Using Hypnosis to Enhance Self-Efficacy in Sport Performers

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High levels of self-efficacy have been documented to be associated with optimal levels of sport performance. One technique, which has the potential to foster increased self-efficacy, is hypnosis. Hypnosis is based upon the power of suggestion and, while often shrouded in myth and controversy, has been used in a number of domains including medicine, dentistry, and psychotherapy. In contrast, sport psychology is one domain where the use of hypnosis has yet to be fully explored. The aim of this review is to add to the extant literature and delineate how hypnosis potentially can enhance self-efficacy. By drawing on neodissociation and nonstate theories of hypnosis, a combined theoretical basis is established to explain how hypnosis may be used to influence sport performers’ sources of self-efficacy information. Furthermore, the review examines these theoretical postulations by presenting contemporary research evidence exploring the effects of hypnosis on sport performers’ self-efficacy. The review concludes with future research directions and suggestions for sport psychologists considering the use of hypnosis within their practice.

Keywords: neodissociation theory; self-efficacy; hypnosis; mental skills; sport; performance

Self-efficacy is one of the most important psychological variables associated with levels of sport performance (see Feltz, Short, & Sullivan, 2008). Because of the importance of self-efficacy, a variety of mental skills and techniques are used by sport psychologists to help athletes regulate self-efficacy levels (Short & Ross-Stewart, 2009; Williams, Zinsser, & Bunker, 2010). One technique overlooked in this regard is hypnosis.

Preliminary evidence exists supporting the use of hypnosis in the domains of medicine, dentistry, and psychotherapy (Alladin & Alibhai, 2007; Heap, Alden, April 2013).
Brown, et al., 2001; Kuttner, 1989; Schoenberger, 2000; Wain, 1980; Wark, 2008). For example, hypnosis has been reported to relieve acute and chronic pain (e.g., Blankfield, 1991; Genuis, 1995) and has been used, in some instances, as an alternative to anesthetic in open-heart surgery and dental extractions (Heap & Aravind, 2002). Further, in psychotherapy, there are data suggesting hypnosis as a potential technique for the treatment of anxiety disorders, self-esteem issues, phobias, obesity, smoking, and psychosomatic issues including asthma, skin disorders, tension headaches and migraines, and gastrointestinal complaints (e.g., Baker, 1987; Braun & Horevitz, 1986; Brown & Fromm, 1987; Collison, 1980, Crasilneck, 1990; Hawkins, 2006; Horowitz, 1970). In addition, the amount and breadth of sport psychology literature demonstrating support for the use of hypnosis is scant (Stegner & Morgan, 2010). In sport, hypnosis research consists of a limited and disparate range of studies, typically with a lack of systematic research efforts. However, research has examined the efficacy of hypnosis for increasing flow and peak performance (e.g., Pates, Cummings, & Maynard, 2002), enhancing mental imagery (Liggett, 2000a), reducing precompetition anxiety (Newmark & Bogacki, 2005), influencing the perception of effort and physiological responses (at rest and during treadmill running exercise; e.g., Morgan, Raven, Drinkwater, & Horvath, 1973), and increasing regional cerebral blood flow (rCBF; e.g., Williamson, McColl, Mathews, Mitchell, Raven, & Morgan, 2001). Until recently, the viability of hypnosis as a technique for enhancing sport performers’ self-efficacy has not been explored. This review adds to the extant literature by drawing upon theory and contemporary research to delineate how hypnosis may enhance sport performers’ self-efficacy. Accordingly, the review is organized into six sections: (1) we briefly discuss the importance of self-efficacy in relation to sport performance and outline the determinants and consequences of self-efficacy; (2) we define hypnosis and describe the use and influence of suggestion(s); (3) we draw upon pertinent hypnosis theories to explain hypnotic functioning and hypnotic phenomena; (4) we use Bandura’s (1997) model of self-efficacy to postulate how hypnosis can influence sources of efficacy information and review current research which has explored the effects of hypnosis on self-efficacy using idiographic and nomothetic approaches; (5) we outline directions for future research; and (6) we present suggestions for practitioners considering the use hypnosis in sport in relation to sport performers’ self-efficacy.

**Applying Self-Efficacy Theory to Sport**

Self-efficacy beliefs are considered to be one of the most influential psychological constructs mediating achievement in sport (Feltz et al., 2008; Moritz, Feltz, Fahrbach, & Mack, 2000; Treasure, Monson, & Lox, 1996). Bandura (1997) defined self-efficacy as “a belief in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3). Self-efficacy, agency, and personal control are critical components of what Bandura refers to as social cognitive theory (SCT).

