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# Experimental Studies of Components in the Treatment for Social Anxiety Disorder

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Department of Psychology

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**CLIMATE  
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*To Nicholas, Johan, and Andreas*



# Abstract

Social anxiety disorder (social phobia) is a debilitating and common anxiety disorder, with a lifetime prevalence ranging from 6 % to 12 %. The condition has its onset in childhood and early adolescence, affects females more often than males, and if untreated is associated with high risk of developing comorbid anxiety and mood disorders, as well as substance abuse. The increasingly growing body of research during the last decades has helped to understand the mechanisms of social anxiety disorder, and has made possible the development of efficacious cognitive behavioural treatment (CBT) methods for the disorder. However, all clients do not improve as much as desired, and there is room for improvement. To explore the relative effectiveness of separate treatment interventions in isolation, or in interaction, may be critical in attempting to enhance the efficacy of current treatment methods.

The present thesis is based on three studies investigating the effects of relatively novel contributions to the treatment repertoire for social anxiety disorder: audio-feedback, imagery rescripting, and experiential self-focused attention.

Study I concerned an analogue experimental study showing that cognitive preparation enhanced the beneficial effects of audio feedback in modifying participants' negative self-evaluation. The effects generalised to a second social task and the changes were associated with concomitant reductions on social anxiety measured by explicit self-reports and by an implicit method.

Study II was designed to experimentally investigate the effects of imagery rescripting (IR) of early adverse memories in social anxiety disorder. Results indicated that IR reduced the distress associated with memory and recurrent catastrophe images in clients with social anxiety disorder. Also, the intervention led to significant improvements on fear of negative evaluation and fear of social interaction. The content of clients' negative self-judgements was radically improved as reflected in increased positivity, empowerment and attraction. Furthermore, in contrast to previous research, results were obtained without the use of a preceding cognitive restructuring.

Study III was an attempt to experimentally explore the effects of two distinct attentional modes on post-event processing: the analytical and the experiential self-focus modes. Using a cross-over design with a sample of socially phobic clients it was demonstrated that the two self-focus modes affected cognitions differently: the experiential mode led to a tendency to a decreased proportion of negative thoughts and the analytical mode to a reduction on neutral thoughts. Also, negative self-evaluation following an initial performance situation strongly predicted the degree of subsequent negative thinking but only if participants had been subject to an analytical

self-focus induction. Supporting previous findings, results showed that an experiential self-focus may have beneficial effects on rumination in social anxiety disorder.

Of special interest in this thesis is the emphasis on imagery in the cognitive behavioural treatment for social anxiety disorder. It is suggested that imagery, as opposed to verbal interventions, plays a key role in the access of emotion and promotion of emotional change. The treatment techniques presented here, do all to some extent involve imagery as an important element of the treatment procedures. Clearly, audio feedback with cognitive preparation, and in particular imagery rescripting, relies heavily on imagery to access fear structures and to provide corrective information for the purpose of emotional processing. Similarly, in the experiential 'mindful' self-focused attention, images provide an important link to the immediate experience in the moment-to-moment of the social situation. Thus, it is concluded that in the attempts to elaborate current treatment methods, the role of imagery should be given special consideration.

# Svensk sammanfattning

## Experimentella studier av behandlingskomponenter vid social fobi

av Jan-Erik Nilsson, Kognio – Centrum för KBT, Lund

Social fobi är en handikappande psykisk störning, som med en livstidsprevalens mellan 6 - 12 %, är mycket vanligt förekommande. Den debuterar i barndomen och i tidiga tonåren, drabbar fler kvinnor än män. Om den förblir obehandlad ökar risken för samsjuklighet i form av andra ångesttillstånd, depressiva störningar eller missbruk. Den allt intensivare forskningen under de senaste decennierna har bidragit till ökad kunskap om social fobi, dess underliggande mekanismer och till att effektiva kognitiva och beteendeorienterade behandlingsmetoder har tagits fram. Samtidigt kvarstår det faktum att en del patienter inte förbättras så mycket som vore önskvärt, varför ytterligare metodutveckling erfordras. I det fortsatta arbetet med att förbättra gängse behandlingsmetoder, kan experimentella studier av enskilda behandlingsinterventioner, var för sig eller i kombination, ha en avgörande betydelse.

Denna avhandling utgår från tre studier som undersökt effekterna av relativt nytillkomna tekniker i behandlingsarsenalerna för social fobi: audio-feedback (Studie I), visualisering ('imagery rescripting', Studie II), och experientiell självfokusering (Studie III).

I Studie I undersöktes effekterna av audiofeedback, med eller utan kognitiv förberedelse, hos en grupp studenter med social ångest. Resultaten visade att kognitiv förberedelse förstärkte de positiva effekter som erhöles av audiofeedback på deltagarnas negativa självvärdering. Dessa effekter kvarstod i en efterföljande social situation och de positiva förändringarna åtföljdes av minskad social ångest uppmätt med både explicita och implicita mätmetoder.

I Studie II undersöktes effekter av en visualiseringsmetod hos patienter med diagnoserad social fobi. Undersökningen avsåg att experimentellt utforska effekterna av Imagery Rescripting (IR), som syftar till att modifiera inre mentala 'bilder', specifikt tidiga minnesbilder av negativa händelser från tiden kring debuten av den sociala fobin. Resultaten visade att IR minskade grad av ångest som var förknippad med minnesbilder och sådana katastrofbilder som vanligen förekommer i för patienten socialt hotfulla situationer. Interventionen medförde dessutom signifikant minskad rädsla för att bli negativt värderad och för att umgås med andra. Patienternas negativa globala omdömen av sig själva förändrades radikalt i positiv riktning, från att ha upplevt sig själva som svaga och oattraktiva till en känsla av att vara stark och attraktiv.



Studie III var utformad för att experimentellt undersöka hur negativ efterbearbetning av en social händelse kan påverkas av två skilda sätt att fokusera uppmärksamheten mot sig själv: det analytiska respektive det experientiella förhållningssättet. Studien genomfördes med ett 'cross-over design' i vilket deltagande socialfobiska patienter utgjorde sin egen kontroll. Resultaten visade att de två förhållningssätten tenderade att ha olika effekter på deltagarnas tankar: det experientiella tenderade att minska andelen negativa tankar medan det analytiska förhållningssättet medförde en minskning i andelen neutrala tankar. Dessutom förelåg ett predicerande samband utifrån negativa självskattningar av en inledande prestation (ett oförberett tal inför kamera) till grad av negativt tänkande senare under sessionen, men bara hos de deltagare som hade antagit ett analytiskt förhållningssätt. I linje med tidigare forskning tyder resultaten på att ett experientiellt förhållningssätt kan ha positiva effekter på ältande ('rumination') vid social fobi.

Inre mentala bilder ('imagery') utgör ett tema i denna avhandling: deras betydelse inom kognitiv beteendeterapi och, i jämförelse med verbala interventioner, deras betydelse för emotionell förändring. 'Imagery' är i mer eller mindre utsträckning involverad som en viktig beståndsdel i de behandlingstekniker som undersökts. I audio feedback med kognitiv förberedelse – och i än högre grad 'imagery rescripting' – utnyttjas mentala bilder i syfte att komma åt ångestladdade minnesstrukturer och att förse individen med korrigerande information för emotionell bearbetning. Om än på något annorlunda sätt har 'imagery' också en nyckelroll i det experientiella förhållningssättet genom att underlätta för en omedelbar upplevelse av nuet i situationen. Resultaten av de tre experimentella studierna tyder på att det är angeläget att särskild hänsyn tas till betydelsen av 'imagery' som förändrande faktor i det fortsatta forskningsarbetet på att förbättra gängse behandlingsmetoder.

# Acknowledgements

I believe it was a bold venture to get engaged in doctoral studies when in the autumn of one's career. However, the idea was to ensure that I would have something sensible to do when the professional life was completed, offering an abundance of leisure days ahead. I have so far never had occasion to regret this choice.

I do, however, regret not having taken this step much earlier in my life. The one person who played a crucial part in my decision was Professor Lars-Gunnar Lundh, who subsequently became my supervisor. When one day in September 2004 I told him that I had a mind to take up doing research, he was truly delighted and encouraged me to apply for the doctoral studies. Having already, as a student, registered for this stage of higher education, but having dropped out in favour of following a career as a psychologist, it was suggested that I simply needed to reactivate these studies. Because, as the dean thoughtfully declared to Lars-Gunnar, once you have registered for the doctoral studies, there are only two ways out of it: either by death or by the successful defence of one's thesis. Given that at the time I had not been examined for the doctoral degree and that I still was alive, Lars-Gunnar and I concluded that I should still be registered. Today, eight years later, at long last I have reached the goal; to be able to make my exit from the studies – and escape alive.

I have, during these exciting years, received generous support from my head supervisor, Professor Lars-Gunnar Lundh, and from my assistant supervisor, Gardar Viborg, PhD. to both of whom I am greatly indebted. I wish to thank Lars-Gunnar especially for all the understanding and encouragement he has given me, and for the open-handedly sharing of his vast knowledge, particularly when the task felt too burdensome and insoluble.

There have been so many people who meant so much to me during my professional life – friends, colleagues, teachers and employers, all of whom, in some way or another, had an influence on my development as a human being and as a professional. I thank them all. However, I am infinitely indebted to the late Professor Carlo Perris, the founder of the Swedish cognitive psychotherapy, who introduced me to the luminaries of psychotherapy, trained me as a cognitive psychotherapist and supervisor, and who was my tutor and friend. With his charisma, warmth and his Italian temperament, he gave me the best conditions in which to thrive.

I also wish to thank those who have helped me carry out the research studies of this thesis. Especially my co-workers, the clinical psychologists and psychotherapists Gunilla Bliding, Shahriar Faghihi, Maria Johansson, Anna Pardo, Elisabeth Malder, Frina Riley, Gun Roth-Andersson, and Arpad Vörös. Thanks to Malcolm Hancock,

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Finally, my family has been of the greatest importance to me, being supportive, showing patience with me and giving me a sense of purpose, especially my dear sons, Nicholas, Johan and Andreas. Thank you all!

# List of Studies

The present thesis is based on the following studies, which will be referred to by their Roman numerals.

- I. Nilsson, J.E., Lundh, L.G., Faghihi, S., & Roth-Andersson, G. (2011). The enhancement of beneficial effects following audio feedback by cognitive preparation in the treatment of social anxiety: A single-session experiment. *Journal of Behaviour Therapy and Experimental psychiatry*, 42 (4), 497 – 503.
- II. Nilsson, J.E., Lundh, L.G., & Viborg, G. (2012). Imagery rescripting of early memories in social anxiety disorder: An experimental study. *Behaviour Research and Therapy*, 50(6), 387–392.
- III. Nilsson, J.E., Lundh, L.G., & Viborg, G. (*in press*). Effects of analytical and experiential self-focus on rumination after a stress induction in patients with social anxiety disorder: A pilot study. *Cognitive Behaviour Therapy*

All studies were printed by permission from the publisher.

# List of Abbreviations

AF	Audio feedback
AF-CP	Audio feedback with cognitive preparation
APA	American psychiatric association
BDI	Beck depression inventory scale
CBT	Cognitive behavioural therapy
CP	Cognitive preparation
CR	Cognitive restructuring
DSM	Diagnostic and statistical manual of mental disorders
ECA	Epidemiological catchment area
FNE	Fear of negative evaluation scale
ICS	Interacting cognitive subsystems framework
IAT	Implicit association test
ID	Image distress
IR	Imagery rescripting
MD	Memory distress
MDD	Major depressive disorder
MOI	Meaning of images
NCS	National comorbidity survey
NCS-R	National comorbidity survey replication
PEP	Post-event processing
PTSD	Post-traumatic stress disorder
RT	Repetitive thought
SAD	Social anxiety disorder
SAMs	Situational accessible memories
SIAS	Social interaction anxiety scale
SPS	Social phobia scale
STAI	State-trait anxiety inventory scale
TL	Thought listing
VAMs	Verbally accessible memories
VEQ	Voice evaluation questionnaire
WHO	World health organisation

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# Introduction

Social anxiety disorder (social phobia) is an intense and persistent fear of becoming extremely anxious and humiliated in social situations, specifically of embarrassing yourself in front of other people. Typically, people with social anxiety may think that others are far better in many social areas such as public speaking, mingling with others at parties, being an agreeable and enjoyable company. Thus, the fear of not fitting in, of flaws in their performance, of not being smart enough is devastating. Even the smallest mistake they do in a social situation is exaggerated to out of proportion.

Hence, social anxiety disorder (SAD) is a disabling condition, disrupting normal life, interfering with career or social relationships. Opportunities for employment may be lost due to the debilitating fear of being negatively evaluated at the job interview. The dread of social events can begin weeks in advance and may prevent the socially anxious person to establish a love relationship, marry and settle down.

Fortunately, both cognitive-behavioural treatments (CBT) and psychopharmacological therapy have demonstrated efficacy for SAD. Although CBT has proven superiority over medication at follow-ups (e.g., Clark et al., 2003) there still remains room for improvement (McManus, Peerbhoy, Larkin & Clark, 2010). There is a need to further explore by what means CBT can help socially phobic patients. Studies examining different parts of treatment packages for social anxiety disorder to determine what components are the most efficient ones and to find out how to elaborate these are warranted.





# Social Anxiety Disorder

## Diagnosis

Social anxiety disorder, formerly "the neglected anxiety disorder" (Liebowitz, Gorman, Fyer, & Klein, 1985), is a relatively recent diagnosis and was first made official in 1980 by being entered as a specific diagnostic entity in the third edition of the *Diagnostic and Statistical Manual of Mental Disorder* (DSM-III, APA, 1980). This edition was also the first to describe the anxiety disorders in a non-theoretical language, thereby departing from the earlier nosological tradition, in which all phobias were grouped together under the concept of 'neurosis', largely influenced by the psychoanalytic perspective. Instead of differentiating between normality and abnormality and deciding on underlying etiological mechanisms, the DSM-III emphasized categories of illness and overt symptoms (Horwitz, 2007). Thus, SAD was defined by excessive fear of scrutiny in discrete performance-oriented situations such as public speaking, writing or using a urinal in front of others. Importantly, the disturbance had to cause "significant distress" and to be perceived by the individual as "excessive or unreasonable" (APA, 1980). Individuals with avoidant personality disorder were excluded.

In view of evidence that some persons feared several social situations (Liebowitz et.al., 1985), the diagnostic revision of DSM-III (DSM-III-R, APA, 1987) broadened the scope of SAD with such social situations that typically were avoided and associated with avoidant personality disorder. Hence, the avoidant personality disorder was included and the generalised subtype of SAD was introduced. The latter was defined by fear of most social situations, such as fear of embarrassment or humiliation when engaged in, for example, conversations with strangers or acquaintances. The other subtype was unlabelled, but has since in the literature been referred to as 'non-generalised' or 'specific' SAD.

## Diagnosis according to DSM-IV

Social anxiety disorder, also known as 'social phobia', is defined by the following criteria:

Table 1. *DSM-IV Definition of Social Phobia (Social Anxiety Disorder)*

- 
- A. A marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. *Note: In children, there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults.*
- B. Exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed Panic Attack. *Note: In children, the anxiety may be expressed by crying, tantrums, freezing, or shrinking from social situations with unfamiliar people.*
- C. The person recognizes that the fear is excessive or unreasonable. *Note: In children, this feature may be absent.*
- D. The feared social or performance situations are avoided or else are endured with intense anxiety or distress.
- E. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.
- F. In individuals under age 18 years, the duration is at least 6 months.
- G. The fear or avoidance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition and is not better accounted for by another mental disorder (e.g., Panic Disorder With or Without Agoraphobia, Separation Anxiety Disorder, Body Dysmorphic Disorder, a Pervasive Developmental Disorder, or Schizoid Personality Disorder)..
- H. If a general medical condition or another mental disorder is present, the fear in Criterion A is unrelated to it, e.g., the fear is not of Stuttering, trembling in Parkinson's disease, or exhibiting abnormal eating behavior in Anorexia Nervosa or Bulimia Nervosa.

*Specify if:*

Generalized: if the fears include most social situations (also consider the additional diagnosis of avoidant personality disorder)

---

*Note.* Reprinted with permission from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision, (Copyright ©2000). American Psychiatric Association.

## **Criticism of DSM-IV**

As Furmark (2002) has pointed out, there is a lack of consensus about the most proper subtyping classification and that any subtyping scheme is arbitrary. The National Comorbidity Survey Replication study (NCS-R, Ruscio et al., 2008) demonstrated that SAD, even in the absence of co-morbid conditions, is associated with significantly elevated impairment in multiple domains. This also held true for individuals reporting a limited number (1 – 4) social fears. Moreover, and consistent with previous research, they found a dose-response relationship between number of social fears and degree of functional impairment, raising the question whether generalised SAD is qualitatively distinguished from the non-generalised subtype of SAD.

As in the third and revised edition (DSM-III-R), the DSM-IV includes a specifier for the generalised SAD: “if the fear includes most social situations”. However, critics argue that the specifier “most social situations” is not operationally defined and that this definition appears to have been inconsistently applied by researchers (e.g., Hofmann, Heinrichs, & Moscovitch, 2004). In response to questions posed by the DSM-V Task Force addressing the generalised specifiers and their alternatives, Bögels et al. (2010), after reviewing the extant literature, concluded that the evidence gave little support for the generalised subtype. The number of symptoms appeared to increase continuously by the number of fears instead of falling into discrete categories, thus leaving the decision of cut-off points for subtyping an arbitrary issue.

