The Effects of Hypnosis on an Elite Senior European Tour Golfer

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Abstract

This study examined the effects of a hypnosis intervention on the performance and flow state experiences of an elite senior European Tour golf professional. The experimental effect was assessed during 11 Senior European Tour golf events. Performance and flow data were analyzed using a single-subject design combined with a procedure to monitor player's internal experience (Wollman, 1986). The results indicated that the players mean stroke average and mean flow scores increased from baseline to intervention. There were no overlapping data points between baseline and intervention conditions for both performance and flow state scores. The qualitative data revealed hypnosis may positively control emotions, thoughts, feelings and perceptions.

In the field of applied sports psychology, hypnosis based interventions are one of the most overlooked techniques available to sports psychologists. This is surprising because there are a number of controlled studies that indicate hypnosis interventions have a notable performance enhancing effect on different athletic populations. For example, research conducted by Baker and Jones (2005, 2006, 2008) has highlighted that hypnosis can be used to enhance the performance of footballers, cricketers and martial artists. Additionally, other researchers have discovered hypnosis improved the performance of badminton players (Pates & Palmi, 2002), cyclists (Lyndsay, Thomas & Maynard, 2005), golfers (Pates & Maynard, 2000; Pates Oliver & Maynard, 2001) and basketball players (Pates, Cummings & Maynard, 2002; Pates, Maynard, & Westbury, 2001).

Pates and his colleagues obtained their positive results using a hypnosis intervention consisting of a hypnotic induction phase designed to create a state of deep relaxation, a hypnotic regression phase designed to help athletes relive an earlier life experience of their optimal performance, and a trigger control phase designed to bring athletes' ideal performance state under the control of a stimulus (Pates, et al., 2002; Pates & Maynard, 2000; Pates, et al., 2001; Pates & Palmi, 2002). Interestingly, all of the researchers employing this intervention strategy observed that many of their participants experienced elevations in both performance and a psychological state described by Csikszentmihalyi (1975) as flow.

The positive effects of hypnosis on flow have a variety of implications for elite athletes because flow states have been strongly associated with the athlete's best performances (see Cohn, 1991; Catley & Duda, 1997). Indeed, a countless number of elite athletes report flow is the crucial factor that separates winners from losers (Costas, 1999; Unestahl, 1983). These findings imply the elite athlete population may have the most to

gain from adopting hypnotic interventions into their mental training regimes.

With the notable exception of Lyndsay et al. (2005) who investigated the effects of hypnosis on flow states and the performance of elite cyclists, studies supporting this proposition are rare. The current study aimed to change this trend by investigating the effects of a hypnotic intervention upon flow states and the performance of an elite Senior European Tour Golfer in the ecological valid environment of real European Senior Tour events. Using Pates and Maynard's (2000) intervention strategy, it was expected that during hypnosis the golfer's experience of flow could be conditioned to a natural trigger (the grip on the golf club). It was then expected that after conditioning, the player would experience a more intense state of flow and lower golf scores.

An AB single-subject design was deemed the most appropriate method to study the effects of the intervention because it allowed the analysis of an intervention that cannot be withdrawn or "turned off" (Hrycaiko & Martin, 1996). Based on the recommendations of Wollman (1986) and other researchers who have utilized single-subject designs (e.g., Lerner, Ostrow, Yura, & Etzel, 1996; Smith, 1988; Swain & Jones, 1995), the present study also applied a procedure that monitored the internal experience of the player.

Method

The Participant

The participant was a male Senior European Tour Player aged 52 with 2 years of Seniors European Tour playing experience. He had won no tour events and had no experience of mental training administered by a qualified practitioner.

Experimental Design

A single-subject AB design was implemented to examine the effects of a hypnosis-based intervention on flow states and golf performance. This type of design allows the participant to serve as his own source of control for the experiment (Barlow & Hersen, 1984; Hrycaiko & Martin, 1996). This format was most appropriate because it facilitates the analysis of the effects of an intervention that could not be withdrawn from the participant due to the ethical reason of withholding a potentially positive intervention from an elite participant (see Robson, 1994). The design required the observation of baseline performance and an intervention phase for the player. The intervention was introduced when a stable baseline or a trend in the opposite direction of the change anticipated became apparent for the participants. Based on the recommendations of Barlow and Hersen (1973, 1984) and Kazdin (1992), data was collected on 11 occasions over 16 weeks of tournament golf.