Self-efficacy levels are proposed to impact performance by determining levels of motivation, which will be reflected in the challenges individuals take (Bandura, 1997). For example, research supports the notion that athletes will choose to
undertake physical challenges and set goals that they believe they can master and hence will avoid those that they consider exceed their capabilities (e.g., Feltz & Albrecht, 1986). Those with higher perceptions of self-efficacy will choose more challenging goals than those with lower levels of self-efficacy (Locke, Frederick, Lee, & Bobko, 1984). The strength of self-efficacy has been suggested to influence the amount of effort athletes will expend along with their levels of perseverance (Bandura, 1997). Self-efficacy judgments have been shown to influence certain thought patterns (e.g., goal intentions, worries, causal attributions) and emotional reactions (e.g., pride, shame, happiness, sadness) that also influence motivation. According to Bandura (1997), persons exhibiting high self-efficacy levels typically work harder, persist in the task longer, and achieve at a higher level above persons who doubt their capabilities.

Self-efficacy judgments, while predominately influenced by behavioral history (e.g., performance outcomes), are also a product of a complex process of self-appraisal and self-persuasion that relies upon cognitive processing of diverse sources of efficacy information (Bandura, 1997). Sources of self-efficacy information presented in hierarchical order include performance accomplishments (e.g., mastery experiences), vicarious experiences (e.g., watching successful people), persuasory information (e.g., self-talk), and physiological states (e.g., somatic feelings; Bandura, 1986). Both imagined experiences (e.g., positive imagery) and emotional states (e.g., a fear response) also may contribute as additional sources of self-efficacy information (Maddux, 1995; Schunk, 1995).

To date, some evidence exists supporting various psychological strategies (including modeling, feedback, imagery, and self-talk) bring about positive changes in athletes’ self-efficacy beliefs (see Short & Ross-Stewart, 2009; Williams et al., 2010). Typically, these strategies are suggested to be effective by influencing one or more sources of self-efficacy information, which in turn influence expectations and then behavior. To illustrate, observing competent models successfully perform actions or the self-modeling of actions can convey information to observers about the sequence of actions one could use to succeed, and thus can influence self-efficacy (e.g., Bandura, 1997; Clark & Ste-Marie, 2007; Dowrick, 1999; Schunk, 1995). Research also has examined the impact of feedback on self-efficacy (Bandura, 1986; Gernigon & Delloye, 2003). For example, Escarti and Guzman (1999) investigated the effect of feedback on self-efficacy, performance, and task choice, and the mediating effects of self-efficacy in the feedback-performance and task choice relationships. Through the use of manipulated feedback and estimates of self-efficacy relative to an athletic task (i.e., hurdling), it was concluded that performance feedback was significantly related to self-efficacy, performance, and task choice. Self-efficacy also can be maintained via images of successful performance (Bandura, 1997). Therefore, the use of mastery-orientated (i.e., motivational general-mastery, MG-M: Martin, Moritz, & Hall, 1999) imagery focusing upon images of competence and success has been found to elicit a positive relationship between imagery use, self-efficacy, and performance (e.g., Callow, Hardy, & Hall, 2001; Jones, Mace, Bray, MacRae, & Stockbridge, 2002). Finally, there is some research evidence demonstrating preliminary support for self-talk (i.e., verbal persuasion) on efficacy expectations (e.g., Hanton & Jones, 1999; Thelwell & Greenlees, 2003). In sum, self-efficacy is an important psychological factor associated with sport performance, and various strategies commonly used in sport psychology have
been applied and investigated in relation to fostering positive changes in athletes’ efficacy beliefs. One technique that has potential but has typically been overlooked in this context is hypnosis.

**Understanding Hypnosis: Definitions and Suggestion**

The term *hypnosis* is shrouded in misconception, myth, and apprehension for many individuals (Heap et al., 2001). Typically, views about hypnosis are built around entertainment stage shows. These shows highlight hypnosis to be a controlling technique, where participants are made to engage in strange behaviors and experiences in an immediate and flamboyant manner (Heap, 2000). However, hypnosis is more commonly used as a therapeutic procedure in which alterations in thoughts, perceptions, feelings, behaviors, and memory can theoretically be induced through suggestion. Successful hypnosis is associated with a situation(s) in which suggestions are more readily accepted and acted upon by the involved participants (Hammond, 1990; Liggett, 2000b). It is a process that involves an interaction between one person (e.g., the hypnotherapist) and people who agree to be hypnotized (e.g., the participants). Through this interaction, the practitioner influences participants by prompting them to focus on ideas, thoughts, and images that intend to evoke desired effects and facilitate long-term behavior change (Heap et al., 2001). The hypnotic state (influenced via suggestion) usually is characterized by intense concentration, extreme relaxation, and high suggestibility (Heap & Aravind, 2002).

In sum, hypnosis may be considered as “an induced temporary condition of being, a state, that differs mentally and physiologically from a person’s normal state of being” (Weitzenhoffer, 2000; p. 221), which is characterized by the “the uncritical acceptance of a suggestion” (Ulett & Peterson, 1965; p. 13), and influenced by “. . . procedures wherein changes in sensations, perceptions, thoughts, feelings, or behaviors are suggested” (Kirsch & Lynn, 1995; p. 846).

