

## ORIGINAL PAPER

Wolfgang Hiller · Winfried Rief · Elmar Brähler

**Somatization in the population: from mild bodily misperceptions to disabling symptoms**

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■ **Abstract** *Objective* This study investigates the prevalence of current somatization in the population by taking different levels of symptom severity into account. Somatization is described along a continuum from mild and negligible bodily misperceptions to severe and disabling somatoform symptoms. *Methods* A representative sample of 2,552 persons in Germany was examined with a screening instrument for medically unexplained physical complaints that had occurred during the past 7 days. All 53 symptoms from the ICD-10/DSM-IV sections of somatoform disorders were included. *Results* 81.6% reported at least one symptom causing at least mild impairment and 22.1% at least one symptom causing severe impairment. The entire sample had an average of 6.6 symptoms associated with at least mild distress. Somatization of any degree was associated with female gender, age above 45, lower educational level, lower household income and rural area. The most common symptoms with prevalence rates > 20% were various types of pain (back, head, joints, extremities), food intolerance, sexual indifference, painful menstruations and erectile/ejaculatory dysfunction. *Conclusion* This population survey demonstrates that medically unclear complaints are an everyday phenomenon. About three out of four cases

are below clinical relevance with only low level of impairment. Epidemiological correlates are similar between clinical and non-clinical forms of somatization.

■ **Key words** somatization – somatoform disorders – symptom severity – population survey – prevalence

**Introduction**

Bodily discomfort not caused by medical disease seems to be a ubiquitous phenomenon of human life. States of exhaustion, mild indigestion or temporary muscle stiffness are examples of physical sensations that may be experienced by many people as ordinary and trivial. Medical advice is rarely sought in such cases [1]. At the other end of the spectrum are clinical manifestations where unexplained somatic symptoms lead to considerable distress and various disabilities. The term “somatization” is frequently used to differentiate medically unexplained somatic symptoms from those which are part of a known organic disease. Patients with clinically relevant somatization are to be diagnosed as somatoform disorder according to current classification systems [2, 3]. “Somatoform” means that the clinical condition is not due to organ pathology, although it has the outer appearance of a somatic disease. The exact etiology of the somatoform disorders is unknown, but risk factors such as childhood experiences of illness [4], increased interoceptive attention [5], misinterpretations of complaints as signs of diseases [6] or endocrine dysfunction [7] have been suggested by previous research.

Several studies of the past years have shown that somatoform disorders are common in the community and the primary care system [8–10]. Table 1 summarizes prevalence rates from different epidemiologic studies that have used psychometrically established interviews to diagnose according to newer versions of

Dr. W. Hiller (✉)  
Dept. of Clinical Psychology  
University of Mainz  
Staudingerweg 9  
55099 Mainz, Germany  
Tel.: +49-6131/39-22344  
Fax: +49-6131/39-24623  
E-Mail: hiller@mail.uni-mainz.de

Dr. W. Rief  
Dept. of Clinical Psychology  
University of Marburg  
Marburg, Germany

Dr. E. Brähler  
Dept. Medical Psychology and Medical Sociology  
University of Leipzig  
Leipzig, Germany

the Diagnostic and Statistical Manual of Mental Disorders (DSM). Pain disorder and abridged forms of somatization disorder were the most frequent conditions with lifetime rates up to around 12–19%. Another consistent finding was that somatization disorder is rare with rates below 1%, mainly because of the very restrictive diagnostic criteria, which require multiple somatic symptoms from different specified organ systems. Somatization disorder therefore includes only the most severely affected patients with unexplained physical symptoms. Less severe presentations such as those labeled abridged somatization disorder are much more typical in the population. Such patients constitute a large group in the primary care system and in inpatient settings [18, 19].

Although the data given in Table 1 allow a good insight into the public relevance of somatoform disorders in Western societies, our knowledge about the epidemiology of somatization is not yet sufficiently complete. Two important aspects were not taken into account in almost all previous studies. First, as the most frequent aim of former research had been the identification of disorders, somatoform complaints beneath the severity level of clinical significance were rarely examined. It should be beared in mind that medically unexplained somatic complaints are not necessarily distressing or disabling but may exist along a continuum ranging from simple uncomfortable sensations to incapacitation [1]. A second question left unclear by previous research refers to the

existence of current somatization. Most studies (see Table 1) have only investigated lifetime, 12-, 6- or 1-month prevalences. No systematic research is known to us addressing the question of how frequent somatization symptoms are present at the point of time when the investigation takes place.