Dependent Variables

Performance analysis. Stroke average was selected as the performance indicator because it represents a global measure of the participant's overall performance. Stroke average is the average score taken from two or three rounds of stroke-play golf. A round of stroke-play golf consists of 18 holes wherein the participant records the number of strokes taken to complete each hole. At the end of the round, the scores from each hole are summed to give a total stroke-play score.

The reliability of the stroke play scores was assessed by comparing the judgments of the participant against an independent observer, who was the participant's playing partner. The reliability assessment took place after each round and resulted in a correlation of 1.00 for the scores of the participant and the independent observer. It is worth noting that a failure to score stroke play correctly would result in a disqualification of the participant from the tournament. Scores were obtained from the official championship scorekeeper.

Flow analysis. In addition to the performance data, information on the intensity of flow experienced by the participant during tournaments was assessed using the Flow State Scale (FSS-2; Jackson & Eklund, 2002). This 36-item instrument provides a quantitative measure of the nine dimensions of flow outlined by Csikszentmihalyi (1990). Reliability estimates ranged from .80 to .90. A global measure of flow was preferred in this investigation owing to Jackson's (1999) contention that single-factor approaches tend to reveal incomplete information about the total flow experience.

Treatment: The Hypnosis Intervention

The training of the participant in hypnosis took place immediately after the completion of the first baseline and was divided into three stages. In the first stage of the intervention the participant was encouraged to sit in a comfortable position and then was asked to focus on his breathing. Specifically, he was instructed to breathe deeply and to release air slowly while counting backwards from the number 10. He was then given a 15-min session involving progressive muscular relaxation (PMR). The technique originally pioneered by Jacobson (1938), involved the golfer tensing and relaxing parts of his body, while deeply inhaling. Suggestions asking the participant to contrast the differences between the tense and the relaxed muscles were given along with instructions to direct his attention to images of situations that were associated with relaxation. For example, the external image of a warm comfortable beach, or the internal sensation of floating in water.

In the second stage, an Ericksonian hypnosis technique known as a staircase induction (Hammond, 1990) was then applied. The staircase induction consisted of a journey, one step at a time, down a flight of 20 stairs. As the participant took the journey he was told to see each stair in front of him and feel the stair under his feet. At the bottom of the stairs he was told he would see a door, and beyond the door he would see a room with a comfortable chair. The participant was then asked to sit down in the chair and focus on a small cinema screen on which appeared a relaxing scene. Throughout this stage suggestions were given to reinforce both the experience of the PMR, the deep breathing, and imagery techniques.

In the third stage suggestions were given to help the participant regress, and remember a multi-sensory experience of their best competitive performance. Specifically he was asked to include visual, auditory, tactile, olfactory, gustatory, and memory of his best performance from an internal perspective. His best performance was then conditioned to be released by a natural trigger. The trigger used was the grip of the golf clubs. The participant was then told to see himself rising from the chair and proceed out of the door and up the staircase. The participant was also told as they ascended the staircase that they would feel refreshed and alert. Once the participant re-acclimatized to the environment they were asked to access their ideal performance state by utilizing his trigger. Training was considered complete when the participant felt that an experience of his best performance was under trigger control.

Intervention Procedures

The hypnosis intervention was administered to the participant in a small, quiet and comfortable room on the college campus and lasted approximately 40 min. The training was composed of three stages: Stage1-hypnotic induction, Stage 2-hypnotic regression, and Stage-3 trigger control.

After the training, the participant was asked to commit himself to practice the techniques, by playing a 40 min audiotape recording of the live session, every day, over a seven-day interval between the first baseline and intervention phase of the study. In total, the player was given one live session, and seven audiotape sessions before

the intervention phase. To ensure participant had listened to the audio tape recording, the player was contacted daily. The quality of the players experience was assessed by examining his thoughts, feelings, and cognitions immediately after each session. Finally, it should be noted that during the intervention stage the player was not under hypnosis, instead he was merely using the trigger that was conditioned to the emotions, feelings, and cognitions he experienced during their ideal performance.