A different line of criticism of the DSM-IV specifiers pertain to the issue whether the socially anxious are overpathologized (e.g., Wakefield, Horwitz, & Schmitz, 2005). Referring to evidence suggesting that social anxiety is a evolutionary designed response to specific triggering situations, one that is normally distributed in intensity (Schneier, Blanco, Antia, & Liebowitz, 2002), the authors argue that the lack of adequate harmful dysfunction indicators to distinguish SAD from normal social anxiety, suggest that many or most people meeting the criteria for DSM SAD “are temperamentally high in social anxiety but do not suffer from a disorder. They suffer from anxiety triggered by social situations we are designed to be wary of ..” and their “pathologization represents a classic confusion between social values and medical diagnosis” (Wakefield et al., 2005, p. 318). Acknowledging the importance of considering the interaction between the individual’s temperament and the demands of present-day society, Campbell-Sills and Stein (2005) argued in reply to Wakefield et.al. (2005) that, when taken in the aggregate, but not in isolation, the DSM-IV criteria for SAD adequately establish the presence of harmful dysfunctions. Moreover, they contended that the classification of SAD as a disorder has served a practical function, giving rise to a large body of research.

## Prevalence

Following the publication of the DSM-III (1980), in which the diagnosis of SAD first was made official, epidemiological studies have consistently shown that a substantial proportion of the population suffers from SAD (Furmark, 2002). Summarising studies conducted during the last two decades of the twentieth century, Furmark concluded that the first wave of epidemiological studies based on the DSM-III, e.g., the Epidemiologic Catchment Area (ECA) study, yielded lifetime prevalence rates of about 2-3 % in United States (e.g., Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992), which probably were grossly underestimations of the true prevalence rates. The second wave, using DSM-III-R or DSM-IV criteria and updated diagnostic instruments, showed considerably higher prevalence rates. For example, the National Comorbidity Survey (NCS), provided a lifetime prevalence estimate of 13,3 % (Kessler et al., 1994). Similarly, increased estimates were found in Italy, from a lifetime prevalence of 1 % to 4 % (Faravelli et al., 2000), New Zealand from around 4 % to 11 % (Feehan, McGee, Raja, & Williams, 1994; Wells, Bushnell, Hornblow, Joyce, & Oakleybrowne, 1989), and in Canada from around 2 % to 7 % (Bland, Newman, & Orn, 1988; Stein, Torgrud, & Walker, 2000). A Swedish study using DSM-IV criteria showed a point prevalence rate of 15,6 % (Furmark et al., 1999). Notably, lifetime rates from two studies in Asia (i.e., in South Chorea and Taiwan) were substantially lower (just over 0,5 %) than in western countries.

With the exception for the National Comorbidity Survey Replication study (Ruscio, et al., 2008) showing lifetime prevalence of 12.1 %, recent epidemiological studies have given somewhat lower estimates of prevalence. Stein et al., (2010) summarised epidemiological surveys undertaken by the World health Organization's World Mental Health Survey Initiative in 9 developed and 11 developing countries and found a lifetime prevalence of 6.1% in the former and much less, 2.1%, in the latter countries. Consistent with this study, telephone surveys conducted in five European countries showed that the point prevalence for SAD was 4.4% of the sample (Ohayon & Schatzberg, 2010).

The striking cross-site differences, particularly in earlier studies, raise the question as to what extent these can be explained by genuine cross-cultural variability or by different culturally bound ways of expressing social fears. In view insufficient adjustments of current instruments to the cross-societal variability in symptoms of SAD, this question is difficult to answer (Chapman, Mannuza, & Fyer, 1995). Moreover, the observed variability in diagnostic cut-off points on levels of impairments and distress specifying the cases, reflects the difficulty on deciding on the exact diagnostic threshold for SAD (Furmark, 2002). Thus, the more conservative estimates in recent studies may in part be explained by the use of improved and more validated instruments. For instance, the Diagnostic Interview Schedule (DIS: Helzer, Robins, & Ratcliff, 1981), used in earlier studies, had the limitation of not fully coinciding with the DSM-III definition (Chapman et al., 1995). However, the more validated World

Health Organization (WHO) Composite International Diagnostic Interview (CIDI 3.0; Kessler & Ustun, 2004), which is a fully structured lay-administered interview, has shown to be a more comprehensive and improved instrument.

## Onset and Course

SAD has an early onset in childhood or early adolescence (Wittchen, Stein, & Kessler, 1999). The disorder is often the underlying reason for school refusal in young children and the one anxiety disorder that most consistently has been shown to be associated with early drop-out of school (Stein & Stein, 2008).

Results from a recent community epidemiological study showed the mean age of onset for DSM-IV SAD to be 13.1 years (Knappe et al., 2011) and in a clinical study the mean age was found to be 11.7 years (Dalrymple & Zimmerman, 2011). These findings are consistent with results from the NCS-R (Ruscio et al., 2008) study, showing that the first social fear occurred between 10 and 13 years of age, which was 1 – 2 years earlier than the age for the first avoidance (median 12 – 14 years). The generalised SAD has been observed to have an earlier median onset (12 years) than the non-generalised subtype (14 years) (Wittchen et al., 1999).

Studying the cumulative age of onset distribution for isolated social fears up to age 34, Knappe et al. (2011) in their sample located onset primarily to childhood for isolated fear of eating and writing (mean 11.6 years), and in adolescence for isolated fear of talking to others or speaking in front of others (mean 14.0 years) and finally the fear of taking a test (mean 14.7 years). Dalrymple, Herbert and Gaudiano (2007) used a structured clinical interview to assess relevant development factors that may be associated with social anxiety symptoms, as well as to track retrospectively symptom severity at various age points in a sample of clients with generalised SAD. Results for age of onset were consistent with previous studies suggesting an early childhood and later adolescent pattern. Specifically, 59 % of the sample reported the onset in childhood and 41 % in adolescence/adulthood. Both groups reported overall increased severity of social anxiety across the different age points (toddler, younger child, older child, younger teen, older teen, currently). The earlier onset group showed greater severity relative to the later onset group.

Previous NCS analyses have documented that SAD is a seriously impairing disorder that usually has an early age of onset and, if untreated, is more often associated with high risk of chronicity and secondary comorbidity as compared to other anxiety disorders. Moreover, social phobics seldom seek professional treatment unless they also suffer from some other co-morbid disorder (Kessler, Stang, Wittchen, Stein, & Walters, 1999). Summarising prospective longitudinal studies, Wittchen and Fehm (2003) found a high incidence of impairment and reduced quality of life. Specifically, a higher rate of unemployment, higher rate of work hours missing, and higher rate

of impairment of work performance was demonstrated by individuals with SAD. Additionally, they showed a marked reduction in quality of life as increased risk of leaving school, disabilities in major social roles (e.g., family, social relations), marked dissatisfaction with friends. All studies reported an elevated risk of comorbidity for SAD. It was estimated that 50 – 80 % of clients with SAD have at least one other disorder – other anxiety disorders, depression, or substance use disorders (Wittchen & Fehm, 2003).

## Comorbidity

According to the National Comorbidity Survey, SAD is indeed associated with considerable coexisting psychiatric disorders. Thus, especially depressive disorders, other anxiety disorders and substance abuse have consistently been found to be associated with SAD (Wittchen & Fehm, 2003). Lifetime comorbidity has been reported to range between 69 % (Schneier et al., 1992) and 92 % (Faravelli et al., 2002). In a German nationally representative sample, covering 113 communities throughout the country, during the past 12-month period just about 12 % of all cases with the diagnosis of SAD were pure, that is, did not meet criteria for any other mental disorder (Fehm, Schneider, & Hoyer, 2007).

In a European epidemiological community survey, 19.6 % of individuals with SAD also had a major depression disorder (MDD) (Ohayon & Schatzberg, 2010). This rate was observed to be lower than in clinical population but consistent with results from the NCS-study (Kessler et al., 1999). For 65.6 % of the cases with SAD and MDD, the social anxiety disorder appeared at least 2 years before the onset of the MDD. The prevalence of another anxiety disorder was found to be 38.3% in individuals with SAD, but, the presence of concomitant MDD dramatically increased the size of prevalence to 65.2 % of the clients (Ohayon & Schatzberg, 2010). The most common comorbid anxiety disorder was specific phobia (27.2 %).

The level of comorbidity with mood and anxiety disorders was found to increase with the number of fears: about 38 % of individuals reporting one social fear had a comorbid anxiety disorder, and the proportion increased to 92% of clients with 5 or 6 social fears. The levels of comorbid mood disorders were lower: 27 % for social phobics reporting one social fear, while for clients with five or six social fears the comorbidity had reached 56% (Acarturk, Graaf, Straten, Have, & Cuijpers, 2008). These results were consistent with the NCS-R study (Ruscio et al., 2008) showing a dose-response pattern which was clearest for comorbidity of other anxiety disorders and weakest for substance use disorders. Nearly two-thirds of respondents with lifetime SAD involving 1-4 fears also had at least one other lifetime disorder, with increasing proportions for 5-7 fears (75.2 %), 8-10 fears (81.5 %) and 11 or more fears (90.2 %). These results are consistent with the original NCS study (Kessler, 1999).

The NCS-R-Adolescent Supplement study (Burstein et al., 2011) reported findings closely resembling the magnitude and severity of this condition among adults (Ruscio et al., 2008). SAD was most frequently associated with other anxiety disorders, and in line with previous research the likelihood of comorbidity was consistently greater among adolescents with generalised as compared to those with non-generalised SAD.

## Gender Differences

The risk for women to develop SAD is higher than for men. Epidemiological community studies have consistently reported that women are more likely to have SAD. Thus, the European study including United Kingdom, Germany, Italy, Portugal and Spain, revealed lifetime prevalence estimates of 5.4% for females and 3.4 % for males (Ohayon & Schatzberg, 2010); the NCS-R-Adolescent Supplement provided somewhat higher estimates, females 9.2 % and males 7.9 %. Reviews of epidemiological, cross-sectional and prospective longitudinal studies have arrived at a female-to-male ratio of 3 : 2 (Furmark, 2002; Wittchen & Fehm, 2003).

Women are also more likely to develop SADs of greater severity. Thus, of all individuals who met the criteria for generalised SAD according to the DSM-IV, as reported by the NCS-R study (El-Gabalawy, Cox, Clara, & Mackenzie, 2010), 59 % were female, whereas only 45 % of those with non-generalised SAD were females. The NCS-R-Adolescent Supplement (Burstein et al., 2011) revealed a lifetime prevalence estimate of generalised SAD for women of 5.9 % and for men 3.8 %. This higher risk of severe SAD in females, about 3 % as compared to males 1.5 %, was confirmed by the review by Furmark (2002).

Hence, women have not only a higher risk than men of developing SAD, they also have a greater vulnerability for the more severe generalised SAD.





# Theoretical Models of Social Anxiety Disorder

Since the introduction of the diagnosis 1980, two cognitive models have had a significant influence on research on CBT for SAD: the models by Clark and Wells (1995) and by Rapee and Heimberg (1997). Although very similar at large, the models differ on some issues, which have been addressed in research studies and helped to delineate the features of SAD. Therefore, the models are presented separately, despite the fact that they greatly agree with each other.

## The Cognitive Model by D.M. Clark and A. Wells

Starting with a statement that the “core of social phobia appears to be a strong desire to convey a particular favourable impression of oneself to others and marked insecurity about one’s ability to do so” (p.69), Clark and Wells (1995) proposed a cognitive model of the factors, including three processes, involved in maintaining social phobic’s fears (Fig. 1).

First, when entering a social situation, individuals with social anxiety disorder (social phobic persons) tend to perceive the situation as dangerous, and become concerned that they may fail to make their desired impression on others. They become anxious and their attention shifts from focusing outwardly on people around them to detailed observation and monitoring of themselves, leading to an enhanced awareness of feared anxiety responses and disturbances in the processing of external information. According to the model they then use internal information, such as their own thoughts, feelings, and bodily sensations, including interoceptive information, brought about by self-monitoring, in order to infer what other people think of them and thereby construct a negative impression of their public self, triggering anxiety responses. This impression often takes the form of mental images, experienced from an “observer perspective”, that is, seeing themselves as though from another person’s point of view. This image is often catastrophic, (e.g. seeing the self performing poorly, blushing or sweating profusely) and by the individual with SAD assumed to be the actual image that is seen by other people. The model also suggests, that information from external sources is blocked, preventing access to any positive social

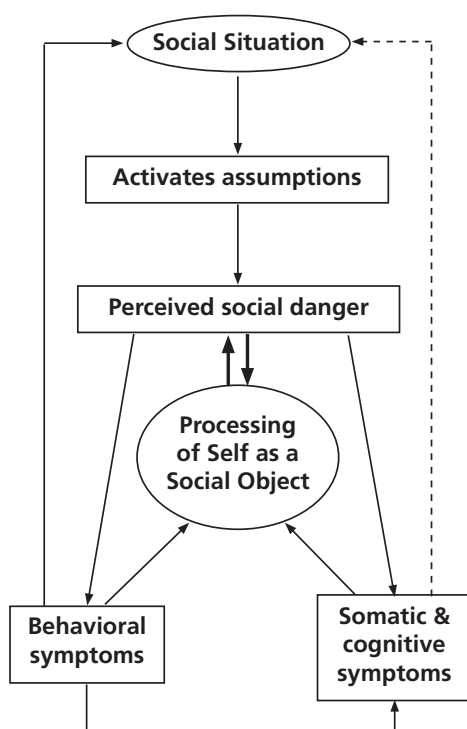


Figure 1. A model of the processes that are hypothesized to occur when a social phobic enters a feared social situation.<sup>1</sup>

safety behaviours to maintain the disorder. They prevent disconfirmation of social phobic's fears, exacerbate their problems by, for example, appearing less friendly, and thus make them feel more anxious. Hence, safety behaviours result in the belief that social situations are dangerous, which is actually reinforced by the absence of the feared social catastrophe.

Third, it is hypothesised, that people with SAD, before and after leaving social situations, selectively retrieve and dwell upon negative information. Because of the ambiguous nature of social interactions, they likely review the situation in detail and focus on past failures and negative images of themselves. This 'anticipatory anxiety' and the 'post-event processing' of social situations exacerbate their negative thinking, confirming their concerns about being socially inadequate, and maintain their negative image of self. Implied by the model, when engaged in anticipatory or post-event processing, individuals with SAD are typically influenced by the same cognitive biases as when in a social situation itself.

feedback, locking the socially anxious individuals in a closed system, in which the evidence of their fears are self-generated. The anxiety triggers inappropriate responses which in turn create vicious circles: (1) somatic and behavioural symptoms (e.g., blushing) become new sources of perceived danger; (2) preoccupation with somatic responses and negative self-evaluation thoughts; and (3) less friendly behaviour from others confirming the social phobic's fears.

Second, Clark and Wells also propose that socially anxious individuals are likely to engage in safety behaviours that are intended to improve their performance. For instance, they avoid eye contact in order not to see others' disapproval, or they conceal their symptoms (e.g., wearing polo-necked jumpers to conceal the blushing; to hold the glass of beverage with both hands to avoid shaking), and/or they simply avoid the feared situation (e.g., not accepting to make a presentation at work). The model predicts the

1 From "A Cognitive Model of Social Phobia," by D. M. Clark and A. Wells, In *Social Phobia: Diagnosis, Assessment, and Treatment* (p. 72), edited by R. G. Heimberg, M. R. Liebowitz, D. A. Hope, and F. R. Schneier, 1995, New York: The Guilford Press. Copyright 1995 by the Guilford Publications, Inc. Reprinted with permission."

Fourth, Clark and Wells assume that individuals with SAD show an anxiety-induced performance deficit and overestimate how negatively other people evaluate their performance and the consequences of such evaluation. Although, in most anxiety disorders, the feared disaster rarely occurs, the anxiety may affect socially anxious individuals to some extent. For example, anxiety can produce blushing, shaky hands, a tensed voice, or a forced speech. Moreover, safety and avoidance behaviours may turn the social phobic individual to behave less friendly and outgoing when anxious.

Finally, why does the social phobic person process situations in maladaptive ways? Influences of longstanding underlying assumptions and negative beliefs about the self, such as “I’m stupid”; “I’m unattractive”; or “I’m inadequate” are assumed to be activated by perceived threatening situations. According to Clark and Wells, social cues are ambiguous and, while non-socially anxious individuals have no problems with this, individuals with SAD become greatly concerned and threatened by the possibility that others will evaluate them negatively. Therefore, cues from others become salient, and the normal way to deal with social ambiguities (e.g., to ask somebody what he/she actually meant) becomes too threatening for the social phobic person.

## The Model by R.M. Rapee and R.G. Heimberg

This model starts from a notion that “people with social phobia assume that other people are inherently critical, i.e. likely to evaluate them negatively” and that “they attach fundamental importance to being positively appraised by others” (Rapee & Heimberg, 1997, p.742). As a first postulate, the model states that when entering a social situation, the social phobic forms a mental representation of the self, depicting his or her external appearance and behaviour in accordance with how he/she believes other people see them. This representation is proposed to be based on input from internal sources, such as information from longterm-memories (e.g., prior experience of similar situations), internal cues (e.g., proprioception, bodily sensations), and behaviour. Individuals with SAD also engage in monitoring of external cues perceived as potentially threatening (i.e., possible negative evaluation), such as frowns, signs of boredom, etc. Given the ambiguous nature of social feedback, and that the attention of socially phobic persons generally is focused on the possibility of negative evaluation, the processing of external social cues is expected to be negatively biased.