Therefore, in this article, we present a study, which aims to broaden our knowledge about the point prevalence of medically unexplained symptoms in the general population by taking different degrees of symptom severity into account. Symptom assessment was not limited to pathological manifestations. We wanted to analyze the relationship between “normal” and clinical manifestations of somatization. For example, little is known of whether or not epidemiological risk factors for somatoform disorders can be also used to explain sub-clinical and non-pathological forms of somatization.

## Method

### ■ Sample and data collection

A nationwide survey representative for the German general population was conducted with the assistance of an institute specialized for market/demographic research (USUMA, Berlin). Age, gender and educational level were the major criteria for representativeness according to the register of the 1994 Federal Elections. Data collection took place at 201 sample points, of which 105 were located in Western and 96 in Eastern Germany. Target subjects were German speaking inhabitants aged 14 or older and living in a private

**Table 1** Prevalence estimates of somatoform disorders

Studies	Lifetime	12-month	6-month	4-weeks/1-month
<i>Somatization disorder</i>				
U.S. population <sup>a</sup>	0.1			
Puerto Rico population <sup>b</sup>	0.7		0.7	
Former West Germany <sup>c</sup>	0.8		0.8	
Northern German representative sample <sup>d</sup>	0.0	0.0		0.0
Florence, Italy <sup>e</sup>		0.7		
<i>Abridged forms of somatization disorder</i>				
U.S. population <sup>a, g</sup>	11.6			
Puerto Rico population <sup>b, h</sup>	19.0			
German general population <sup>f, h</sup>	5.6	4.3		3.1
Florence, Italy <sup>e, i</sup>		13.4		
<i>Pain disorder</i>				
German general population <sup>f</sup>	12.7	8.1	5.4	5.4
Northern German representative sample <sup>d</sup>	12.3			4.0
Florence, Italy <sup>e</sup>		0.6		
<i>Overall (any form of somatoform disorder including abridged forms of somatization disorder)</i>				
German general population <sup>f</sup>	16.2	11.0		7.5

<sup>a</sup>Epidemiologic Catchment Area Study;  $N > 18,000$ ; NIMH-DIS; see Robins and Regier [11]

<sup>b</sup>Puerto Rico Epidemiological Survey,  $N = 1,551$ ; NIMH-DIS; see Canino et al. [12]

<sup>c</sup>Munich Follow-Up Study,  $N = 483$ ; NIMH-DIS/DSM-III; see Wittchen et al. [13]

<sup>d</sup>Transitions in Alcohol Consumption and Smoking Project;  $N = 4,075$ ; modified M-CIDI/DSM-III-R/IV; see Meyer et al. [14], Grabe et al. [15]

<sup>e</sup>Florence Community Survey,  $N = 673$ ; modified SADS-L/DSM-III-R; see Faravelli et al. [16]

<sup>f</sup>German National Health Interview and Examination Survey (GHS);  $N = 4181$ ; M-CIDI/DSM-IV; see Jacobi et al. [17]

<sup>g</sup>Sub-syndromal somatization syndrome

<sup>h</sup>Escobar's SSI 4,6 (Somatic Symptom Index; at least 4 lifetime symptoms in men and 6 symptoms in women)

<sup>i</sup>Undifferentiated somatoform disorder

Table 1 considers only studies with diagnoses according to DSM-III, DSM-III-R, DSM-IV; only diagnoses based on interview data, no questionnaire surveys

household. A random-root procedure was used to construct the sample. First, sample points were defined by taking the entire area of Germany into account. Households and inhabitants were then allocated to each sample point with the aim to form homogeneous sample points of similar size. The first interview was conducted after selecting a specific street, a house, a floor and an apartment. Afterwards, every third apartment was chosen for interview. Within each household, the target person was randomly selected from all household members aged 14 or older. In the first wave, attempts were made to contact 3.125 persons. Two call-backs had to be without success before an address was considered a failure. Quality neutral failures (e.g., apartment not inhabited) amounted to 3.8% and systematic failures (target persons refused interview) were 30.6%. The final sample consisted of 2.552 persons between 14 and 92 years. Their sociodemographic characteristics are summarized in Table 2. The frequency of people with other nationalities than German was low with 3.1%.

