

Rates and predictors of remission in young women with specific phobia: A prospective community study

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ABSTRACT

This prospective study reports rates and predictors of remission in young women with specific phobia. Data came from a prospective community study, in which German women (aged 18–25 years) completed an extended version of the Anxiety Disorders Interview Schedule (ADIS-IV-L) at two time points. Of the 137 women with specific phobia at baseline, 41.6% were partially remitted and an additional 19.0% were fully remitted at follow-up, defined as absence of any specific fears. A remitting course of specific phobia was predicted by residual protective factors at baseline, especially participants' positive mental health and life satisfaction. Baseline levels of stress, coping skills, cognitive factors, psychopathology, and specific phobia characteristics did not predict remission. Results show that specific phobia in young women rarely takes a stable course at the full diagnostic threshold. The factors that influence remission of specific phobia are different from those that predict the incidence.

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1. Introduction

Specific phobia affects a very large number of people. Approximately 9.4% to 12.5% of the adult population will suffer from at least one specific phobia during their lifetime. Women are usually twice as likely to suffer from specific phobia as men (e.g., Kessler et al., 2005; Stinson et al., 2007). Despite extremely high prevalence, data on the natural course of specific phobia are sparse. Such lack of knowledge is remarkable because specific phobia is associated with high comorbidity as well as significant impairment and distress (Becker et al., 2007). Furthermore, specific phobia is a predictor of the subsequent onset of various other mental disorders (Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996).

Numerous clinical and epidemiological studies have documented that adults with specific phobia have usually suffered from these fears since childhood (e.g., Becker et al., 2007; Burke, Burke, Regier, & Rae, 1990; Kessler et al., 2005; Marks & Gelder, 1966; Öst, 1987; Stinson et al., 2007; Thyer, Parrish, Curtis, Nesse, & Cameron, 1985). Further evidence comes from prevalence studies demonstrating that prevalence rates do not change much over differing time frames (e.g., Becker et al., 2007; Stinson et al., 2007).

These findings from cross-sectional studies suggest that specific phobia is rather stable. However, cross-sectional studies based on

retrospective information are less suitable to go beyond a fairly broad estimation about the course and outcome of specific phobia. Unfortunately, there are few studies that have prospectively studied the course of specific phobia in community samples using diagnostic interviews. In a study by Milne and colleagues (1995), in which phobic disorders in adolescents (seventh, eighth, and ninth graders) were assessed over a 3-year period, only 11% showed a stable course. Note that this study relied on a very small sample ($n = 12$) and included specific phobia, social phobia, and agoraphobia. The Early Developmental Stages of Psychopathology Study (EDSP; Wittchen, Lieb, Pfister, & Schuster, 2000) investigated the course of specific phobia in 14- to 17-year-old adolescents over a 19-month time interval. Taking participants with threshold and subthreshold specific phobia together, 30.1% of these cases showed a stable course, at least at the subthreshold level. Finally, Agras, Chapin, and Oliveau (1972) studied natural course of specific phobia in a small sample of 10 phobic children (under 20 years) and 20 phobic adults (over 20 years) over a 5-year period. Results showed that 100% of the children but only 43% of the adults remitted during the 5-year period. Thus, prospective findings indicate that children and adolescents with specific phobia have a relatively high likelihood of remission, suggesting that the disorder shows fluctuations at the full diagnostic threshold over time. Most prospective studies relied on relatively young samples. Though, the course in children and adolescents is not necessarily comparable to that in adults because younger samples usually show a more instable course with higher rates of spontaneous

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remission (Agras et al., 1972; Last, Perrin, Hersen, & Kazdin, 1996). Therefore, corroborating previous findings by examining the course of specific phobia in adults would be important.

Whereas research on predictors of the incidence of specific phobia has been expanding, predictors of a remitting versus stable course are relatively understudied. Identification of such predictors is relevant for prognosis and planning of intervention measures. Analyses from prospective studies found several salient predictors of remission from anxiety disorders in general: younger age, absence of comorbid mental disorders, and a low number of negative life events (Bruce et al., 2005; Essau, Conradt, & Petermann, 2002). With regard to specific anxiety disorders, the absence of comorbid generalized anxiety disorder and avoidant personality disorder predicted remission from social phobia (Massion et al., 2002). In female samples, remission from social phobia was predicted by: high Global Assessment of Functioning scores, absence of a history of suicide attempts (Yonkers, Dyck, & Keller, 2001) as well as being employed, absence of comorbid mental disorders, low anxiety sensitivity scores, few daily hassles, and high positive mental health scores (Vriends et al., 2007). Altogether, these studies suggest that in addition to disorder characteristics, comorbid psychopathology, cognitive factors, stress, and protective factors are predictive of the long-term natural course. As far as we know, there is only one prospective study that has examined predictors of the natural course of specific phobia. In this study, Agras and colleagues (1972) found that a lower number of fears comprising the phobia and lower general fearfulness predicted remission over a 5-year period, but that severity of specific phobia was not associated with course.

