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Specific fears and phobias in the general population: Results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS)

■ **Abstract** *Objective* To examine the prevalence rate, impairment, comorbidity, course of illness and determinants of eight specific phobia variants: animals (animal subtype); heights, water, storms (natural environment subtype); flying, enclosed spaces, being alone (situational subtype); and blood/injury (blood/injury subtype). *Method* Data were obtained from the Netherlands Mental Health Survey and Incidence Study, a prospective study in the Dutch general population aged 18–65 (*N* = 7,076). *Results* The most prevalent condition was specific phobia with a fear of heights (4.9%). On all parameters except duration, specific phobia with a fear of being alone emerged as the most severe condition. Phobias with fear of enclosed spaces and phobias with fear of blood showed a slightly greater likelihood of impairment, comorbidity and personality problems than phobias with fear of animals, heights, water or storms. *Conclusion* The situational and blood/injury phobia subtypes appear to be a more significant index for impairments and for comorbid psychiatric disorders than the animal and natural environment phobia subtypes.

■ **Key words** specific phobia – population study

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Introduction

Specific phobia is one of the most widely prevalent mental disorders on a lifetime basis. It occupied fourth place at 11.3% in the National Comorbidity Survey (NCS) [20], and third place at 12.5% in the recently completed National Comorbidity Survey Replication (NCS-R) [19]. Only major depressive disorder and alcohol abuse had higher lifetime prevalence rates in the latter survey, at 16.6 and 13.2%. The Netherlands Mental Health Survey and Incidence Study (NEMESIS) ranked the most prevalent disorders in precisely the same order as the NCS-R, although the lifetime prevalence of specific phobia was slightly lower in NEMESIS at 10.1% [5].

Specific phobia scores rather unfavourably on other indicators as well. More than 80% of people with a specific phobia have been found to suffer one or more comorbid mental disorders, and more than one third have reported that their phobia interferes "a lot" in their daily activities; in the latter respect, they scored even worse than those with agoraphobia [21]. Their functional limitations are more comparable to those that accompany major depression and dysthymia [4]. Despite these impairments, people with specific phobia are little likely to seek professional help or to take medications for their disorder [21]. All things considered, the costs attributable to specific phobia still appear high [30]. The above data derive from the NCS and NEMESIS studies. A more recent report from the European Study of the Epidemiology of Mental Disorders (ESEMeD) failed to confirm this adverse picture of specific phobia; it found relatively low rates of co-occurrence between specific phobia and other mental disorders [31].

All these findings refer to specific phobia in all its manifestations. With the introduction of DSM-IV, specific phobia was differentiated into five subtypes: animal, natural environment, blood/injury, situational and other [2]. Few epidemiological data are

available on these subtypes as yet. Frederikson et al. [11] found that the situational phobias had the highest point prevalence, followed by animal phobias and blood/injury phobias. Based on lifetime fears, Curtis et al. [10] arrived at a different sequencing, in which fear of animals was most prevalent for women and fear of heights for men. Because they also found that most specific phobias involved multiple fears, these researchers focused their analyses on the numbers of specific fears, independent of type.

The present article builds further on the Curtis study [10], but we now take the type of fear as the frame of reference. We investigate the prevalence, impairment, psychiatric comorbidity, course of illness and determinants associated with the following eight specific phobia variants: animals (animal subtype); heights, water and storms (natural environment subtype); flying, enclosed spaces and being alone (situational subtype); and the blood/injury subtype. Our choice of these specific fears is informed by the 1.1 version of the Composite International Diagnostic Interview (CIDI) [27, 34]. Our data derive from the NEMESIS study, a longitudinal study of the Dutch household population that collected information on psychiatric symptoms and disorders.

Materials and methods

■ Sample

A multistage, stratified, random sampling procedure was used to obtain the sample. First, ninety municipalities were sampled randomly. Second, addresses of private households were randomly selected. Third, individuals in these households with the most recent birthday and aged between 18 and 64 were invited to participate. All subjects received an introductory letter from the Dutch Minister of Health. To establish contact with the selected respondents, interviewers made up to ten phone calls or visits to their homes at different times and days of the week. Respondents gave verbal consent after being informed about the aims of the study. These procedures were approved by the ethics committee of the Netherlands Institute of Mental Health and Addiction. Detailed descriptions of the design and the major outcomes of NEMESIS have been published previously [5, 14].