### Measures

Physical complaints were assessed with the Screening for Somatoform Symptoms (SOMS; [20, 21]), an internationally well-established questionnaire developed to identify and classify persons with somatoform conditions [22]. We applied the SOMS-7 version, which assesses symptoms that had been present during the past 7 days. If present, each symptom is rated according to its degree of associated impairment: 1 = mild, 2 = medium, 3 = severe, and 4 = very severe. The SOMS includes a total of 53 physical symptoms, all taken from the definitions of the fourth DSM (DSM-IV) and the tenth International Classification of Diseases (ICD-10) for somatization disorder and somatoform autonomic dysfunction. Subjects are instructed to report only complaints for which physicians had not been able to find medical causes. Although participants could ask trained assistants for help, no person of the present study made use of this offer. The SOMS can be analyzed by either adding up the number of symptoms reported (irrespective of symptom severity) or by referring to the severity score for somatization across all symptoms. This somatization severity index can be computed either for the 33 items of the DSM-IV somatization disorder list (range 0–132) or for all 53 items from both the DSM-IV and ICD-10 lists (range 0–212).

The psychometric properties of the SOMS have been determined in previous studies [20, 21]. The scale showed a high internal consistency of  $\alpha = 0.92$ . Both indices, the somatization symptom count and the somatization severity index, discriminated patients with somatoform disorders from those with other forms of mental

disorders. When results obtained with the SOMS and the Structured Clinical Interview (SCID) were compared, the symptom correlation was  $r = 0.75$  and diagnoses made by the SOMS had a sensitivity of 82% and a specificity of 85%. The 72-h test-retest reliability was 0.85 for the somatization index and more than 90% of the items had reliabilities of  $\kappa \geq 0.60$ . The somatization index correlated 0.59 with the SCL-90R somatization scale. The utility of the SOMS for state assessments was additionally confirmed in treatment studies where a significant decrease of the scores was observed in contrast to no changes during a pre-treatment waiting period [19, 21].

### Statistical methods

Base rates for each symptom as well as mean SOMS scores will be reported. Odds ratios (OR) are used to analyze the potential influence of sociodemographic variables, together with 95% confidence intervals (CI), which provide an estimation of sample bias. Effect sizes (ES) according to Cohen's  $d$  will be computed in addition to the  $t$ -statistic when means are compared, as statistical significance does not guarantee sufficient effects in large samples.

## Results

### Prevalence of current somatization

We first examined the overall point prevalence of somatization in our sample. Table 3 shows that about four of five subjects had at least one symptom associated with at least mild impairment. This demonstrates that somatization represents a widespread phenomenon, although many of these cases might not be of clinical relevance. Therefore, we calculated how many subjects reported that their symptoms had led to severe or very severe impairment. This was the case in about one of five persons. If the combined DSM-IV plus ICD-10 list was taken, the entire sample reported a mean number of 6.6 current symptoms of any degree, whereas the mean number of severe symptoms was

**Table 2** Sociodemographic variables of the sample

	Male (N = 1.206)	Female (N = 1.346)	Total (N = 2.552)
Age (mean, SD)	47.5 (17.8)	47.8 (18.2)	47.6 (18.0)
45 years or older (%)	53.6	52.2	52.9
Western part of Germany (%)	76.8	77.4	77.1
Educational level (%)			
School $\leq 8$ years	46.6	46.0	46.3
School $> 8$ years	45.2	48.3	46.8
University	8.2	5.7	6.9
Familial status (%)			
Married	56.1	51.0	53.4
Divorced	10.9	9.7	10.2
Widowed	5.8	17.4	11.9
Household income (%)			
$< 750$ Euro/month	4.1	4.8	4.5
750 to $< 1.250$ Euro/month	17.2	25.7	21.7
1.250 to $< 2.000$ Euro/month	41.3	36.5	38.8
$\geq 2.000$ Euro/month	37.5	33.0	35.1
Urban/rural (%)			
$< 50.000$ inhabitants	59.7	59.1	59.4
$\geq 50.000$ inhabitants	40.3	40.9	40.6