Next, Rapee and Heimberg postulate that socially phobic persons make predictions of the performance standard, which they believe others will employ in a given situation. This prediction is then compared with the mental representation, of how they presume others view themselves, in order to determine whether they are performing to standard, and to provide an estimate of how other people will react. The discrepancy between the predicted standard and the mental representation (appearance and/or behaviour) will determine the perceived likelihood of negative

evaluation from other people and the costs of such an evaluation. Finally, expecting negative evaluation, behavioural, cognitive, and physical symptoms of anxiety are triggered, “which subsequently influence the individual’s mental representation of his/her appearance and /or behaviour as seen by the audience, and the cycle is renewed” (Rapee & Heimberg, 1997, p.744).

## Comparisons of the Models

Building on almost identical frameworks, within which cognitive processes occur to generate and maintain social anxiety, the differences of the finished structures of the two models appear to be more of degree than kind.

Thus, both models hypothesise cognitive biased processing to underlie and maintain social anxiety, mainly attentional, interpretational, and memory bias. They share the hypothesis that individuals with SAD shift their attention inwards when perceiving social threats and construct an impression of themselves as they believe others see them. Rapee and Heimberg suggest a ‘mental representation of self as seen by the audience’, in accord with the Clark and Wells’ formulation of an ‘impression of oneself as a social object’, which often takes the form of an image from an observer’s perspective. However, the models differ on the range of biased attention. In contrast to the Rapee and Heimberg account, Clark and Wells suggest that the attention is exclusively focused on the self, whereas in the former account it is proposed that socially anxious individuals focus on both internal and external information, in the latter case on signs of possible negative evaluation from the audience.

The hypothesis of interpretation bias as a maintaining factor in SAD is held by both models. First, the models assume that social phobics interpret social situations in a more threatening manner than do non-socially anxious individuals. Then, when in a social situation, the negative self-perception, as depicted in self-imagery, is influenced by negative interpretation of information from detailed monitoring of bodily sensations, feelings, and behaviour. Moreover, the models are in agreement with the assumption that social phobics negatively evaluate and underestimate their performance. Additionally, but in contrast to Clark and Wells, Rapee and Heimberg emphasise the negative interpretation of ambiguous social information from the in-situation environment (the audience), whereas in the Clark and Wells’ account, the negative post-event processing bears traces of negative interpretation of previous as well as of the past social interactions.

A memory bias is implied by both models. Information related to negative evaluation is more easily recalled than non-evaluative or positive information. Thus, in-situation memory recall is made explicit in the Rapee and Heimberg account, whereas the formulation of Clark and Wells implicitly refers to biased recall in asso-

ciation to assumptions of self-schemata. However, they make this type of bias more explicit in their description of anticipatory and post-event processing.

The major differences between the two models consist in (1) the additional assumption of safety behaviours by Clark and Wells, and (2) the assumptions, proposed by Rapee and Heimberg, that individuals with SAD (a) develop a standard by which they believe the audience is evaluating them, (b) compare their perception of their own performance against this standard, and (c) believing that they will not measure up, the perceived likelihood of negative evaluation and anxiety increases.

In conclusion, the cognitive models for SAD by Clark and Wells (1995), and Rapee and Heimberg (1997) overlap considerably. Moreover, the differing aspects of the models do indeed contribute to the understanding of the disorder. A recent formulation, the comprehensive psychological maintenance model of social anxiety disorder by Hofmann (2007), draws heavily on the above presented models and on research from over the last decade. Given that this model capitalises on the vast amount of research instigated by earlier accounts, and that, in its essential parts, this model is in accord with the two earlier models, there is ample support for the conclusion that taken together, Clark and Wells' and Rapee and Heimberg's models for SAD, provide a solid foundation on which researchers and clinicians can rely.



# Three Processes in Social Anxiety Disorder and Its Treatment

Theoretical models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997) have inspired to a great deal of research that has broadened our understanding of the disorder and its psychological treatment. Heimberg, in a short commentary, indicated that current models have led to the development of appropriate and effective treatments, but conceded that there are many clients who do not improve as much as desired (Heimberg, 2009; see also McManus, Peerbhoy, Larkin & Clark, 2010). Although cognitive behavioural therapies have demonstrated efficacy in the treatment of SAD, the average effect size of 0.80 remains modest (Butler, Chapman, Forman, & Beck, 2006). Recently, several investigators (e.g., Rapee & Abbott, 2007) have provided empirical evidence in support of the role of cognitive processes (e.g., negative self-perception, attentional bias) in the maintenance of the disorder. Although, researchers have begun to demonstrate that social anxiety can be reduced through the direct manipulation of these processes (Rapee, Gaston, & Abbott, 2009), there has, to date, been little investigation of the relative impact of different treatment components (McManus et al., 2010).

## Cognitive Biases of the Self-Image. Feedback with Cognitive Preparation

According to cognitive models of SAD, socially anxious individuals are characterised by biases in information processing that maintain anxiety in social situations (Clark & Wells, 1995; Rapee & Heimberg, 1997). Indeed, empirical evidence has confirmed that socially anxious individuals demonstrate biases in attention, interpretation, and imagery (see Hirsch & Clark, 2004, for a review). Further, the models also suggest that these biases have bidirectional effects and can influence each another. It is possible that different forms of cognitive biases and their results may combine and work together additively to maintain the disorder (Hirsch, Clark, & Mathews, 2006). Moreover, there may be a potential for a common underlying mechanism of cognitive biases in SAD, exerting its effect simultaneously on both attention (shift towards threatening stimuli) and interpretation (negative evaluation of ambiguous



social feedback) to produce negative imagery (Mathews, Mackintosh, & Fulcher, 1997). However, most research on cognitive processes in SAD has examined the different biases in isolation and thus has not addressed their combined effects.

### **Attentional bias in social anxiety disorder**

Consistent with the models (Clark & Wells, 1995; Rapee & Heimberg, 1997), self-focused attention has been associated with increased social anxiety and negative self-evaluation (Beidel, Turner, & Dancu, 1985; Hope, Burns, Hayes, Herbert, & Warner, 2010; Spurr & Stopa, 2003; Stopa & Clark, 1993). In the literature, biased attention is often referred to as hypervigilance and self-focused attention. Hypervigilance is typically used to refer to the selective attention for threatening stimuli (e.g., a frowning face) rather than neutral stimuli (e.g., the frown is appraised as concentrated). Self-focused attention refers to the process whereby attention is directed towards internal self-relevant stimuli (see Bögels & Mansell, 2004, for a review) and is usually defined as either private or public (Fenigstein, Scheier, & Buss, 1975). Private self-focus represents a tendency to be aware of internal aspects of the self, whereas public self-focus describes a tendency to focus on external, observable aspects of the self. As suggested by the models, the excessive public self-focus, typically observed in social anxiety, may prevent access to external information. Indeed, research has shown that internal and external focus are discrete processes and that allocation of attentional resources to one area reduces resources available for the other (Carver, 1979).

The most commonly used paradigm to study selective attention for threat-related stimuli is the emotional Stroop test. In this test the participant must name the colour of words printed in different coloured inks. If incongruent (e.g., the word 'green' is printed in 'red') the perception of the two aspects interfere with each other and cause longer reading time as compared to congruency (i.e., the 'word green' written in 'green' ink). With the modified Stroop task, hypervigilance was assumed to be indexed by a longer time to name the ink colour of threat words relative to neutral words, but results of studies using this paradigm may have been subject to confounding of other cognitive processes and should therefore be interpreted with caution (Bögels & Mansell, 2004).

To overcome the interpretative difficulties associated with the Stroop paradigm, researchers have used a dot-probe paradigm to assess attentional bias in a more direct fashion. In this method usually the speeding of reaction times is used as an index of attentional bias. Musa, Lépin, Clark, Mansell, and Ehlers (2003) used a dot-probe task in which participants were presented with word pairs on a computer screen, each pair consisting of a neutral and a threat word. Trials consisted of short displays (i.e., 500 ms) of words, the emotional word either in an upper location of the screen and the neutral in the lower region, in a counterbalanced order. At some trials the probes (letter 'E' or 'F') were displayed replacing one of the words at that occasion.

When probes appeared participants were to react to this by pressing one of two buttons and the reaction time was used to index attention bias. It was thought that when threat words and probes were displayed simultaneously, but at different locations of the screen (e.g., the threat word in the upper area and the probe in the lower, or vice versa), the reaction time would increase, as compared to presentations on the same location (e.g., threat words and probes in the same area), and reflect an attentional bias. Indeed, findings indicate that individuals with SAD show an attentional bias towards social-threat words while non-patients tend to avoid such words (Musa et al., 2003). Using the same method, Mansell, Clark, Ehlers, and Chen (1999) demonstrated similar results on vigilance to faces (positive or negative).

To test the hypothesis (Clark & Wells, 1995; Rapee & Heimberg, 1997) that socially anxious individuals shift attention to internal cues when perceiving social threat, Mansell, Clark, and Ehlers (2003) developed a task asking participants to detect two probes: one external and one internal. The internal probe was a pulse to the finger supposedly reflecting participants level of arousal, the external probe was superimposed on pictures of faces presented on the screen. Consistent with the model, high, as compared to low, socially anxious individuals showed an internal attentional bias that was specific to conditions of social-evaluative threat. In a more naturalistic setting, Stopa and Clark (1993) asked social phobic participants to report their immediate thoughts (to speak their thoughts out loud) following a conversation with a stooge and to rate their actual coping abilities and social skills during the conversation. Responses were later rated on valence and classified whether they were self-evaluative as regards the self and their performance. During the conversation individuals with SAD experienced a significantly greater number of negative self-evaluative thoughts than anxious and non-anxious controls. Moreover, almost all listed thoughts were self-focused. However, Stopa and Clark failed to demonstrate a direct support for their hypothesis of impaired external attention for the environment (i.e., difficulties recalling items, like belt, rings, badges, worn by the confederate during the conversation).

Schultz and Heimberg (2008) conceded that the evidence supports the assertions that individuals with SAD are more focused on themselves, but disagree with Clark and Wells that self-focused attention is exclusive of others-focused external attention. Examining the contents of irrational automatic thoughts reported by clients of SAD, Hope et al., (2010) partially replicated findings by Stopa and Clark (1993) that negative self-evaluative thoughts dominated the cognitions of individuals with SAD. They also made a direct comparison between self-referent and other-referent thoughts and found that over three times as many thoughts were self-referent (e.g., labelling the self, own symptoms, own performance) as were other-referent (e.g., labelling others, others visible signs, others' standards). Thus, taken together, there is evidence in support for the theoretical proposals that attentional bias has a significant influence on social anxiety.

## **Interpretation bias in social anxiety disorder**

Social information is often ambiguous. For example, a smile may be perceived in two ways, positively as a friendly smile, or negatively as a derisive smile. Thus, interpretation bias refers to a tendency to resolve such ambiguities in a particular (negative or positive) direction. According to cognitive models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997), negative interpretations are the socially anxious individuals' default reactions in threatening social situations and contribute to maintain the disorder.

A typical paradigm to examine biased interpretation involves asking clients with SAD to give a speech and then to rate their performance. Thus, comparing self-evaluation ratings by social phobic individuals with non-clinical controls, Rapee and Lim (1992) found that both groups underestimated their performance relative to ratings by neutral assessors, that the underestimation was greater for the SAD group. These findings were replicated in studies in which clients of SAD had a conversation with confederates (Alden & Wallace, 1995; Stopa & Clark, 1993) and in analogue studies (e.g., Mellings & Alden, 2000). Thus, individuals with SAD tend to perceive their own social performance as poorer than do others. Further, assessing how socially anxious individuals interpret social information, Stopa and Clark (2000) demonstrated that, compared to clients with anxiety disorders other than SAD, persons with SAD made much more negative interpretations of mildly negative situations, thus exaggerating in a catastrophic fashion.

Using a different paradigm, Constans, Penn, Ihen, and Hope (1999) asked high and low socially individuals to read a scenario that included a number of ambiguous statements related to interpersonal evaluation. Participants then rated the extent to which they agreed with a given interpretation. Individuals with low anxiety tended to generate more positive interpretations of ambiguous social information than negative inferences, whereas people with high anxiety had more even-handed interpretations. Thus, social anxiety appeared to be associated with a lack of positive interpretive bias. Employing an "on-line" paradigm, Hirsch and Mathews (1997) asked individuals with high or low levels of social anxiety to read incomplete descriptions of being interviewed for a job that implied a threatening continuation. They were then asked to make a speeded lexical decision about the final words that were either consistent with the threatening continuation or disconfirmed it. At emotionally ambiguous points in the text, low anxious individuals were faster to endorse words that correspond to benign, rather than threatening, interpretations. However, high socially anxious participants responded just as slow, endorsing words matching either benign or threatening interpretations. This line of research has shown that socially anxious people lack the positive inferences seen in non-anxious individuals, but has also shown a lack of clear-cut evidence of negative interpretation when ambiguity is encountered on-line (Hirsch & Mathews, 1997).

## **Negative self-imagery and the observer perspective**

Clark and Wells (1995) suggest that much of the increased self-focus in social anxiety would be achieved by seeing oneself in negative imagery from an observer perspective (i.e., as if through the eyes of the audience) as opposed to a field perspective (i.e., as if through one's own eyes). The images are assumed to be excessively negative and distorted, and individuals with SAD appear to believe that the image is accurate at the time it occurs. The experience of negative self-images may interfere with the person's ability to process information contrary to their negative beliefs about the self.

Indeed, Hackmann, Surawy, and Clark (1998), found that almost all of the interviewed persons with SAD reported spontaneously occurring images when engaging in threatening social situations. These images were more negative, more anxiety-provoking, and were more likely to be seen from an observer perspective compared to controls. Replicating these findings, Hackmann, Clark and McManus (2000) also found that these images were recurrent, that is, they appeared to have similar content within a range of different feared social situations. Furthermore, the investigators also found that recurrent images were linked to memories of traumatic experiences (e.g., being bullied or criticized in public) dating back to the time around the onset of the disorder.

A number of studies have demonstrated that individuals with SAD, as compared to non-socially phobic persons, tend to adopt an observer perspective in anxiety-provoking social situations (Coles, Turk, Heimberg, & Fresco, 2001; Wells, Clark, & Ahmad, 1998; Wells & Papageorgiou, 1999). Typically, patients were asked to recall and imagine a recent anxiety-provoking situation and to rate the perspective from which the image was seen on a continuum ranging from -3 ("entirely looking out through my eyes") to +3 ("entirely observing myself from an external point of view"). Wells and Papageorgiou further demonstrated that the use of observer images appeared to be specific to social anxiety, rather than a general characteristic of phobias. Moreover, Coles et al., demonstrated a positive association between the level of anxiety and the likelihood of seeing memories from an observer perspective.

Research has also found that the purposeful use of an observer perspective (compared to a field perspective) during social situations produced more negative cognitions, greater use of safety behaviours, and poorer subjective self-evaluation of a speech task, regardless of one's own overall level of social anxiety (Spurr & Stopa, 2003). Interestingly, viewing a video-taped recording of the speech, improved the self-ratings of performance in the high socially anxious individuals, but only when having adopted the observer perspective suggesting that the observer image was more distorted than the image from a field perspective. No such differences were found in participants low in social anxiety. The authors speculated in the possibility that the observer image could have been more positive and realistic for participants low in anxiety and therefore less disabling than observer images for high socially anxious individuals.

Self-imagery has also been thought to have a causal role in social anxiety. Experiments, manipulating images by asking clients with SAD to hold either a negative self-image or a benign image of themselves during a social situation (i.e., a conversation with a stranger), demonstrated that holding a negative, observer-perspective, image in mind resulted in greater anxiety and poorer ratings of own performance (Hirsch, Clark, Mathews, & Williams, 2003; Hirsch, Meynen, & Clark, 2004).

## Implications for treatment

Treatment for SAD has generally centred on a combination of cognitive restructuring and exposure, and treatment packages for the disorder have been successful (Clark, Ehlers, et.al., 2003; Clark et al., 2006; Ledley et.al., 2009; Turk, Heimberg, & Magee, 2008). There is empirical evidence indicating that standard CBT for SAD including verbal feedback could reduce the underestimation of social performance (Hope, Heimberg, & Bruch, 1995). However, cognitive restructuring and exposure do not usually address negative perception of performance directly.

Theoretically, addressing the tendency to underestimate one's performance should provide a vehicle for increasing improvement (Rapee & Hayman, 1996). Arguing that this phenomenon largely is due to the attentional bias towards internal information, Rapee and Hayman suggested that, in trying to alter the negative mental representation (self-image), video-feedback should provide a simple method to maximise the external input. In three studies reported by Rapee and Hayman (1996), performance ratings made by socially anxious individuals following video-feedback were, in comparison to those not receiving feedback, more consistent to ratings made by independent observers, indicating reduced underestimation. Additionally, video-feedback affected both socially and non-socially participants in a similar way.

Drawing from clinical practice, Clark and Wells (1995) suggested that when receiving video-feedback of their performance (i.e., a speech), individuals with SAD were likely to recall images of how they *felt* they came across during the speech and thus confused these images with the actual contents of the video-recording. Thus, in an attempt to maximise the discrepancy between the perceived self and the content of the video-recording, Harvey, Clark, Ehlers and Rapee (2000) succeeded, with a sample of non-clinical subjects, in enhancing the effects of video-feedback by asking participants to carefully prepare themselves cognitively, before watching the video-recording. After having given an impromptu speech, participants in the cognitive preparation condition were asked to "(1) predict in detail what they will see in the video, (2) form an image of themselves giving the speech, and (3) watch the video as though they were watching a stranger" (p.1186-1187). After the video-feedback, while there was still a remaining discrepancy between the ratings of independent observers and self-ratings, Harvey et al. (2000) found that participants receiving cog-

nitive preparation made significantly more positive evaluations of their performance than did participants without cognitive preparation.