Data collection occurred in three waves: baseline (T_0), one year after baseline (T_1) and three years after baseline (T_2). In the first wave (T_0), from February to December 1996, 7,076 persons were interviewed, a response rate of 69.7%. Participants adequately reflected the Dutch population in terms of gender, civil status and urbanicity [6]; only the 18–24 age group was underrepresented. Of the 7,076 persons who had taken part at T_0, 5,618 could be reinterviewed at T_1 (response: 79.4%) and 4,796 at T_2 (response of T_1 subjects: 85.4%). After adjustment for demographic variables, a 12-month specific phobia at T_0 did not predict loss-to-follow-up between T_0 and T_1 (OR = 0.96 (0.70–1.20) [13] and a 12-month specific phobia at T_1 did not predict attrition between T_1 and T_2 (OR = 1.11 (0.79–1.56) [14].

The results presented here on prevalence, impairment, comorbidity and determinants are based on the T_0 data; the prospective analysis of the course of illness is based on data from all three waves.

■ Lifetime specific phobia

Lifetime specific phobia was coded on the basis of DSM-III-R criteria for simple/specific phobia [1], using the computerised 1.1 version of the Composite International Diagnostic Interview (CIDI) [27, 29, 34]. The CIDI had acceptable interrater reliability [8], test–retest reliability [28] and validity for virtually all diagnoses [33].

The stem question was as follows: have you ever had a strong, unreasonable fear of (1) heights; (2) flying (in an aeroplane); (3) enclosed spaces like caves, tunnels or lifts; (4) swimming in water (e.g. in a swimming pool or lake); (5) storms, thunder or lightning; (6) being alone; (7) insects, snakes, birds or other animals; (8) seeing blood, getting an injection or going to a dentist or hospital? The ninth item, "other fear", was omitted from our analysis. Respondents who answered affirmatively to at least one item were asked to complete several additional questions to ascertain whether one or more reported fears met the full DSM-III-R criteria for specific phobia.

Because CIDI version 1.1 did not record this supplementary information in direct reference to each separate fear, we were not able to determine which particular fear or fears met full criteria for specific phobia. We therefore do not describe subjects here as having an animal phobia, but as having a "specific phobia with a fear of animals"; not claustrophobia, but a "specific phobia with a fear of enclosed spaces". Because most specific phobias involve multiple fears [10], the eight "specific phobias with fear" constitute partially overlapping categories. In the Statistical Analysis section below, we explain how we have dealt with these co-occurring fears.

■ Other measures

Impairment was determined using the CIDI questions designed to assess whether the recorded fear(s) satisfied the inference criterion for specific phobia. In the first place these included two questions on service utilisation: (1) whether the respondent had consulted a doctor or other professional in connection with the fear(s) ("professional help"); and (2) whether they had taken medication for the fear(s) ("medication"). A third indicator for impairment was an affirmative answer to the question of whether the fear(s) interfered a lot with the respondent's life or activities ("serious interference in life"). Fourth, individuals were recorded as experiencing "interference in social functioning" if their fear(s) had ever seriously interfered with their work or other social commitments. Because only one affirmative answer was required to qualify respondents for DSM-III-R specific phobia, each respondent could potentially vary in terms of these indicators.

We determined psychiatric comorbidity on a lifetime basis. The variable "other lifetime anxiety disorder" refers to the occurrence of one or more of the following anxiety disorders at some time in a respondent's life: panic disorder, agoraphobia, social phobia, obsessive–compulsive disorder and generalised anxiety disorder; the variable "lifetime mood disorder" reflects one or more of the following mood disorders: major depression, dysthymia, bipolar disorder; and the variable "lifetime substance use disorder" indicates alcohol or drug abuse or dependence. The DSM-III-R hierarchical rules were not applied in determining these variables.

The course of specific phobia was inferred first of all from the duration of the phobia at T_0 (age of recency minus age of onset). To define unfavourable courses, we used a cut-off score of 10 years or longer (a shorter period would have yielded an excessively large subgroup with an unfavourable course; even with a 10-year cut-off, the percentage was still 68.3%). We also determined the course of illness prospectively; respondents with lifetime specific phobia at T_0 were defined as having an unfavourable course if they also reported specific phobia (irrespective of the content) at both T_1 (1 year after baseline) and T_2 (3 years after baseline).

After the CIDI had been administered, respondents were asked additional questions, some of which addressed the following risk factors for psychopathology:

- *Parental psychiatric history.* We recorded whether one or both biological parents had exhibited one or more of the following

problems: depression, delusions or hallucinations, anxiety disorders or phobias, alcohol abuse or suicide (as reported by respondents about their own parents; 0 = no, 1 = yes).

