# Video Feedback Techniques Used in Social Anxiety Disorders

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**Abstract**

The effectiveness of video feedback in socially anxious individuals including the improvement of distorted self-perceptions has been reported. However, socially anxious individuals might overestimate their appearance on video as more negative or less positive. Such misjudgments might be caused by excessively high negative interpretations and lack of positive interpretations in patients with social anxiety disorder (SAD). The results of this study suggest that a person's interpretations of his or her appearance on video interfere with the effectiveness of video feedback. The significance of these findings and techniques for improving cognitive interventions using video feedback are discussed.

**Keywords:** social anxiety disorder, video feedback, self-perception

## 1. Introduction

Social anxiety disorder (SAD), which is the most common type of anxiety disorder, is characterized by fear of negative evaluation by others [1, 2]. SAD impairs social, academic, occupational, and economic functioning of individuals with the disorder [3]. SAD patients and highly socially anxious individuals have many similar psychological and physiological features that only differ in intensity [4, 5]. Moreover, it has been suggested that there are overlaps between shyness, social anxiety, and SAD [6]. Therefore, it is reasonable that SAD symptoms gradually improve the quality of life and functioning in individuals, including those who are socially anxious or who have SAD.

The cognitive and the cognitive behavioral models of SAD suggest that negative cognitions maintain social anxiety symptoms [7, 8]. Clark and Wells [7] indicated that SAD patients develop a series of negative assumptions and overestimate how negatively other people evaluate their performance in one or more social situations. Rapee and Heimberg [8] suggested

that the distorted self-perception about performance is one type of negative cognition that maintains social anxiety symptoms in SAD patients and socially anxious individuals. Moreover, previous studies have reported that SAD patients and socially anxious individuals show lower self-ratings than other ratings of their performance [9–11].

There are two subtypes of SAD, the generalized type and the performance only type [12]. Individuals diagnosed with the generalized type experience excessive fear in almost all social situations, including performance and social interactions. Individuals diagnosed with the performance only type experience excessive fear only in performance situations, such as making a presentation in front of the class, with no major anxiety associated with social interaction per se, such as talking with friends or strangers. Furmark et al. reported that individuals with the generalized type exhibit more social distress and impairment [13]. These impairments might include holding a cup firmly, avoiding eye contact, or speaking softly. People with SAD use such safety behaviors to reduce their anxiety, but these behaviors can exclude opportunities to learn what happens in social situations and might cause further anxiety due to decreased coping efficacy. Their physical symptoms might involve displays of physiological arousal in social situations that include shaking, sweating, heart throbbing, and other manifestations of anxious arousal. People with SAD also tend to exaggerate the extent to which these symptoms are visible to others, which leads to more concerns about negative evaluation from others.

Many previous studies have indicated that cognitive-behavioral therapy (CBT) techniques are effective in the psychological treatment of SAD [14–16]. According to Rodebaugh et al. [16], typical CBT techniques for the treatment of SAD include exposure, applied relaxation, social skills training, and cognitive restructuring. In a meta-analytic review, they reported that the most recommended treatment component of CBT programs is exposure and cognitive restructuring [16].

Video feedback is also included in most CBT treatment programs. After exposure and cognitive restructuring sessions, individuals with SAD try to watch videos of themselves, before receiving cognitive preparation. Clark et al. reported the high efficacy of individual CBT [17]. Their program consisted of developing personal safety behaviors and self-focused attention with patients by shifting the focus of attention to social situations. Based on Clark and Wells' model, patients try to identify the relationship between their own cognition and SAD symptoms on psycho-education sessions. Additionally, video feedback was used to modify distorted self-imagery. Participants try to improve the discrepancy between their negative, distorted self-images and their objective social performance.