Suggestion is an important facet of hypnosis and refers to the issuing of verbal statements by the hypnotherapist to a participant to bring about long-term changes in behavior patterns (Hammond, 1990). Suggestion can be operationally defined as:

“A communication, conveyed verbally by the hypnotist, that directs the subject’s imagination in such a way as to elicit intended alterations in sensations, perceptions, feelings, thoughts and behaviour” (Heap & Aravind, 2002; p. 17)

Suggestions theoretically can be used to bring about a number of effects during hypnosis. These may include relaxation, ideomotor behaviors (e.g., arm levitation), ideosensory behaviors (e.g., analgesia), amnesia, regression, posthypnotic suggestions, and hallucinatory behaviors (Hawkins, 2006; Wagstaff, 1991). Posthypnotic suggestions are generally considered to be the “therapy,” whereby desired behaviors (postsession) and thoughts are presented via suggestions to facilitate change or gain a response sometime after the initial presentation during hypnosis (Heap & Aravind, 2002). For example, posthypnotic suggestions may be presented to help an archer feel more composed, confident, and calm during training and competitive situations. For the purposes of the present review, we postulate that hypnosis is a state that is induced (via relaxation) and comprises the use of suggestion(s) to
bring about changes in thoughts, perceptions, and behavior in a sport setting. It is the use and influence of suggestion(s) during hypnosis that make hypnosis distinctive from imagery and relaxation-based psychological strategies (Armatas, 2009).

**Explaining Hypnotic Functioning: State and Nonstate Theories**

The debate regarding hypnotic functioning (i.e., what happens to a person during hypnosis) is long-running (see Kallio & Revonsuo, 2003). Generally, theorists fall into one of two camps: state or nonstate. From a state perspective, hypnotic phenomena are viewed as consequences of trance states (Kirsch & Lynn, 1995) and altered or divided consciousness (e.g., special processes; Hilgard, 1977); a nonstate perspective takes a sociocognitive and behavioral perspective of hypnotic responding (Spanos, 1991; Wagstaff, David, Kirsch, & Lynn, 2010). The following sections explore these two major perspectives.

**Special-Process Theories: Neodissociation Theory**

A consistent failure to identify markers of presumed altered or trance states provided the basis for special process theories (e.g., neodissociation theory; Hilgard, 1977), where the concept of ‘dissociation’ is used to explain hypnotic functioning (see Sadler & Woody, 2010). Such theories are based on Prince’s (1929) classical dissociation theory that proposes two tasks can achieve a state or condition of functional independence when one task is performed subconsciously. When functional independence is achieved (i.e., dissociation), the performance of the two tasks (one subconsciously) ought to result in less interference than when both are performed consciously. In dissociation theories, easier access to the unconscious, a shift toward primary process thinking, greater ego receptivity, and regression of the ego are defining characteristics of the special process of hypnosis (Fromm, 1992; Nash, 1991). Theories of dissociation are grounded on the assumption that behavior is organized as a hierarchical series of subsystems of control that carry out habitual action sequences (Hilgard, 1986). These subsystems are governed by a central control structure referred to as the executive ego. The functions of the executive ego are to initiate action sequences (i.e., its output function) and monitor their consequences (i.e., an input function). The executive ego also monitors input from external sources that are independent of activated action consequences. Once activated, cognitive subsystems carry out habitual action sequences with limited involvement of the executive ego, for example, someone arriving at a habitual destination without remembering the process of navigation (Kirsch & Lynn, 1998).

Hilgard (1977) revived interest in the notion of dissociation and its relevance to hypnotic responding with neodissociation theory (Hilgard, 1979, 1991, 1992, 1994), in which he contended that dissociations can be partial and the act of dissociating requires attentional effort, leading to increased task interference. The theory’s major premise is to explain hypnosis and related phenomenon through the process of dissociation rather than the concept of the hypnotic trance (Kallio & Revonsuo, 2003). For example, one may cycle to work while focused on anything but the actual riding of bike, and then suddenly arrive at the destination with
little recall of the ride. It is this process of dissociation that is suggested to explain hypnotic responding and the associated hypnotic phenomena in neodissociation theory. Dissociation in the context of hypnosis has been defined “... as a division of consciousness in which affective effort and planning are carried out without awareness” (Hilgard, 1977, p. 2).