● *Childhood abuse.* We recorded whether respondents had personally undergone emotional neglect, psychological abuse, physical abuse or nonconsensual sexual contact before the age of 16 (1 = never; 5 = always). Individuals were categorised as having a history of childhood abuse if they scored >1 on at least one of these four questions.

● *Personality characteristics.* Neuroticism was assessed with the Neuroticism Scale from the Amsterdam Biographical Questionnaire (ABV) [24, 25], containing 14 items (1 = no, 3 = yes; Cronbach's α = 0.80), with higher scores indicating higher neuroticism. Locus of control was gauged using the 5-item Mastery Scale [26] (1 = totally agree, 5 = totally disagree; α = 0.81), with higher scores reflecting a stronger degree of internal control. The outcomes were dichotomised in such a way that one third of all respondents received unfavourable ratings (consistently with other NEMESIS studies on risk factors [3, 12]).

■ Statistical analysis

First, we determined what percentage of respondents had affirmatively answered the stem question for each specific fear ("lifetime fears in total sample"), what percentages of respondents with each of these fears had met DSM-III-R criteria for specific phobia ("lifetime specific phobia given fear"), and what percentage both had ever experienced each fear and had met the specific phobia criteria ("lifetime specific phobia with fear in total sample"). For each lifetime specific phobia with fear, we then calculated the percentage of respondents who reported impairments (four measures), psychiatric comorbidity (three measures), an unfavourable course of illness (two measures) and determinants (four measures). We also calculated the median ages at which they had first experienced a specific phobia (median age of onset) and when they had last experienced one (median age of recency). As specific phobia usually involves multiple fears, the unadjusted percentages do not accurately represent the relationships between the eight specific phobia variants and the dependent variables. To filter out the confounding influences of co-occurring fears, we calculated adjusted odds ratios and 95% confidence intervals in forced entry multiple logistic regression analyses, incorporating lifetime specific phobia with fear, gender, age, and the other seven specific fears.

Results

■ Prevalence

The lifetime prevalence of the specific fears in the total sample ranged from 5.8% (fear of being alone) to 19.1% (fear of heights; Table 1, column 1). A total of 41.2% of all respondents had suffered one or more unreasonable fears at some time in their lives.

There was no great variation in the total numbers of fears given each specific fear (range 2.3–3.1; column 2), but the specific fears did vary considerably in their likelihood of being associated with lifetime specific phobia (column 3). Whereas 45.1% of the people with a fear of being alone also exhibited lifetime specific phobia, that percentage for the other specific fears was between 25.5% (fear of heights) and 36.6% (fear of flying). Note that the two most prevalent fears have the least probability to meet full DSM-III-R criteria of specific phobia.

The most widely prevalent phobia was phobia with a fear of heights (the total percentage fearing heights × the percentage of that subgroup exhibiting lifetime specific phobia); nearly 5% of the total sample had experienced an excessive and persistent fear of heights as well as satisfying the specific phobia criteria (column 4). That was more than twice the number suffering specific phobia with each of the other two natural environment fears (water and storms). The prevalence of the eight specific phobia variants together was 9.6% (the total specific phobia prevalence in the sample, including the residual category of "other fears", was 10.1%, as noted in the introduction).

Respondents diagnosed with a specific phobia reported more total fears on average (column 5) than those with one or more specific fears (column 2). This

Table 1 Lifetime prevalences of different types of specific fears and phobias in the Dutch general population (*N* = 7,076)

Specific fear	Lifetime fears in total sample (%)	Number of fears given fear (mean ± SD)	Lifetime specific phobia given fear (%)	Lifetime specific phobia with fear in total sample (%)	Number of fears given lifetime specific phobia with fear (mean ± SD)
Animal subtype					
Animals	12.6	2.5 ± 1.5	26.5	3.3	3.4 ± 1.8
Natural environment subtype					
Heights	19.1	2.3 ± 1.4	25.5	4.9	3.2 ± 1.7
Water	7.1	2.7 ± 1.6	30.4	2.2	3.5 ± 1.8
Storms	7.0	3.0 ± 1.7	31.3	2.2	4.0 ± 1.8
Situational subtype					
Flying	6.9	3.1 ± 1.6	36.6	2.5	4.0 ± 1.7
Enclosed spaces	9.5	3.0 ± 1.5	35.0	3.3	3.6 ± 1.6
Being alone	5.8	2.9 ± 1.8	45.1	2.6	3.5 ± 1.9
Blood/injury subtype					
Blood	9.5	2.6 ± 1.6	33.3	3.2	3.3 ± 1.8
All subtypes					
Any fear	41.2	1.9 ± 1.2	23.3	9.6	2.5 ± 1.6

