Inner experience during golf performance

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INNER EXPERIENCE DURING GOLF PERFORMANCE

by

Yani L. Dickens

Bachelor of Arts
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1999

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ABSTRACT

Inner Experience During Golf Performance

by

Yani L. Dickens

Dr. Russell T. Hurlburt, Examination Committee Chair
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Sport performance is widely believed to depend on internal processes that occur during performance. Studies examining these processes have relied on retrospective self-reports obtained long after performance, a method limited by athletes' abilities to compete and recall. Our study circumvented these problems by obtaining contemporaneous non-retrospective reports of inner experience using Descriptive Experience Sampling (DES). DES uses a device that emits a random beep via an earpiece. Participants record ongoing inner experience immediately after the beep in a notebook. Within 24 hours participants are interviewed about these momentary experiences. Five highly-skilled (handicaps of between 2 and 7) and five moderately-skilled (handicaps between 13 and 26) golfers competed in an experimental tournament. DES was used to examine inner experience during golf. Golf inner experiences consisted of golf-related content, mental preparation strategies, perceptual awareness, and inner speech most prominently. Unsymbolized thinking, sensory awareness, feeling, and speaking aloud were also present. Inner experience during golf was also found to be individually different. Golf-related content and mental preparation strategies may be positively related to performance.
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CHAPTER 1

INTRODUCTION

Sport Psychology Literature Review

That golf is a mental game is widely recognized but only partially understood. Conventional lore suggests that successful performance in sport is determined both by physical and mental factors; in golf, success is thought to be determined even more by mental processes than in other sports. As the prominent sport psychologist Bob Rotella (1995) puts it, "at least half the battle occurs inside the golfer's mind" (p. 11). Professional golfer Tom Kite speculates "the game is 80 percent or 90 percent mental" (Rotella, 1995, p. 15). The fundamental assumption of what it takes to be successful in golf is clear. As golfer Sam Snead puts it "Golf is a game played on a six inch course - the space between your ears!" (Kirshenbaum, Owens, & O'Connor, 1998, p. 271). Thus it is commonly held in sport in general and golf in particular that successful performance depends on mental processes.

The notion that successful performance depends on mental processes is pervasive throughout the field of sport psychology with one notable addendum: Sport psychology focuses on emotional (e.g. arousal and anxiety, stress and coping) as well as on mental processes. The presence of emotions in sport is exemplified by the cliché of the athlete who "chokes" under the pressure of a competitive situation due to excessive arousal and anxiety. Thus the regulation of internal processes including emotions (Hanin, 2000;
Hardy, 1996a; Lazarus, 2000; Meyers, Whelan, & Murphy, 1996) and cognitions (Hardy, 1996a; Hardy, Jones, & Gould, 1996; Meyers, Whelan, & Murphy, 1996; Williams & Leffingwell, 2002) is a need recognized by researchers and laypeople alike.

Our understanding of what it takes to be successful in athletic performance, and golf for that matter, is far from thorough. One reason for this is the fact that studies examining internal processes have strongly relied on methodologies with two main sources of potential error: (1) they use retrospective self-report obtained after performance; and (2) they rely on athletes’ abilities to compete and, simultaneously, to attend, process, encode, store, and later retrieve inner experiential phenomena. Competing effectively and simultaneously remembering aspects of inner experience is a difficult combined task. These potential sources of error coupled with the demands required by retrospective self-report about remote processes that occur in the midst of complex task performance call into question hundreds of sport psychology studies that suggest an understanding of internal processes and threaten the effectiveness of performance enhancement interventions. As Meyers and colleagues (1996) cautioned, “the failure to engage in assessment or the poor fit between assessment strategies and intervention raises serious concerns about this applied work” (p. 157).

Equally troubling is the fact that many basic scientific questions about the relationship between internal processes and sport performance remain unanswered largely because they are seldom directly and explicitly examined. For instance, what internal processes or inner experiences occur during golf? Are inner experiences during golf emotional, cognitive, motivational, sensory, perceptual, directed toward behavior, directed toward emotional regulation, directed toward others, directed toward self,
simple, complex, organized, disorganized, present, or absent? How consistent are inner experiences during golf? Do they vary within individuals? Do they vary across individuals? Are they related to external experiences? Are they independent of external experiences? Are they related to the individual’s behavior? Are inner experiences related to quality of performance? In those rare instances where these questions have been addressed, they have been examined deductively by quantitative approaches aimed at assembling support for pre-existing theories by using narrow measures of discrete phenomena assumed to exist during performance. Inductive qualitative explorations that suspend pre-existing theoretical assumptions have seldom been conducted on internal processes in natural performance environments.