**Table 3** Prevalence of current somatization in the general population

	Percent	Mean (SD)
<i>From combined DSM-IV/ICD-10 list:</i>		
at least one symptom causing at least mild impairment	81.6	
at least one symptom causing severe or very severe impairment	22.1	
number of symptoms causing at least mild impairment		6.6 (8.2)
number of symptoms causing severe or very severe impairment		0.7 (2.1)
<i>From DSM-IV list only:</i>		
at least one symptom causing at least mild impairment		
at least one symptom causing severe or very severe impairment	78.6	
number of symptoms causing at least mild impairment	19.9	4.0 (4.7)
number of symptoms causing severe or very severe impairment		0.5 (1.3)

0.7. If only persons with at least one mild symptom were taken as a sub-sample, we found a mean of 12.2 symptoms (SD = 15.4) in the DSM-IV/ICD-10 list and of 8.0 symptoms (SD = 9.0) in the DSM-IV list. If only persons with at least one disabling symptom were considered, the corresponding mean numbers of symptoms were even 27.0 (SD = 21.1) in the DSM-IV/ICD-10 list and 17.4 (SD = 12.3) in the DSM-IV list. This underlines the fact that people tend to have multiple somatic complaints, not only single symptoms.

### ■ Impact of sociodemographic factors

Table 4 demonstrates that somatization was significantly associated with major demographic variables. The proportion of people reporting at least one symptom was higher in women, among older persons, among subjects with lower educational level and lower household income, and in less urbanized areas. For example, 69.7% of the persons in the age group below 45 had at least one mild symptom, compared to 87.1% of the age group above 45. The corresponding OR was 2.94, which indicates that the odds of the older subjects to have somatization symptoms of any degree was almost three times higher than the corresponding odds of the younger persons. All ORs in Table 4 are significant, as no confidence interval included the value of 1.0. The highest ORs for the subgroup with at least one severe/very severe symptom were found for age (2.53) and household income (2.15). This finding corresponds to differences in the overall symptom distress score of the SOMS. There were no interactions either between educational level and age or between household income and gender (all  $P > 0.05$ ). If age was considered as a continuous variable, the cor-

relation between age and the SOMS overall somatization index was 0.25 ( $P < 0.01$ ).

### ■ Gender effects

It should be taken into account that the SOMS contains several items that address only female aspects. Four DSM-IV symptoms apply to women (pain during menstruation, irregular menses, excessive menstrual bleeding, vomiting throughout pregnancy), whereas only one is specific to men (erectile or ejaculatory dysfunction). We therefore repeated the gender-related analyses of Table 4 by correcting for the unequal number of relevant items. Instead of taking the mean number of symptoms across all 33 DSM-IV items, we calculated mean symptom scores based on 29 items for men and 32 for women. The difference between men ( $M = 0.19$ ,  $SD = 0.29$ ) and women ( $M = 0.22$ ,  $SD = 0.28$ ) remained significant ( $t = 3.08$ ,  $P < 0.01$ ), although the effect size of  $d = 0.12$  turned out to be somewhat smaller than for the uncorrected somatization severity index shown in Table 4. When only the 28 gender-neutral symptoms were considered, women still had significantly more symptoms than men. The ORs were 1.49 (95% CI 1.24–1.78) for the presence of at least one mild symptom and 1.43 (1.17–1.76) for at least one severe/very severe symptom. Although these values, especially the one for mild symptoms, tend to be lower than those shown for the uncorrected comparisons in Table 4, the finding that women had more symptoms than men was generally maintained.

### ■ Prevalence of single complaints/symptoms

The base rates of the individual symptoms are shown in Table 5. To enhance comparability, the 2-year-

**Table 4** Associations between sociodemographic variables and current somatization from the DSM-IV somatization disorder list