Table 2 Lifetime prevalences of different numbers of specific fears and phobias in the Dutch general population (N = 7,076)

Number	Lifetime specific fears in total sample (%)	Lifetime specific phobia with fear in total sample (%)
1	21.8	3.3
2–3	15.1	4.1
4–5	3.6	1.7
6–8	1.5	0.5
Any	41.2	9.6

difference can also be observed in Table 2. In over half of the fear group, the fear remained limited to a single fear. In the specific phobia group (9.6% of the sample), only one third (3.3%) exhibited a pure phobia; and the remaining two thirds suffered from two or more specific phobia variants.

Impairment

Table 3 summarises the relationship between the specific phobia variants and four indicators of impairment, adjusted for gender, age and co-occurring fears. On all indicators, the odds ratios were highest for specific phobia with a fear of being alone. That phobia showed a sharply higher probability of getting professional help (OR = 14.1), taking medication (OR = 16.9) and experiencing interference with general daily life (OR = 19.8) and social life (OR = 9.3); the difference with the other phobias was especially pronounced on the first three indicators.

Amongst the other phobias, a distinction in terms of professional help and medication was apparent between the animal and natural environment phobias on one side (OR = 1.0–2.7) and the situational and blood/injury phobias (OR = 3.2–5.4) on the other; but few differences were seen on impairments in normal routine. One consistent result was that

phobia with fear of storms was the least impairing form (OR = 2.7–2.9) and the phobia with fear of enclosed spaces was the most impairing (OR = 7.2–9.0). Especially in terms of daily life interference, the latter was considerably more disabling than the other phobias.

Psychiatric comorbidity

The strongest comorbidity associations emerged for specific phobia with fear of being alone (Table 4). It carried a strongly higher probability of comorbid anxiety and mood disorders (OR = 9.5 and 9.2 respectively). Adjusted odds ratios for the separate anxiety and mood disorders were, in descending order of magnitude (not in table): obsessive–compulsive disorder (OR = 7.2 [95% CI = 3.6–14.6]; social phobia (OR = 7.2 [95% CI = 5.1–10.0]); panic disorder (OR = 5.6 [95% CI = 3.8–8.4]); major depression (OR = 5.5 [95% CI = 4.0–7.6]); bipolar disorder (OR = 4.4 [95% CI = 2.5–7.6]); dysthymia (OR = 4.0 [95% CI = 2.8–5.7]); generalised anxiety disorder (OR = 3.1 [95% CI = 1.8–5.4]); and agoraphobia (OR = 2.8 [95% CI = 1.8–4.4]).

The phobias involving other fears did not differ greatly in their comorbidity odds ratios, especially comorbid substance use disorder (OR = 1.2–2.2). Variation was slightly greater for the anxiety and mood disorders; odds ratios for the phobias with fears of animal, heights, water, storms and flying ranged between 1.5 and 2.9, while those involving enclosed spaces or blood ranged from 3.3 to 4.8.

Course of illness

The median ages of onset for the animal, natural environment and blood/injury subtypes were in

Table 3 Associations between lifetime specific phobia with fear and impairment among the Dutch general population (N = 7,076)