In summary, data on the natural course of specific phobia come primarily from cross-sectional, retrospective studies. The few prospective community studies available are hampered by reliance on small sample size and examination of a very limited number of predictors of remission. Knowledge about the course of specific phobia in older samples and information about a broad range of predictors is lacking. Given the high prevalence of specific phobia in women, investigating remission in this group is clearly important.

The current study determined remission rates of specific phobia in a community sample of German women, initially aged 18–25 years. Data came from a prospective study, in which participants were evaluated at two time points over a 17-month time interval. By also considering specific phobia subtypes, we examined remission rates separately for full and partial remission from specific phobia. Moreover, by using information about specific phobia and participants' vulnerability factors at initial assessment, we investigated a broad range of predictors of remission from specific phobia.

2. Method

2.1. Participants

Participants were 137 German women with specific phobia who participated in the Dresden Predictor Study (DPS; also referred to as Dresden Mental Health Study; Becker et al., 2000), a prospective study of mental disorders. On the basis of information gathered in a diagnostic interview, all participants fulfilled criteria for point prevalence of specific phobia (i.e., disorder was present in the last 7 days up to the interview) according to *DSM-IV* (American Psychiatric Association, 1994).

Participants were randomly drawn from the 1996 population registers of residents in Dresden, former East Germany. In Germany, registers usually include all residents because each and every person is obliged to register. All participants had to meet

the selection criteria of being female and being aged 18–25 years at the time of initial assessment. A total of 5203 women were located and deemed eligible for the study. At the baseline assessment between July 1996 and September 1997, a total of 2068 women completed the diagnostic interview and 997 filled out questionnaires only, resulting in a response rate of 58.9%. Of the 2068 participants took part in the interview, 1881 also filled out questionnaires. Of these 1881 participants, 178 (9.5%) met *DSM-IV* criteria for point prevalence of specific phobia. At the follow-up assessment approximately 17 months later ($M = 16.9$ months, $S.D. = 6.0$, range = 7–30 months), 137 (77.0%) participants returned for readministration of the diagnostic interview and were included in the current study.

2.2. Diagnostic interview

The interviewer invited the participant for an individual face-to-face interview. The diagnostic assessment at baseline and follow-up was made using the "Diagnostisches Interview bei Psychischen Störungen – Forschungsversion" (F-DIPS; translation: Diagnostic Interview for Mental Disorders – Research Version; Margraf, Schneider, Soeder, Neumer, & Becker, 1996). The F-DIPS is an earlier version of the DIPS (Schneider & Margraf, 2006) and is based on a German translation and extension of the Anxiety Disorders Interview Schedule (ADIS-IV-L; Di Nardo, Brown, & Barlow, 1995). It is a structured interview for the assessment of Axis I mental disorders according to *DSM-IV*. Diagnoses are given for the past 7 days and lifetime.

The F-DIPS specific phobia section started with a stem question about the degree of fear and avoidance of 18 potentially phobic objects and situations. These referred to contents of the *DSM-IV* specific phobia subtypes, including: animals, natural environment (heights, storms, and water), blood-injection-injury on oneself or someone else (bleeding because of a cut, getting an injection, blood withdrawal), and situations (flying, elevators or closed spaces, driving a car). An additional question included physical phobias (medical or dental treatment, choking, vomiting, contagion) and phobias with fear of noise, costumes, or exams. Participants who endorsed the stem question were interviewed in detail to evaluate *DSM-IV* criteria.

Interviewers were psychologists, physicians, or psychology students in their last year of study. To ensure blinding, the interviewer who conducted the follow-up interview was unaware of the participant's assessment at baseline. All interviewers underwent 1 week of intensive training focusing especially on the content of the study and the use of the F-DIPS. Interviewers received biweekly supervision during fieldwork. Moreover, supervisors proofread every single completed interview protocol for formal consistency, appropriate recording, and coding. In cases where problems were detected, the interviewer was contacted and instructed for corrections. For reliability purposes, a second interviewer reviewed the audiotapes of 43 interviews and made diagnoses. The retest reliabilities for lifetime diagnoses were between .58 and 1.0 (Cohen's kappa; κ) and .64 and 1.0 (Yule's γ ; γ).

The retest reliability of the F-DIPS was also tested in a sample of 191 psychosomatic patients (Keller, 2000). The patients underwent two independent administrations of the F-DIPS within a mean retest interval of 2 weeks (range = 1–4 weeks). The retest reliabilities for current diagnoses were between $\kappa = .64$ and $\kappa = .89$, and $\gamma = .65$ and $\gamma = .94$. For specific phobia, the retest reliability was fair ($\kappa = .56$, $\gamma = .73$). In the same study, the validity of the F-DIPS was examined with the help of self-report questionnaires and diagnoses made by therapists. Overall, the F-DIPS proved to be a valid instrument for the assessment of mental disorders (Keller, 2000).