In video feedback sessions, individuals with SAD watch themselves doing actual social tasks, such as public speaking and conversation tasks. They often recognize their performance to be worse than their actual performance. Then, therapists try to improve the discrepancy between subjective and objective perceptions of social performance. For example, Shirotsuki et al. attempted to examine the effects of an individual CBT program that included exposure, cognitive restructuring, and video feedback techniques [18] using video feedback of speech tasks. The results indicated that the program was effective for improving social anxiety symptoms and self-perception during speech tasks, suggesting that individuals with SAD can improve their negative self-perceptions and negative estimations before a speech task. Previous research has also

shown that both individual and group CBT programs are highly effective for treating SAD symptoms [19–25] and have several similarities, in spite of differences in treatment style between them. For example, cognitive restructuring, video feedback, attention training, and exposure technique are the main components in both treatment modalities [26].

In recent years, therapeutic intervention programs that include mindfulness have been developed. Mindfulness is defined as "paying attention in a particular way—on purpose, in the present moment and nonjudgmentally" [27]. Research on the applications of mindfulness to SAD is progressing with many studies reporting that mindfulness-based therapy is effective for treating social anxiety symptoms [28]. The improvement of trait mindfulness might affect factors maintaining SAD, such as post-event processing, fear of negative evaluation, avoidance behavior, and self-focused attention [29–32]. Kocovski et al. indicated that trait mindfulness predicts subsequent changes in social anxiety and that social anxiety predicts subsequent change in trait mindfulness [33]. Rasmussen and Pidgeon suggested that higher levels of trait mindfulness predict lower levels of social anxiety symptoms [34]. These approaches have not been used in video feedback research. Perhaps, mindfulness-based psychotherapy combined with video feedback technique could improve treatment efficacy.

Computerized cognitive behavior therapy using the Internet has also been developed internationally. Computerized cognitive behavior therapy (CCBT) programs involve the effective delivery of evidence-based treatments over the Internet, using computers, tablets, and smartphones. CCBT is a self-help treatment. Self-help cognitive behavior therapy (CBT) can provide a useful approach to the treatment of psychological problems. A meta-analysis examined the efficacy of technology-assisted interventions for individuals with SAD [35]. This meta-analysis divided studies into Internet-delivered cognitive behavior therapy (ICBT; 21 trials), virtual reality exposure therapy (VRET; 3 trials), and cognitive bias modification (CBM; 13 trials) and reported that ICBT had a small advantage (g = 0.38) over active control conditions. Moreover, while the efficacy of CBM was limited, substantial evidence regarding ICBT and preliminary evidence for VRET suggest that both could effectively reduce SAD symptoms, which is suggestive of the potential of technology-assisted interventions for SAD. The results showed that ICBT and VRET were effective in reducing SAD symptoms, with VRET having comparable effects and ICBT being more effective than active control groups. The best-known CCBT program for SAD is the SOFIE program, which was developed in 2003 [36] and is the first Internet-based CBT program with demonstrated efficacy. The program consisted of nine modules delivered within 9 weeks, which was subsequently changed to a 15-week version. The components of the SOFIE program were psycho-education, cognitive restructuring, exposure and attention-shifting exercises, and social skills relapse prevention.

## 2. Video feedback (VF)

VF, which is based on the cognitive model of SAD [7], involves providing highly socially anxious individuals and people with SAD with video playback of their social performance following the participation in a social task, such as making a public speech or a one-on-one conversation [37]. Participants then watch the situation using the video recording. It is anticipated that the review of the recording would correct their distorted self-evaluations, including

the underestimation of their own social skills [38]. It is suggested that the experience of viewing video recordings of their own social performances would enable socially anxious individuals to correct their underestimation of their social abilities. This, in turn, is expected to lead to reduced symptoms of anxiety when anticipating in future social events [39–41]. Moreover, objective information about the self is expected to result in changes in the negative self-image and lead to confidence about social performance. (See **Figure 1** for an illustration of an actual video feedback session).