	At least one symptom		At least one symptom		Mean (SD)	Overall somatization severity index	
	Mild (%)	OR (95% CI)	Severe/very severe (%)	OR (95% CI)		Significance	ES ( <i>d</i> )
<i>Gender</i>							
Female ( <i>n</i> = 1.346)	83.9	1.95	22.8	1.49	7.1 (8.9)	$t = 4.86$	0.19
Male ( <i>n</i> = 1.206)	72.7	(1.61–2.37)	16.6	(1.22–1.81)	5.4 (8.4)	$P < 0.01$	
<i>Age</i>							
<45 years ( <i>n</i> = 1.240)	69.7	2.94	12.6	2.53	4.3 (6.9)	$t = 11.4$	0.46
≥45 years ( <i>n</i> = 1.312)	87.1	(2.40–3.60)	26.8	(2.06–3.12)	8.1 (9.7)	$P < 0.01$	
<i>Education</i>							
<8 years school ( <i>n</i> = 1.174)	82.6	1.57	25.0	1.81	7.5 (9.5)	$t = 6.85$	0.27
≥8 years school ( <i>n</i> = 1.365)	75.2	(1.29–1.91)	15.5	(1.48–2.20)	5.2 (7.7)	$P < 0.01$	
<i>Household income</i>							
<1.250 Euro/month ( <i>n</i> = 636)	82.5	1.38	29.7	2.15	9.3 (12.0)	$t = 10.1$	0.42
≥1.250 Euro/month ( <i>n</i> = 1.792)	77.4	(1.09–1.74)	16.4	(1.74–2.66)	5.3 (7.0)	$P < 0.01$	
<i>Urban/rural</i>							
<50.000 inhabitants ( <i>n</i> = 1.505)	81.3	1.48	21.4	1.27	6.7 (8.8)	$t = 3.31$	0.13
≥50.000 inhabitants ( <i>n</i> = 1.034)	74.7	(1.22–1.79)	17.7	(1.03–1.55)	5.6 (8.3)	$P < 0.01$	

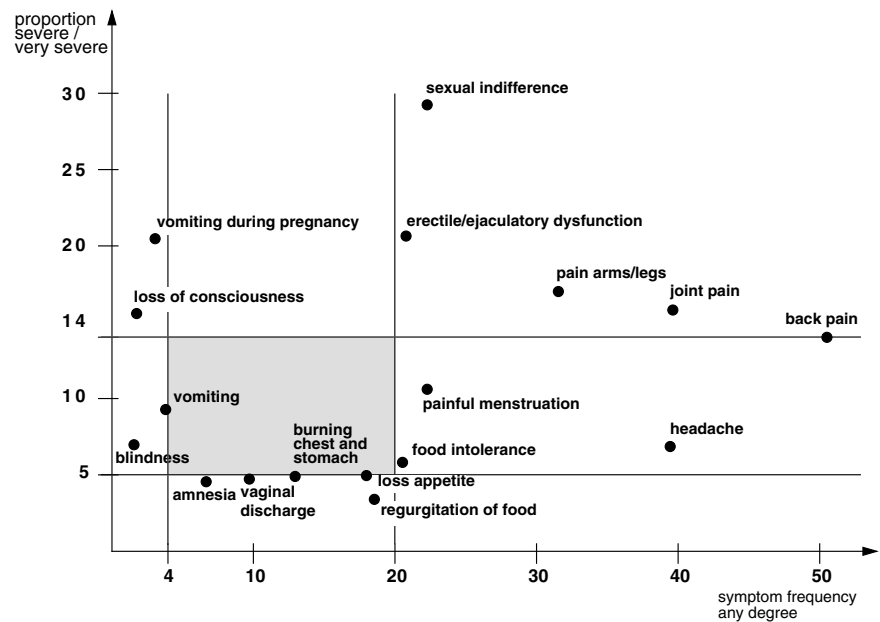
OR = Odds Ratio; CI = confidence interval; ES = Effect Size according to Cohen's *d*