2.3. Remission from specific phobia

For this study, we distinguished between partial and full remission from specific phobia. On the basis of point prevalence diagnoses given at follow-up assessment, participants were subdivided in the following exclusive diagnostic groups:

- (a) Stable specific phobia: the participant still met full DSM-IV criteria for specific phobia by the end of the 17-month follow-up period.
- (b) Partial remission: the participant reported at least one specific phobia symptom (i.e., met at least one of the DSM-IV criteria) but no longer met full diagnostic criteria for the diagnosis of specific phobia by the end of follow-up.
- (c) Full remission: the participant no longer met any diagnostic criterion for specific phobia by the end of follow-up.

2.4. Measures of predictor variables

2.4.1. Specific phobia characteristics

Number of feared and avoided stimuli. In the F-DIPS specific phobia section, participants were first asked if they were afraid of 18 specific objects and situations or if they otherwise tried to avoid them. The interviewer rated the participant's answer on a scale from 0 (*no fear or avoidance*) to 8 (*extreme fear or avoidance*). The interviewer rated symptom endorsement values of the midpoint of scale as moderately strong.

Severity. If the participant reported a moderately strong fear, the interviewer rated the participant's degree of distress and impairment on scales ranging from 0 (*no distress or impairment*) to 8 (*severe distress or impairment*). For this study, we combined distress and impairment ratings to an overall measure of the severity of specific phobia.

Age at onset. The participant reported age at onset of the specific phobia. If participants were unable to indicate an exact time point, the interviewer tried to pinpoint onset of the specific phobia by asking about the life situation at the beginning of the disorder (e.g., "Were you already in school or kindergarten?").

2.4.2. Aggregate variables

In addition to the diagnostic interview, all participants completed a comprehensive battery of questionnaires at baseline, with the intent of assessing a broad range of potential predictors of remission. Because a large number of interrelated variables had been administered at baseline, measures of predictor variables were reduced to a smaller number of composite scores. Measures that were found to be strongly correlated and conceptually similar were standardized and combined into a single aggregate variable. Brief descriptions of each aggregate variable are presented in turn.

Protective factors. For this study, several questionnaires were combined to create an aggregate variable of participants' protective factors at baseline. Positive mental health was assessed with the 14-item Mental Health Scale (P-scale; Lutz, Heyn, Schmid, Sick, & Steinl, 1992). Social support was assessed using the 22-item Social Support Scale (SOZU-K; Fydrich, Sommer, Menzel, & Höll, 1987). Self-efficacy was assessed with the 10-item General Self-efficacy Scale (GKE; Jerusalem & Schwarzer, 1986). Life satisfaction with important life areas was assessed with a 12-item questionnaire (Lutz, Heyn, Schmid, Sick, & Steinl, 1992). Correlations between these indices ranged from $r = .46$ to $r = .71$ (in each case, $P < .01$). Each of the four variables was standardized (z scores with $M = 0$, $S.D. = 1$) across subjects. The aggregate variable was then computed as the mean of the standardized scores.

Twelve-month stress. Stress from life events and daily hassles was assessed with a modified version of the Inventory for Determining Life-Changing Events (ILE; Siegrist & Dittmann, 1983), in which participants indicated if 17 critical life events and 16 daily hassles were present within the last 12 months in their own life or whether they were present in the life of a significant other person. Participants then rated the degree of stress they were experiencing from each event and daily hassle. A total 12-month stress score was calculated as the mean of the standardized scores for stress ratings from life events and daily hassles in participants' own lives ($r = .56$, $P < .01$).

Coping skills. Problem-focused and emotion-focused coping strategies were assessed with the 25-item Ways of Coping Checklist (WOC; Folkman & Lazarus, 1980; German version, Ferring & Filipp, 1989). Problem-focused coping tries to activate resources to solve the stress-inducing problem; emotion-focused coping attempts to ease inner tension without trying to solve the problem (e.g., wishful thinking, self-preoccupation, mental rumination, self-blame, and emphasizing the positive). There is evidence documenting the negative adaptive outcomes of emotion-focused coping, mainly when the stressful situation can be ended by problem-focused responses (McCrae & Costa, 1986). For this study, we reversed scores for the emotional coping variable in order that high scores reflected effective coping. An aggregate variable was then computed as the mean of the standardized scores of both coping scores ($r = -.22$, $P < .05$).

Negative cognitive style. This aggregate variable assessed attributional style and negative cognitive schemata using the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986; German version, Ehlers, 1986), the Bodily Sensations Questionnaire (BSQ; Chambless, Caputo, Bright, & Gallagher, 1984; German version, Ehlers, Margraf, & Chambless, 1993), and the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978; German version, Hautzinger, Luka, & Trautmann, 1985). Correlations between these indices ranged from $r = .31$ to $r = .69$ (in each case, $P < .01$). Measures were standardized and a mean score was calculated to create an aggregate variable.