Warnock-Parkes et al. [42] suggested five broad categories of interference that results from video feedback [43]: (a) reexperiencing feelings when watching the video, (b) selectively searching for behaviors that could be interpreted negatively, (c) discounting the accuracy of the video image, (d) mistaking safety behaviors for social deficits, and (e) reactivating habitual patterns of self-criticism. Warnock-Parkes et al. [42] suggested that patients with social anxiety disorder have these processing biases that would make it difficult for them to see the videos differently from their habitual negative self-perception. It is important to reduce processing biases to identify the effects of video feedback.

Several studies have reported that video feedback techniques improve distorted self-perceptions when used as a psychological intervention for social anxiety [9, 11, 39]. Rapee and Hayman showed that high and low socially anxious individuals improved their distorted self-perceptions after video feedback [9]. Harvey et al. demonstrated that 7 min of cognitive preparation before video feedback enhanced the effect of video feedback on distorted self-perceptions [39]. Rodebaugh also reported that cognitive preparation enhanced self-perceptions about speech performance [11]. On the other hand, Smits et al. failed to find any difference between exposure and exposure with video feedback [40]. They suggested that their technique might have targeted probability bias by providing performance feedback, which interferes with the necessary reappraisal of cost bias.

Orr and Moscovitch summarized previous VF studies [37]. They described that experimental research on social anxiety and VF has typically examined the efficacy of VF on its own (i.e., with neither a pre-VF preparation phase nor a post-VF review phase) [37, 41] or only with the
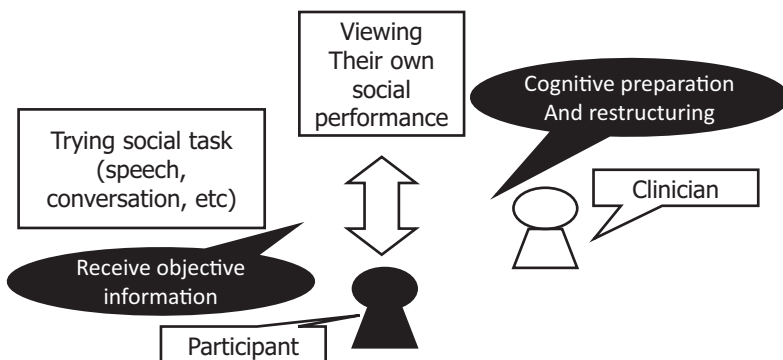


**Figure 1.** Image of the state of actual video feedback.

addition of a pre-VF cognitive preparation phase [39, 40, 43]. In addition, Orr and Moscovitch examined the effect of cognitive review (CR) with video feedback and cognitive preparation (CR) [37]. The results showed that participants in the CP, VF, and CR conditions demonstrated marginally significant reductions in anxiety from Speech 1 to Speech 2. Furthermore, only those who received CP, VF, and CR demonstrated significant improvements in self-perception and performance expectations relative to the only exposure condition. In CR, participants received open-ended questions asking them to provide elaborate written answers (e.g., "How does this feedback make you feel?" or "What is the significance of this feedback to your sense of self?"). However, certain studies have also indicated that neither VF alone nor VF with cognitive preparation succeeded in facilitating significant reductions in social anxiety symptoms above and beyond exposure alone [9, 40, 44]. It is suggested that the null findings pertaining to the reduction of social anxiety in previous VF studies could be at least partially related to the absence of a post-VF review period, during which time participants would be encouraged to elaborate the processing and encoding of feedback information. Orr and Moscovitch indicated that the post-VF review period, which encourages individuals to elaborate, could lead to the processing of new information about themselves and facilitate improvements in self-perception, leading to the subsequent reductions in social anxiety symptoms [37].

## 3. Cognitive biases in SAD

It has been suggested that the negative interpretation bias in social situations and social information might interfere with the effectiveness of video feedback in SAD. Certain studies have reported the effects of negative interpretations on social anxiety symptoms. Foa et al. found that individuals with social phobia rated negative social events as more probable and costly than nonclinical anxious controls [45]. Stopa and Clark showed that patients with generalized social phobia were more likely to interpret ambiguous social events negatively and to catastrophize in response to unambiguous, mildly negative events relative to other anxiety disorder groups or a nonpatient control group [46]. Constans et al. reported that socially anxious individuals showed a less positive interpretation of ambiguous interpersonal events [47]. In summary, the interpretation bias regarding social situations seen in individuals with social anxiety is characterized by more negative and less positive cognitions.