Practical Assessment Questionnaire

During the 11 tournaments the internal experience of the participant was monitored using an assessment questionnaire that included the following questions:

> *How did you feel during the performance?; What were you thinking during the performance?; Were there any outside thoughts distracting you?; What was the effect of the intervention?; Did you experience any problems?; What were your general beliefs about your performance?; and How much effort did you put into today's performance?*

The list of questions was adapted from Kazdin (1992), Kendall, Hrycaiko, Martin and Kendall (1990) and Pates et al. (2001). This information permitted on-going assessment of the quality of the participants' feelings, thoughts, and cognitions across the baseline and treatment phases. The data were analyzed by comparing the comments obtained in the baseline sessions to the comments obtained during the intervention phase of the experiment.

Social Validation Questionnaire

Following the completion of the intervention phase, the participant was asked a series of questions to assess the social validity of the Hypnosis intervention. The questions were designed to provide information concerning the importance and the effectiveness of the intervention. This was based on the work of Pates et al. (2001), and Thomas, Maynard, and Hanton (2007). The participants were asked the following questions: *Did you perceive the intervention to be important?; Are you satisfied with the results?*; *Do you consider the changes in performance to be significant?*; and *How satisfied were you with the intervention?*

Data Analysis

The performance scores and global FFS-2 scores were plotted onto two graphs. Based on the guidelines put forward by Hrycaiko and Martin (1996) an experimental effect was analyzed through a visual inspection of the plotted data. According to these researchers the intervention had an effect when: (a) baseline performance is stable or in a direction opposite to that predicted for the effects of treatment; (b) the greater the number of times that an effect is replicated within the subjects data (c) the fewer the number of overlapping data points between baseline and treatment phase; (d) the sooner the effect occurs following the introduction of treatment; and, (e) the larger the size of the effect in comparison to baseline.

Results

Upon receiving the intervention the participant experienced an immediate performance and flow effect with no overlapping data points between the baseline and the intervention phase. Specifically the participant improved his performance from a mean of 72.8 during the baseline to a mean of 68.6 during the intervention phase. His flow data also improved from a mean flow score of 119.3 during the baseline to a mean of 151.6 during the intervention phase. The results suggest that the hypnosis intervention consistently improved golf performance and the intensity of the participant's experience of flow during real competitions.

Practical Assessment Data

After finishing each tournament, the participant responded to the practical assessment

questionnaire. This helped the researcher examine the internal experience of the player during tournament golf.

The participant indicated that after the intervention he felt "more calm"; he had fewer negative conscious thoughts and reported the intervention "stopped him thinking about the consequences of his shots" and "his overall score". He also informed the researcher he was able to stay in the present: "I was more focused on what I had to do next and it made me think one shot at a time …my concentration was also really good today nothing seemed to bother me… I was completely focused on what I had to do".

The participant also noticed he had become "more rationale about playing the game" and was "able to play with no fear". At the same time he revealed during the intervention phase he "thought more about making birdies" and "played more aggressive". He also declared he felt more comfortable: "I feel, for the first time, I belong on this tour".

Interestingly, difficult and stressful moments during the tournament triggered images of his "favourite hole" on his "favourite golf course". "Bad shots" also made him think about peak experiences from the past: "when I get into trouble, or hit bad shots, I don't know what you did, but it triggers great moments I have experienced in the past, like winning or my favourite hole on my home course".

The participant also indicated that intervention made him have more fun and experience feelings of confidence: "I feel I can beat anyone in the tournament. I feel really great out there…. It was one of the first times I had fun".

Perhaps the strangest finding was the participants report about the change in his perceptions and feelings of control: "I [stand over the ball, about to] putt and I get the feeling the ball is going in before I hit it… when I get these thoughts the ball always goes in…it is like I know what is going to happen next". He also explained on some occasions he felt detached or dissociated from his swing: "I sometimes feel I am not really swinging the club out there… it is almost like I am watching myself".

Finally, it should be noted the social validation questionnaire revealed that the participant was extremely satisfied with the results of the intervention and recognized that the intervention had improved his performance and prize money. Indeed, just three weeks after the introduction of the intervention the participant won his first European Seniors event.

Discussion

The present study demonstrated that a hypnosis intervention may have a positive effect on the performance and flow experiences of an elite Senior European Tour Golfer. The results are consistent with previous research that showed Pates and Maynards (2000) intervention strategy improved the performance and intensity of flow states in elite athletic populations (see Lindsay et al., 2005). The findings are clearly relevant to sport psychology practitioners because they suggest hypnotic training may increase personal control over flow and the performances of elite athletes. This discovery supports the work of Unestahl (1983, 1986) who explicitly indicated that in elite athletes' level of performance, positive emotions like flow states could be initiated through hypnosis techniques. Additionally, the results support the work of Cohn (1991) and Pates and his colleagues who indicated that improved performances can be achieved with techniques designed to facilitate the flow experience (Pates et al., 2002; Pates & Maynard, 2000; Pates et al., 2001).