Methods are available that largely circumvent the inherent limitations of retrospective self-report. These methods may provide answers to basic scientific questions about the relationship between internal processes and sport performance. One of these methods is Descriptive Experience Sampling (DES).

The current study seeks to provide preliminary answers to basic questions about inner experience in sport and to provide directions for further study in sport performance by circumventing many of the problems inherent within retrospective and theory-driven self-reports obtained well after performance. DES provides this by 1) obtaining contemporaneous non-retrospective reports of inner experience and 2) training participants extensively to attend to, process, encode, store, and later retrieve and report the phenomena of their inner experience. The current study thus proposed a direct approach to exploring internal processes during performance, consistent with the recommendations of Burton and Naylor (1997), which will subsequently be discussed.
The purpose of this study is to understand these processes more completely and to begin to address the aforementioned basic questions.

Prior to discussing the course of action used for this study, two topics will be addressed. First, the empirical basis for the existing assumptions in the field of sport psychology, such as that of the connection between particular internal processes and optimal performance, will be summarized with an emphasis on work conducted in golf. Next, we will summarize the rationale behind proposing a qualitative exploration of internal processes during sport performance using DES by describing methods that have been widely used to sample inner experience. Once these topics have been examined, we will describe the methods used in the current study to explore the internal processes that occur during golf performance.

*Internal Processes and Athletic Performance*

Qualitative and, most frequently, quantitative methods have been used to investigate the relationship between internal processes and athletic performance. Research has sought to understand the relationship between sport performance and cognitive processes such as self-talk, attentional focus, imagery, as well as self-confidence and self efficacy. Research has also examined the relationship between sport performance and emotional processes such as anxiety and arousal, stress and coping, anger and aggression, mood states, and additional emotions. In both cases, hardly any research has explored internal phenomena without relying on retrospective self-reports focusing entirely on expected phenomena. This may shape our sense of which inner experiences occur in sport, how frequently they occur, and how they influence performance. Thus existing research has assessed phenomena in sport indirectly, retrospectively, casually, and deductively, so
existing knowledge about these phenomena may be tenuous. To illustrate this, existing
research on cognitive and emotional processes in sport will be critically reviewed.
Research on emotion in sport will be reviewed first, followed by research on cognition in
sport, and finally recommendations for future research examining the internal processes
that occur during performance will be provided.

*Emotion & Sport Performance*

"Brad had begun to fear his driver.... In stressful situations, on narrow driving holes,
he tightened up and lost his rhythm. If he mishit a driver..., all the energy left his body”
(Rotella, 1995, pp. 133-134). As this depiction of a struggling professional golfer
illustrates, emotional phenomena have been thought to have considerable influence on
sport performance. Considerable empirical attention has been devoted to the relationship
between anxiety and/or arousal and sport performance; stress and coping have also been
examined by sport psychology researchers, as have anger and aggression, mood states,
and several additional emotions. These domains of emotional phenomena related to sport
performance will be reviewed with a general emphasis on major findings and specific
emphasis on findings in the sport of golf. It will become evident from this review that
almost no studies have been conducted that directly assessed emotional phenomena,
despite the existence of methods that can accomplish this. Instead, empirical
investigations of emotion in sport have generally avoided the direct assessment of
emotional phenomena in favor of casual retrospective self-report measures.
Anxiety & Arousal

Conventional wisdom and sport lore have posited two contradictory notions of anxiety and arousal. Excessive anxiety is believed to cause athletes to “choke” under pressure. The contrary is illustrated by the athlete or team whose overconfidence and minimal arousal allows the underdog to pull off an upset. Thus conventional speculations leave one with the notion that anxiety and arousal may be excessively low or high but debilitating either way.

Within the field of support psychology, empirical attempts have been made to understand the anxiety and arousal-performance relationship and to manage anxiety and arousal prior to and during performance. An optimal level of arousal is assumed to be one of the fundamental preconditions to successful athletic performance. Nonetheless, theoretical models of arousal have not consistently attained empirical support. Conceptual vagueness, complexity, and heterogeneity have plagued explanations of arousal. Although optimal levels of arousal have been posited, research findings have failed to support several explanations of arousal consistently (Whelan, Epkins, & Meyers, 1990).