It is possible that socially anxious individuals negatively evaluate their appearance on video. This negative interpretation could interfere with the effectiveness of video feedback. In addition, SAD patients may also lack positive interpretations about their appearance on video. Therefore, it is possible that SAD patients and high socially anxious individuals interpret their video as more negative and less positive. However, the relationship between negative and positive interpretations of their appearance on video and social anxiety symptoms has not been investigated to date.

Based on the above considerations, Shirotsuki et al. examined differences in efficacy between video only (VW) and video with cognitive interventions (VW + CI) [44]. They divided participants into a video only group (VW group) and a video with cognitive intervention group (VW + CI group). Only VW + CI group was instructed to watch a video of their speech

objectively after the speech tasks. The results showed that there was a significant interaction (group × times) on self-perception. In addition, the VW + CI group showed significantly higher ratings for self-perception than the VW group after watching the video. These findings suggest that cognitive intervention before video feedback is an important factor in enhancing the effects of video feedback. Moreover, just watching videos has only a limited effect on improving self-perceptions about speech tasks.

## 4. Case examples

Shirotsuki has described a 23-year-old man named A with SAD [48] who was treated with VF.

A was helping the family business by working in their factory as a self-employed person. At the factory, he was often required to communicate with customers about repairing their products. A felt excessive anxiety on these occasions. Because of his anxiety, he often spoke fast and could not sufficiently express what he intended to say. Therefore, he avoided talking with customers as much as possible. He was also taking the prescription medications Paroxetine and Landsen. A CBGT program was conducted for A on eight occasions to treat his SAD. Psychological education was given in the first therapy session; exposure focused on speech, cognitive restructuring, and video feedback (VF) were conducted at the second, third, and fourth sessions, respectively; and exposure using conversation settings, cognitive restructuring, and VF were conducted at the fifth, sixth, and seventh sessions, respectively.

After making a speech for the first time, A had the following impression; "I thought it would be all right to make a speech even in front of an audience if the topic were pre-decided. However, somehow, I became awkward and felt I might be the worst speaker." After implementing the program, he thought "It seems like I am improving, but cannot feel the improvement." Video feedback was given during the fourth therapy session. "A" seemed rather nervous about observing the videos, similar to the other participants. After the observation, he thought "I was not as bad as I thought I would be." Regarding his speech, he thought "I could make the speech rather smoothly because I was relaxed. I will also do my best in the future." This case study suggests that A felt confident about his own behavior as a result of VF. After finishing the CBCT program, A was able to talk to people that he was acquainted with without excessive feelings of tension. He could also become involved with first-time customers without being too defensive.

Shirotsuki et al. have presented another case study that illustrated the treatment process of a SAD patient who participated in a CBGT program and was reinstated in his former office after treatment [49]. The patient was in his 40s and was feeling difficulties about working in his office because it had a negative environment. He was also afraid of his colleagues because they often reproached him. As a result, he gradually became uncomfortable in the office. Moreover, he became scared of getting involved with people because he was afraid that he might make others feel unpleasant. Furthermore, he thought that he might be smelling bad. His depressive symptoms increased, and as a result, he took a leave of absence and attended therapy to treat his anxiety and depression. A CBGT program was initiated because his anxiety about

involvement with other people increased. The patient was afraid that he might be acting strangely or making the audience unpleasant before VF during the CBGT program. After watching his own video, he was able to see that he was not as unpleasant as he had thought. On the other hand, he mentioned a sense of burden when watching videos of himself. Although he knew that he could see himself objectively, he was somewhat afraid that he might look strange, and this sense of anxiety increased before VF. Therefore, a discussion was held before watching the video to reduce his anxiety. However, the anxiety was not completely alleviated by the discussion.