Hilgard’s (1977, 1991, 1994) neodissociation model (see Figure 1) of hypnosis is based upon three assumptions. First, there is a central control system (executive ego) that performs planning and monitoring functions (e.g., decision making). Second, beneath the control system there are relatively autonomous subordinate cognitive-behavioral systems (e.g., movement control, perception, and memory). One of these is a control substructure for an ordinary movement, such as lifting or bending an arm. In neodissociation theory, responses to ideomotor suggestions may occur because the person making the suggestions has direct access to the participants’ cognitive and behavioral substructures; thus, it is the central control structure or the executive ego that must move or inhibit any movement in the arm. Although the movement or any inhibition is an intentional act, the participant experiences it as involuntary because it is controlled by a part of the ego that has been separated from awareness. The second substructure displayed in Figure 1 is a control structure for pain perception. It has been speculated that suggested analgesia (i.e., suggestions relating to the inability to feel pain) might be accomplished by the voluntary redirection of attention (Hilgard, 1977). For example, the important feature of dissociative analgesia is not whether a participant is aware of intentionally reducing pain, but that the pain is perceived only by the dissociated part of the ego. Similarly, during suggested amnesia, output from a memory substructure may only be received by the dissociated part of the executive ego (Kirsch & Lynn, 1998). Third, the subsystems of control are arranged hierarchically.

In a normal waking state, the two control systems work in harmony with each other; however, during hypnosis the central control system and the cognitive-behavioral systems are dissociated from one and other. Hypnotic suggestions (e.g., feeling confident, focused, positive, recalling a successful past performance) are believed to act upon the central-control structure, causing it to create a communication or amnesic barrier that separates a segment of itself from conscious awareness (Hilgard, 1994). Hypnotic suggestions are also proposed to modify the normal hierarchical relationship among the various systems and subsystems of central cognitive control, resulting in functional changes (Hilgard, 1994). To illustrate, although most executive functions recede during hypnosis, the monitoring and observing functions remain active but lack normal criticality (Kirsch & Lynn, 1995). This dissociation in cognitive functioning in conjunction with the existence of a communication or amnesia-like barrier between the dissociated parts explains the experience of involuntariness or automaticity that accompanies many hypnotic responses.

The most direct empirical evidence supporting neodissociation theory relates to the concept of the hidden observer: Hilgard (1977, 1979). This concept was introduced to describe phenomenon by which a person registers and stores information in memory, without the person being aware that the information has been processed (e.g., being able to ride a bike while thinking about a future holiday). In an classic pain study detailing the hidden observer effect, participants were required to keep their hands in a bucket of ice-cold water and rate the degree of pain experienced...
on a scale of 0–10 (Hilgard, Morgan, & Macdonald, 1975). Without suggestions of analgesia, the ratings given were more toward the upper end of the scale. In response to suggestions of analgesia, these ratings were down toward the lower end of the scale. In accordance with neodissociation theory, the experimenter then suggested that there is an ‘unhypnotized’ part of the person that is still experiencing the pain in the usual manner. This hidden observer was then asked to rate the
pain experienced on the 0–10 scale in writing, using the free hand. Typically, these ratings corresponded to the pain ratings given without suggestions of analgesia during hypnosis. In Hilgard’s model, the hidden observer of consciousness is there all along, experiencing pain despite analgesic suggestions (see Figure 1). It is for this reason that the hidden observer is open to communication through hidden observer suggestions.

The phenomenon of the hidden observer and the separation of the central control structure into two insulated compartments are illustrated in part (b) of Figure 1. Part (a) of the figure shows the normal coordinated relationship between the central control structure and the subordinate cognitive-behavioral systems of movement, pain perception, and memory. The central control system is very aware of both input and output to the subcontrol systems in a normal waking state and the two are in perfect coordinated harmony. Part (b) of Figure 1 highlights the phenomenon of hypnosis as explained by neodissociation theory. In response to a suggestion, the subconscious part of the control structure attenuates to the given suggestion (e.g., you will have more belief in your ability when standing on the start line) without the conscious part of the central control structure’s knowledge (Hilgard, 1994). To illustrate this, even though an athlete does not consciously hear the presented suggestions about having more self-belief, they are aware of them via the hidden observer. Therefore, the unconscious part of the central control system is able to maintain contact with the subordinate control system for memory, while the conscious part is not (except for the hidden observer). As illustrated in Figure 1, hypnotic suggestions are proposed to act upon the central-control structure (or executive ego) causing it to create a communication or amnesic barrier that separates for use in conscious awareness (Hilgard, 1994).

Neodissociation theory has a number of strengths in relation to explaining hypnotic functioning (Sadler & Woody, 2010). First, the theory explains a variety of suggestive phenomena (e.g., analgesia, amnesia, positive and negative hallucinations, ideomotor and challenge suggestions) via the same underlying mechanism of dissociation (Kirsch & Lynn, 1998). Second, the theory helps to explain self-hypnosis as readily as it explains hetero-hypnosis (Hilgard, 1986). For example, there is nothing in the theory that necessitates an external hypnotherapist to instigate the division of consciousness. Third, data continue to support the existence of the hidden observer following hypnotic suggestions (Kihlstrom, 1998; Sadler & Woody, 2010). Despite initial support, typically evidence for neodissociation theory has been provided by the main proponent of the theory (i.e., Hilgard). To this end, the challenge for researchers is to demonstrate a strong empirical base for the theoretical postulations of neodissociation theory through further research.