Research on the anxiety and arousal-performance relationship has used several definitions for these constructs. Gould and Krane (1992) defined arousal as physiological and psychological activation which exist on a continuum from deep sleep to extreme excitement. The term anxiety was used to refer to the cognitive and emotional aspects of arousal (Gould & Krane, 1992). Hanin (2000) specified several subtypes of anxiety in sport performance. Cognitive anxiety was used to refer to negative thoughts about performance, whereas somatic anxiety included the bodily symptoms of autonomic
reactivity associated with nervousness. Anxiety has also been viewed along a social dimension. Vallerand and Blanchard (2000) suggested that emotions such as anxiety may involve *intrapersonal* and *interpersonal* consequences. Interpersonal consequences included emotional impact on thoughts (e.g., worry), motivations (e.g., approach or avoidance), health (e.g., immune system seems to mediate the stress and illness relationship), and sport performance (e.g., may depend on state anxiety level). Anxiety was seen as interpersonal, when it influences the relationship between two specific group members (e.g., an emotional display catches on). Thus in the context of a team, the individual may experience *interpersonal state anxiety*. Finally, Spielberger's state-trait conceptualization (see Spielberger & Diaz-Guerrero, 1986) was extended to performance anxiety to differentiate situational from characterological anxiety, respectively. Thus *competitive state anxiety* was used to refer to the specific state of anxiety in a given competition (Hardy, Jones, & Gould, 1996).

Zaichkowsky and Takenaka (1993) advocated the use of the term *intensity* as a multidimensional construct for the physiological, cognitive, and behavioral processes that perform an energizing function. Taylor and Wilson (2002) preferred the term *intensity* to avoid the pathological connotations of anxiety and the sexual connotations of arousal. There are two problems with this label. First, arousal and anxiety have been more commonly used. Second, intensity may potentially be confused with *severity*.

The most recent definitional trends in arousal and anxiety research are: 1) Researchers have more recently used *arousal* as a multidimensional construct that includes both psychological and physiological components (Gould & Udry, 1994; Gould & Krane, 1992) with either facilitative and debilitative connotations. 2) *Intensity* is a
recently recommended term that is nonetheless seldom used among researchers. Taylor & Wilson (2002) recommended that practitioners and researchers use the term intensity with athletes and coaches to avoid misunderstanding. When used by researchers, intensity has had connotations more similar to those of arousal than anxiety. 3) Anxiety related to performance has been seen as a multidimensional construct with several subtypes (e.g., state-trait) and manifestations (e.g., cognitive, somatic, performance, interpersonal) with debilitative connotations. Thus anxiety, arousal, and intensity have all been proposed as multidimensional constructs related to the emotion and energy level in sport performance. 4) Researchers have advocated better distinction among these constructs but have failed to provide consistent and mutually exclusive definitions. Hardy and colleagues (1996) defined arousal as “cognitive and physiological activity which takes place in response to some new input to the system” (p. 118). Anxiety was defined as “a meta-cognitive emotion” (p. 119). For instance Hardy and colleagues believed that “doubts about one’s ability to cope with a given stressor are likely to be reflected in feelings of anxiety” (p. 141). More simply, arousal was seen as a mental and bodily process, whereas anxiety was seen as a mental and emotional process. Both contain cognitive elements, but arousal was seen as more physiological whereas anxiety was seen as more emotional. Raglin & Hanin (2000) used a similar definitional strategy. Anxiety was used to refer to an emotional reaction to stress, whereas arousal was used with more physiological connotations.

Due to the conceptual similarity between arousal and intensity, only one term will be used in the present study. Because arousal was more traditionally and frequently used within the sport psychology literature, intensity will be abandoned in favor of using
arousal. Thus for the purposes of the present study, anxiety and arousal will be used as multidimensional constructs with physiological, cognitive, and emotional manifestations. The only difference that will be evident is that arousal will have a slightly greater physiological emphasis, whereas anxiety will have a slightly greater emotional emphasis, consistent with the work of others (Hardy et al., 1996; Raglin & Hanin, 2000).