Psychopathology. Psychopathology was assessed on the basis of the point prevalence of comorbid mental disorders and the revised Symptom Checklist-90 (SCL-90-R; Derogatis, 1977; German version, Franke, 1995). The correlation between the number of other current disorders and general psychopathology was $r = .44$, $P < .01$. To create an aggregate variable of participants' psychopathology, we combined measures of the number of other anxiety disorders, affective disorders, and other disorders with the General Severity Index from the SCL-90. These four measures were standardized across subjects. An aggregate variable of participants' psychopathology was computed as the mean of the standardized scores.

2.5. Statistical analyses

Prospective associations between predictor variables at baseline and remission from specific phobia by the end of follow-up were examined using separate logistic regression analyses. For each variable, odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated. The dependent variable in each equation was the presence or absence of remission from specific phobia at 17-month follow-up. For predictor analyses, full and partial remissions were first combined because relatively few women experienced full remission. Analyses were then repeated to also predict full remission from specific phobia as a separate outcome. We used standardized scores to enhance comparability of the ORs. Data were analyzed using SPSS 11.0 (SPSS Inc, Chicago, IL).

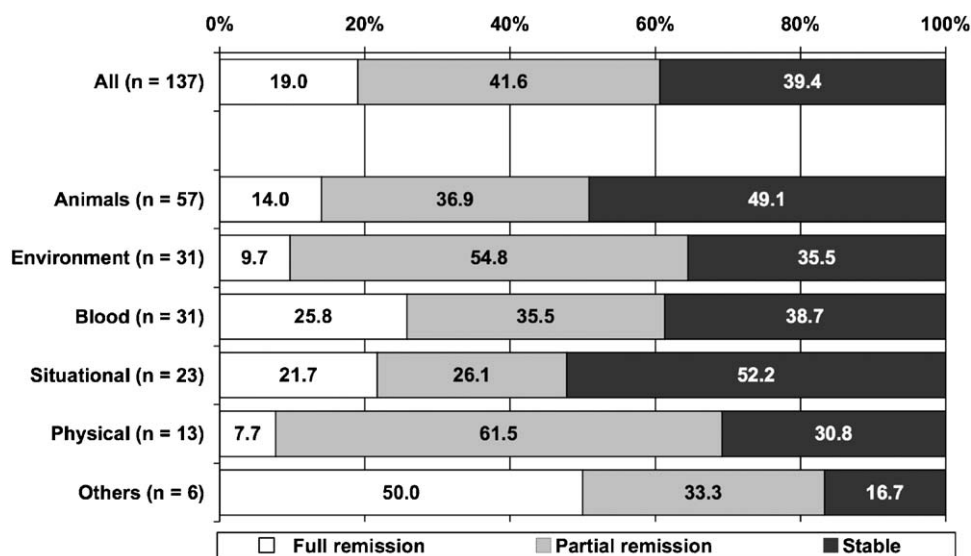


Fig. 1. Rates of 17-month remission in 137 women with specific phobia.

3. Results

3.1. Dropouts and sample characteristics

The follow-up rate was 77.0%. Biases that might have emerged due to dropout were examined by comparing our sample ($n = 137$) to those women with specific phobia who did not complete the follow-up interview ($n = 41$). Analyses revealed that dropouts did not differ from follow-up participants on specific phobia characteristics (number of fears, severity, age at onset), sociodemographic characteristics (educational level, socioeconomic status), and comorbid mental disorders (P -values $> .05$ for all comparisons; analyses based on t -tests or χ^2 tests, respectively).

Of the 137 participants, specific phobias reported were highest for animal (42.3%), environmental (23.4%), and blood-injection-injury (22.6%) subtypes; followed by situational (16.8%) and physical phobias (9.5%). Phobias of the category “others” occurred rarely (4.4%). Note that about one-third of participants had more than one specific phobia. Twenty-five percent met criteria for the point prevalence of at least one comorbid mental disorder. An additional anxiety disorder was present in 20.4% of the women, 2.2% had an affective disorder, 2.2% a somatoform disorder, 1.5% a substance-use disorder, 1.5% reported an eating disorder, and 1.5% had a childhood disorder.

The sociodemographic characteristics of the sample were as follows: They had a mean age of 21 years (S.D. = 1.9, range = 18–25 years). Few participants (3.6%) had finished pre-secondary schooling with the lowest educational level (“Hauptschule”). About 35% of participants had attended intermediate level school (“Realschule” or “Polytechnische Oberschule”), and most participants (53.3%) had finished schooling with the highest educational level (“Abitur”) that qualified them for university entry. Almost half of the participants were working; 13.2% worked part-time, 34.3% full-time. About 30% were classified as having low socioeconomic status. Most participants were classified as belonging to middle socioeconomic status (61.3%), and few as high (8.0%).

3.2. Remission at follow-up

The 17-month remission rate including partial and full remission was 60.6%. Of our sample of 137 women, 57 (41.6%) experienced a partial remission and 26 (19.0%) experienced a full remission. Rates of remission varied across specific phobia

subtypes with animal and situational phobias being relatively stable. Of the 137 women, 54 (39.4%) experienced neither full nor partial remission and still fulfilled full diagnostic criteria for point prevalence of specific phobia at 17-month follow-up. These women were thus classified as having stable specific phobia (see Fig. 1).