Overall, neodissociation theory focuses principally on dissociation processes to explain hypnotic functioning. A contrasting theoretical perspective recognizes nonstate processes (e.g., the interpersonal relationship between hypnotherapists and participant) as plausible hypnosis explanations.

**Nonstate Theories**

In contrast to neodissociation theory, researchers also identify that social-psychological, social-cognitive, and cognitive-behavioral processes (e.g., hypnotic expectancy and preconceptions toward hypnosis, compliance, and attribution) may also
explain hypnotic responding (e.g., Barber, 1969; Kirsch & Lynn, 1995; Sarbin & Coe, 1972; Wagstaff, 1991, Wagstaff et al., 2010). For example, a hypnotherapist is able to create expectancy in participants that they will have certain experiences and responses. A theory of role-taking to explain hypnosis (Sarbin & Coe, 1972) is based on the sociological concept of role enactment and proposes that role-taking behaviors may help to explain hypnotic functioning (Weitzenhoffer, 2000). To illustrate, hypnosis is argued to be an active, goal directed role-enactment in which the participant and therapist are enacting roles appropriate to their conceptions of a developed script (Spanos, 1991). Therefore, hypnotic responses are not automatic occurrences but purposeful activities (Wagstaff et al., 2010).

There is some initial support for the view that preconceptions about hypnosis affect the way hypnosis is experienced and how the demand characteristics, rather than experimental variables may be the major determinant of hypnotic behavior (e.g., Barber, 1969; Spanos, 1982, 1986, 1991). Indeed, such postulations oppose dissociation theories, where the participant is not passively letting things happen, but actively making things happen.

Another view posits the social role or compliance to please the hypnotherapist as being the main reason for hypnotic phenomena (e.g., Wagstaff, 1981). For example, a ‘good’ hypnotic participant will be able to involve themselves in imaginative processes to enact the role demanded in the hypnotic context (e.g., laboratory or stage show). Hypnosis also may appear to be largely a matter of willing compliance to the implied demands by the hypnotherapist. Thus, the hypnotized person is not in an altered condition, they are responding to expectations and social obligations (Wagstaff, 1981). Research exploring the concept of compliance suggests that individuals who are highly hypnotizable may be complying or faking their experience to keep up the pretense of being a deeply hypnotized person (e.g., Coe & Sluis, 1989).

In sum, nonstate theories draw attention to the important role played in hypnosis by attitudes, motivations, beliefs, and expectancies; these factors are considered very disparate from dissociation. Although some researchers have contended nonstate explanations to lack necessary theoretical underpinning (Weitzenhoffer, 2000), social-cognitive factors have been reported to be important to the hypnosis process and in hypnotic responding (e.g., Hawkins, 2006). Therefore, a more balanced view of hypnotic functioning could recognize the importance of both dissociation and nonstate factors (Kirsch & Lynn, 1998; Sadler & Woody, 2010; Woody & Sadler, 1998).

A Combined Theoretical Approach and Working Definition

The hypnosis literature has typically viewed theoretical explanations in isolation rather than considering integration to more clearly explain hypnotic functioning and associated phenomena (Kallio & Revonsuo, 2003; Sadler & Woody, 2010). Therefore, in-line with contemporary views and based upon the authors’ experience of applying hypnosis to the sport domain, we recognize the value of dissociation and nonstate processes in explaining hypnotic behavior and present a combined theoretical approach.

We propose a combination of Hilgard’s (1977, 1994) neodissociation theory, and nonstate theories (e.g., Spanos, 1986, 1991; Wagstaff et al., 2010) because
Hypnosis and Sport Performers’ Self-Efficacy

In our recent program of research, we have suggested that hypnosis may enhance self-efficacy through the combined use of self-modeling, feedback, imagery, and self-talk techniques (see Barker & Jones, 2005, 2006, 2008; Barker, Jones, & Greenlees, 2010). For example, hypnosis may help to recreate a mental picture of a model or of a self-modeling experience. Further, it is possible that hypnosis could provide feedback to an athlete with hypnotic suggestions that replicate past performances. In addition, it is plausible that hypnotic suggestions could contain imagery-mastery information relative to successful performances. Finally, hypnosis...
also could possibly be used as a way of facilitating the content and delivery of athletes’ self-statements. Hypnosis therefore may have the potential to be a time-efficient and effective technique to increase self-efficacy in sport, as it can draw upon a range of techniques simultaneously, although these postulations remain open empirical questions.

