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Cognitive Therapy for Social Anxiety Disorder: The Impact of the "Self-Focused Attention and Safety Behaviours Experiment" on the Course of Treatment

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Background and Aims: Several studies have shown that cognitive therapy is an effective treatment for social anxiety disorder (SAD). However, it remains unclear which of the complex interventions are associated with an anxiety reduction during the course of treatment. The aim of this study was to examine the impact of the intervention referred to as the "self-focused attention and safety behaviours experiment" on treatment outcome. **Method:** This study was part of a randomized controlled trial including 16 sessions of either individual cognitive therapy (CT) or interpersonal therapy (IPT) for SAD. Of particular importance, a concomitant time-series analysis was used to investigate the impact of the self-focused attention and safety behaviours experiment on subsequent social anxiety (1, 2, 3, and 4 weeks after the intervention) in 32 patients with SAD, who are receiving cognitive treatment. **Results:** The results revealed a significant reduction of social anxiety after the self-focused attention and safety behaviours experiment during the subsequent month of treatment. **Conclusion:** The findings of the current study confirm current cognitive theories of SAD and demonstrate the importance of interventions that target self-focused attention and safety behaviour in cognitive therapy for SAD.

Keywords: Cognitive therapy, social anxiety disorder, concomitant time-series analysis, behavioural experiment, self-focused attention, safety behaviours

Introduction

According to the American Psychiatric Association (2000), social anxiety disorder (SAD) is characterized by an excessive fear of embarrassment or humiliation in social situations. The disorder has a median lifetime prevalence of 12.1% and a high 12-month prevalence of 7.1% (Ruscio et al., 2008) and is highly persistent if untreated (Keller, 2006).

According to Clark and Wells' (1995) cognitive model of SAD, high levels of self-focused attention, the use of safety behaviours and biased beliefs about the social self are important variables for maintaining SAD. The differential aspects of the model have been confirmed in several experimental studies (e.g. Amir, Weber, Beard, Bomyea and Taylor, 2008; Clark, 2001; Stopa and Clark, 2000; Mellings and Alden, 2000; Spurr and Stopa, 2002; Woody, 1996). Based on the cognitive model, Clark et al. (2003, 2006) also developed a specific treatment

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that targets the essential factors of the theoretical approach. First, the level of self-focused attention (SFA) and the use of safety behaviours (SB) are reduced, using role playing and attention training, after an idiosyncratic model of SAD has been developed with the patient. Furthermore, biased beliefs about one's own appearance, or the impression made on others, are corrected with video feedback. Moreover, throughout the therapy, behavioural experiments are applied to test and change dysfunctional beliefs.

Although studies have proved CT to be a highly effective treatment (e.g. Clark et al., 2003; Stangier, Schramm, Heidenreich, Berger and Clark, 2011) residual symptoms may persist after termination of the treatment in about 30% of the patients (Stangier et al., 2011). In order to further increase the effectiveness of cognitive therapy, it is important to examine the enduring effect of individual interventions that are comprised in the CT treatment on social anxiety. One might speculate that identifying and intensifying effective interventions, while eliminating the least effective, could reduce the costs and length of treatment (McManus et al., 2009). In order to accomplish this aim, it is initially crucial to examine the effectiveness of single interventions of this complex treatment. However, only few studies have so far evaluated the effectiveness of single aspects (Bögels and Mansell, 2004; McManus, Sacadura and Clark, 2008; McManus et al., 2009). Two studies demonstrated the effectiveness of the self-focused attention and safety behaviours experiment (SFA-SB experiment) in analogue (McManus et al., 2008), as well as clinical SAD populations (McManus et al., 2009). This experiment is usually conducted in the initial phase of treatment and aims at demonstrating the adverse effects of self-focused attention and the use of safety behaviour. However, there is little research on its effects within treatment studies. Recently, McManus et al. (2009) demonstrated that, among socially anxious individuals, the SFA-SB experiment reduced social anxiety symptoms in the following week and at the end of treatment.