Of the 83 baseline specific phobia cases that were fully or partially remitted, 79.5% had no other current mental disorder diagnosis at follow-up. However, 13.3% met criteria for the point prevalence of another anxiety disorder, 6.0% had an affective disorder, 4.8% had an eating disorder, and 1.2% reported a somatoform disorder.

3.3. Predictors of remission

Associations between baseline predictors and remission (including full and partial remission) of specific phobia at follow-up are shown in Table 1. Analyses revealed that specific phobia characteristics, 12-month stress, coping skills, a negative cognitive style, and psychopathology at baseline did not predict remission at follow-up. However, protective factors at baseline predicted remission from specific phobia at follow-up.

Findings are also summarized in Fig. 2, which displays baseline indices of protective factors (mean standardized scores) across women with remitted and stable specific phobia at follow-up. As

Table 1
Predictors of remission (partial and full) during 17-month follow-up in 137 women with specific phobia.

Baseline variable	Remission ($n = 83$) versus stable specific phobia ($n = 54$)	
	OR	95% CI
Number of feared stimuli	0.87	0.73–1.05
Number of avoided stimuli	0.83	0.67–1.02
Severity of specific phobia	0.81	0.61–1.09
Age at onset of specific phobia	1.03	0.97–1.09
Protective factors	1.48*	1.03–2.12
Twelve-month stress	0.76	0.54–1.07
Coping skills	1.07	0.74–1.53
Negative cognitive style	0.80	0.57–1.14
Psychopathology	0.72	0.51–1.02

Note. OR = odds ratio from logistic regression. CI = confidence interval.
* $P < .05$.

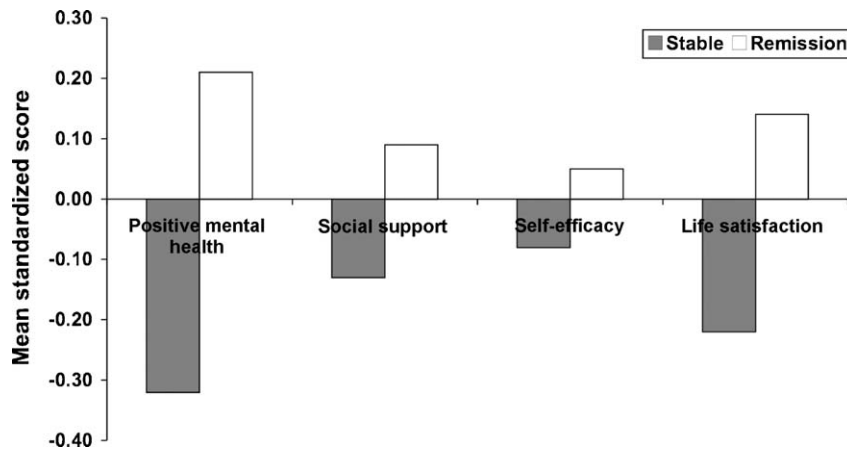


Fig. 2. Baseline levels of protective factors across women with remitted (partially and fully) and stable specific phobia.

can be seen in Fig. 2, women who showed remission from specific phobia at follow-up had higher baseline levels of positive mental health, social support, self-efficacy, and life satisfaction than women with a stable specific phobia. Separate logistic regressions examining the effects of the individual protective indices revealed that positive mental health (OR = 1.74, 95% CI = 1.20–2.52, $P < .01$) and life satisfaction (OR = 1.47, 95% CI = 1.02–2.12, $P < .05$) predicted remission from specific phobia; social support (OR = 1.25, 95% CI = 0.88–1.76, $P > .05$) and self-efficacy (OR = 1.15, 95% CI = 0.81–1.62, $P > .05$) did not.

In a multiple regression model with all predictor variables, protective factors did not remain a significant predictor of remission from specific phobia (not shown in Table 1).

Finally, in an additional set of logistic regressions, we examined predictors of achieving full remission as a separate outcome. In these analyses, we compared the subsample of women who fully remitted from specific phobia ($n = 26$) with those who had a stable specific phobia ($n = 54$). None of the predictors remained significant when using full remission as the dependent variable, which is probably due to small sample size and thus lack of power (not shown in Table 1).

4. Discussion

The 17-month remission rate found in this prospective study was 60.6%. The remaining 39.4% failed to achieve any improvement and were classified as having stable specific phobia. Of the 137 women with specific phobia, 19.0% remitted fully and no longer met any DSM-IV criterion for specific phobia at follow-up. Moreover, 41.6% remitted partially, meeting one or more diagnostic criteria but not a diagnosis. Of those women who remitted fully or partially from specific phobia, only few (13.3%) still had mental disorders at the end of follow-up. Of these, most had another anxiety disorder or presented with an affective disorder. Thus, although more than half of the young women were at least partially remitted at follow-up, most of these women still displayed specific fears, which might depict an important vulnerability for relapse. Overall, our findings suggest that rates of remission from specific phobia depend to a large degree on definition of remission. In this study, the rate showed a remarkable decline from 60.5% to 19.0% when using a more stringent definition of full remission from specific phobia. These findings concur with another study based on data from the DPS investigating remission from social phobia (Vriends et al., 2007). In the study of Vriends et al., the rate of remission from social phobia declined from 64% to 36%, when using the stricter definition of full remission.