Lifetime specific phobia with fear	Professional help[a]		Medication		Serious interference in daily life		Interference in social functioning[b]	
	%	OR[c] (95% CI)	%	OR[c] (95% CI)	%	OR[c] (95% CI)	%	OR[c] (95% CI)
Animal subtype								
Animals	26.8	1.6 (1.0–2.3)*	13.0	1.2 (0.7–2.1)	31.7	3.3 (2.2–4.9)*	30.4	3.8 (2.6–5.6)*
Natural environment subtype								
Heights	28.5	2.2 (1.6–3.1)*	17.0	2.5 (1.6–3.8)*	35.3	5.6 (4.1–7.8)*	33.7	6.3 (4.6–8.7)*
Water	33.2	2.7 (1.7–4.2)*	17.5	1.7 (1.0–3.1)	41.3	5.9 (3.9–9.1)*	37.6	5.6 (3.7–8.6)*
Storms	31.5	1.3 (0.8–2.1)	18.2	1.0 (0.5–1.8)	36.7	2.7 (1.7–4.3)*	33.8	2.9 (1.9–4.6)*
Situational subtype								
Flying	40.7	3.5 (2.3–5.3)*	30.4	5.4 (3.4–8.7)*	44.4	5.2 (3.5–7.9)*	38.2	4.0 (2.7–6.0)*
Enclosed spaces	39.7	4.1 (2.8–5.8)*	24.0	3.3 (2.1–5.3)*	46.5	9.0 (6.3–12.9)*	41.0	7.2 (5.1–10.3)*
Being alone	57.0	14.1 (9.9–19.9)*	36.2	16.9 (11.1–25.7)*	59.2	19.8 (13.9–28.2)*	43.8	9.3 (6.5–13.4)*
Blood/injury subtype								
Blood	32.8	4.0 (2.8–5.9)*	17.1	3.2 (1.9–5.2)*	35.2	5.6 (3.9–8.1)*	29.9	4.2 (2.9–6.2)*

[a]Combination of two items: seeing a doctor and seeing another professional
[b]Combination of two items: interference in work and interference in other social situations
[c]Adjusted for gender, age and other specific fears
*Significant at the 0.05 level

Table 4 Comorbidity between lifetime specific phobia with fear and lifetime other anxiety disorder, mood disorder and substance use disorder, among the Dutch general population (N = 7,076)

Lifetime specific phobia with fear	Other lifetime anxiety disorder		Lifetime mood disorder		Lifetime substance use disorder	
	%	OR[a] (95% CI)	%	OR[a] (95% CI)	%	OR[a] (95% CI)
Animals subtype						
Animals	47.0	2.0 (1.5–2.8)*	57.0	2.6 (1.9–3.5)*	21.1	1.3 (0.9–2.0)
Natural environment subtype						
Heights	48.4	2.5 (1.9–3.3)*	51.8	2.3 (1.8–2.9)*	25.3	1.5 (1.1–2.1)*
Water	52.4	2.8 (1.9–4.1)*	51.0	1.8 (1.3–2.7)*	29.8	2.2 (1.4–3.3)*
Storms	57.6	2.5 (1.7–3.7)*	53.0	1.5 (1.0–2.2)*	19.5	1.2 (0.7–1.9)
Situational subtype						
Flying	59.3	2.9 (2.0–4.1)*	56.0	1.8 (1.3–2.5)*	22.7	1.3 (0.9–2.0)
Enclosed spaces	63.7	4.8 (3.5–6.6)*	62.5	3.3 (2.4–4.5)*	19.9	1.3 (0.9–1.9)
Being alone	72.6	9.5 (6.7–13.6)*	77.5	9.2 (6.3–13.2)*	31.1	2.4 (1.7–3.5)*
Blood/injury subtype						
Blood	52.9	3.7 (2.7–5.1)*	57.6	3.3 (2.4–4.4)*	31.7	2.1 (1.5–2.9)*

[a]Adjusted for gender, age and other specific fears
*Significant at the 0.05 level

childhood (8–11 years), whereas for the situational subtype they were in adolescence (14–15 years; Table 5). Amongst the "childhood" phobias, those of the natural environment subtype had the highest median age of recency (38–39), as did those involving flying and enclosed spaces. Specific phobia with fear of being alone had the lowest median age of recency at 32.

To control for co-occurring fears on the duration of specific phobia, we performed a series of multiple logistic regression analyses (Table 5, third column). In all cases, the resulting adjusted odds ratios confirmed the relatively unfavourable course of the "childhood" specific phobias (animal, natural environment, blood/injury); the blood/injury phobia carried an especially high likelihood of long-term pathology (OR = 10.1).

On the prospective course of illness indicator (Table 5, fifth column), the results crosscut the various subtypes. Lifetime specific phobia with fear of

heights proved the best predictor of specific phobia 3-years later (OR = 7.0). About 15% of the phobic respondents who reported that fear at T_0 also qualified for DSM-III-R specific phobia at both T_1 and T_2. Other phobias associated with poorer prognoses were storms (OR = 4.9), enclosed spaces (OR = 4.1) and blood/injury (OR = 5.1).