The current study aims to build on and extend this previous research, by replicating the positive effect of the SFA-SB experiment on socially phobic symptoms through a concomitant time series analysis. We examined the temporal relationship between the intervention and its effect on social anxiety in the course of treatment. Based on the theoretical basis provided above, we predicted that the SFA-SB experiment would reduce the level of social anxiety, as measured by the social phobia weekly summary scale, 1, 2, 3 and 4 weeks after the intervention.

Method

Participants

A total of 38 patients suffering from social phobia participated in the cognitive therapy trial of the randomized controlled treatment trial reported by Stangier et al. (2011). The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) and for Axis II Personality Disorders (SCID -II) were used for diagnosis. The inclusion criteria were (1) DSM-IV diagnosis of social anxiety disorder (American Psychiatric Association, 2000); (2) SAD being considered the main problem; (3) age between 18–65 years; (4) willingness to accept random allocation to the sample. Exclusion criteria were (1) current major depressive disorder (HRSD $>$ 24), psychosis, alcohol or substance dependency; (2) personality disorders except anxious cluster; (3) current psychotropic medication or additional psychotherapeutic treatment; (4) suicidal tendency. The mean age was 34.6 years ($SD = 12.9$; range = 20–62)

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and 41.2% of the participants were female (see Stangier et al., 2011 for more detailed information). In order to be included in the present study, patients had to have completed a minimum of 10 treatment sessions in order to be able to assess the impact of the SFA-SB experiment on the level of social anxiety until 4 weeks after this intervention. Three patients dropped out before completion of 10 treatment sessions. Furthermore, due to missing data regarding the Social Phobia Weekly Summary Scale (Clark et al., 2003), three additional patients had to be excluded from the analysis, yielding a final sample of 32 patients. The mean age was $M = 34.7$ years ($SD = 8.82$); 14 participants (43.8 %) were female.

Design

The clinical randomized controlled trial was conducted at the Outpatient Clinic of the Department of Psychology, University of Frankfurt, as well as at the Outpatient Clinic of the Department of Psychiatry, University of Freiburg. In both centres, both treatment conditions were offered. Patients were randomly assigned to the cognitive therapy (CT), interpersonal therapy (IPT; Lipsitz and Markowitz, 1996) or waitlist control group (WLC) and received 16 weekly sessions (followed by three booster sessions). In this study, only patients from the CT condition were examined. Outcomes were assessed at pretreatment, posttreatment and 12-month follow-up. For a detailed description of the multicentre trial, see Stangier et al. (2011).

Therapists

A total of 10 cognitive therapists conducted the treatments. Two therapists were male and the mean age was 33.7 ($SD = 7.1$; range 29–51). Therapists had an average of 4.8 years of clinical experience ($SD = 2.9$; range: 2 to 12 years). All had been trained for 30 hours, treated at least two pilot cases, and had to provide video-tapes of each session to ensure treatment adherence. Further, continuous supervision was provided by experienced supervisors during the whole trial.

Treatment and self-focused attention and safety behaviours experiment

The cognitive treatment was applied according to the model of SAD by Clark and Wells (1995) and was manualized. The following strategies were used to identify and modify patients' negative beliefs (see Stangier et al., 2011): first, an idiosyncratic model of SAD was derived with the patient. Subsequently, the influence of self-focused attention and safety behaviours were evaluated in the SFA-SB experiment, which is the target intervention for the current study. This experiment encompassed two role-plays about a social situation. Patients were first instructed to focus their attention on themselves and used safety behaviours as he or she usually does. In a second role play, patients were instructed to focus their attention externally and refrain from safety behaviours. After each role play, the patients rated their subjective level of anxiety. Finally, individual anxiety ratings for both situations were discussed and patients were encouraged to reappraise the impact of the use of safety behaviours and focus of attention on their social anxiety. Thus, the intervention is supposed to help the patient modifying dysfunctional cognitive processes such as self-focused attention and subsequently social anxiety.