We hypothesized that hypnosis will facilitate cognitions and behaviors that will influence all of the antecedent sources of self-efficacy information as presented in Bandura’s (1997) self-efficacy theory (see Barker et al., 2010). First, with regards to performance accomplishments, the use of suggestions regarding effective coping and the mastery of challenging situations may help a performer to recall past (and imagine future) mastery experiences, along with reappraising past poor performances. For example, MG-M imagery, which refers to effective coping and mastery of challenging situations, and motivational-specific (MS) imagery referring to setting and attaining specific training and performance goals, have been found to be effective at increasing self-efficacy (e.g., Callow et al., 2001; Jones et al., 2002). Second, hypnosis could be used to provide information on vicarious experiences. Moreover, an athlete could be presented with suggestions that relate to the successful performance or confident behaviors of a teammate. To illustrate, models provide vicarious experience information, and accordingly, they may impact and facilitate levels of self-efficacy (Bandura, 1997; Clark & Ste-Marie, 2007). Third, hypnosis could be used as an internal verbal persuasive technique, whereby suggestions could be given to give a performer encouragement and support, and hence possibly build self-efficacy about a particular task. For example, self-talk has been proposed to be positively related to an individual’s self-efficacy beliefs (Bandura, 1997). Finally, hypnosis could theoretically impact the physiological and emotional state (e.g., reduce arousal and increase relaxation) as well as improve the imaginal experience (i.e., the quality of the athlete’s imagery ability) of the athlete before and during performance, achieved via the use of suggestions to control and alter perceptions, emotions, and behavior. For example, motivational general-arousal imagery (MG-A), which involves focusing on the affective responses associated with sport performance, such as feeling excited before an important competition, has been associated with changes in athletes’ emotional responses (Martin et al., 1999).

According to neodissociation theory responses to suggestions focusing on mastery experiences, vicarious experiences, internal verbal persuasion, emotional and physiological arousal control, and the imaginal experience of the individual will cause the subconscious part of a sport performers’ central-control structure to attenuate to the given suggestion(s) without the conscious part of the central control structures’ knowledge (Hilgard, 1994). In turn, by communicating with the subconscious part of the mind, long-term behaviors and cognitions may be impacted upon without the conscious part interfering. For example, athletes may respond positively to suggestion(s) and imagery during hypnosis (e.g., a greater acceptance of persuasory information, and a greater belief in images of future success) because the nonconscious part of the cognitive control structure responds to the given suggestion and image without engaging potentially critical conscious awareness (Hilgard, 1986). In addition to suggestions facilitating dissociation, we posited by drawing on nonstate theories that hypnotic suggestions may also be effective due to positive expectations, beliefs, attitudes held by participants, and the interpersonal nature of hypnosis (Wagstaff et al., 2010). Overall, we proposed that
during hypnosis, athletes may be provided with important self-efficacy information (via hypnotic suggestions) that enhances self-efficacy beliefs, and associated athletic performance.

To explore our predictions, we have undertaken a line of research using both idiographic and nomothetic approaches and the use of ego-strengthening posthypnotic suggestions. Ego-strengthening, popularized by John Hartland (1966, 1971), has been suggested to facilitate self-confidence and self-efficacy in clinical hypnosis. The concept of ego-strengthening revolves around helping participants to enhance feelings of self-confidence, self-worth, and to minimize anxiety and worrying. The essence of this approach is to repeat suggestions of confidence and belief over and over so that the suggestions take hold in the person’s subconscious mind and exert an automatic influence on feelings, thoughts, and behavior (Hammond, 1990). Typically, throughout our research we have used the original ‘authoritarian’ routine from Hartland (1966, 1971) to increase hypnotic acclimatization for participants. Afterward, this original routine has been amended to make it more sport-specific, and therefore more meaningful to participants. Scripts have included suggestions relating to previous sport experiences, sport-specific terms, reference to practice and competition settings, and the use of individual self-statements. The task-specific posthypnotic suggestions that were added to Hartland’s original script were done following recommendations made by Hammond (1990). To illustrate, suggestions were included if they were appropriate to the context (e.g., competition scenario), valued by or acceptable to the participants (e.g., feeling more self-confident), and demonstrable within the participant’s repertoire or potentialities (e.g., performing successfully). For example, combining mastery experiences into ego-strengthening suggestions has been observed to promote positive ego-strengthening changes (e.g., Gardner, 1976). Overall, the posthypnotic suggestions used throughout our research have focused on elevating feelings of self-efficacy, improving sport performance, inducing feelings of relaxation, focused attention, effort, persistence, skill development, and decreased anxiety.

To date, our research has provided preliminary support for our theoretical and empirical postulations regarding the effects of hypnosis on sport performers’ self-efficacy. First, Barker and Jones (2005) explored the effects of a hypnosis intervention on an elite judo athlete who reported a debilitating level of self-efficacy. Using a single-subject A-B design with a six-month follow-up phase, self-efficacy data were collected via a specifically designed questionnaire comprising seven-items relating to good judo performance from 35 judo training sessions. An intervention program (devised specifically for the study) including eight hypnosis sessions (three general ego-strengthening, three sport-specific ego-strengthening, and two self-hypnosis) was delivered to the client. A preperformance routine using self-hypnosis was developed which the client used before training and competition. Visual inspection of self-efficacy data across the study revealed a substantial improvement from pre- to postintervention phases; moreover, social validation data (Kazdin, 1982) from the client indicated that the hypnosis had been the main influence for the increase in her self-belief.