As a result of the CBGT program, the client's anxiety, avoidance, and cost bias in social situations had been decreased. In addition, negative self-perception improved as a result of speech and conversation exposure. Along with the improvement in SAD symptoms, the client gradually began the process of reinstatement. These findings indicate the effectiveness of CBGT program and the process of reinstatement of SAD patients. These case examples suggest the reality of video feedback sessions. In most cases, the clients reported benefits as well as difficulties in viewing the video. Although VF sessions are highly effective, participants simultaneously feel a heavy burden. Clinicians need to recognize both these aspects of VF and take steps in advance to reduce the feeling of resistance.

## 5. Future direction

Firstly, it is important to clarify the influence of factors interfering with VF. Certain studies have reported the effect of negative self-images and interpretations. Individuals with SAD and highly socially anxious people often provoke negative self-images before conducting video feedback. These cognitions might interrupt the shift in their thoughts to an objective and balanced view. Shirotsuki suggested that highly socially anxious people might have negative and positive interpretations about their appearance on video, which might interfere with the efficacy of VF sessions [50]. In addition, high social anxiety results in negative interpretation about social information. When conducting video feedback, activated negative interpretation biases interrupt receiving neutral information from video images. Certain studies have suggested that estimated social cost was activated by watching video images. Therefore, the relationship between these cognitions and SAD symptoms needs to be examined in the future.

Secondly, conducting VF with individuals having SAD would burden the participants because they feel uneasy and strange about themselves. In clinical settings, it is often said, "It is very hard to watch myself." They feel uncomfortableness about viewing their video because some people watch only negative information on the videos and remember a negative image. It is necessary to reduce this burden to improve the effectiveness of VF. Future studies need to identify effective interventions for reducing the psychological burden of VF.

In **Figure 2**, the psychological process during VF sessions is described. After conducting social tasks, highly socially anxious individuals and individuals with SAD have negative self-images. These images lead to focusing on negative information during video watching. Therefore, they become unable to change their negative self-perceptions and as a result continue to maintain
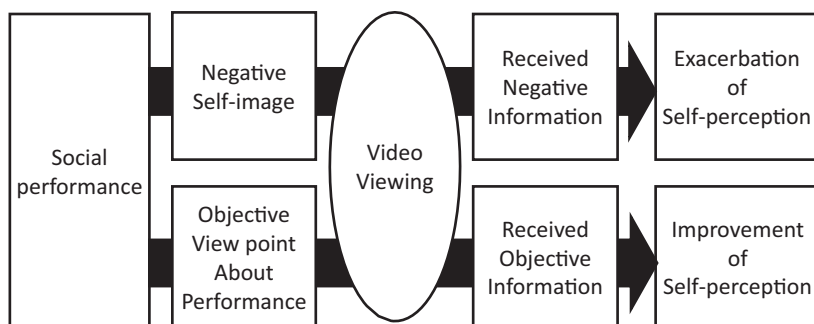
**Figure 2.** Psychological process in video feedback.

their previous self-image. On the other hand, they can prepare appropriately before watching the video and develop an objective self-image. This is expected to make them receptive to receiving objective information during video feedback.

Research on interventions that are conducted before and after VF sessions suggests that it is important to conduct cognitive preparations before VF. Second, mindfulness-based psychotherapy could improve the efficacy of VF as suggested by research on the efficacy of mindfulness-based psychotherapy for SAD symptoms. Conducting mindful breath training and mediation before VF affects improvements in self-perceptions. Additionally, the burden of VF might be mediated by mindfulness training. Third, Internet-based CBT programs that include video feedback techniques could be developed. Internet-based CBT is an effective treatment modality in spite of certain difficulties. CCBT consist of complete self-help and clinician-guided treatment programs. In most cases, it is important to assist the participants during exposure or video feedback sessions. By using Internet services (e.g., Skype or web camera), video feedback could be easily given during Internet-based CBT.

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