During the subsequent sessions after the SFA-SB experiment, there is a certain sequence of interventions including video-feedback as well as attention training that typically follows the experiment. However, this sequence might not be allocated to predefined session numbers. Throughout the further course of treatment imagery restructuring was used to correct distorted observer-perspective images. In addition, negative beliefs were tested by behavioural experiments, and cognitive restructuring was used to modify negative automatic thoughts including fear-related anticipatory and post-event processing, and basic assumptions.

Measures

Social phobia weekly summary scale (SPWSS). This self-rating instrument comprises six items referring to the level of social anxiety, avoidance, focus of attention, anticipatory and postevent processing as well as level of social activity and was administered each week prior to the session (Clark et al., 2003). For this study, only the first item measuring the average intensity of social anxiety over the week was used for analytical purposes; Patients are requested to rate the intensity on a 9-point Likert-scale ranging from 0 (no anxiety at all) to 8 (very intense anxiety). The SPWSS has good internal consistency, with a Cronbach's α of .81 and is sensitive to treatment effects (e.g. Clark et al., 2003, 2006; Mörtberg, Clark, Sundin and Wistedt, 2007).

Intervention checklist. The measure comprises 44 items and was developed to evaluate adherence to the CT and IPT treatment protocols (Stangier, Schramm and Clark, 2003). A total of 15 items refer to interventions that are specific to cognitive therapy (e.g. role-playing regarding self-focused attention and safety behaviours). Therapists completed the checklist after each therapy session, indicating which interventions had been applied during the session. For the purposes of the current study, the intervention checklists were used to identify the exact session in which the SFA-SB experiment was conducted.

Data analytic approach. For the current study, the concomitant time-series analysis (CTSA) was used to detect trends and changes during the course of treatment, with respect to the weekly outcome series social anxiety (Nasby and Read, 1997; Stader and Hokanson, 1998; West and Hepworth, 1991). The method enables an analysis of correlations between two variables over a time series, which are referred to as a cross-correlation function (CCF, McCleary and Hay, 1980). Specifically, we investigated whether changes in the time series of an SFA-SB experiment affect changes in the time series for social anxiety, as measured with the first item of the SPWSS.

The therapy protocol for each patient was 16 sessions. Since the length of a time series is important, we could not conduct a separate analysis for each patient. Following a suggestion by Hoffart, Versland and Sexton (2002), the time series of the individual cases were connected consecutively to form a long time series across patients, comprising 480 data points. To account for the periodical occurrence of interventions within each individual treatment, the time series for individual patients were decomposed, by means of the seasonal function. To investigate the effects of interventions, the transfer-function model was applied.

Estimation of parameter. Prior to analysing the cross-correlation function, a univariate model for each time series had to be established, to rule out possible autocorrelations and correlated errors biasing the results of the time-series analysis. For example, high autocorrelations might result in large CCFs, even if there were no association between the

two variables of the time series. The procedure of a univariate CTSA includes the following steps:

1. Identification of a tentative ARIMA model, in which patterns of autocorrelation function (ACF) and partial autocorrelation function (PACF) are observed. The ACF (k) is a measure of correlation between Y_t and Y_{t+k}. In general, ACF (k) is the coefficient estimated between time series (lag-0) and its k_{th} lag. It is symmetrical about lag-0. The PACF is a correlation between two time points (lags), after the correlation between intermediate lags has been controlled. The ACF and PACF for specific ARIMA-models reveal characteristic model-specific patterns. All necessary terms of an ARIMA (p,d,q) (P,D,Q) model must be identified.
2. Estimation, in which the parameters of the tentative model are estimated.
3. Diagnosis, analysing whether the model is appropriate. This is the case when the residuals of a model are "white noise", i.e. a "series of random shocks, each distributed normally and independently about zero mean with constant variance" (p.31, McCleary and Hay, 1980).

For the time series SFA-SB experiment, an ARIMA (0,0,0) (1,2,0)-model was identified. It should be noted that the residuals score on the significance limits at lag-2, whereas this was not the case for all other lags. This fact might influence the interpretation of the CCF and will be discussed later. For the time series social anxiety level, an ARIMA(3,0,0) (1,0,0) model was identified. The residuals are uncorrelated, indicating that the model is appropriate.