These results confirmed findings by Rapee and Hayman (1996) that the overall effect of video-feedback was to reduce participants' underestimation of performance, but the reduction was more marked in the cognitive preparation condition. Although not including ratings by objective observers, Kim, Lundh, and Harvey (2002) replicated these findings and extended it by demonstrating that the enhancement effects generalised to a later performance (i.e., a second speech).

Rodebaugh (2004) and Rodebaugh and Rapee (2005) however, questioned the usefulness of video-feedback having failed to demonstrate significant associations between reductions in self-observer discrepancy and concomitant social anxiety. Nevertheless, consistent with recent research (Chen et al., 2010; McManus et al., 2009), testing video-feedback with cognitive preparation among clients of SAD, Rodebaugh, Heimberg, Schultz and Blackmore (2010) found that the intervention improved self-perception of performance and reduced anticipatory anxiety for a later performance (i.e., a second speech). These effects were more pronounced in participants with high self-observer discrepancy.

Since one's voice represents another aspect of the self, feedback given auditorily should produce equivalent results to video-feedback. Consistent with this hypothesis, Hirsch and Clark (2007) found audio-feedback with cognitive preparation to produce less negative ratings of auditory performance using a procedure similar to the one used with video feedback. Also, more positive performance evaluations were associated with corresponding reductions of state anxiety. However, their design did not allow for a separate examination of audio feedback only as opposed to audio feedback with cognitive preparation.

## Traumatic Memories of Social Situations. Imagery Rescripting

In this section a pragmatic distinction between imagery and memories will be used, as proposed by Hackmann, Bennet-Levy and Holmes (2011). Since mental imagery is defined as 'mental contents that possess sensory qualities without access to immediate perceptual input' (Horowitz, 1970), images by necessity are elements from past perceptions and therefore also from a memory. However, the pragmatic distinction adopted by Hackmann et al. (2011) is based on the subject's understanding of the image as something that is "about the *present or the future*, whereas *memories* are clearly referenced to past events" (p.25).



## **Negative self-imagery and linked early memories**

Conducting a semi-structured interview, Hackmann, Surawy and Clark (1998) explored the possibility that negative self-images may play an important role in maintaining SAD. Findings were consistent with the cognitive model by Clark and Wells (1995) showing that social phobics were significantly more likely than controls to report spontaneously occurring negative and anxiety-provoking images when in threatening social situations. The images typically depicted their worst fears about how they might come across. For example, one patient described an image he experienced at a restaurant: "I am rushing through the restaurant trying to get past people, knocking them over, it's crowded and other people are looking confused. Where has he gone? What's happening? I look hot and sweating, silent" (p.9). Another patient having a fear of blushing: "It's like a camera zooming in on horrible, red, panicky face, just the face and neck and top part of the body. I look really put-on-the-spot and nervous" (Hackmann et al., 1998, p.9). All patients reported images from an observer perspective whereas controls' images were predominantly from a field perspective. These findings were replicated and extended by showing that images were recurrent, that is, they remained stable over a range of different feared social situations and over time (Hackmann, Clark & McManus, 2000). Although visual components dominated, most images involved other sensory modalities as well. Moreover, recurrent images were found to be linked to early memories of adverse social events from about the onset of the disorder, and the recurrent images appeared to correspond to linked memories in terms of both content and sensory modality. The content of the memories were categorised in six themes, of which "being criticized for getting something wrong" was the most frequent, for example, "being criticized by a teacher, and unfavourably compared to her brother in front of the class, because she wanted to play football" (Hackmann et al., 2000, p. 606). The authors concluded that memory images of unpleasant experiences could explain the production of recurrent images and the failure to update in the light of beneficial reactions from the social environment.

Following these seminal papers, a growing body of research has demonstrated the occurrence of negative imagery and its linked memories in various other psychopathological disorders, such as agoraphobia (Day, Holmes, & Hackmann, 2004), obsessive-compulsive disorder (Rachman, 2007; Speckens, Hackmann, Ehlers & Cuthbert, 2007), post-traumatic stress disorder (Ehlers et al., 2002; Long & Quevillon, 2009), depression (Wheatley et al., 2007), eating disorders (Somerville et al., 2007), and personality disorders (Arntz & Weertman, 1999).

## **Imagery Rescripting**

Following Rachman (1980) Hackmann and colleagues suggested that whether an imagery intervention to be judged successful depends on "the extent that disturb-

ing emotions have been successfully processed and transformed” (Hackmann et al., 2011, p. 46). In his seminal paper on ‘emotional processing’, Rachman (1980) proposed a working definition identifying the necessary conditions for successful processing of emotions. Thus, there must be evidence (a) of an emotional disturbance, (b) that the disturbance has declined, and (c) that behaviour has returned to normal. Applied to imagery work, a successful imagery intervention should lead to images becoming less distressing and less disruptive of behaviour.

The therapeutic application of imagery techniques has a long history dating back to the work on “imagery substitution” by Pierre Janet in 1889 (for a historical review, see Edwards, 2007). However, it is not until recently that researchers have begun to investigate the therapeutic potential of imagery. ‘Imagery rescripting’ was originally developed by Smucker and Niederee (1995) for treating adult survivors of childhood sexual abuse. Drawing from the formulation of “emotional processing” (Foa & Kozak, 1986), they designed the imagery rescripting intervention to include three stages: (1) a re-experience imagery (reliving as a child) to activate the fear memory, (2) a mastery/adaptive imagery (as an adult) to provide corrective, coping information to be integrated with the fear structure, and finally, (3) an “adult-nurturing-child” imagery. Thus far, the method has been successfully applied in the treatment for various disorders (Holmes, Arntz, & Sucker, 2007), such as posttraumatic stress disorders (Grunert, Weis, Smucker, & Christianson, 2007; Smucker & Niederee, 1995), personality disorders (Arntz & Weertman, 1999), eating disorders (Ohanian, 2002), depression (Brewin et al., 2009; Wheatly et al., 2007), snake fear (Hunt & Fenton, 2007), and just recently for SAD (Wild, Hackmann, & Clark, 2007, 2008).

### *The rationale*

The imagery rescripting protocol used by Arntz and Weertman (1999), is a direct extension of the method by Smucker and Niederee (1995) by which the imagery work is sequenced over eight sessions comprising reliving (imagining the original abuse situation as if it happened in the present) and rescripting images (patients imagining intervening as an adult – stopping the abuse and nurturing the child). Arntz and Weertman observed that some patients were not able to fully integrate the new information. Clients reported that “as an adult I saw that it was wrong what (for example) the parents did and that the child was not to blame, *but I do not feel it*” (p. 718). Thus, the authors added a third phase in which the patients relived the situation again but this time experiencing the intervention by themselves as adults. Moreover, the patients were stimulated to express any need in order to feel better like wanting to be hugged, and protected. This third phase largely serves to nurture the child, to convey compassion and consolation. Interestingly, Arntz and Weertman (1999) found that patients at this stage experienced higher levels of affect and above all, new affects, other than fear (e.g., sadness, anger) and emotional needs that hitherto appeared to have been suppressed (like asking for help, consolation). In conclusion they suggested, that this phase would facilitate emotional process-



ing (Rachman, 1980), achieve better integration of new information, and stimulate growth of underdeveloped areas central to self (cf. 'Compassion-focused therapy' by Gilbert, 2010).

*The basic model (Arntz & Weertman, 1999)*

The basic rescripting model comprises three phases which all may be implemented in one prolonged session. During the first phase – reliving – the patient is asked to close the eyes and to imagine the original scene as experienced as a child. The patient is asked to evoke the memory as vividly as possible, describing the situation in the first person (field perspective) and in present tense. Usually, describing the event in different sensory modalities facilitate the access to the memory image (e.g., “what sounds do you hear?”, “do you notice any scent?”, “what do you see?”). Secondly, – the rescription phase – the patient is asked to view the scene as an adult, observing it as a bystander, asked for thoughts and feelings that are triggered by the scene, and what inclinations (s)he has to intervene. The patient as an adult is asked to intervene by addressing the parent, or the perpetrator to stop (sometimes by firm action) the abuse, calling the abusive figure’s attention to the child’s distress, and probing for the parent’s compassion. In phase three, the patient again is asked to relive the situation, but now inclusive of the intervention part, that is, to experience him(her)self as an adult intervening to stop the abuse, and giving him(her)self as a child compassion and consolation (e.g., a hug). Additionally, the patient as an adult may explain to the patient as a child what had happened and in particular convey to the child that he/she is not to blame.

## **Imagery rescripting for social anxiety disorder**

The two investigations by Wild et al. (2007; 2008) were the first to use IR of early trauma related memories for an unselected group of clients with SAD. Their version of imagery rescripting built on the Arntz and Weertman (1999) procedure in three stages (Smucker & Niederee, 1995), but differed in that the investigators included an initial session of standard cognitive restructuring. Results from their pilot investigation (Wild et al., 2008) showed that this version of IR of early memories, reduced memory distress as well as the anxiety associated with current imagery. Moreover, the intervention lead to significant improvement in negative beliefs, image and memory distress and vividness, fear of negative evaluation, and anxiety in feared social situations. However, the investigators had chosen a within-subjects design starting off with a control session for baseline measurements, which included activating both memory and recurrent imagery. As the authors concluded, this session could have made the rescripting session more effective and their study vulnerable to a sequence effect. To address this limitation an experimental between-group design should be employed comparing IR with a control condition. Drawing from clinical experience,

that IR by itself may be a powerful intervention, the question is raised whether cognitive restructuring as a technique adds to the treatment.

## Rumination (Post-Event Processing). Experiential versus Analytical Self-Focus

According to cognitive models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997) socially anxious individuals attach a major importance to giving a positive impression, but fear not being able to do so. Hence, socially anxious individuals believe that their behaviour will end in disaster, humiliation, or rejection (Wells, 1997). In Clark and Wells' (1995) account of SAD it is proposed that, when socially anxious individuals leave an ambiguous social event, they will engage in a detailed review or 'post-mortem' of this event, also referred to as post-event processing (PEP). With heightened self-focused attention, increasing the salience of negative self-related information during the social event, this post-mortem rumination is likely to focus on anxious feelings and negative self-perceptions. This is because they "were processed in detail ... and hence were strongly encoded in memory" (Clark & Wells, 1995, p. 74). Hence, it is assumed, that individuals with SAD will recall the social situation as more negative than it really was.

### Empirical support for the model

The recognition of 'rumination' as an important feature of SAD has increasingly engaged researchers (see Brozovich & Heimberg, 2008, for review), and several studies have shown that socially anxious individuals do indeed spend more time brooding over distressing or embarrassing social events (Edwards, Rapee, & Franklin, 2003; Lund & Sperling, 2002; Mellings & Alden, 2000; Rachman, Grüter-Andrew, & Shafran, 2000).

One of the first studies to empirically describe the phenomenon of post-event processing was conducted by Rachman et al. (2000). Using a semi-structured interview the authors showed that people with elevated social anxiety would dwell a great deal on past unsatisfactory social events, that these thoughts were intrusive by nature, and that the brooding interfered with their ability to concentrate.

In a laboratory setting, Mellings and Alden (2000) engaged socially anxious and non-anxious students in a social interaction with an opposite sex confederate. Following the interaction participants were assessed for self-focused attention and asked to rate anxiety-related physiological sensations and behaviour. At the following day participants were requested to rate the frequency of ruminative thoughts relevant to the interaction the day before, and memories for physiological sensations and

behaviour. Finally, participants provided a written description of the interaction, which then was analysed for self-related versus external-related information. Results were consistent with the hypothesis, showing that socially anxious individuals selectively focused their attention on themselves and to negative self-related information. Also, participants who focused their in-situation attention on themselves reported more biased and negative self-related judgements. On day 2, they recalled less partner-related information and more self-related information on an open-ended recall. Moreover, as compared to non-anxious participants, the socially anxious subjects were involved in more post-event processing.

Following a social performance situation (an impromptu speech), Edwards et al. (2003) demonstrated, at one week follow-up, greater levels of post-event processing in participants high in social anxiety, and that this rumination was biased toward negative evaluation. Additionally, they also found evidence for negatively biased recall in subjects with high social anxiety. However, inconsistent with cognitive models, they failed to demonstrate significant relationships between recall biases and negative rumination. Lundh and Sperling (2002) employed a diary method for the assessment of post-event processing over a period of one week. Consistent with previous research they demonstrated that levels of post-event processing of events that contained negative evaluation were associated with social anxiety. Also, they found that post-event processing was stable over time, that is, the degree of rumination on day 1 was found to be strongly related with post-event processing on day 2.

Abbott and Rapee (2004) used a clinical sample to investigate post-event processing. Similar to Edwards et al. (2003) they asked participants to give an impromptu speech following which they were asked to evaluate their performance: immediately after the manipulation and at one week follow-up. Also, the frequency of post-event rumination during the past week was assessed. Results showed that after one week, the socially phobic individuals maintained their negative view of themselves, whereas the original positive self-view in the non-anxious controls was increased in strength.

As regards recall biases, research examining the relationship between autobiographical biases and PEP in social anxiety has provided somewhat mixed results. Thus, in support of the model (Clark & Wells, 1995), socially anxious individuals produced more negative (Mellings & Alden, 2000) and shameful memories (Field, Psychol, & Morgan, 2004) as well as autobiographical memories with a greater average anxiety rating (Morgan & Banerjee, 2008). Moreover, PEP was shown to mediate between social anxiety and recognition memory (Cody & Teachman, 2010). Further, and consistent with the model, research has demonstrated associations between PEP and recollections of negative self-related information (Mellings & Alden, 2000). Nevertheless, these findings failed to replicate (Edwards et al., 2003) and contrary to expectations, following PEP, some anxious memories were rated as calming and helpful (Field, et al., 2004).

To summarise, consistent with Clark and Wells' (1995) cognitive model of SAD, research has shown that negative post-event processing occur following socially dis-

troubling events, and that these processes are associated with social anxiety in social situations. Further, post-event processing may be related to stronger encoding of negative self-related information in memory. However, findings concerning selective memory recall are mixed and not entirely in accord with the model

### **Adaptive aspects of post-event processing**

Surprisingly, observations by Rachman et al. (2000) and findings by Field et al. (2004) indicate that post-event processing was not altogether maladaptive. In the Rachman et al. study, some of the anxious and non-anxious participants reported that the processing actually improved matters, and unexpectedly, Field et al. (2004) found that negative post-event processing led to the recall of memories that were calming. Indeed, this is in agreement with Mellings and Alden's (2000) suggestion that prolonged processing of an anxiety-provoking event could actually aid some socially phobic individuals in resolving their concerns.

From a different field of enquiry, the field of ruminative thought in depression, a large and consistent body of research has emerged demonstrating the maladaptive and harmful consequences ruminative self-focus has on depressive mood and self-perception. Rumination defined as "behaviour and thoughts that focus one's attention on one's depressive symptoms and on the implications of these symptoms" (Nolen-Hoeksema, 1991, p. 569) has been associated with increases in the likelihood and levels of depressive symptoms, enhanced negative thinking and impaired problem solving (e.g., Nolen-Hoeksema, 2000). Moreover, the vigilance and uncertainty concerning questions asked by ruminators, such as " 'Why are things happening this way?', 'What am I going to do?' " (p. 509) also may contribute to anxiety symptoms (Nolen-Hoeksema, 2000).

However, as Watkins (2004) suggested, self-focus (on depressive mood and other aspects of self-experiences) may be adaptive. He argued that for effective self-regulation, and to reach greater self-awareness and self-knowledge, it is critical to focus on problems and internal states. Thus, given this, how can we understand such disparate (adaptive and maladaptive) effects of rumination? Drawing from Teasdale's (1999) account of adaptive and maladaptive self-focus, Watkins (2004) proposed that apart from looking to the content of rumination (negative mood, problems and self), there is a need to consider "the precise manner in which people attend to these aspects of self-experience" that will determine "the consequences of self-focus" (p. 1038).

### *The Interacting Cognitive Subsystems framework (ICS)*

The ICS framework was proposed in response to findings that were not easily explained by models built on assumptions of a single level of meaning representation. Therefore, Teasdale and Barnard (1993) proposed two qualitatively different

levels of meaning: the propositional level and the implicational level. Explicit specific and conceptual meanings represented verbally are encoded on the propositional level, whereas implicit meanings of recurring patterns from all aspects of experiences, such as sensory information as well as propositional meanings, are encoded on the implicational level. The ICS framework also proposes that these two modes of processing meanings are incompatible, that is, it is only possible to focus consciously on information within one level at the time, either within the propositional or the implicational mode. When processing at the propositional level, the individual is thinking about the self, in an analytical and evaluative manner and focusing on discrepancies between goal-attainment (cf. "Goal Progress Theory", Martin, Shrira, & Startup, 2004). Within the implicational self-focus mode, non-evaluative, intuitive and direct experiential awareness of experience in the moment would dominate the processing of information. Further, and critically, within this account, access to emotions are possible only at the implicational level, and for emotional processing to occur changes in emotion-related implicational schematic models are necessary. Teasdale (1999) proposed that changes in schematic mental models are facilitated by processing within the experiential mode, and that processing within the conceptual-evaluative self-focus mode would obstruct such changes. Thus, processing with an experiential self-focus would be adaptive and facilitate emotional change, whereas adopting a conceptual, analytical self-focus mode would be maladaptive (Watkins, 2004).