The remission rate in the present study is lower than in previous prospective community studies that have investigated remission from specific phobia in children and adolescents. Of course, comparing the remission rate of the current sample with rates found in other studies is difficult given differences in sample characteristics, diagnostic instruments, duration of observation periods, and the lack of consensus definitions of remission. Milne and colleagues (1995) reported that 89% of young adolescents with phobic disorders showed remission within 3 years of follow-up. Agras and colleagues (1972) found a 5-year remission rate of 100% in children. One reason for the lower remission rate in the present study might be that our study had a considerably shorter follow-up period and used a somewhat older sample. As the course of specific phobia seems to be more favorable in children than in adults (Agras et al., 1972), it might be hypothesized that a younger sample would have shown higher rates of remission from specific phobia.

The current study explored a broad range of predictors of remission from specific phobia. Analyses revealed that participants' protective factors at baseline were predictive of remission. Other vulnerability factors at baseline did not predict course of specific phobia. Also, specific phobia characteristics such as severity and age at onset did not predict remission. Overall, these findings suggest that the natural course of specific phobia in young women is relatively independent from the disorder's characteristics. This is clearly inconsistent with earlier assumptions suggesting that the future course of anxiety disorders is mainly predicted by its former course (Angst & Vollrath, 1991). Our findings are partly in line with earlier findings from the Agras et al. (1972) study, in which the number of fears comprising the specific phobia, but not the severity of specific phobia, predicted remission. In our study, predictors are rooted in residual protective factors at baseline. In terms of clinical implications, these findings suggest that inclusion of additional prognostic factors beyond specific phobia characteristics and comorbidity might be considered. Consequently, designing prevention and intervention strategies for specific phobia requires careful consideration of various factors. Clinicians should be made aware that many young women could be at risk for stable specific phobia and therefore might need more intensive interventions.

In addition to clinical implications for intervention planning, knowledge about predictors of remission has important theoretical implications for a better understanding of the processes that influence a remitting versus stable course. So far, the vast majority of research has emphasized the development of specific phobia whereas the long-term natural course including predictors of remission has been relatively neglected. With the scarcity of such research in mind, an important theoretical contribution made by

this study is the finding that protective factors were the only significant predictor of remission from specific phobia. This suggests a salutogenetic approach, in which mental health is the result of a dynamic process determined by the relation between pathogenetic and protective factors. Accordingly, theoretical models of specific phobia should strive to integrate both pathogenetic and salutogenetic factors. Especially, positive mental health and life satisfaction seem to be salutogenetic factors of importance to balance pathogenetic factors such as stress and preexisting psychopathology. These results support health promotion programs focused on salutogenetic factors and not only prevention concerning traditional pathogenetic factors and mental disorders.

In our own recently conducted study (Trumpf, Margraf, Vriends, Meyer, & Becker, in press), we examined predictors of incidence of specific phobia in young women and found that higher levels of psychopathology, lack of coping, and a negative cognitive style predicted incidence of specific phobia in young women; protective factors did not. Thus, these findings suggest that incidence and remission are predicted by different factors, probably suggesting different processes involved in developing specific phobia and remitting from the disorder.

The current study has several strengths and limitations. Given the paucity of prospective data available on the natural course of specific phobia, this was the first study to examine remission and its predictors in an adult sample. Major strengths include the prospective design, the community-based sample, the use of structured diagnostic interviews according to *DSM-IV*, and consideration of residual specific fears in defining remission. A particular strength of this study is the examination of a broad range of predictors of remission. Also, some limitations of the present study should be taken into account when interpreting the present findings. First, findings are based on a relatively short follow-up period. Future prospective studies over longer observation periods are needed. Second, one obvious limitation of this study relates to generalizability. Young women are a high-risk group for specific phobia; thus, examining rates and predictors in a female young adult population is clearly important. However, because specific phobia may proceed along different developmental pathways in men and women (Kendler, Jacobson, Myers, & Prescott, 2002), future studies will be needed to determine whether these findings are generalizable to men. Third, this study was based on prospective self-report measures exclusively and therefore, the associations may be inflated by common method variance. However, the rather small effect size and the failure to find associations between all variables, argue against significant influences of common method variance. Also, this study used a prospective design, which might also reduce concerns about common method variance. Future studies would be strengthened by combining self-report measures with more objective data collection methods (e.g., genetic information, observational measures) in a prospective design. Moreover, it is suggested that obtaining a larger number of participants would enable structural equation modeling to be employed and this is recommended for future research.

