. Therefore, findings from one site might not be representative of findings at another. As the socio-demographic data showed, more highly educated women participated in our study, but data from the official census show that this is rather typical for Dresden, being a city with a large university.

The data suggest that SPs are a heterogeneous group. Age of onset varies widely for different subgroups, as do patterns of comorbidity. Even the phobias within one subgroup (e.g., natural/environment or situational phobias) defined by DSM-VI differ

Table 4
Impairment ratings: means and standard deviations

	Severity of disorder	Impairment	Distress
Animals (<i>N</i> = 110)	4.30 (1.28)	3.34 (1.84)	3.97 (1.50)
Heights (<i>N</i> = 39)	4.14 (1.22)	3.51 (1.76)	3.33 (1.87)
Environment (<i>N</i> = 15)	4.21 (1.05)	3.40 (1.45)	3.67 (1.63)
Blood, injuries, injections (<i>N</i> = 50)	4.36 (1.36)	3.20 (1.91)	3.92 (1.78)
Situational (<i>N</i> = 52)	4.15 (1.42)	3.69 (1.91)	3.81 (1.68)
Physical (<i>N</i> = 46)	4.21 (1.17)	3.07 (2.30)	4.43 (1.72)
Others (<i>N</i> = 13)	4.55 (1.21)	3.54 (1.85)	4.92 (1.19)

regarding age of onset. Age of onset might in some cases be related to vulnerable times during normal development. It can be assumed that the likelihood of developing a phobia is related to the exposure to an object or situation that children fear while growing up, thus following a prepared pattern. Furthermore, some phobias are clearly related to experience, like fear of driving. Since most participants fear driving as a driver and not as a passenger, this phobia can not start earlier than at around 18 years (the legal age for driving in Germany). Interestingly, subgroups of phobias seem to have their own patterns of comorbidity, also. Physical illness phobias and blood phobias, for instance, seem not to be related to affective disorders, in contrast to situational phobias are. Thus, age of onset and patterns of comorbidity show that SPs may not be a uniform group, and where subgroups are not homogeneous, doubts about the validity of the groups are raised.

5. Conclusions

These data show that SPs are common, impairing, and phenomenologically heterogeneous among young women in the community. In addition, these data carry messages for prevention and classification of SPs. First, the data suggest that age of onset may vary widely by phobia subtype and, as such, efforts aimed at primary prevention need to take into account these specific differences. Second, the results indicate that the use of subtypes employed in the current diagnostic classification system may obscure phenomenological differences within and across subtypes as they occur naturally in the community. Future research should look closely at the differences and their significance for treatment.

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