#### *Other theoretical accounts*

According to 'the goal progress theory' (Martin, Shrira, & Startup, 2004), rumination is activated when failing to attain the goal, as well as failure to make satisfactory progress towards a goal. Consistent with the Zeigarnik effect, information related to performing poorly in a social situation will be kept highly accessible, increasing its salience and the likelihood of being detected and processed (cf. Zeigarnik, 1938). Accordingly, problem-solving would be facilitated and eventually lead to goal attainment or reconciliation. Thus, the function of rumination is fundamentally adaptive, by finding alternative means of reaching unattained goals (e.g., making a good impression), downgrading goals, or reconciling oneself for not reaching these goals (Martin et al., 2004).

Drawing from the Control Theory (Carver & Scheier, 1990) and the Action Identification Theory (Vallacher & Wegner, 1987), Watkins (2011) proposed a framework to understand why repetitive thoughts about upsetting events sometimes are adaptive and sometimes maladaptive (Watkins, 2008). Pursuing their goals, individuals by default will identify appropriate actions on an abstract level and thereby become sensitive to the broader meaning of an action. However, when faced with difficulties in performing an action, the natural tendency is to break down the superordinate goal into its constituents and thus to identify goals and actions on a lower, concrete level in order to manage. It is assumed, that individuals may flexibly choose

the most appropriate level of identification, matching their competence with the difficulty of the task. According to this view, abstract goal/action identifications are associated with questions concerning the reasons for, “why”, the actions are carried out, whereas identifications on the more concrete level concern the means and “how” actions should be carried out. Given this, adaptive processes are characterised by choices of goal/action identifications on a level matching the ability of the individual and conversely, maladaptive processes are marked by the inability to shift from an abstract to a more concrete level of identification. Hence, post-event processing, as well as imagery from an observer perspective, is associated with abstract maladaptive representations, whereas adaptive rumination and imagery from a field perspective is predominantly on a concrete level of regulation (Watkins, 2011).

### **The experiential vs. the analytical self-focus**

A great deal of research (e.g., Nolen-Hoeksema, 1991) has demonstrated that rumination (on symptoms) has deteriorating effects on the depression. The finding that distraction (to non self-related information) improved matters has led several investigators to successfully pursue this line of enquiry (e.g., Kocovski, McKenzie, & Rector, 2011; McEvoy, Mahoney, Perini, & Kingsep, 2009; Wong & Moulds, 2009). However, Watkins and Teasdale (2004) argued that distraction, instead of offering a cure, may result in cognitive and emotional avoidance, and thus maintain the disorder. They proposed “a refocus of attention on the self, using forms of self-focus that are not ruminative” (p. 2), that is, an experiential, ‘mindful’ self-awareness, focusing on direct experience of the moment. Moreover, in depressed patients, they hypothesised that inductions of analytical and experiential self-focus modes, would differentially affect overgeneral autobiographical memory. To test this prediction 28 patients with Major Depressive Disorder were randomly allocated to either an analytical or an experiential self-focus condition. Participants were then asked to work through (during 8 minutes) an adapted version of Nolen-Hoeksema and Morrow’s (1993) rumination task, which contained a list of 28 symptom-focused items (e.g., “the physical sensations in your body”). Patients allocated to the analytical self-focus condition were instructed to think about the causes, meanings and consequences of the items, whereas patients in the experiential self-focus condition were asked to focus their minds on the experience of the items, attempting to capture the sense of them. The proportion of categoric memories recalled (defined as summaries of repeated events) was used to measure overgeneral memory prior to and after manipulation. Consistent with the prediction, and previous research (Watkins & Teasdale, 2001), the experiential self-focus condition significantly reduced categoric memory recall pre- to post-manipulation in depressed patients. No effect was found with the analytical self-focus. However, no differences in effects of the two of self-focus modes were found on self-rated mood (Watkins & Teasdale, 2004).

Comparing the effects on overgeneral *thinking*, Rimes and Watkins (2005) found depressed patients in the analytical self-focus condition to increasingly rate themselves as worthless and incompetent, pre- to post- manipulation, whereas no change was evident for clients in the experiential condition. Manipulating the mode of self-focus on stress-induced cognitive reactivity in individuals with eating disorders, Rawal, Williams, and Park (2011) showed that the consequences of self-focused thinking in eating disorder was moderated by mode of processing. Thus, as compared to experiential processing, analytic processing was likely to exaggerate the post-stressor estimates of their own weight and urges to neutralising. Taken together, these findings confirm Teasdale's (1999) proposal that different modes of self-focused processing may determine whether the self-focus has adaptive or maladaptive effects in depression..

## Implications for treatment

The suggestion by Clark and Wells (1995) to ban the post-mortem is understandable, given the maladaptive properties of post-event processing. Certainly, recent research has addressed the issue of finding a way to counter rumination and so reduce the risk for future relapse and recurrence. Nolen-Hoeksema (1991) has shown that in depressed patients the deleterious effects of ruminative self-focus could be reduced by engaging in distracting tasks, that is, asking patients to deliberately attend to non-self-related information. Consistent with these results, evidence from studies with socially anxious individuals showed that relative to rumination, a distraction mode reduced anxiety and unconditional global beliefs (Wong & Moulds, 2009), and that participants in a distraction condition expressed more positive thoughts at 1 week follow-up, than those who were engaged in a guided rumination (Kocovski, McKenzie, & Rector, 2011).

However, as indicated by Watkins and Teasdale (2001, 2004), deliberately adopting a distractive focus of attention to non-self-related information may not be optimal. Their main objections to refocusing attention away from negative thoughts and feelings, was the preclusion from the possibility of developing alternative interpretations (cognitive restructuring) and the risk of fostering tendencies of thought suppression and experiential avoidance

Given this, and that post-event processing, conceptualised as repetitive thought (Segerstrom, Stanton, Alden, & Shortridge, 2003), shares essential properties with depressive rumination (see review by Watkins, 2008), it is conceivable that experiential self-focus, as compared to the analytical self-focus mode, would have beneficial effects on post-event processing after a socially threatening event. Recent research has in fact tested this hypothesis in samples of non-clinical participants (Vassilopoulos, 2008; Vassilopoulos & Watkins, 2009). Using essentially similar research design as Watkins and Teasdale's (2004) study, Vassilopoulos (2008) demonstrated that high



socially anxious individuals reported more positive thoughts and reduced ratings of anxious mood, in an experiential self-focus condition, as compared to an analytical condition. Consistent with results by Rimes and Watkins (2005), the experiential self-focus condition produced significantly decreased ratings of the self as worthless and incompetent, from pre- to post-manipulation, whereas the analytical self-focus condition did not affect global negative self-judgments (Vassilopoulos & Watkins, 2009).





# Imagery versus Verbal Methods. A Theoretical Analysis of Above Mentioned Techniques

*Författarens bilder skola leva  
därför de en gång voro levande*  
August Strindberg

The importance of imagery has long been acknowledged by clinicians, but it is not until recently researchers have taken a greater interest in the role images play in psychopathology. One reason for this newly awakened preference for imagery might be the advances within the field of cognitive neuroscience (e.g., Kosslyn, 1981; Kosslyn, Ganis, & Thompson, 2001) and the development of viable experimental research paradigms for investigating imagery and its impact on emotion (e.g., Holmes & Mathews, 2005; Mathews & Mackintosh, 2000). During the last decade, an enormous amount has been learned about the underpinnings of mental imagery, its relation to emotion, its effects on behaviour, and its specific content in different disorders. Above all, the implications for treatment have encouraged to a vastly increased interest in exploring the role of imagery as an agent of change in treatment. Before addressing the latter issue there is a need to review some of the research on imagery in general.

## Imagery and Perception

Neuro-imaging research has demonstrated a considerable overlap of imagery with sensory-perceptual processes (e.g., Kosslyn, Ganis, & Thompson, 2001). Hence, images occur when perceptual information is accessed from memory, “giving rise to the experience of ‘seeing with the mind’s eye’, ‘hearing with the mind’s ear’ and so on” (Kosslyn et al., 2001, p. 635). Thus, sharing properties with perceptual representation, imagery “can ‘stand in’ for (re-present, if you will) a perceptual stimulus or situation” (p. 641), and thus affect behaviour as well as the body, just as can actual

perceptual experience (Kosslyn et al., 2001). Although Kosslyn does not explicitly describe how imagery is related to emotion, the link is, indeed, implied (Hackmann et al., 2011). As Hackmann et al. pointed out, the proposal by Kosslyn et al., that behaviour and the *body* itself can be affected by the same neural processes underlying imagery and actual perceptual experience implies a relation to emotion. The effects of images' impact on the body, in the form of physiological reactions and bodily sensations, are indeed also key features of emotion.

## Experimental Research on Imagery vs. Language

Given the sensory-perceptual characteristic of imagery and its impact on emotion, Hackmann et al. (2011) suggested that imagery may have more natural access to emotion than verbal conceptual processes. In a series of laboratory experiments, Holmes and colleagues tested the hypotheses that imagery would have a more powerful impact on negative (i.e., anxious) emotion as well as positive (i.e., benign) emotion than verbal processing. Employing a interpretation training paradigm, developed by Mathews and Mackintosh (2000), Holmes and Mathews (2005) trained participants to either focus on imagery or on verbal semantic information of scenarios read out aloud. Each of the 100 scenarios consisted of descriptions of emotionally negative situations. Following the training phase, ten new emotionally ambiguous descriptions were presented and the participants were asked to rate them for degree of emotion. The participants in the imagery group reported more anxiety during the training phase and rated the ambiguous test items as more emotional than those in the verbal condition.

In a subsequent study, Holmes, Mathews, Dalgleish, and Mackintosh (2006) tested the hypothesis that imagery also would have greater impact on positive emotions. Using positive interpretation training, numerous descriptions of scenarios having a positive emotional outcome were read out aloud. For example, "It's your birthday, and your partner reaches over to you with a present. You open it and *feel incredibly happy*" (p. 239). Participants were asked either to imagine the events or to focus on their verbal meaning. Greater increases in positive emotion were reported by participants in the imagery condition who also rated subsequent ambiguous test scenarios as more positive than did those in the verbal condition. Moreover, the investigators extended the previous study by including an assessment of state-anxiety, and results from pre- to post-training showed that anxiety was reduced in the imagery condition but paradoxically *increased* in the verbal condition.

In a review addressing four areas of research, one of which concerned the empirical support for the proposal that imagery has greater access to emotion than verbal representation, Holmes and Mathews (2010) concluded that there is now a large body of evidence that convincingly demonstrates that imagery brings forth

emotional responses more readily than verbal language. Moreover, they also strongly recommended the use of imagery-based interventions that could serve as powerful therapeutic tools in the attempts to change negative emotional conditions. Finally, they concluded that one of the reasons why mental imagery is important is that images serve to amplify emotional responses (Holmes & Mathews, 2010).

## Theoretical Accounts

Thus, there is strong evidence in support of the notion that imagery has a special relationship with emotion. Why is that? One explanation is the close overlap between imagery and perception. Thus, when images are evoked, equivalent processes as in perception are activated, including the links to emotion (see Holmes & Mathews, 2010, for discussion).

Another explanation is provided by the model of autobiographical memory proposed by Conway and colleagues (Conway & Pleydell-Pierce, 2000). They argue that mental imagery has a special function as “a type of mental representation specialised for representing information about goals” (Conway, Meares, & Standert, 2004, p.525). When holding an image in mind, important goal information can be accessed and have an impact on current processing. Further, goals are unconscious processes that can be represented by imagery, emotions, or actions. Within the model, images correspond to the standard or referent in negative or positive feedback loops (Scheier & Carver, 1982), in which the actual state of the world is compared to an ideal or standard of performance. The goal standards, as represented by images, may either motivate to reduce perceived discrepancies between the actual state and the standard (image) (i.e., a negative feedback loop) or, in order to avoid a particular state of the world (i.e., being bullied), to enhance the discrepancy (i.e., a positive feedback loop). The model also proposes that goal processing is linked to emotions, which are ways to express progress towards the goal and, like images, motivate to action. “Adopting new self-enhancing images, which become goal-referents, should then also act to increase positively toned feelings” (Conway et al., 2004, p. 528).

## The Role of Imagery in Treatment

According to cognitive models (Clark & Wells, 1995; Rapee & Heimberg, 1997) and consistent with empirical research (Hackmann, et al., 1998; Hackmann, et al., 2000; Hirsch, et al., 2003; Hirsch et al., 2006; Rapee & Abbott, 2007) imagery has a central role in SAD. Given this, and the work by Holmes and colleagues on links between imagery and emotion (see Holmes & Mathews, 2010), it does indeed seem

reasonable to employ treatment strategies that include imagery in some form or another.

There seems to be a consensus among researchers on the tenets by Foa and Kozak (1986) as to the requirements for 'emotional processing' (Rachman, 1980) of fear. Regardless of type of intervention, they argued that two conditions must be required for reduction of fear to take place. First, the fear memory must be activated, and second, corrective, incompatible information must be made available to be integrated in the fear structure. To access the fear structure, the fearful individual must be exposed to material that matches some of the information of the memory (Lang, 1977). The content of this material might be about the feared situation, its meaning and the person's responses (Foa & Kozak, 1986). Discussing the optimal match between the memory and the evoking information, *in vivo* exposure was thought to be most suitable, but imaginal procedures were considered to provide greater flexibility and to serve as the optimal condition, especially when accessing more complex structures, such as those of social fears (Foa & Kozak, 1986).

Thus, imagery might have the advantage over verbal processing not only to have greater impact on emotion, but also that imagery more readily than verbal processing can access some material stored in memory. Consistent with this notion, the dual representation theory of post-traumatic stress disorder (PTSD) (Brewin, Dalgleish, & Joseph, 1996) proposes that traumatic information is encoded in two separate memory systems: lower-level 'situational accessible memories' (SAMs), and higher-level 'verbally accessible memories' (VAMs). Consisting of autobiographical memories of secondary appraisals, VAMs can be deliberately accessed, consciously processed, and have time-tags attached. On the other hand, SAMs handle peritraumatic information, encoded at the time of trauma and stored in a fragmentary manner without context and a time-tag. As such, they are difficult to retrieve intentionally and verbally, but when triggered by cues, they involve a re-experience of the event, as if it was happening just now. Although this theory applies to PTSD, the arguments seems to be relevant for SAD as well, considering the observation that there may be more similarities between the imagery in PTSD and imagery in other anxiety disorders, including SAD, than previously supposed (Hackmann & Holmes, 2004).

### **Imagery in feedback techniques**

Various feedback techniques, such as video-feedback and audio-feedback, in the treatment of SAD, build on the assumption that individuals with SAD, when in threatening social situations, do not fully access corrective external information. Hence, their distorted negative self-images remain stable and recurrent (Hackmann et al., 2000). In particular, their self-images are from an observer-perspective, that is, the socially anxious individuals are viewing themselves as they believe other persons experience them. Hence, video-feedback following a stress-inducing event (e.g., an

impromptu speech) may serve to correct this view as demonstrated by reductions of observer-rater discrepancies in several studies (e.g., Rapee & Hayman, 1996). Observing one's performance via video may increase the salience and impact of the corrective feedback and thus alter the self-image and in turn to be integrated in long-term memory (Harvey et al., 2000). However, the suggestion that the individual receiving video-feedback might confuse the memory of the felt sense from the previous performance with the content of the video-recording (Clark & Wells, 1995) prompted the extension of the technique with the cognitive preparation procedure (Harvey et al., 2000). This procedure was designed to maximise the chance that the participants would be able to perceive the difference how they actually came across as opposed to how they felt the came across during the speech. Consistent with Foa and Kozak (1986) the first two of three steps of the cognitive preparation served to activate their fear memory of how they came across, and the third step would create a dissociation between the memory and the corrective content of the recording. Interestingly, the second step, accessing and increasing the salience of the memory, was achieved by using imagery. Participants were specifically told to close their eyes and do their very best to form a clear image of the impression they think they made during the speech. Thus, imagery with its sensory-perceptual qualities was selected to match and access the fear structure thereby meeting the first condition for emotional processing (Foa & Kozak, 1986). The third step, the instruction to watch the video-recording as if watching a stranger served to prevent participants from remembering how they felt while giving the speech. Thus, in this way video-feedback could satisfy the second requirement for emotional processing, providing corrective incompatible information to be integrated in memory structures. Since one's own voice represents another aspect of the public self, audio-feedback should have equivalent effects to video-feedback.

### **Imagery rescripting**

Imagery rescripting is perhaps the most direct way in which imagery is utilised as a changing agent in therapy. By deliberately using an image to access memories of adverse events, this method takes advantage of the specific capacity of images to retrieve material encoded in lower memory systems (Brewin et al., 1996), that is, material that is not verbally accessible. As Hackmann et al. (2000) observed on images reported by socially phobic individuals in their interview study, there was a close correspondence, in terms of both content and meaning, between recurrent images and early memories, dating back from about the onset of the disorder. Thus, when conducting imagery rescripting for this disorder, recurrent images (e.g., being criticised or scorned) that occur when entering a threatening social situation, are used to facilitate the retrieval of early traumatic memories (e.g., being bullied). Hence, recurrent images provide an optimal match with underlying fear structures, since the

requirement of matching response properties, including physiological, emotional, and behavioural responses, is fulfilled (Foa & Kozak, 1986; Lang, 1977).

The introduction of incompatible, corrective responses within the imagery re-scripting procedure is achieved by cues elicited by the therapist and processed by the participant during the imaginal procedure. Hence, the original memory-image is transformed and an alternative positive imagery is constructed. Given the evidence of research on reality monitoring, which has shown ‘false memories’, that is, memories of implanted fictive events, were more likely to be remembered as genuine, if the event was imagined rather than verbally ‘thought about’ (Hyman & Pentland, 1996), this alternative benign image should be associated with positive emotions and behavioural responses and cause a decline of distress.