Despite these limitations, the present study suggests that among young women from the community more than half show remission, at least in terms of partial remission. Full remission, defined as having no specific fears anymore, is considerably less likely to occur. In a substantial proportion of women, specific phobia runs a stable course. Women with low levels of protective factors may be at risk for a chronic course of specific phobia. Our findings highlight the importance of future prospective studies to map the long-term natural course of mental disorders, especially of understudied disorders such as specific phobia.

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References

- Agras, W. S., Chapin, H. N., & Oliveau, D. C. (1972). The natural history of phobia. Course and prognosis. *Archives of General Psychiatry*, 26, 315–317.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Angst, J., & Vollrath, M. (1991). The natural history of anxiety disorders. *Acta Psychiatrica Scandinavica*, 84, 446–452.
- Becker, E. S., Rinck, M., Türke, V., Krause, P., Goodwin, R., Neumer, S.-P., et al. (2007). Epidemiology of specific phobia subtypes: findings from the Dresden Mental Health Study. *European Psychiatry*, 22, 69–74.
- Becker, E. S., Türke, V., Neumer, S.-P., Soeder, U., Krause, P., & Margraf, J. (2000). Incidence and prevalence rates of mental disorders in a community sample of young women: results of the "Dresden study". In: R. Manz & W. Kirch (Eds.), *Public health research and practice: report of the public health research association Saxony* (pp. 259–291). Regensburg, Germany: Roderer.
- Bruce, S. E., Yonkers, K. A., Otto, M. W., Eisen, J. L., Weisberg, R. B., Pagano, M., et al. (2005). Influence of psychiatric comorbidity on recovery and recurrence in generalized, social phobia, and panic disorder: a 12-year prospective study. *American Journal of Psychiatry*, 161, 1179–1187.
- Burke, K. C., Burke, J. D., Regier, D. A., & Rae, D. S. (1990). Age at onset of selected mental disorders in five community populations. *Archives of General Psychiatry*, 47, 51–518.
- Chambless, D. L., Caputo, G. C., Bright, P., & Gallagher, R. (1984). Assessment of fear in agoraphobics: the Body Sensations Questionnaire and the Agoraphobic Cognitions Questionnaire. *Journal of Consulting and Clinical Psychology*, 52, 1090–1097.
- Derogatis, L. R. (1977). *SCL-90-R: administration, scoring, & procedures. Manual I for the R(visited) Version and other instruments of the psychopathology rating scale series*. John Hopkins University School of Medicine.
- Di Nardo, P. A., Brown, T. A., & Barlow, D. H. (1995). *Anxiety Disorders Interview Schedule for DSM-IV: lifetime version (ADIS-IV-L)*. Albany, New York: Graywind Publications.
- Ehlers, A. (1986). *Angst-Sensitivitäts-Index [Anxiety Sensitivity Index, German version]*. Unpublished manuscript.
- Ehlers, A., Margraf, J., & Chambless, D. L. (1993). *Fragebogen zu körperbezogenen Ängsten, Kognitionen und Vermeidung*. Questionnaire for the assessment of bodily fears, cognitions, and avoidance. Weinheim, Germany: Beltz.
- Essau, C. A., Conradt, J., & Petermann, F. (2002). Course and outcome of anxiety disorders in adolescents. *Journal of Anxiety Disorders*, 16, 67–81.
- Ferrig, D., & Filipp, S.-H. (1989). Bewältigung kritischer Lebensereignisse: Erste Erfahrungen mit einer deutschsprachigen Version der "Ways of Coping Checklist" [Coping with critical life events: preliminary results with a German-language version of the Ways of Coping Checklist]. *Zeitschrift für Differentielle und Diagnostische Psychologie*, 10, 189–199.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21, 219–239.
- Franke, G. H. (1995). *Die Symptom Checkliste von Derogatis*. The symptom checklist by Derogatis. Göttingen, Germany: Beltz.
- Fydrich, T., Sommer, G., Menzel, U., & Höll, B. (1987). Fragebogen zur sozialen Unterstützung (Kurzform; SOZU-K-22) [Questionnaire on social support (short form; SOZU-K-22)]. *Zeitschrift für klinische Psychologie*, 16, 434–436.
- Hautzinger, M., Luka, U., & Trautmann, R. D. (1985). Skala dysfunktionaler Einstellungen – Eine deutsche Version der Dysfunctional Attitude Scale [Dysfunctional Attitude Scale: a German version of the Dysfunctional Attitude Scale]. *Diagnostica*, 31, 312–323.
- Jerusalem, M., & Schwarzer, R. (1986). Fragebogen zur Erfassung von Selbstwirksamkeit [Questionnaire for assessment of self-efficacy]. In: R. Schwarzer (Ed.), *Skalen zur Befindlichkeit und Persönlichkeit (Forschungsbericht 5)*. Berlin, Germany: Free University.
- Keller, A. (2000). *Die Klassifikation psychischer Störungen nach DSM-IV mit Hilfe eines strukturierten diagnostischen Interviews (F-DIPS)*. [The classification of mental disorders with the help of a structured diagnostic interview (F-DIPS)]. Unpublished doctoral dissertation, Ruprecht Karls University of Heidelberg-Germany.
- Kendler, K. S., Jacobson, K. C., Myers, J., & Prescott, C. A. (2002). Sex differences in genetic and environmental risk factors for irrational fears and phobias. *Psychological Medicine*, 32, 209–217.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 593–602.
- Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1996). A prospective study of childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 1502–1510.
- Lutz, R., Heyn, C., Schmid, S., Sick, U., & Steinl, B. (1992a). Fragebogen zur Lebenszufriedenheit, Skala der Marburger Gesundheitsstudie I (alte Fassung) [Questionnaire on life satisfaction, scale of the Marburg Health Study I (old version)].