**Table 5** Symptom frequencies in the general population

	2-year prevalence (%)	Point prevalence (%)		
		Present any degree of severity	Present only severe/very severe	Mean symptom severity
Headache	19	39.4	2.7	1.57
Abdominal pain	11	19.8	1.3	1.28
Back pain	30	50.5	7.1	1.83
Joint pain	25	39.6	6.3	1.66
Pain in legs and/or arms	20	31.7	5.4	1.53
Chest pain	5	10.8	1.2	1.17
Rectal pain	2	4.7	0.5	1.07
Pain during sexual intercourse	1	4.2	0.4	1.06
Pain during urination	3	5.4	0.4	1.08
Nausea	9	11.4	0.7	1.15
Bloating	13	18.5	1.5	1.26
Discomfort around the precodium	7	12.2	1.2	1.18
Vomiting (pregnancy excluded)	2	3.8	0.4	1.06
Regurgitation of food	8	18.6	0.6	1.24
Hiccough, or burning sensations in chest or stomach	7	13	0.6	1.17
Intolerance of food	12	20.6	1.2	1.28
Loss of appetite	7	18	0.9	1.24
Bad taste in mouth, or excessively coated tongue	5	17.2	1.2	1.24
Dry mouth	8	19.7	1.4	1.27
Frequent diarrhea	3	8.1	0.9	1.12
Discharge of fluid from anus	1	4.2	0.4	1.06
Frequent urination	9	15.2	1.7	1.24
Frequent bowel movements	3	8	0.8	1.12
Palpitation	11	14.1	1.4	1.21
Stomach discomfort or churning feeling in the stomach	11	14.5	1	1.2
Sweating (hot or cold)	9	16.5	1.3	1.23
Flushing or blushing	9	13.8	1.3	1.21
Breathlessness (without exertion)	6	13.9	1.1	1.2
Painful breathing or hyperventilation	5	12.5	0.9	1.18
Excessive tiredness on mild exertion	8	17.5	2.1	1.27
Blotchiness or discoloration of the skin	4	8.1	1.1	1.13
Sexual indifference	11	22.4	6.6	1.46
Unpleasant sensations in or around the genitals	2	6.8	0.5	1.1
Impaired coordination or balance	5	12	1.1	1.17
Paralysis or localized weakness	2	8.6	0.7	1.13
Difficulty swallowing or lump in throat	3	7.2	0.5	1.1
Loss of voice	2	6.3	0.6	1.09
Urinary retention	3	7	0.8	1.11
Hallucinations	2	5.3	0.4	1.07
Loss of touch or pain sensations	1	5.5	0.6	1.08
Unpleasant numbness or tingling sensations	5	10.5	1.2	1.16
Double vision	2	4.1	0.3	1.06
Blindness	1	1.7	0.1	1.03
Deafness	3	6.9	0.6	1.1
Seizures	2	4.8	0.4	1.07
Amnesia (loss of memory)	3	6.7	0.3	1.09
Loss of consciousness	1	1.8	0.3	1.03
<i>Women only:</i>				
Painful menstruation	9	22.3	2.4	1.35
Irregular menstruation	8	14.6	1.4	1.22
Excessive menstrual bleeding	4	11.2	1.6	1.18
Continuous vomiting during pregnancy	1	3.1	0.6	1.06
Unusual or copious vaginal discharge	3	9.7	0.5	1.12
<i>Men only:</i>				
Erectile or ejaculatory dysfunction	6	20.9	4.3	1.38

Note: The 2-year-prevalences were taken from Rief et al. [23]

**Fig. 1** Relationship between overall symptom frequency and the proportion of severe/very severe symptoms



prevalences of all symptoms as previously published by Rief et al. [23] are also displayed. The most common symptoms were various types of pain (back pain, headache, pain of the joints and in the extremities) as well as food intolerance, sexual indifference, painful menstruations and erectile/ejaculatory dysfunction, all of which had prevalence rates >20% if symptom reportings of any degree of severity were considered. If only severe/very severe symptoms were analyzed, rates >4% were found for the same symptoms except headache, food intolerance and pain during menstruations.

A closer inspection of Table 5 reveals that the base rates for complaints of any severity are not in all cases

parallel to those for severe symptoms only. For example, complaints may be common in a mild form but rare as symptoms with high degrees of associated disability. We therefore decided to analyze this situation in more detail. Figure 1 gives a graphical illustration of symptoms that were either very frequent or very rare. We computed for each symptom the conditional probability of how often it was reported as severe/very severe, given it was present to any degree (see axis proportion severe/very severe in Fig. 1). The vast majority of the symptoms was located within the gray-shaded area in the center of Fig. 1, i.e., these symptoms had frequencies between 4 and 20% and severe/very severe proportions between 5 and 14%. Only symptoms with