The qualitative data also revealed some interesting findings. First, the data show that hypnosis may increase positive emotions such as confidence and fun. Second, it also appeared

hypnosis elevates the feeling of mental relaxation resulting in feelings of calm. Third, the intervention appeared to improve the players' ability to focus his attention on task relevant information and help the player cope with distractions. Fourth, the intervention appeared to augment positive thinking by suppressing cognitions such as judging, monitoring, and censoring, and fifth, the technique seemed to alter the golfer's perceptions and feelings of control.

Taken together, these findings are consistent with the outcomes of a number of clinical experiments (e.g., Damaser, Shor, & Orne, 1963; Wadden & Anderton, 1982; Kirsch, 1994; Crawford, Clarke & Kitner-Triolo, 1996) wherein hypnosis positively controlled emotions, thoughts, feelings and perceptions.

The results appear to support a hypothesis that hypnosis is a dynamic cerebral process that activates a number of cognitive mechanisms important for athletic performance. Unfortunately, the mechanism by which hypnotic interventions increases performance and the experience of flow is not known. However, it is possible that hypnosis facilitates a shift from an analytical to a holistic style of thinking, which gives access to processes that are important for athletic performance (Crawford & Gruzelier, 1992). Some support for this conjecture comes from electrocortical research that utilises an electroencephalogram (EEG) as a major method of studying the brain by detecting changes in electrical charges in its different parts. More specifically, EEG measures brain wave patterns of activity, namely, delta, beta, theta, and alpha waves. Interestingly, Graffin, Ray and Lundy (1995) found that when hypnotizable subjects were given the suggestion to eliminate pain, theta activity shifted hemispheric dominance from the left to the right anterior temporal region. The Crawford, Clarke and Kitner-Triolo, (1996) investigation of high and low hypnotizable subjects also showed that highly hypnotizable persons had significantly greater hemispheric alpha, theta, and beta activity in the right parietal region, than those who scored low.

Furthermore, the literature indicates that hypnosis generates more theta power resulting in greater feelings of pleasure (Stenberg, 1992) and improved attention (Crawford, *et al*., 1996). Such evidence suggests that hypnosis may assist purposeful hemispheric shifts to a desired state ideal for performance. That is, hypnotic training may increase personal control over flow states, which may in turn enhance performance. Although EEG is the most popular brain imaging technique used in hypnosis research, new techniques such as Functional Magnetic Resonance Imagery (fMRI) will surely add to our understanding of how hypnosis effects the mechanisms involved in athletic performance and phenomenological experiences such as flow.

A clear strength to this study is it's ecologically validity; rarely has an elite golfer using a hypnosis intervention been studied during professional golf tournaments. Another important aspect of the present study was that the single-subject design enabled the experimenter to be more confident that the change in flow and the performance scores were produced by the intervention and not some other uncontrollable variable. Indeed, the demonstration of a performance and flow effect when the intervention was introduced, gave a very clear demonstration that the intervention had some degree of external validity (Kazdin, 1992).

The possibility remains, of course, that the positive results are an artifact of both participant and experimenter bias. Indeed, neither were blind to the outcome thus, experimenter expectations or the demand characteristics of the experiment may have influenced the results (Kazdin, 1992). There may also have been either a Hawthorne or Rosenthal effect (Rosenthal & Rosnow, 2008). Scrutiny of performer in a

single-subject experimental design might heighten these effects. However, Drew (1976) observed, these effects tend to decline as the participants become acclimatized to being studied, so the extended length of the single-subject study could aid in controlling this effect.

The results of the study indicate that a hypnosis intervention may be an effective way of preparing professional golfers for significant competitions. Based on these findings the researcher has a number of suggestions for the sport psychology community. First, attitudes and opinions about hypnosis need to be changed within the applied sports psychology community. Second, graduate programs in sports psychology should be required to provide core foundational coursework in hypnosis. Third, scientific and professional societies should provide training for individuals in the use of hypnosis in sport.

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