- Lutz, R., Heyn, C., Schmid, S., Sick, U., & Steinl, B. (1992b). Fragebogen zur seelischen Gesundheit, Skala der Marburger Gesundheitsstudie I (alte Fassung) [Questionnaire on mental health, scale of the Marburg Health Study I (old version)].
- Magee, W. J., Eaton, W. W., Wittchen, H.-U., McGonagle, K. A., & Kessler, R. C. (1996). Agoraphobia, simple phobia, and social phobia in the national comorbidity survey. *Archives of General Psychiatry*, *53*, 159–168.
- Margraf, J., Schneider, S., Soeder, U., Neumer, S.-P., & Becker, E. S. (1996). *F-DIPS: Diagnostisches Interview bei Psychischen Störungen (Forschungsversion) [F-DIPS: Diagnostic Interview for Mental Disorders (Research Version)]*. Unpublished manuscript, Dresden University of Technology, Germany.
- Marks, I. M., & Gelder, M. G. (1966). Different ages of onset in varieties of phobia. *American Journal of Psychiatry*, *123*, 218–221.
- Massion, A. O., Dyck, I. R., Shea, M. T., Phillips, K. A., Warshaw, M. G., & Keller, M. B. (2002). Personality disorders and time to remission in generalized anxiety disorders, social phobia, and panic disorder. *Archives of General Psychiatry*, *59*, 434–440.
- McCrae, R. R., & Costa, P. T. (1986). Personality, coping and coping effectiveness in an adult sample. *Journal of Personality*, *54*, 385–405.
- Milne, J. M., Garrison, C. Z., Addy, C. L., McKeown, R. E., Jackson, K. L., Cuffe, S. P., et al. (1995). Frequency of phobic disorder in a community sample of young adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 1202–1211.
- Öst, L.-G. (1987). Age of onset in different phobias. *Journal of Abnormal Psychology*, *96*, 223–229.
- Reiss, S., Peterson, R. A., Gursky, D. M., & McNally, R. J. (1986). Anxiety sensitivity, anxiety frequency and the prediction of fearfulness. *Behaviour Research and Therapy*, *24*, 1–8.
- Schneider, S., & Margraf, J. (2006). *DIPS: Diagnostisches Interview bei Psychischen Störungen*. Diagnostic interview for mental disorders. Berlin, Germany: Springer.
- Siegrist, J., & Dittmann, K. H. (1983). *Inventar zur Erfassung lebensverändernder Ereignisse (ILE)*. Inventory of Life Events (ILE). ZUMA – Handbuch sozialwissenschaftlicher Skalen]. Bonn, Germany: Informationszentrum Sozialwissenschaften.
- Stinson, F. S., Dawson, D. A., Chou, S. P., Smith, S., Goldstein, R. B., Ruan, W. J., et al. (2007). The epidemiology of DSM-IV specific phobia in the USA: results from the National Epidemiological Survey on Alcohol and Related Conditions. *Psychological Medicine*, *37*, 1047–1059.
- Thyer, B. A., Parrish, R. T., Curtis, G. C., Nesse, R. M., & Cameron, O. G. (1985). Ages of onset of DSM-III anxiety disorders. *Comprehensive Psychiatry*, *26*, 113–122.
- Trumpf, J., Margraf, J., Vriends, N., Meyer, A. H., & Becker, E. S. (in press). Predictors of specific phobia in young women: a prospective community study. *Journal of Anxiety Disorders*.
- Vriends, N., Becker, E. S., Meyer, A. H., Williams, S. L., Lutz, R., & Margraf, J. (2007). Recovery from social phobia in the community and its predictors: data from a longitudinal epidemiological study. *Journal of Anxiety Disorders*, *21*, 320–337.
- Weissman, A. N., & Beck, A. (1978). Development and validation of the Dysfunctional Attitude Scale: a preliminary investigation. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy.
- Wittchen, H.-U., Lieb, R., Pfister, H., & Schuster, P. (2000). The waxing and waning of mental disorders: evaluating the stability of syndromes of mental disorders in the population. *Comprehensive Psychiatry*, *41*(Suppl. 1), 122–132.
- Yonkers, K. A., Dyck, I. R., & Keller, M. B. (2001). An eight-year longitudinal comparison of clinical course and characteristics of social phobia among men and women. *Psychiatric Services*, *52*, 637–643.