■ Determinants

As shown in Table 6, the relationship between lifetime specific phobia and parental psychopathological history varied little amongst the specific fear associated with the disorder. That was largely true as well for the relationship with childhood abuse; the only phobia variant that stood out unfavourably on that indicator was fear of being alone (OR = 3.8). Differences were rather more apparent on the two personality indicators, where phobias with fear of being alone and with

Table 5 Associations between lifetime specific phobia with fear and course of illness among the Dutch general population (N = 7,076)

Lifetime specific phobia with fear	Age of onset	Age of recency	Retrospective (>10 years of symptoms)		Prospective (specific phobia still present both at 1-year and 3-year follow-up)[a]	
	Median	Median	%	OR[b] (95% CI)	%	OR[b] (95% CI)
Animal subtype						
Animals	8	35	84.0	5.1 (3.3–8.0)*	8.6	2.8 (1.3–5.9)*
Natural environment subtype						
Heights	11	38	79.2	4.4 (3.1–6.2)*	15.3	7.0 (3.2–15.2)*
Water	10	39	78.4	3.1 (1.8–5.3)*	7.4	2.3 (0.9–6.0)
Storms	9	38	87.5	4.7 (2.6–8.7)*	14.6	4.9 (2.2–10.7)*
Situational subtype						
Flying	15	39	76.1	0.9 (0.6–1.5)	9.4	1.8 (0.7–4.5)
Enclosed spaces	15	39	77.7	1.9 (1.3–2.9)*	10.9	4.1 (1.9–8.6)*
Being alone	14	32	62.2	0.8 (0.5–1.3)	10.0	3.2 (1.4–7.1)*
Blood/injury subtype						
Blood	10	35	83.8	10.1 (6.4–15.7)*	10.6	5.1 (2.5–10.4)*

[a]These analyses were performed on the respondents who participated in all three waves (N = 4,796)
[b]Adjusted for gender, age and other specific fears
*Significant at the 0.05 level

Table 6 Associations between lifetime specific phobia with fear and four determinants: parental psychopathology, childhood abuse, neuroticism and external locus of control, among the Dutch general population (N = 7,076)

Lifetime specific phobia with fear	Parental psychopathology[a]		Childhood abuse[b]		Neuroticism[c]		External locus of control[d]	
	%	OR[e] (95% CI)	%	OR[e] (95% CI)	%	OR[e] (95% CI)	%	OR[e] (95% CI)
Animal subtype								
Animals	43.8	1.3 (1.0–1.8)*	50.2	1.6 (1.2–2.1)*	62.4	1.7 (1.3–2.3)*	50.0	1.3 (1.0–1.8)
Natural environment subtype								
Heights	48.7	2.0 (1.6–2.5)*	45.6	1.4 (1.1–1.7)*	60.8	1.9 (1.5–2.4)*	51.8	1.5 (1.1–1.9)*
Water	48.5	1.8 (1.3–2.5)*	54.1	1.8 (1.3–2.6)*	62.7	1.8 (1.2–2.6)*	55.3	1.5 (1.0–2.1)*
Storms	44.8	1.3 (0.9–1.9)	50.0	1.3 (0.9–1.9)	65.9	1.6 (1.1–2.4)*	53.3	1.2 (0.8–1.7)
Situational subtype								
Flying	45.0	1.4 (1.0–1.9)	49.2	1.2 (0.9–1.7)	63.5	1.4 (1.0–2.0)*	57.7	1.5 (1.1–2.0)*
Enclosed spaces	43.5	1.4 (1.0–1.8)*	49.2	1.4 (1.0–1.9)*	71.1	2.7 (1.9–3.6)*	60.9	2.0 (1.5–2.7)*
Being alone	52.8	2.2 (1.6–3.0)*	66.0	3.8 (2.8–5.3)*	77.9	5.0 (3.4–7.2)*	67.5	3.4 (2.5–4.8)*
Blood/injury subtype								
Blood	41.8	1.3 (1.0–1.7)	51.8	1.9 (1.4–2.5)*	63.7	2.3 (1.7–3.1)*	53.1	1.7 (1.3–2.2)*

[a] Father and/or mother had one of the following psychiatric conditions or problems: depression, delusions or hallucinations, anxiety disorders or phobias, alcohol abuse, suicide
[b] Respondent perceived at least one experience in childhood of emotional neglect, psychological abuse, physical abuse or nonconsensual sexual contact
[c] Respondent scored unfavourably on neuroticism scale (in top third of sample)
[d] Respondent scored unfavourably on mastery scale (in bottom third of sample)
[e] Adjusted for gender, age and other specific fears
*Significant at the 0.05 level

fear of enclosed spaces both had relatively unfavourable profiles; both were more likely to be associated with neuroticism (OR = 5.0 and 2.3, respectively) and an external locus of control (OR = 3.4 and 2.0, respectively).