Second, Barker and Jones (2006) explored the effects of an intervention comprising hypnosis, technique refinement, and self-modeling on the self-efficacy of a male cricket leg-spin bowler. Using a single-subject A-B design, data were collected across 24 games (i.e., eight baseline, 16 postintervention including eight
collected seven months after the intervention). The multimodal intervention was comprised of three aspects. Aspect #1 focused on using hypnosis and self-hypnosis procedures. To this end, based on a similar procedure as used by Barker and Jones (2005), 10 hypnosis sessions in total were delivered including both general-and sport specific ego-strengthening suggestions and self-hypnosis. A preperformance routine was developed for the client to use the night before, and on the morning before each match. Aspect #2 was based around refining the bowler’s technique, focusing on the run-up, head position, and follow-through. Aspect #3 focused on self-modeling through the use of an edited videotape. Overall, the results revealed a statistically significant difference between pre- and postintervention self-efficacy levels, with this positive change being maintained in the long-term follow-up data. An increase in bowling performance was also noted across the postintervention phases.

Finally, Barker and Jones (2008) reported the effects of a hypnosis intervention on a professional soccer player who reported low self-efficacy and a negative mood state relative to his soccer performance. Using a single-subject A-B design, pre- and postintervention data were collected via a Soccer Self-Efficacy Questionnaire (SSEQ) that comprised 10-items relating to good soccer performance, a subjective Soccer Performance Measure (SPM), and the Positive and Negative Affect Schedule (PANAS; Watson, Clarke, & Tellegen, 1988). An intervention program consisting of eight hypnosis sessions was conducted. These sessions comprised the presentation of ego-strengthening suggestions. Both visual and statistical analysis revealed substantial increases in self-efficacy, positive affect, and soccer performance, as well as a substantial decrease in negative affect over the course of the intervention. Furthermore, social validation data indicated the client considered the intervention to have had a substantial effect upon the belief he had in his ability and as well as his mood state before soccer performance.

These three idiographic studies provide some preliminary evidence for the potential of hypnosis interventions in bringing about changes in self-efficacy, affect, and sport performance. To illustrate, postintervention data in all three studies demonstrated self-efficacy levels to have substantially increased and become more consistent in comparison with baseline. The studies also indicated hypnosis to be a potentially effective technique in differing modalities of delivery (e.g., client led, self-hypnosis and as part of a multimodal intervention).

While the three idiographic studies reveal hypnosis to be potentially effective in enhancing athletes’ self-efficacy, between-group designs and statistical evaluation of the results have traditionally been used to evaluate treatment and intervention techniques in psychological research (Bodner, 2006). Therefore, using a nomothetic approach Barker et al. (2010) evaluated the immediate and maintained effects of hypnosis on self-efficacy and soccer performance. A total of 59 collegiate soccer players were randomly allocated to either a hypnosis ($n = 30$) or video attention-control group ($n = 29$). A pretest-posttest design with an additional four-week follow-up was used. Self-efficacy was measured via a task-specific questionnaire comprised of 10 items relating to good performance on a soccer wall-volley task. The hypnotic intervention was comprised of three 45-min sessions using ego-strengthening suggestions. The control group watched edited videos of professional soccer games across three 45-min sessions. Results
indicated that, following the intervention, the hypnosis group were more self-efficacious and performed better on the soccer wall-volley task than the control group. These differences were also seen at the four-week follow-up stage. Social validation data supported the findings with the entire hypnosis group, indicating that the intervention had helped them to feeling more confident while performing the soccer task.

Future Research Directions

Our recent research provides some promising data regarding the effect of hypnosis in facilitating athletes’ self-efficacy beliefs and performance in a variety of sporting tasks and activities. However, the between-groups study did not evaluate soccer competitive performance per se, and so the possibility of hypnosis resulting in competitive performance outcomes remains an open empirical question. Data also offer some initial support to our postulations that hypnosis (comprising ego-strengthening suggestions) can potentially facilitate self-efficacy beliefs by influencing the antecedent sources of self-efficacy (i.e., performance accomplishment, vicarious experience, verbal persuasory, physiological and emotional state, and imaginal experience; Bandura, 1997). Future researchers should consider replication of our data and further exploration of our theoretical postulations.

While much research has been devoted to the study of self-efficacy beliefs in sport, SCT also postulates that attainments sought after by teams, develop through a shared sense of collective efficacy (Bandura, 1986, 2000). The constructs of self- and collective efficacy are proposed to share similar antecedents and consequences. That is, analogous to self-efficacy, collective efficacy is associated with tasks, level of effort, and persistence (Bandura, 1997). Identifying strategies that help facilitate a strong sense of collective efficacy among sports teams is necessary (Feltz et al., 2008). Therefore, hypnosis in-group settings may be expected to impact upon teams’ collective efficacy beliefs using similar mechanisms as postulated for self-efficacy. Despite this suggestion, to date no research has considered whether collective efficacy beliefs can be enhanced through the use of hypnosis.