Based on the residuals of each series, the Cross Correlation Function (CCF) was determined, so as to identify between-series correlation. A significant positive spike at lag k of the CCF suggests that variable x affects variable z k-units of time later. The other way round, when z affects x, the CCF yields a significant negative spike. Nonstationary time series will always be correlated due to common patterns like drift or trend. To avoid this, the time series was rendered stationary prior to estimating CCF (McCleary and Hay, p. 229).

Results

Level of social anxiety during course of treatment

A cross-correlation function (CCF) was provided to identify between-series correlation between the SFA-SB experiment and the social anxiety level. Spikes might be classified as significant if the CCF exceeds two standard errors. The CCF yielded a negative correlation lag of 0 ($r = -.13$), lag 1 ($r = -.09$), lag 2 ($r = -.12$), lag 3 ($r = -.09$) and lag 4 ($r = -.10$). The correlations at lag 0, lag 2 and lag 4 exceed two standard errors and were therefore significant. The correlation at lag 1 and lag 3 score were close to significance (see Figure 1). Figure 1 shows the cross-correlations between the SFA-SB experiment and past (negative lags), current (zero lag), as well as future (positive lags) values of social anxiety. For example, lag 2 indicates that the SFA-SB experiment correlates significantly with the level of social anxiety 2 weeks after the intervention. Lag-1 shows the correlation between the SFA-SB experiment and social anxiety in the week before the intervention. In sum, small significant effects were observed between the SFA-SB experiment and social anxiety at lag 0, lag 1, lag 2, lag 3 and lag 4. This indicates that conducting the SFA-SB experiment leads to lower social anxiety symptom scores during the subsequent 4 weeks of treatment.

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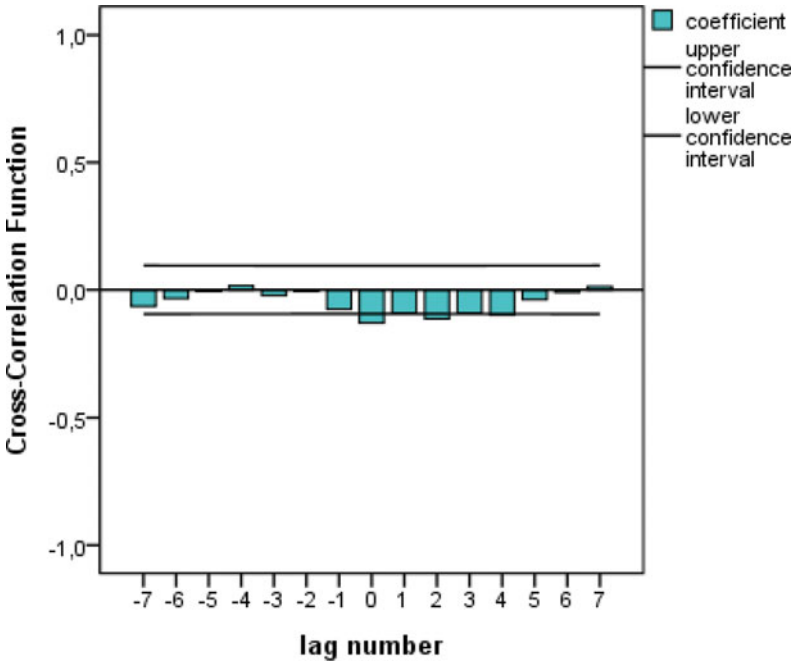

Figure 1. (Colour online) Cross-correlograms for time series "self-focused attention and safety behaviours experiment" with lagged values of "social anxiety level". The lines indicate the 95% confidence intervals

Levels of social anxiety before and during the following week of the role play

As the assumption of normally distributed variables was violated, the non-parametric Wilcoxon-test was used to evaluate the extent of anxiety reduction after the first role play. This test revealed significant differences in the level of social anxiety, before and after the first role-play ($N = 32$, $z = -2.06$, $p = .04$). Prior to the intervention, the mean social anxiety level was $M = 4.75$ ($SD = 1.81$) and declined to $M = 3.97$ ($SD = 1.18$) in the following week. The estimated effect size was moderate ($d = .50$) according to Cohen (1992).