Discussion

■ Limitations

We have investigated eight kinds of lifetime specific phobia in terms of their prevalence, impairing effects, psychiatric comorbidity, course of illness and determinants. The most significant limitation of our study lies in the operationalisation of the eight variants. The CIDI 1.1 version on which our data are based did not record which of the lifetime irrational fears endorsed by respondents actually provoked the development of specific phobia. Hence, it was not possible to study a phenomenon like "animal phobia" as such, but only "specific phobia with a fear of animals". One drawback of such categories of "lifetime phobia with a specific fear" is that the reported fears included not only fears that were serious enough to meet the DSM-III-R criteria for specific phobia, but undoubtedly some subthreshold fears as well. The estimated odds ratios are therefore probably on the low side, especially for the fears that were relatively prevalent at the subthreshold level (such as fear of heights). However, as the degrees of underestimation can be seen as manifesting the impairing effects of the specific fears, this limitation does not affect the validity of the results. The results reported for the specific phobias actually reflect the impairing effects of the specific fears.

An alternative approach would have been to base the analyses solely on pure phobias (those involving one specific fear only), but that would have had two major disadvantages. For one thing, it would have seriously weakened the statistical power of the analysis, as pure phobias comprised only 34% of the phobia cases in the data. More important, pure phobias are not representative of the full spectrum of specific phobias. Phobias with multiple fears are the ones associated with the highest levels of impairment and comorbidity and with the most unfavourable courses of illness [10]. In other words, selecting the pure phobias would have implied selecting the milder cases.

A second limitation of the study concerns the selection of phobic items included in the CIDI version used. In comparison with the studies by Kendler et al. [16, 17], we had few items to work with, especially in the animal and blood/injury subtypes. For one thing this prevented us from testing the equivalence between phobias of small animals and phobias of blood as argued by Merckelbach et al. [23]. We also had relatively few items in the situational cluster as compared to the examples mentioned in DSM-IV (p. 445): public transport, tunnels, bridges, elevators, flying, driving and enclosed spaces. This prevented us from contributing to the current debate about differentiating situational phobias from agoraphobia [9].

■ Animal and natural environment subtypes

The animal and natural environment phobia subtypes resemble one another in many ways. They have comparable profiles in terms of living impairments, comorbid psychopathology, and factors commonly

underlying mental illnesses. The most notable feature is the far greater likelihood of role impairment, particularly in phobias with fear of heights or fear of water (highest OR 6.3). The probabilities of having a comorbid disorder or a risk factor for psychopathology (parental psychopathology, childhood abuse, weak personality) were also elevated in most cases, though much less strongly (highest OR 2.8). Most phobia variants in this category were associated with the seeking of professional help, but not with medication use (except phobia with fear of heights).

Another similarity between the animal and natural environment subtypes lay in the age of onset and the subsequent duration of the anxiety symptoms; both subtypes involve phobias that have origins in childhood and tend to last more than 10 years. The only anomalous results in the animal–natural environment cluster concern the prevalence and prognosis of phobia with fear of heights. This phobia variant was the most prevalent by far of the specific phobias assessed here, as well as the most intractable. It occupied a less exceptional place in the NCS study [10], where its lifetime prevalence was slightly lower than that for phobia with fear of animals (5.3 vs. 5.7).

Beyond these similarities, some distinctions also emerged within the animal and natural environment subtypes. Ranked in terms of severity, the phobia with fear of heights appeared the most problematic and the phobia with fear of storms the least; the latter showed "only" a higher probability of role impairment, comorbid anxiety or mood disorders, and neuroticism.

■ Situational and blood/injury subtypes

An interesting finding in our study was the highly distinctive profile of the specific phobia with fear of being alone. After adjustment for gender, age and co-occurring specific fears, this phobia emerged not only as the most serious variant in its consequences, but also as the strongest predictor of comorbid anxiety or mood disorders and of risk factors for psychopathology (highest OR 19.8). The only feature in which phobia with fear of being alone compared favourably to other specific phobias was its course of illness. Although that may reflect a shorter natural course, it could also result from the relatively greater frequency in which treatment was obtained for this condition. These findings are consistent with those in a study by Curtis et al. [10]. They reported that although fear of being alone had the lowest prevalence in the population (7.3%) compared to other specific fears, it was nonetheless the fear most likely to be associated with a diagnosis of DSM-III-R simple/specific phobia (in over 40% of cases).