Ehlers and Clark (2000) proposed that a combination of verbal and experiential elements would have beneficial effects on PTSD. However, combining cognitive restructuring with exposure alone, yet keeping the interventions in separate segments of the treatment, no additional benefit was found (Tarrier et al., 1999). Instead, it was suggested that the different elements should be more closely interwoven, with a mixture of verbal and imaginal strategies to access and challenge distorted appraisals. For example, immediately following an imaginal reliving of an adverse event, the therapist would verbally attempt to explore and clarify various spots of the client’s experience and appraisals, challenging these appraisals, and finally introduce alternative appraisals into a subsequent imaginal reliving of the event (Ehlers et al., 2000). Thus, there is evidence giving support for the hypothesis that interwoven verbal and imaginal elements have substantial beneficial effects, at least on PTSD.

## **Experiential attentional self-focus**

Turning to the work on post-event processing and the differential effects of analytical and experiential self-focus modes, a somewhat different picture of the role of imagery emerges. Here, the focus of attention is on the self and on negative information selectively retrieved, and dwelled upon of the last and previous perceived social failures (Clark & Wells, 1995). According to Watkins (2008, 2011), unhelpful rumination is characterised by analytic, repetitive thoughts which predominantly are processed on an abstract, global, and de-contextualised level of meaning. In contrast, helpful rumination is associated with experiential (imaginal) experience, which is pervaded by concrete, specific and contextualised moment-to-moment experiences. The analytic self-focus seems to be the default mode in ruminators (Watkins, 2011), and effective therapeutic interventions must be designed to abolish such destructive thinking without shifting attention away from the self (Watkins & Teasdale, 2001, 2004). Experiential self-focused attention is such an intervention which has demonstrated beneficial effects on overgeneral autobiographical memory in depressive patients (Watkins & Teasdale, 2001, 2004; Rimes & Watkins, 2005) and on rumina-

tive thinking in non-clinical samples of socially anxious participants (Vassilopoulos, 2008; Vassilopoulos & Watkins, 2009).

Adopting an experiential self-focus mode while attending to the self and one's performance involves imaginal representations of the past event. Thus, by its sensory-perceptual nature, sustained experiential processing of emotional material enables the individual to focus on details, the context, and the concrete actions that may make it possible to progress towards the goal, thus alleviating anxiety (Carver & Scheier, 1990; Conway & Pleydell-Pierce, 2000; Watkins, 2011). Within the framework of ICS (Teasdale, 1999), the conceptual-evaluative focus on goal-attainment is proposed to be processed on a propositional level, whereas the non-evaluative experiential awareness of experience is processed on an implicational level. Importantly, within the ICS approach, only implicational processing is associated with the generation and experience of emotion. Thus, changes in emotional state require changes in affect-related implicational schematic mental models. Finally, and of importance for therapy, these two modes of processing meanings are incompatible, that is, it is only possible to focus consciously on information within one level at the time, either within the propositional or the implicational mode (Teasdale, 1999).

## Summary

For therapeutic change to occur, the emotional processing perspective prescribes the activation of dysfunctional cognitive structures (fear structures, fear memories) and the integration of corrective information into these structures. Of the techniques reviewed above, these requirements are satisfied in the case of audio-feedback with cognitive preparation and in the imagery rescripting. In both cases, the fear structure is accessed by images that match the memory structure: in audio-feedback by forming an image of the remembered felt sense of how the participant came across; in the case of imagery rescripting by matching current images with memories of similar early experiences of adverse events. In the feedback method required corrective information is provided by viewing the content of the video-recording or listening to the audiotaped recording. In the case of imagery rescripting the corrective information is presented as suggestions for transformation of the dysfunctional image. Finally, post-event processing is proposed to be associated with abstract, conceptual and analytic processes engaging material on a propositional level of meaning, which is incompatible of implicational meaning processes of a more experiential, emotional and concrete nature. Although the experiential self-focused attentional mode is not directly engaged in changing dysfunctional structures, it exerts its impact of imagery on disrupting maladaptive rumination and paving the way for adaptive helpful repetitive thoughts.





# Empirical Studies

## Participants in the Empirical Studies

All participants were self-recruited. In study I, undergraduates of Lund University, Sweden, were recruited to participate in the investigation by campus advertisement flyers and by a selection procedure using Fear of Negative Evaluation (FNE; Watson & Friend, 1969) as a screening instrument. Those who scored high (i.e., 17 points or more) on the FNE were selected.

Table 1. *Descriptive data for the participants in the three studies*

	Study I <i>n</i> = 40	Study II <i>n</i> = 14	Study III <i>n</i> = 12
Mean age ( <i>SD</i> )	26.5 (7.2)	33.5 (12.9)	33 (10.1)
Females	37	6	6
Mean age at onset	na <sup>a</sup>	13	13
Duration, median years	na	14	16.5
Range of duration	na	5 - 55	4 - 44
Specific phobia	na	5	na
Generalised SAD	na	9	na
Comorbidity	na	3	7
Medication	3	1	7

<sup>a</sup> na = not applicable or information is lacking

For studies II and III, outpatients with a primary diagnosis of SAD were recruited to the investigation by publicity flyers placed in the receptions (1) of clinics at the Student Health Services, Lund University, the Carema Specialist Health Care, and Kognio – Centre for CBT in Lund, Sweden (Study II), and (2) of the psychiatric clinic at the hospitals in Helsingborg and Ängelholm, Sweden (Study III). None of the patients were receiving psychological treatment during the experiment, but they were to be engaged in cognitive therapy following their participation in the study. All were diagnosed by the head psychiatrists of the units and met criteria for SAD in accordance with DSM-IV (APA, 2000). Patients with on-going substance abuse, psychosis, and/or brain damages were excluded from the investigations.

## Instruments

In all three studies pre-manipulation assessments were performed for the purpose of obtaining broad descriptions of participants' anxiety and mood characteristics. Also, some of the instruments listed below were employed as outcome measures (i.e., VEQ in study I and III; FNE, SPS and SIAS in study II). Two instruments (i.e., STAI and IAT) were used in study I only.

*Fear of Negative Evaluation* (FNE: Watson & Friend, 1969).

FNE is a 30-item true-false self-report questionnaire developed to assess the respondent's fear of being evaluated by others, distress over negative evaluation, and of having expectations of negative evaluation. Sample items include "I am often afraid that I may look ridiculous and make a fool of myself." FNE has good reliability and validity (Watson & Friend, 1969). The internal consistency of the Swedish version of FNE in these studies was high (Cronbach's Alpha, ranging from 0.70 to 0.90).

*Social Phobia Scale* (SPS: Mattick & Clark, 1998).

SPS was developed to assess anxiety in social performance situations, i.e. the client's fear of being scrutinized and observed by others ("I get nervous if I have to write anything while others are watching me"; or "I am worried that other people will think that my behaviour is odd"). Participants are asked to rate the statements on a 0 ("not at all") to 4 ("exactly") scale. The Swedish version of SPS in these studies had a high internal consistency (Cronbach's Alpha, range from 0.90 to 0.93).

*Social Interaction Anxiety Scale* (SIAS: Mattick & Clark, 1998).

SIAS was designed to assess general fears and avoidance behaviours concerning social interactions (e.g., distress while initiating and maintaining conversations, anticipatory anxiety of interpersonal situations). Participants are asked to rate the statements on a 0 ("not at all") to 4 ("exactly") scale. The Swedish version of SIAS had in these studies a high internal consistency (Cronbach's Alpha = 0.89 – 0.94).

*State-Trait Anxiety Inventory* (STAI; Spielberger et al., 1983).

Trait anxiety was measured using the trait form of STAI, containing 20 statements describing anxiety symptoms that the participant rates for frequency of occurrence. Items are rated on a four-point scale, of which 13 refer to negative aspects (e.g., worrying a lot, lack of self-confidence, tension, tiredness) and 7 to aspects of positive affect (e.g., being happy, satisfied, calm, feeling safe). In computing the total STAI-T score the positive items are reversed. The questionnaire has an acceptable test-retest reliability ( $r = 0.71$ ) and the Swedish version in this study had a high internal consistency (Cronbach's Alpha = 0.82).

*Beck Depression Inventory – Second Edition* (BDI-II; Beck, Steer, & Brown, 2006). BDI-II, a revised version of the original BDI first published in 1961 (Beck et al., 1961), is a self-report scale using 21 items to be rated from 0 to 3 assessing the presence and strength of cognitive, behavioural, emotional, and somatic symptoms of depression. The Swedish translation of the BDI-II shows good reliability and validity (Beck, Steer, & Brown, 2006). In the Swedish version the internal consistency in these studies was acceptable, the Cronbach's Alpha ranging from 0.77 to 0.93.

*Voice Evaluation Questionnaire* (VEQ; Lundh et al., 2002).

VEQ is an 18-item questionnaire developed to assess audible aspects of performance and anxiety: Voice Quality ("How good did you think your voice sounded?"); Performance Anxiety ("How anxious were you during the recording?"); and Performance Characteristics, (e.g. "my voice appeared relaxed"; "my voice gave an impression of confidence"; "my voice trembled"; "I talked quietly"; "my voice sounded tense"). All ratings of the VEQ are made on a 0 ("not at all") to 10 ("extremely") scale. High total scores indicate audible signs of anxiety and poorer performance. The internal consistency of the VEQ in these studies was high with Cronbach's Alpha ranging from 0.83 to 0.94.

*Implicit Association Test* (IAT; Greenwald, McGhee, & Schwartz, 1998).

IAT is a computer controlled experimental situation designed to measure implicit attitudes and attributions. In this study an adaptation of Greenwald's test, described in more detail by Westberg, Lundh and Jönsson (2007), was used. This social anxiety IAT contains four word categories with five words each: *self*-referent words (the Swedish words for "I", "self", "me", "my", and "mine"), *other*-referent words ("you", "your", "they", "their", and "others"), *social anxiety*-related words ("afraid", "anxious", "nervous", "embarrassed", and "criticized") and *social relaxation*-related words ("calm", "safe", "secure", "accepted", and "untroubled"). During the IAT, participants are required to respond as fast as possible by pressing one of two keys when words appear in a fixed position of the computer screen. Higher scores on the social anxiety IAT indicate relatively stronger associations of self-words with social anxiety words, as compared with relaxation words. Westberg et al. (2007) found that this social anxiety IAT showed good test-retest reliability ( $r = 0.87$ ).



# Study I

## The Enhancement of Beneficial Effects Following Audio Feedback by Cognitive Preparation in the Treatment of Social Anxiety: A Single-Session Experiment

### Aims

The first study was designed to test the hypothesis that audio feedback with cognitive preparation (AF-CP) would produce larger effects than audio feedback alone (AF-only) in a non-clinical group of participants with high social anxiety. It was predicted that participants given AF-CP would show larger reductions in their perceptions of negative auditory performance with concomitant reductions in anxiety, than did those who received AF-only. It was also predicted that the effects should generalise to a later performance situation. Moreover, it was predicted that participants given AF-CP would show larger reductions in implicit social anxiety as measured by the IAT. Considering that audio feedback may have the potential of changing negative self-perceptions, and that clinical settings often do not have access to the necessary equipment required for video feedback, it was believed worthwhile to test the utility of audio feedback, since audiotape recorders are more readily accessible.

### Method

Having given informed consent and following pre-experimental assessments with self-report questionnaires (FNE, STAI, SPS and BDI), including the recording of reaction times in accordance with the IAT, forty socially anxious participants were asked to prepare and give a short (3 minutes) impromptu speech and subsequently to rate their performance on the VEQ. Prior to the delivery of the speech, participants were informed that the speech was to be recorded on an audio-tape, which would be played later and that the recorded performance would be evaluated by two psychologists. State anxiety was rated immediately before giving the speech. Using a pair-wise randomisation procedure, participants were assigned to either experimental or control condition. Participants of the experimental group were given the CP, whereas those of the control group were interviewed about their experience during the speech (e.g., "How did you feel?", "What were you thinking about during the speech?"). Cognitive preparation involved asking participants to (1) predict in detail what they would hear on the audiotape, (2) form an image of themselves giving the speech

and (3) listen to the audio recording as though they were listening to a stranger. Following the manipulation, all participants were receiving auditory feedback, i.e., the participants were asked to listen to their recorded speech. Next they were again given the VEQ to complete for the second time, after which there was a break of 15 minutes (e.g., to drink coffee).

To assess generalisation effects, all participants were asked to give a second speech, with the same procedure as before, following which the VEQ was completed for the third time. As with the first speech, state anxiety was rated immediately before the delivery of the second speech. Finally, post assessment by the IAT was carried out and participants were debriefed and informed of the purpose of the study and that no psychologists were to evaluate the taped speeches and that the audio taped material was to be deleted.

## **Results and discussion**

This study is the first that has been specifically designed to examine the effects of auditory feedback with cognitive preparation (AF-CP) on self evaluation by socially anxious participants. It demonstrated that audio feedback with cognitive preparation was beneficial to high socially anxious individuals without specific concerns about their voice. Further, the intervention also showed a beneficial effect on an implicit measure of social anxiety, underscoring its therapeutic potential.

Overall, and as predicted, participants given CP, as compared to those who did not receive CP, rated their auditory performance less negatively immediately after AF. The results are in line with findings from the study by Kim et al. (2002) in which the effect of video-feedback was shown to be enhanced by CP. Furthermore, just as in their study, the present findings showed that the benefits of AF-CP were maintained, and hence generalised, to a second social task.

In accordance with their less negative self-views, participants also reported feeling less anxious over their performance following AF-CP and the second speech. This anxiety reduction was seen on both Performance Anxiety of the VEQ and on IAT scores. Moreover, the extent to which AF, with or without CP, improved self-assessment of auditory performance correlated significantly with participants' reduction in state-anxiety from before the first to before the second speech. Certainly, because performance and state anxiety were measured by only one item each, there might be problems with reliability. However, even though they tap somewhat different aspects of anxiety, the two measures along with the IAT appear to tell the same story. These data give extra weight to the argument that less negative voice evaluations are associated with less anxiety. This is in line with findings reported by Hirsch and Clark (2007) and consistent with the model of Clark and Wells (1995).

Taken together the results support the main hypothesis that CP does help to enhance the effects of AF in reducing negative evaluations of self-performance and de-

creasing anxiety. Since the effect sizes of audio feedback (with  $d$ 's from 0.43 to 0.70) compare roughly with the effects of video feedback found by Harvey et al. (2000), with  $d$ 's ranging from 0.63 to 0.70 for a variety of measures (Rodebaugh, 2004), we believe that AF-CP may be equally effective as video feedback with cognitive preparation in addressing clients' negative self-evaluation, at least in non-clinical samples. Therefore, we suggest that the intervention may be used as a therapeutic tool in the treatment for SAD (cf. Hirsch & Clark, 2007).

There are limitations to this study. The sample size is relatively small, and represents an analogue group; the conclusions would be stronger if similar results had been demonstrated in a clinical group. Also, there is a strong gender bias towards females, which limits the scope of generalisation. There is also some concern about using the FNE as a basis for selecting participants, with some evidence indicating that its reversed items are less related to social anxiety than items worded straightforwardly (Rodebaugh et al., 2004). Considering the need to make our study comparable with previous research (Harvey et al., 2000; Kim et al., 2002), we decided to keep the FNE, despite its possible shortcomings. Further, to reduce the burden on participants, given the need for repeated measurements of both self-evaluation and state anxiety, and considering the limited space for questionnaires, the choice of assessing state anxiety by one item rather than the more validated STAI-S was considered appropriate. Although this might lead to some loss of sensitivity, it has been demonstrated that a one-item measure of state anxiety adequately predicted the STAI-S score and hence could replace the latter (Davey, Baratt, Butow, & Deeks, 2007). Further, there is only one other study on the effects of AF-CP (Hirsch & Clark, 2007), but neither in that investigation nor the present study were attempts made to contrast the effects of AF-only against no feedback at all. Therefore, there is so far no evidence that AF alone is effective as a treatment intervention. However, since video feedback alone has been associated with improvement in some studies (Harvey et al., 2000; Rapee & Hayman, 1996), it would be of interest to test also the effects of audio feedback alone.

In conclusion, AF with CP has the potential to produce corrective information to be integrated into the public self. The intervention may thus serve as a useful tool in the treatment for SAD.





# Study II

## Imagery Rescripting of Early Memories in Social Anxiety Disorder. An Experimental Study

### Aims

Wild, Hackmann, and Clark (2007, 2008) were the first to use IR of early trauma related memories for an unselected group of socially phobic clients. Their version of imagery rescripting built on the Arntz and Weertman (1999) procedure in three stages (Smucker & Niederee, 1995), but differed in that the investigators included an initial session of standard cognitive restructuring. Results from their pilot investigation (Wild et al., 2008) showed that this version of IR of early memories, reduced memory distress as well as the anxiety associated with current imagery. Moreover, the power of the intervention was demonstrated in significant decreases on social anxiety and fear of negative evaluation. However, the investigators had chosen an unbalanced within-subjects design, in which IR was preceded by a control session carried out one week earlier for baseline measurements, which included activating both memory and recurrent imagery. As the authors concluded, this session could have made the rescripting session more effective and their study vulnerable to a sequence effect. Also they suggested that this limitation could be addressed by using a between-subjects design with one group receiving IR and the other one a control condition.