**Table 6** Prevalence of symptom clusters (syndromes) derived from the symptom list of DSM-IV somatization disorder

	Pain symptoms		Gastrointestinal symptoms		Pseudoneurological symptoms	
	Percent	Mean (SD)	Percent	Mean (SD)	Percent	Mean (SD)
At least one symptom causing at least mild impairment	71.6		35.4		27.1	
At least one symptom causing severe or very severe impairment	13.5		3.2		3.5	
Number of symptoms causing at least mild impairment		2.2 (2.1)		0.6 (1.1)		0.8 (1.9)
Number of symptoms causing severe or very severe impairment		0.3 (0.8)		0.1 (0.3)		0.1 (0.5)
	OR	95% CI	OR	95% CI	OR	95% CI
<i>Gender<sup>a</sup> at least one symptom</i>						
Causing at least mild impairment	2.05	1.72–2.44	1.37	1.17–1.62	1.31	1.10–1.56
Causing severe or very severe impairment	1.63	1.29–2.06	1.83	1.15–2.93	0.83	0.54–1.27
<i>Age<sup>b</sup> at least one symptom</i>						
Causing at least mild impairment	2.40	2.01–2.87	1.84	1.56–2.17	2.85	2.37–3.44
Causing severe or very severe impairment	1.89	1.49–2.40	1.32	0.84–2.07	2.65	1.65–4.25
<i>Education<sup>c</sup> at least one symptom</i>						
Causing at least mild impairment	1.70	1.42–2.03	1.20	1.02–1.41	1.42	1.19–1.70
Causing severe or very severe impairment	1.69	1.34–2.12	0.98	0.63–1.53	1.44	0.94–2.20

<sup>a</sup>ORs refer to: women > men

<sup>b</sup>ORs refer to: persons aged 45 or above > persons below age 45

<sup>c</sup>ORs refer to: persons with school below 8 years > persons with school 8 years or more

unusual distributions are displayed in Fig. 1. Among the frequent symptoms, sexual indifference and erectile/ejaculatory dysfunction were associated with a relatively high risk of being rated as severe/very severe, whereas a comparatively small proportion of subjects experienced painful menstruations, headaches and food intolerance as seriously disabling. Vomiting during pregnancy and loss of consciousness were associated with a higher risk of being experienced as severe than vomiting independent from pregnancy and blindness. Symptoms that were moderately frequent but rarely severe were amnesia, vaginal discharge, burning sensations in chest and stomach, loss of appetite and regurgitation of food.

We also analyzed age effects on symptom level and found that the occurrence of most symptoms was positively correlated with age. The by far highest point-biserial correlations between symptom absence/presence and age were found for back pain, joint pain and pain in legs or arms (all  $r > 0.30$ ;  $P < 0.01$ ). In contrast, all symptoms related to menstruation were negatively correlated with age.

### ■ Symptom clusters

In a last step of analysis, we examined symptom clusters (i.e., groups of associated symptoms forming a syndrome) instead of single symptoms. The symptom list of DSM-IV somatization disorder defines a pain cluster (10 symptoms), a gastrointestinal cluster (5 symptoms), a sexual cluster (5 symptoms) and a pseudoneurological cluster (13 symptoms). Table 6 gives prevalence rates and ORs for gender, age and education. The sexual cluster was not considered because it mainly consists of gender-specific symptoms. A larger proportion had symptoms from the pain cluster than from either the gastrointestinal or pseudoneurological cluster (both comparisons  $P < 0.01$ ). Gender effects were highest for the pain cluster with severe impairment but practically absent for the pseudoneurological cluster. This cluster, in contrast, had highest age effects, which in turn were small for the gastrointestinal cluster.

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## Discussion

Complaints are not necessarily symptoms, and perceptions of bodily irregularities are not necessarily complaints. Definitions of somatization must take into consideration that abnormalities of physical functioning can be localized along a continuum between mild discomfort and severe disability [24]. From a clinical perspective, it seems useful to divide this continuum into one area describing benign everyday phenomena and another area where clinical attention is required. There is no generally accepted convention until now of how to separate these areas. One attempt

has been made by the classification system DSM-IV where symptoms relevant for the diagnosis of somatization disorder are defined as follows: "A somatic complaint is considered to be clinically significant if it results in medical treatment (e.g., the taking of medication) or causes significant impairment in social, occupational, or other important areas of functioning" ([3], p. 446). It remains open, however, how to operationalize this definition in research projects and for clinical purposes.

The study presented here deals with the epidemiology of the different types of somatization. We studied the seven-day prevalence of medically unexplained physical symptoms in a representative German population sample. The most striking finding is that somatization, if broadly defined, is an exceptionally common phenomenon. Four of five persons of our sample (81.6%) reported at least one current physical complaint associated with at least mild distress. It also became apparent that somatization symptoms, once present, rarely occur singly. The mean number of symptoms per person was 6.6 in our study when all 53 symptoms of the DSM-IV/ICD-10 lists were rated. There was an impressive predominance of pain symptoms with back pain reported by every second person and headaches present in four out of ten persons. High rates for pain symptoms have been described consistently in various studies (e.g., [15, 25]). When symptom clusters were compared, the subjects of our study had more often symptoms of the pain cluster than of the gastrointestinal and pseudoneurological clusters.