One explanation for the strong associations between phobia with a fear of being alone and the impairment measures might be its high level of comorbidity with other anxiety and mood disorders. To test this, we conducted an additional series of regression analyses that included both the comorbid disorders and the co-occurring fears as potential confounders (table available from the authors). Here again, the impairments associated with the phobia with fear of being alone were found to be significant; although the odds ratios were lower, as expected, they remained the highest of all variants on the measures of professional help, medication and interference in daily life. Hence, even in the absence of comorbid disorders, people who had a phobia with fear of being alone suffered more impairment from their fear than those with any other specific phobia variant.

It is questionable, however, whether controlling for comorbid disorders is actually justified here. In view of the relatively early onset of specific phobia with fear of being alone (the median age in the present study was 14), one cannot rule out that this disorder is a cause of the later emerging agoraphobia [21] and mood disorders [19]. Should that be the case, then one would be adjusting for effects that originate in the specific phobia itself.

The other two situational phobias (involving fears of flying and of enclosed spaces) formed a distinct cluster only in terms of their adolescent ages of onset. For the rest, the phobia with fear of flying had a relatively favourable profile (highest OR 5.4), more akin to that of the animal and natural environment phobias, in contrast to the relatively unfavourable profile of the phobia with fear of enclosed spaces (highest OR 9.0). Other studies have also reported a relatively dissimilar profile for claustrophobia in comparison to animal phobias [23]. The phobia with fear of flying did distinguish itself from the animal and natural environment phobias in terms of medication use. In fact, medicine use constituted the most characteristic feature of this variant (the medication indicator had the highest odds ratio of all features). That may reflect the predictable nature of the feared situation.

It has been argued that blood/injury phobias are characterised by different physiological responses [7] or different genetic structures [15] in comparison to the other specific phobias. Based on the characteristics we studied, the blood/injury phobias appeared to have a closer resemblance to claustrophobia than to animal or natural environment phobias. Kinship to the latter types was closer only in terms of age of onset and duration of illness.

■ Domain debate

The current DSM categorisation of phobias originated in the classification by Marks [22]. Although the definitions of agoraphobia and social phobia have changed very little since that time, the discussions about specific phobia still continue [9]. The essential

feature of this phobia category is a marked and persistent fear of clearly discernible, circumscribed objects or situations [10]. Although such fears are not evenly dispersed over all conceivable objects and situations (fear of snakes is far more prevalent than fear of electricity), the number of stimuli that can trigger phobic reactions is basically infinite. The debate on specific phobia concerns whether all these specific fears ought to be clustered under a single label. DSM-IV chose an intermediate solution, distinguishing five subtypes of specific phobia. Thus, although specific phobia is still defined as a single class of disorders, it contains so much evidence for heterogeneity that different subtypes need to be acknowledged.

Our results endorse the conclusion of Craske et al. [9] that there seems to be little basis for distinguishing the animal and natural environment subtypes from each other. Our findings suggest that fear of flying could be added to that cluster as well. Although it is not a childhood anxiety, it does strongly resemble the fears of animals and natural phenomena in other respects. Our study does not permit any conclusions about whether the remaining two phobias (enclosed spaces and blood/injury) warrant separate categorisations. What does seem clear, at any rate, is that their consequences are more severe than those of the animal and natural environment subtypes.

The fear of being alone emerged here as the most pathological condition of all. It therefore does not seem to belong to the array of specific fears. Other observers have apparently reached the same conclusion, as this phobic item was removed from the more recent version 2.1 of the CIDI [35]. The serious consequences of the fear of being alone justify further research on its meaning and its appropriate location in DSM.

In discussing how our findings might inform the future classification of specific phobia, we should not confine ourselves to the debate on whether this diagnostic category needs to be subdivided further, but we should also consider the countermovement towards identifying commonalities amongst the separate mental disorders in DSM. Results of structural analyses of patterns of comorbidity suggest that the common mental disorders may be divisible into two broad categories of internalising and externalising disorders [32]. In these analyses specific phobia is seen as just one variant of an underlying "fear" dimension, which together with an "anxiety-misery" dimension, would explain a large part of the variation within the group of internalising disorders. Such findings have been confirmed in studies on the structures of genetic and environmental risk factors for the common mental disorders [18]. The high rates of comorbidity encountered in the present study between the specific phobia subtypes and the other anxiety and mood disorders can be seen as supporting this tendency.

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