Study II was inspired by the imagery rescripting study by Wild et al. (2008) and sought to (a) use a between groups design in an unselected sample of clients with SAD, and (b) use imagery rescripting in the absence of verbal cognitive restructuring. Drawing from clinical experience, which suggests IR by itself to be a powerful intervention, the element of cognitive restructuring was assumed unnecessary. It was hypothesised that imagery rescripting would produce effects of the same kind as in the Wild et al. (2008) study. Specifically, the prediction was that IR would, as compared to the control condition, result in fewer symptoms of SAD, less memory distress, less anxiety associated with recurrent imagery, and reduced image vividness and frequency. Finally, following IR, it was expected that, compared to the control condition, the meaning content of the patients' imagery would become more positive, reflecting increased empowerment and more attractiveness.

## **Method**

The study was implemented as a randomised single experimental intervention in which the experimental group received imagery rescripting whereas the control group was given a self-focus induction task. Having given informed consent, pre-manipulation assessments were made using the FNE, SPS, SIAS and the BDI-II. Then, a semi-structured interview (Hackmann et al., 2000; Wild et al., 2008) was conducted to obtain participants' descriptions and meanings of recurrent imagery in socially threatening situations. To establish the meaning of the image, participants were asked what was the worst thing about the image and what did it say about the participant as a person. They were also requested to identify and describe a memory of an event in which they had felt the same way as they did with their image: "When did you first experience this feeling? How old were you? Please describe the memory!" Finally, participants were asked to summarise the meaning of both memory and recurrent images: "I'd like you to give one or two sentences that encapsulate the meaning of your memory and image".

Participants were also asked to rate the imagery and memory for distress, vividness and frequency. Following this, the control group was given a reading task while the experimental group underwent the memory rescripting procedure. The latter intervention built on Arntz and Weertman's (1999) procedure in three phases: reliving, mastering, and compassion. However, following some leads from clinical practice, it differed in that an image of a secure place (of the participants' own choice) was dwelled upon just prior to, and at the conclusion of the rescripting intervention (see Leuner, 1994). The reading task consisted of reading an introductory chapter from a standard self-help textbook on cognitive behaviour therapy for SAD. Immediately after the manipulation, all participants were again asked to complete the imagery and memory ratings and to elicit the meaning of the images (MOI). At the follow-up, one week later, all participants completed for the second time the FNE, SPS, and the SIAS, rated for the third time their imagery and memory (as above), and once again asked to elicit the MOI.

At this point of time the experiment was concluded, but the memory rescripting was now administered to the participants of the control group, thus replicating the first imagery rescripting session. At the end of this intervention these participants were again (for the fourth time) asked to complete imagery and memory ratings and to elicit the MOI. Finally, one week later, and for the fifth time, the same imagery and memory ratings were completed as well as the eliciting the MOI, and the final assessments using FNE, SPS and SIAS were made for the third time. Due to limitations of space afforded for "brief reports" in the journal who accepted this study for publication, this part of the investigation was not reported in Study II.

## Results and discussion

Study II was designed to examine the effects of imagery rescripting of early memories in an unselected sample of patients with SAD. As predicted, the results demonstrated that, compared to the control condition, imagery rescripting led to greater reductions in fear of negative evaluations (FNE) and social interaction anxiety (SIAS), memory distress (MD), and on distress associated with spontaneously occurring images (ID). However, there were no differences on anxiety in social performance situations (SPS), image vividness or frequency. Nevertheless, imagery rescripting led to robust changes in clients' perception of themselves as reflected in their statements of the meaning content of their images (MOI).

Analyses of data from the replication study (which are not part of the to-be-published version of Study 2), that is, the part of the investigation in which participants of the control group were being treated with IR in the same manner as the clients of the experimental group earlier, showed no significant differences on FNE, SIAS or SPS following the intervention. However, paired *t*-tests showed a reduction in MD, the difference pre- to post-IR being significant,  $t(6) = 2.62, p = .019$ . A further reduction on MD was noted between post-IR and Follow-up,  $t(6) = 2.97, p = .012$ . Corresponding comparisons on the ID showed similar, albeit weaker effects, the difference pre- to post-IR being significant,  $t(6) = 2.50, p = .023$ , although no significant further reduction was found between post-IR and follow-up. Performing paired *t*-tests on the independent assessors ratings of the meaning content of the participants' imagery just before IR, and at the follow-up, revealed the following results: NP,  $t(6) = 4.22, p = .003$ ; HC,  $t(6) = 2.66, p = .023$ ; and UA,  $t(6) = 7.74, p = .001$ . Thus, with the exception for measures of symptoms, the replication part of the investigation confirmed the results of the main study.

This study extended the investigation by Wild et al., (2008) by (1) using an experimental design with control group and randomisation and (2) exploring the effects of imagery rescripting without cognitive restructuring. As mentioned above, Wild and colleagues could not rule out the generation of a sequence effect in their study and suggested that future studies should address this limitation with a between-subjects design. Thus, following their advice and using such a design it was able to support the findings by Wild et al. (2008) underscoring the efficacy of IR. For example, in the present study the mean difference on MD ( $M_{\text{diff}} = 34.28$ ) between Pre-IR and Follow-up for the experimental group was comparable to the corresponding difference in Wild et al. study, ( $M_{\text{diff}} = 30.91$ ). Moreover, the effect size in our study, calculated on MD means for experimental and control groups at the follow-up, was substantial, (Cohen's  $d = 1.38$ ). An interesting observation, not found in the Wild et al. study, is that the reduction on MD between Pre-IR and Post-IR was continued during the week to follow, suggesting that the change process initiated by IR continued spontaneously – a hallmark of promising therapy.

Given this, and the fact that these results were achieved with imagery rescripting without cognitive restructuring the question has to be posed whether cognitive restructuring in this context adds to the treatment. However, a dismantling study exploring the differential effects of IR and CR is required to draw more firm conclusions.

Unexpectedly, no significant differences were found on vividness from pre-test to follow-up. However, while reduced vividness was reported to follow IR (Wild et al., 2008), the reason why reduced vividness should follow reduced distress is not entirely clear. Although there is evidence in support of this view (Hackmann, Ehlers, Speckens, & Clark, 2004), relatively little is known about the topic of vividness of imagery (Karatzias, Power, Brown, & McGoldrick, 2009; Hackmann & Holmes, 2004). Nevertheless, as suggested by Wild et al. (2008), we would have expected to find stronger effects of IR on both vividness and frequency of current images if we had followed the participants for a longer period after the intervention.

Related to this discussion are the findings regarding changes in participants' meanings of the images. The changes in their statements following IR suggest that the imagery restructuring has led to cognitive reappraisals. Participants' statements before the IR typically contained descriptions of themselves in negative terms, as being a loser, being helpless, unattractive and unworthy. The statements at the follow-up were clearly showing signs of reappraisals, the participants viewing themselves and the situations in more positive terms, feeling less helpless, more empowered, and attractive.

This study has some limitations. First, the sample size is small, and the conclusions would be stronger if similar results had been demonstrated in a larger group. Second, as regards the mechanism of change, the design does not allow for conclusions concerning the relative effects of IR and habituation. Ideally, IR should be compared with a control condition which involves exposure to the traumatic memory during an equal amount of time without IR. Still, the control condition, although not matching for exposure to traumatic memory, removes the confound of activating the memory and images as in Wild et al. (2008) study. Given this, and the occurrence of corresponding changes in the replication part of the study, it is justified to conclude that the IR treatment was the cause of the effects. However, the question as to what processes explain the effects (IR as such or habituation/exposure for traumatic memories) should be addressed in further studies. Third, there were no means provided to assess whether the reductions on ID would generalise to actual social interaction situations. This too, should be addressed in a future study. To summarise, some suggestions for future research are (1) to repeat this study with a larger sample, (2) to study the differential effects of CR and IR with a dismantling design, and (3) to study the relative effects of IR and habituation while keeping the exposure time constant. In conclusion imagery rescripting of early distressful memories may be a powerful intervention in the treatment of SAD.

# Study III

## Effects of Analytical and Experiential Self-Focus on Rumination After a Stress Induction in Patients with Social Anxiety Disorder. A Pilot Study

### Aims

Study III was designed to examine the differential effects of the analytical and the experiential self-focus modes on cognition and mood. Also it aimed to conceptually replicate Vassilopoulos' (2008) investigation and to extend it by (a) using a clinical sample of patients with SAD, (b) including a stress induction (an impromptu speech) before the manipulation to activate rumination processes (post-event processing), and (c) using a cross-over design in which participants constitute their own controls. A number of hypotheses were tested. First, because negative self-evaluation has been found to predict negative post-event processing in previous research (e.g., Dannahy & Stopa, 2007; Makkar, 2011a, 2011b; Perini, Abbott, & Rapee, 2006; Rapee & Abbott, 2007), it may be expected that the more negatively the participants evaluate their own speech performance the more negative their post-event processing should be. Second, drawing on the ICS account (Teasdale et al., 1995) and from findings of previous research (Watkins & Teasdale, 2001, 2004), it was expected that the experiential and analytical modes of self-focus would have different effects on the activated rumination processes (i.e., the post-event processing of the delivered speech), the former by disrupting these processes and the latter by strengthening them. In terms of specific predictions, this means that it was expected the experiential self-focus to produce (2a) more positive thoughts, (2b) less negative thoughts, and (2c) more neutral thoughts as compared with the analytical self-focus. Third, it was also expected that the experiential focus condition would produce lower ratings on (3a) anxiety and (3b) depression, as compared with the analytical self-focus mode.

### Method

The study was conducted with an experimental cross-over design in which half of the participants (i.e., the AB group) were given condition A (analytic self-focus) followed by condition B (experiential self-focus), and the other half (i.e., the BA group) were given the same conditions in the reversed order.

Following pre-experimental assessments with the self-report questionnaires (FNE, SIAS, SPS and BDI-II) and a baseline rating of state anxiety and depression, participants were asked to prepare and deliver an impromptu speech on a subject matter of their own choice. They were informed that the speech was to be audio recorded and that their performance on the recording would be evaluated by two psychologists. Just before giving the speech, participants were checked for anxiety, using a single-item state-anxiety rating scale and immediately after the speech the VEQ was administered for the first time.

In the analytical and experiential self-focus inductions participants were asked to read a list of 28 items which was adapted by Watson and Teasdale (2004) from Nolen-Hoeksema and Morrow's (1993) rumination task. The listed items were symptom-focused (e.g., "the way you feel inside"; "the physical sensations in your body"; or "how awake or tired you are"), and participants in the analytical condition were asked to think about and concentrate on each item, attempting to make sense of and understand the issues raised by each one of them. In contrast, while reading the identical set of items, the instructions to participants in the experiential condition were to focus their attention on the moment to moment experience of the sensations and symptoms raised by the items. (see Watkins & Teasdale, 2004, page 4).

Effects of the self-focus conditions were measured by mood ratings and a thought listing (TL) procedure (Cacioppo & Petty, 1981) the latter being a way to tap a person's thoughts that are associated with affective responses and has proven useful as an independent variable in assessing cognitions. The participants were asked to "list those thoughts that you are thinking right now" on a sheet of paper and to rate the valence of their individual thoughts (positive, negative or neutral). The thought-listing procedure has been found to have an acceptable reliability, a split-half reliability was  $r = .78$ , the average test-retest reliability being  $r = .64$  (Cacioppo & Petty, 1981). The TL (a duration of 2½ minutes) was administered 3 times: before the manipulation, at the cross-over, and after the manipulation. The mood ratings (i.e., ratings of anxiety and depressive mood on single-item scales) were obtained simultaneously as the thought listing.

## **Results and discussion**

Although the effects were weak, the results were as predicted with regard to negative and neutral thoughts after the first self-focus induction. Adopting an experiential self-focus was associated with a tendency to a decreased proportion of negative thoughts, whereas an analytical self-focus led to a reduction of the proportion of neutral thoughts. The effects remained after controlling for depression. There was no support for the hypotheses, however, with regard to positive thoughts, or on mood ratings. Neither were these effects replicated after the second manipulation, following a shift of self-focus mode.

Unexpectedly, the proportion of positive thoughts increased in both groups after the first self-focus induction, and decreased in both groups after the second induction, thereby indicating some kind of non-specific effect that was not due to type of self-focus. One possible explanation of the increase in positive thought after the first induction may be that the participants experienced relief after the preceding performance situation; not knowing what was to follow, they may have suspected to be confronted with yet another stressful performance task, and thus responded with relief upon encountering a simple reading task (independently of whether they were asked to apply an experiential or analytical self-focus). If so, the overall decrease of positive thoughts in both groups after the second attentional manipulation may indicate that the relief was only a temporary effect, which disappeared when there were no longer any expectations of a new stressful performance situation.

Interestingly, the participants' self-evaluation of their speech prior to the self-focus manipulations predicted their degree of negative thinking during the remaining part of the session (before and after the first self-focus induction, as well as after the second induction) only if they had been subject to an analytical self-focus induction (with  $r$ s ranging from .83 to .97), but not if they had received an experiential self-focus induction. Controlling for BDI by means of partial correlations did not alter this picture. In the experiential condition, there remained only a weak and non-significant association between speech evaluation and negative thinking after the first self-focus induction, thus indicating that the experiential self-focus intervention led to a decoupling, or at least weakening, of the association between negative self-evaluation and post-event processing. This might be expected to occur if the experiential self-focus causes the participants to experience a "decentering" or "distancing" to their own self-evaluations, perceiving these as thoughts rather than reality – which is what should be expected if the rationale behind promoting an experiential self-focus is correct (Teasdale, 1999; Teasdale, Segal, & Williams, 1995). On the other hand, it should be noted that the second self-focus induction did not reverse this effect, possibly indicating that one kind of self-focus is not so easily replaced by another one, especially if the adopted self-focus is associated with an increase in positive thoughts/feelings of the kind that occurred in the present case.

Even though the effects were weak, the results of the current study add to the growing body of research indicating that analytical and experiential self-focus modes of attention affect cognition differently (Rimes & Watkins, 2005; Vassilopoulos, 2008; Vassilopoulos & Watkins, 2009; Watkins & Teasdale, 2001, 2004). While the findings need to be treated with great caution, they indicate that the results of previous research on depression (Rimes & Watkins, 2005; Watkins & Teasdale, 2001, 2004) are applicable to SAD as well.

In hindsight, the employment of a cross-over design appeared less optimal for this kind of study, given the difficulties to switch over from one to another self-focus mode. In view of the results a between-subjects design would have been more suitable for testing our hypotheses. However, this observation raises the question whether



the seemingly inertia of the different self-focus modes could be explained by some feature inherent of the attentional foci, that would merit further exploration, or, considering the relative high level of depression in the sample, if this difficulty reflects a lack of cognitive control. The latter would imply difficulties in keeping irrelevant emotional information from entering the working memory, as well as discarding material from the working memory that is no longer relevant (Gotlib & Joormann, 2008).

Whereas one strength of this study stem from having used a clinical sample of patients with SAD, the small sample limits the conclusions. Nevertheless, the results were encouraging and a replication of the study with a larger sample is required. Moreover, the question concerning the durability of the effects, especially those of the experiential self-focus mode, should be addressed in a future study. A related question concerns whether these effects generalise to an ensuing interaction and if they affect the anticipative thinking preceding such an event?

In conclusion, the results of the current pilot study give some support to the hypothesis that an experiential self-focus of attention has beneficial effects on clients' cognitions following a social interaction. However, the small sample and the weak effects that were found call for a replication, preferably with a larger sample, before any firm conclusions are drawn.

# General Discussion

Social anxiety disorder is a debilitating and common anxiety disorder, with a lifetime prevalence ranging from 6 % to 12 %. The condition has its onset in childhood and early adolescence, affects females more often than males, and if untreated is associated with high risk of developing comorbid anxiety and mood disorders, as well as substance abuse. The vast and increasingly growing body of research during the three last decades has helped to understand the mechanisms of SAD, and has made possible the development of efficacious treatment methods for the disorder. Although the majority of the individuals with SAD have been helped by current cognitive behavioural treatments, there still are clients that do not improve as much as desired (Heimberg, 2009). Thus, there is room for improvement, and to explore separate treatment components in isolation, or in interaction, as well as attempting to match specific features of SAD, i.e., biased cognitive processes, with appropriate treatment techniques, appears to be a reasonable strategy.

## Aims of the Thesis

The aim of the present thesis was to explore the effectiveness of three separate treatment techniques often employed in cognitive behavioural treatments for SAD. First, the 'audio-feedback with cognitive preparation' was investigated. This is an adaptation of the video-feedback technique, for providing socially anxious individuals corrective feedback of their performance. Second, the effects of 'imagery rescripting' of early traumatic memories was studied in a sample of clients with SAD. Third, 'experiential self-focused experience', a method to address the destructive and maladaptive ruminative processes in people suffering of SAD, was explored in a small sample of clients. The first two of these techniques addressed cognitive processes activated when entering a socially threatening situation and when being in-the-situation, whereas the third dealt with on-going ruminative processes after having left the situation. As all of these methods to some extent capitalised on the impact of imagery, also a great deal of interest and attention was focused on the role of imagery in the treatment for SAD.

## Results

All three studies presented in this thesis were conducted using experimental designs, the first two used a between-subjects design and the third a cross-over within-subjects design. Participants were allocated to either condition using a pair-wise randomisation procedure. Whereas the first investigation was an analogue study with a sample of socially anxious undergraduates, the following two were completed using unselected samples of clients with SAD.