Discussion

The current study evaluates the influence of the SFA-SB experiment on subsequent levels of anxiety during cognitive therapy for SAD, on the basis of data from a treatment group receiving CT in a randomized controlled trial (Stangier et al., 2011). Contrary to other studies, we used a time series approach that conforms well to the repeated measurement of intervention and outcome. As predicted, the SFA-SB experiment was correlated with significantly lower levels of social anxiety 2 and 4 weeks later. For the points in time 1 and 3 weeks later, a trend was detected in the same direction. This implies that these experiments are indeed associated with a significant decline in social anxiety throughout the subsequent weeks. Our results support current cognitive models of SAD (e.g. Clark and Wells, 1995; Rapee and Heimberg,

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1997), which suggest that safety behaviours and self-focused attention contribute causally to the maintenance of SAD, since the manipulation of both leads to decreases in social anxiety. Moreover, the finding is in line with McManus et al. (2009) and extends it, since we examined sequential associations over time. McManus et al. (2009) also found that self-focused attention and safety behaviours experiments are associated with subsequent lower social anxiety levels. However, we cannot rule out the possibility that the pre-post difference in the present study may have been influenced by other interventions during treatment (e.g. an attention training or video feedback). For instance, a review by Bögels and Mansell (2004) shows that changing attention processes in SAD patients is also related to a change in SAD symptoms and serves as a mediator of symptom improvement. Nonetheless, combining the results of McManus and colleagues (2009) and our findings from the time-series analysis, make it seem unlikely that the effect of anxiety reduction was fully driven by another intervention.

The current study has several methodological strengths. First, we addressed a clinical sample. Second, it includes the time-series analysis, which allows an examination of variations in the relationship between two variables over time, which is an important advantage, compared to simple cross-sectional analyses. However, there are some issues that need to be considered regarding interpretation of results. In a concomitant time-series design, a correlation is interpreted as an indicator of causal relationships, generally referred to as Granger Causality (Granger, 1969). This proposes that if a correlation with a certain lag is unidirectional and both variables equate to "white noise", the correlation can be interpreted as a causal relationship. When conducting a concomitant time-series design, it is possible to examine the order of occurrence of different variables. Cromwell, Hannan, Labys and Terraza (1994) define the causality as follows: "When we speak of Granger causality, we are really testing if a particular variable precedes another and not causality in the sense of cause and effect" (p. 33). Therefore, our results should still be interpreted with caution regarding causal conclusions that the self-focused attention and safety behaviours experiment itself was causally related to the reduction of subsequent social anxiety.

Other limiting factors of the current study are that the analysis relies on self-report measures, which are susceptible to self-favouring bias. Additionally, the SPWSS is a relatively short self-report instrument. Thus, future research should consider longer measures, such as the LSAS, or SPIN, to examine session-by-session changes in social anxiety. The inclusion of a clinician-administered tool on a weekly basis is therefore recommended. Furthermore, two important maintaining factors of the cognitive model, namely safety behaviours and self-focused attention, were targeted within the same intervention. Therefore, valid conclusions relating to the differential effects of both factors are not possible on the basis of the current analysis. As discussed above it is important to note that we cannot rule out that other interventions following the SFA-SB experiment, such as video feedback or attention training, might have accounted for (additional) decreases in social anxiety in the subsequent weeks. Moreover, the study is based on a small sample, which might lead to a low level of power. It may also be important to include more specific measures that reliably assess the targets of the interventions.

In conclusion, the results are in line with the assumptions regarding the central maintaining role of self-focused attention and safety behaviours of the cognitive model of Clark and Wells (1995). The behavioural experiment probably did lead to significantly lower levels of anxiety during the course of therapy. Accordingly, in order to increase the overall effectiveness of cognitive therapy for SAD, further studies that examine individual treatment components are necessary.

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