A potential caveat of our data and an area for future researchers relates to the measuring or determining if participants were experiencing hypnosis. This is indeed a complex issue due principally to a lack of precise measures and markers. Throughout our research, hypnosis was determined by triangulating information from observing objective behavioral responses to suggestions by subjective participant feedback about feelings during hypnosis, and the assessment of hypnotic depth. While all of these markers have been contended to be useful in determining whether someone is in a hypnotic state (Hawkins, 2006; Heap & Aravind, 2002; Sapp & Evanhow, 1998), there are obvious limitations in terms of their accuracy and interpretation. It could be argued that psycho-physiological measures such as electroencephalogram (EEG) may have provided more objective and accurate indices of hypnosis. However, measurement issues, including limited electrode placement, and inadequate signal processing technologies have rendered the drawing of conclusions about psycho-physiological markers of hypnosis difficult and inconclusive (e.g., Graffin, Ray, & Lundy, 1995). Accurately measuring a hypnotic state is a contentious issue and will remain so until more valid and reliable measures
are obtained. Clearly, determining whether someone is hypnotized, although arduous, will provide pertinent stimulus for future researchers.

Finally, in this review, we presented a combined theoretical approach and working definition to help explain hypnotic functioning. We further challenge researchers to explore the major tenets and foundations of our approach. To illustrate, future researchers may wish to establish which processes (e.g., special-state or nonstate) have the most substantial effect on hypnotic functioning in the combined approach.

**Suggestions for Practitioners**

Some useful practical findings for coaches, athletes, and sport psychologists have been identified from our use of hypnosis in sport. First, our research and experience has provided some initial data supporting the potential use of both one-to-one and group based ego-strengthening hypnosis. Practitioners may therefore consider such approaches, dependent on the nature of their consultancy (i.e., working with one athlete or a small team sharing a similar performance related problem). Second, when using hypnosis, it is possible that sport psychologists will encounter negative views, experiences, and prejudice from those involved in sport. In such cases, it is recommended that education procedures be used to break these barriers down (see Table 1). Third, the use of the term hypnosis with athletes may create as many problems as it does intrigue. Practitioners also may consider using the term sparingly in situations where they are trying to gain entry into sports and there is skepticism toward sport psychology and mental skills. Fourth, case histories of any potential athlete for hypnosis should be collected and checks made for mental illness, medication, and the use of recreational drugs (Heap & Aravind, 2002). Individuals who reveal any of the above issues should be counseled regarding more appropriate interventions (Hawkins, 2006). Fifth, hypnosis requires a strong rapport between the practitioner and athlete to reduce client anxiety and facilitate overall treatment efficacy (Hammond, 1990). Therefore, time should be taken before hypnosis exposure to become accustomed with the athlete and their training and competition situations. Sixth, specific emphasis may be placed in allowing athletes to contribute to the content of the mental skills sessions and the hypnosis scripts. We have discovered that allowing athletes to have an active role in the content of future sessions greatly enhanced their overall motivation and adherence to the mental skills training program. Having their input in the development of the hypnosis scripts was seen as an integral part of facilitating rapport and the impact of the hypnotic suggestions. Hypnosis scripts containing athletes’ self-talk, sport-specific speak, and terms may be more likely to resonate with the athlete and bring about the desired changes rather than a script developed solely by the practitioner. Finally, from our experiences we suggest athletes consider the use of self-hypnosis to foster less reliance on hetero-hypnosis and autonomous use of the technique. Practitioners may monitor athletes’ use and progression of self-hypnosis closely and make changes to scripts and procedures where appropriate. In some situations, the use of self-hypnosis may be deemed inappropriate and removed due to individual characteristics (e.g., low imaginative skill and poor attentional focus) and thus hetero-hypnosis could be considered the primary strategy (Hawkins, 2006; Heap & Aravind, 2002).
Given the significant association between self-efficacy and sport performance research exploring effective techniques that facilitate such beliefs are worthy additions to the sport psychology literature. The aim of this review was to add to the extant literature and present theoretical postulations and preliminary empirical data indicating the potential of hypnosis as a strategy to influence athlete’s self-efficacy. To this end, data provide some initial promise for hypnosis as a potential strategy to bring about changes in self-efficacy and performance. Despite the current line of research, hypnosis still remains relatively under-researched in the sport domain and thus there is a continued need for future researchers to explore the efficacy of hypnosis upon other psychology performance variables such as concentration, emotions, and motivation. The intrigue of hypnosis and the pursuit of meaningful psychological gains in sport-related research and practice are ubiquitous, and much remains to be discovered about hypnosis and the most efficacious ways of facilitating psychological states associated with optimal sport performance.

References