Although all studies conceptually replicated previous research, each one of them extended their earlier studies with the intention to introduce a novel element with a view to further promote the understanding of the subject. Thus, Study I replicated and extended Kim's et al. (2002) investigation of feedback with cognitive preparation by using auditory feedback instead of video-feedback. Moreover, the added implicit assessment procedure with the IAT (Greenwald, McGhee, & Schwartz, 1998) made the study in this sense unique. The imagery rescripting study extended the Wild et al. (2008) study by using a between-subjects design and by examining the effects of imagery rescripting without a preceding verbal cognitive restructuring procedure. Moreover, in this investigation it was also made possible to analyse how the (encapsulated) meaning of images changed pre- to post-manipulation. Finally, the pilot study of rumination extended Vassilopoulos' (2008) investigation by using a cross-over design, making the participants their own control, and by introducing an initial stress-induction procedure (an impromptu speech) intended to activate participants' post-event processes, on which to explore the effects of experiential self-focused attention.

Overall, the results provided evidence in support of the hypotheses that the three different treatment techniques would have beneficial effects on social anxiety (Study I and II), on symptoms of SAD (Study II), on negative self-evaluation (Study I and III), and on post-event processing (Study III). It is noteworthy, that when, as in the present studies, treatment was targeting biased cognitive processes, the treatment effects were substantial. This was especially true for negative self-imagery, which was modified in participants receiving auditory feedback, but particularly in clients who underwent imagery rescripting. In this latter group, memory-images were radically affected by robust reductions in distress and qualitative changes in meanings of the images. Moreover, imagery rescripting was associated with reductions in symptoms, that is, clients reported less fear of negative evaluation and less anxiety in social interactions. The encapsulated meanings of images, as reported by the clients, were indeed transformed dramatically into more benign descriptions of the self, reflecting more positivity, increased empowerment, and in a greater sense of attraction. Certainly, such changes may be pivotal in the course of treatment.

Also, negative self-imagery was modified following the audio-feedback, and consistent with previous research (Harvey et al., 2000; Kim et al., 2002) it was demonstrated, that cognitive preparation enhanced the effects of feedback. The important

finding in this study was that reductions in negative self-ratings following a performance situation were associated with reductions in social anxiety at a subsequent test performance situation, assessed explicitly as well as implicitly. This was in contrast to arguments by Rodebaugh (Rodebaugh, 2004; Rodebaugh & Rapee, 2005) who maintained that to his knowledge so far nobody had been able to establish such an association between positive changes in self perception and concomitant reductions in anxiety. Nevertheless, in a subsequent study this statement was revised (Rodebaugh et al., 2010). However, the unique contribution of the present study was that the reductions on anxiety were indeed tapped on an implicit measure, which strengthened the conclusion that reductions in negative self-ratings led to reduced experience of anxiety.

The results from the rumination study, targeting post-event processing, are equally interesting. First of all, the clients' self-evaluation, following a stress inducing performance situation predicted negative thoughts listed prior to manipulation. Secondly, this pattern was even more pronounced in clients after having adopted the analytical self-focus, and strikingly, this association was attenuated among those clients who had adopted an experiential self-focus. Given that the contents of the negative thoughts bore the mark of maladaptive rumination, the evidence supported the prediction, that analytical self-focus maintains or increases maladaptive rumination, whereas experiential self-focus tends to create a 'decentering' of thoughts and possibly promoting adaptive rumination.

## Theoretical Considerations

The results are consistent with the cognitive models by Clark and Wells (1995) and Rapee and Heimberg (1997). Particularly the proposal that negative self-images (mental representations) draw from internal information is supported by evidence from the imagery study and the audio-feedback study. Specifically, the models imply that current catastrophic images in socially anxious individuals are maintained and influenced by information from ongoing monitoring of feelings, thoughts and bodily sensations, and by input from long-term memories. Hence, changes in relevant long-term memories should lead to changes in current imagery. Findings of the present study on imagery rescripting clearly support such a proposal: the benign changes on memory-images following the rescripting intervention were also, albeit to a weaker degree, associated with concomitant changes in current images. Thus, and consistent with previous research, the evidence indicates a link between memories and current images (Hackmann et al., 1998; Hackmann et al., 2000). Also, the findings of enhanced effects of audio-feedback by the cognitive preparation procedure confirm the suggestion by Clark and Wells (1995) that when receiving (video or audio) feedback, clients may confuse the content of the video/audio with the memory of the

felt sense during the speech of how they came across. By maximising the discrepancy between the content of the audiotaped recording and the memory, as was the case in cognitive preparation, the risk of such a confusion should be minimized, hence the enhanced effects. The point in this issue is, that implied by the suggestion of a possible confusion is the assumption that clients actually have shifted their attention inwardly to observation of feelings, bodily sensations etc. during the performance situation, which would be expected when perceiving an impending threat – that is, being negatively evaluated by others.

Another implication of the models concerns the impact of changes in self-imagery (as represented by recurrent images) on emotion and behaviour, that is, symptoms of SAD. Again, the evidence of the imagery rescripting study is consistent with such an argument, demonstrating significant reductions on symptoms as assessed by the FNE (Watson & Friend, 1969) and the SIAS (Mattick & Clark, 1998). However, the design did not allow conclusions as to whether the changes on memories directly caused changes on the symptom level, or if changes on recurrent images mediated between memory change and symptomatic improvement. Future research is needed to decide on this matter. The literature indicates that perception of performance (i.e., self-images) serves a mediating role between SAD and social state anxiety (Rapee & Abbott, 2007), and in fact, findings of the present Study I is consistent with such contentions, showing that changes in self-imagery, as reflected in less negative self-ratings, had beneficial effects on a subsequent performance situation.

One implication of Clark and Wells (1995) model is that exposure alone as a treatment for SAD is relatively ineffective because patients do not process external information of what is happening in the social situation. In their account Clark and Wells indicate that the re-appraisals of distorted beliefs are central to the treatment for SAD. However, the possibility for habituation as a result of the imaginal exposure to the feared situation can hardly be ruled out. In the imagery rescripting study, all clients were, as part of the pre- and post-measurement procedure, equally exposed to their catastrophic images, which were expected to be influenced by the generalisation effects of memory rescripting. Given this, the findings of substantial reduction on imagery distress for *both* conditions (those receiving the imagery rescripting and those given a reading task) was unexpected and may be accounted for by a habituation process due to repeated exposures to the content of images. On the other hand, turning to the effects of manipulation of memory-images, the strikingly continued reduction on memory distress, as observed at the follow-up, speaks against the action of habituation, since no (systematic) exposure was implemented during the follow-up period. Although clients may have been engaged in spontaneous exposures during this time, the occurrence of spontaneous re-appraisals seems more plausible, which was demonstrated in previous research (Wild, et al., 2007, 2008). Strikingly, the findings on encapsulated meanings of images in Study II, showing changes pre- to post-manipulation, into distinct, qualitatively different self statements, also valid at the follow-up, indicated that the treatment intervention was made to work by

re-structuring or re-appraisals of memory contents. Further support of Clark and Wells' view is provided by the audio-feedback study. The main ingredient acting in this treatment is the feedback procedure. This part is of relatively short duration (3 minutes) and can hardly be explained by habituation which normally requires prolonged exposure to the fear component. Thus, the evidence of studies I and II is in line with and support the proposition that treatment for SAD at least, acts through restructuring distorted beliefs.

The dual representation theory of PTSD (Brewin et al., 1996), predicts that information stored in lower-level memory systems is not readily retrieved intentionally and verbally. The evidence from Study II, showed that the effects of imagery rescripting alone were comparable to the effects of cognitive restructuring and imagery rescripting combined as evidenced in the Wild et al. (2007, 2008) studies. Although not conclusive, the results raise the question whether cognitive restructuring as a technique in this context and in this manner adds to the treatment. In line with Brewin's et al. (1996) theory, employing the cognitive restructuring technique as in the Wild et al. studies, should be contraindicated since this method solely relies on verbal interventions. Given that the memories of the adverse events reported by socially anxious individuals are to some extent traumatic in character, verbal access to this material should be difficult, if at all possible. On the other hand, what if Wild and colleagues in contrast to this theory after all did access this kind of material by the cognitive restructuring procedure? According to the interaction cognitive subsystems framework (Teasdale, 1999; Teasdale & Barnard, 1993) it is only possible to focus on one level of meaning at the time: either on the propositional or the implicational level of meaning. Thus, when processing verbally on a conceptual (propositional) level, as in cognitive restructuring, access to emotions are prevented, since these are only accessible on an implicational meaning level. Accordingly, cognitive restructuring should be effective only to the extent it gives rise to experiential-based imagery (Brewin et al., 1996; Teasdale, 1999) that is shown to be linked to emotions (Holmes & Mathews, 2010).

Finally, the evidence from Study III, the rumination study, is consistent with proposals of both Teasdale and Watkins. The analytical self-focus processing mode represents processes on the propositional meaning level (Teasdale, 1999) and on an abstract goal/action identification level (Watkins, 2011) which are predominantly conceptual and evaluative. When not balanced by experiential processing on the implicational level proposed by Teasdale and the concrete level of goal/action identifications, as suggested by Watkins (2011), destructive negative ruminative processes are promoted. Results from the present study indicate that experiential processes can disarm such destructive processes by decentering or decoupling thoughts from negative self-evaluation (Teasdale, 1999). In the view of Watkins (2011), employing an experiential self-focus mode allow the participants to experience the situation contextually and exploring it and its possibilities in a moment to moment fashion. However, a shift of self-focus mode, especially from an experiential to an analytic

mode, appeared to be difficult. Thus, this raises the question whether effects of experiential self-focus mode are self-reinforcing in the sense that the positive emotional reactions strengthen the tendency to process situational information experientially.

## Limitations

The studies presented in this thesis have a number of limitations, the most serious ones pertaining to threats to the statistical and external validity. With the exception for the audio-feedback study, the investigations were carried out using small samples causing a low statistical power. Larger samples would reduce the risk for Type I or II errors and strengthen the conclusions. However, on the positive side, the two clinical studies (Study II and III) recruited clients of SAD including individuals meeting criteria for both specific and generalised SAD as well as other comorbid disorders. Thus, in this sense, the samples were to some extent representative of the population. Moreover, these studies replicated and extended previous research, and despite the introduction of changes in design, or assessment procedures, comparable results to previous studies were obtained, which strengthened the conclusions.

The participants in the clinical studies were assessed by skilled psychiatrists in accordance to the DSM-IV (APA, 2000) but no other formal administration of primary measures of SAD was performed. However, secondary measures were assessed by different validated instruments measuring symptoms of SAD and depressive mood. Moreover, there were some concerns about using the FNE as some evidence indicated that its reversed items were less related to social anxiety than items worded straightforwardly (Rodebaugh et al., 2004). Yet, the aims to replicate previous research and in order to make the studies comparable to previous studies the choice of the FNE despite its shortcomings was justified. The same arguments apply to the extensive use of single-item rating scales. With repeated administration of more validated measures of state anxiety containing several items, the burden on participants would have been unacceptable and would have been too time consuming. Although using a single-item scale would lead to some loss of sensitivity, there is some support for its usage. It has been demonstrated that one-item measure of state anxiety adequately predicted the STAI-S score and therefore may replace the latter (Davey et al., 2007). The use of an implicit measurement however, as employed in the audio-feedback study, strengthens the construct validity. Here the data on the IAT confirmed the results on the single-item rating scales for social anxiety.

Another shortcoming concerns the lack of manipulation checks. Especially, participants in the rumination study, indicated difficulties in adopting the experiential self-focus mode. In part this may have been due to the experience of an increased level of anxiety following the evaluative performance situation (i.e., an impromptu speech), which according to Watkins (2011) would by default prompt intense ana-



lytical ruminative thinking. Addressing this problem, clients were allowed a short practise prior to manipulation which in turn should ensure the adoption of self-focus in an adequate manner. As regards the imagery study however, the pre-manipulation ratings of images on distress and vividness in combination with the verbal account of imagery contents made manipulation checks obsolete. Yet, this issue seems more relevant to the audio-feedback study, in which the second step of the cognitive preparation procedure required participants to form a mental image of how they thought they came across during the speech. Even though formal manipulation checks were not performed, ratings of imagery vividness, which unfortunately were not reported in the paper, indicated that images were adequately evoked.

The strength of the studies depends on the methodological considerations in designing the experiments to allow conclusions of causality. Even though all three studies in this thesis are well designed there are some drawbacks threatening the internal validity. In particular, the control condition (i.e., the reading task) of the imagery rescripting study may raise questions as to what causal conclusions can be drawn. A reading task is not a comparable intervention and does not match the experimental condition for exposure to the traumatic memory. Hence, it is impossible to know if the effects of imagery rescripting can be attributed to imagery rescripting rather than repeated exposure to the trauma memory. However, the study was primarily designed to test if Imagery Rescripting as a treatment technique is effective and therefore, questions concerning the mechanisms underlying changes caused by imagery rescripting were of a secondary nature.

Further challenges to the internal validity may arise due to demand characteristics and experimenter effects. While it is impossible to rule out the experimenter effects on the audio-feedback and imagery studies, these effects were minimised in the rumination study, since all participants received same conditions. Also, this threat should affect the results of the audio-feedback study to a lesser degree, in view of the few opportunities to influence the results. However, the ratings of the meaning of images in the imagery study were actually performed blindly by two independent assessors, and as these results were in line with the other results of this study, the experimenter effects, although not eliminated, may be considered mitigated. Concerning the issue of demand characteristics (i.e., participants behaving consistent with their expectations of the purpose of the experiment), this risk was considered negligible in the audio-feedback and ruminations studies, owing to the fact that both conditions involved a plausible intervention that subjects might have perceived as being the one to be tested. However, the reading task serving as a control condition of the imagery study, was not likely to be perceived as an active treatment component, hence, demand characteristics may have affected the result of this study. A related challenge to the validity stems from the possibility of a consistency bias, that is, the tendency to respond on individual items of a questionnaire consistent with response patterns on previously conducted measurements with the same instrument. In particular, this bias may have affected the results on the VEQ in study I, as this questionnaire was



administered three times in a relatively short time span. A neutral filler condition would have provided data allowing an estimate of this bias. Still, results on the Performance Anxiety scale of the VEQ were corroborated by findings on the IAT indicating that such a bias may be negligible. A consistency bias on outcome measures was less likely in study II as the prolonged passage of time between assessments at pre-manipulation and at follow-up would prevent recall of previous responses.

Finally, the risk of demoralization effects in participants not receiving treatment, as in the case of being allocated to the control condition in the imagery rescripting study, was eliminated or at least mitigated by the information that they were to receive the same treatment following the completion of the experimental procedure. Thus, participants of the control group too were given the intervention with a simple pre- and post-measurements within-subjects design. While not reported in the paper, the results of this internal replication confirmed the results of the main study. However, contrary to our expectations, we found no changes on the FNE and SIAS in the control group after having received the IR as part of the replication study. This is puzzling and throws some doubts on the interpretations of our original results. One possible explanation is that, as participants of the control group for the third time were asked to complete the questionnaires for measuring the effects of IR, a consistency bias may have been present. A longer period before follow-up would have eliminated the risk of such a bias.

## Suggestions for Future Research

The studies in this thesis suggest a number of ideas for future research. Above all, replications and extensions with larger samples are needed. Dismantling studies present theoretically interesting opportunities to explore the mechanisms underlying changes demonstrated by the audio-feedback and imagery rescripting studies. Particularly, the third step of the cognitive preparation procedure, that is, the instruction to listen to the audio-taped recording as if listening to a 'stranger' merits an investigation. For example, an experiment comparing audio-feedback including all three steps of cognitive preparation with audio-feedback involving only the third step should answer the question as to what role this step play in this context. The study should also include ratings by neutral observers, and a second control group receiving no treatment at all.

The question concerning the differential effects of the treatment components 'cognitive restructuring' vs. 'imagery rescripting' may be addressed by manipulating experimental conditions with a view to examine the effects of cognitive restructuring and imagery rescripting combined (but in sequence) as compared to the effects of imagery rescripting alone. Moreover, as noted in the section of limitations above, the lack of an adequate control intervention in the imagery study makes it impossible

to know if the effects of imagery rescripting can be attributed to imagery rescripting rather than habituation as a result of repeated exposure to the trauma memory. One way of disentangling these processes would be to compare the effects of imagery rescripting and no imagery rescripting with control of the exposure time.

The rumination study posed the question whether the one self-focus mode might interfere with the other when shifting self-focus mode after the first self-focus induction. To what extent are these modes enduring? As indicated by the data, might the experiential self-focus mode be more persisting than the analytical counterpart? This question may be examined using a single-case design by which the two self-focus modes were to be adopted alternatively following an ABABAB sequence.

Also, a key area of investigation suggested by above studies concerns generalisation effects. Even though the audio-feedback study included a test of generalisation on a second speech it is suggested that a future study should employ a more naturalistic context for such a test, preferably a social interaction situation including confederates. Also, such an arrangement is proposed to test the generalisation effects of both imagery rescripting and the adoption of experiential self-focus mode. However, in the latter case a between-subjects design is indicated, comparing the effects of analytical and experiential self-focus modes. Moreover, an extension of this study is suggested to assess self-evaluation following the completion of manipulation. In addition, a generalisation test in a social interaction situation should be conducted.

## Concluding Remarks

To summarise, it is concluded that audio-feedback with cognitive preparation and imagery rescripting of early distressful memories have the potential to produce corrective information to be integrated into the public self. In particular, imagery rescripting may be a powerful intervention in the treatment for SAD. The pilot study examining the effects of analytical and experiential self-focus modes of attention gives preliminary support to the hypothesis that the experiential self-focus has beneficial effects on clients' cognitions. Overall, the empirical evidence presented in this thesis support the proposals by the cognitive models of SAD that imagery plays a key role in the successful treatment of the disorder.



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