The second major conclusion to be derived from our study is that somatization of clinical significance is also very frequent, although the rates for severe symptoms were smaller than those for mild and moderate complaints. A still substantial proportion of 22.1% had at least one somatoform symptom causing severe or very severe impairment. Hence, it must be expected that roughly every fifth person in the population has developed at least one severe somatization symptom. Our data also show that somatization is linked to a number of sociodemographic risk factors. Symptoms occur more often in women, in older persons, in those with lower educational levels and lower household income, and in rather rural areas. Increased risks associated with these factors were found not only for severe somatization symptoms but generally for symptoms across all grades of severity. For example, women had an odds ratio of 1.49 to develop severe somatization symptoms and of 1.95 to develop somatization complaints of any degree. This suggests that predisposing psychophysiological factors and etiological pathways seem to be similar both for clinical and non-clinical manifestations of somatization.

When comparing the results presented here with those of other epidemiological studies, it should be kept in mind that our focus was on current symp-

tomatology, whereas most other studies report prevalence rates for longer time periods or even lifetime rates. The point prevalence of at least one severe somatization symptom is somewhat higher than the prevalence estimates of somatization-related disorders (see Table 1). This finding is plausible because single symptoms may be temporary and do not necessarily have to lead to the development of a disorder. It is interesting to compare our 7-day rates with the corresponding 2-year rates published for the same symptoms by Rief et al. [23]. While all 2-year rates were clearly higher than our 7-day rates for severe symptoms, the opposite was the case when the 2-years rates were compared with current symptom across all severity grades. Gender and age effects were similar in both studies, which corresponds well with previous findings such as those reported by Swartz et al. [26] and Jacobi et al. [17, 27]. Thus, the predominance of somatization both as symptoms and disorders among women and older people seems to be a strongly reliable phenomenon (see also [9, 28, 29]).

Method differences often make comparisons between epidemiological studies difficult. We worked with a questionnaire approach to obtain information about the presence of somatic complaints and their severities, while many other studies used structured interviews administered by trained lay personnel (e.g., [11, 17, 27]). Interviews are indispensable when coding rules must be applied to appraise and categorize different types of information. For example, the diagnostic criteria and algorithms of classification systems are usually too complex to be based solely on self-ratings. In the case of somatization, however, interviews performed by non-professionals seem to have little advantage over self-ratings. Both methods refer primarily to the subjective patient report rather than to objective tests or medical examination (which would be too expensive to be used in large epidemiological surveys). We therefore believe that the data presented here and the data from interview-based studies are well comparable, although it is sometimes assumed that self-report methods yield higher rates [30]. Disadvantages of lay interviews have been described by Helzer et al. [31] who found a tendency of false negative diagnoses for somatization disorder when lay diagnoses were compared to diagnoses made by experts. To a certain degree, a tendency towards false negative findings might be present also in questionnaire data due to a substantial proportion of patients who prefer to interpret their physical symptoms as “medical” and not “psychological”.

There are some clinical implications and suggestions that can be derived from the present study. First, clinicians should be aware that a very high proportion of their patients experiences bodily complaints of different intensity. These symptoms should be addressed during clinical examination to evaluate whe-

ther or not they are associated with distress and psychosocial impairment. Second, symptom severity must be considered carefully when diagnosing somatoform disorders. It is not justified to base a diagnosis only on mild and negligible symptoms. Such erroneous diagnoses would lead to an overrepresentation of somatization-related diagnoses in clinical settings. On the other hand, the presence of mild or moderate symptoms should not be ignored because these complaints may worsen over the course of time. The successful management of sub-clinical symptoms will likely decrease the risk of a manifest somatoform disorder in the future.

To summarize, this study demonstrated that somatization is an extremely frequent phenomenon and basic manifestation of human life. The development of somatization-related disorders is only the tip of the iceberg. Perfect physical well-being seems to be a rather exceptional state. Research in the future should clarify the biological, psychological and social mechanisms that underlie “normal” and clinical somatization. Although it can be expected that both types have similar roots, the process of how everyday bodily misperceptions develop into pathological somatization is not yet well understood.

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