Theories. Sport psychology has a rich theoretical tradition. In no area is this more evident than with the continual development and refinement of theories regarding the anxiety and arousal-performance relationship. Several theories and conceptual models have emerged to explain the relationship between arousal and athletic performance. Descriptive models include drive theory, the Yerkes-Dodson hypothesis, optimal zones of functioning, multiple dimensional anxiety theory, reversal theory, and catastrophe theory. Historically, the anxiety and arousal-performance relationship was evaluated by single physiological or self-report measures. More recently however, the relationship has been examined along multidimensional lines with multiple measures targeting state-trait anxiety, cognitive anxiety, somatic anxiety, and physiological arousal. Drive Theory, the Yerkes-Dodson hypothesis, the State-Trait perspective, Optimal Zones of Functioning Theory, Multidimensional Anxiety Theory, Catastrophe Theory, and Reversal Theory will be reviewed to discuss how arousal and anxiety have been studied in relation to sport performance. From this review, it will become evident that studies that have examined arousal and anxiety have relied on self-reported ratings of arousal and anxiety rather than samples of immediate inner experience. Since no studies could be found that have examined immediate inner experience during sport performance, little is known about the actual experience of anxiety and arousal during sport performance. Thus the existing
knowledge about the relationship between anxiety/arousal and performance will be reviewed.

*Drive Theory.* Drive theory (Hull, 1943; Spence & Spence, 1966) is one of the earlier and simplest approaches to the study of the relationship between arousal and performance. Drive theory hypothesized that the quality of performance increases along with increasing levels of arousal. This simple positive linear relationship was later contradicted by research findings. For instance, as arousal increases beyond a moderate level, quality of performance decreases (Robazza, Bortoli & Nougier, 1998). Drive theory has long since been rejected because of a lack supporting evidence (Raglin & Hanin, 2000) and its failure to account for the dynamics of arousal related to the performance of complex motor tasks (Gould & Krane, 1992).

*Yerkes-Dodson Hypothesis.* The Yerkes-Dodson hypothesis, sometimes referred to as the Yerkes-Dodson *law*, is the most widely recognized explanation of the arousal-performance relationship (Taylor & Wilson, 2002; Weinberg, 1990). Yerkes and Dodson hypothesized an inverted-U relationship between arousal and performance in 1908. At low levels of physiological arousal, performance typically suffers. As levels of arousal increase however, improved performance follows. This increase in the quality of performance begins to decline as arousal levels become exceedingly high. Oxedine (1970) applied the Yerkes-Dodson hypothesis to sport performance and suggested that the level of optimal arousal, although usually moderate, was different for different motor tasks (e.g., fine or gross). In the 1970s this relationship was extensively studied with initially supportive results. Several later failures to demonstrate its predictive validity however relegated the Yerkes-Dodson hypothesis to a well known historical artifact, and

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it is more typically used as a general descriptive model (Gould & Krane, 1992).
Exceptions to the model emerged as studies found that as arousal increases, performance
declines dramatically in an irreversible manner, where as the inverted-U hypothesis
suggests that simply decreasing arousal would improve performance. Further criticisms
of the Yerkes-Dodson hypothesis include the lack of support for its premise (Fazey &
Hardy, 1988; Gould & Krane, 1992), lack of support for Oxendine’s (1970) distinction
between different arousal levels for different tasks (Krane & Williams, 1994), and the
failure to take into account individual differences in coping with competitive stress
(Fazey & Hardy, 1988; Raglin & Hanin, 2000; Raglin & Turner, 1993; Taylor & Wilson,
2002). Thus, however logically appealing it may be, the Yerkes-Dodson hypothesis has
failed to receive consistent empirical support for its application to athletic performance
(Gould & Krane, 1992; Taylor & Wilson, 2002).

State-Trait Perspective. Spielberger applied a state-trait theory to anxiety, which has
been extended to arousal (Spielberger & Diaz-Guerrero, 1986). State anxiety refers to
transitory levels of arousal which vary across the contextual situations an individual
encounters. Trait anxiety is the predisposition for perceiving situations as threatening.
Thus anxiety can be described as both a mood-like state and a personality trait. Several
self-report anxiety inventories have been widely used in the study of arousal, including
the State-Trait Anxiety Inventory (STAI), the Sport Competition Anxiety Test (SCAT),
which measures trait anxiety, and the Competitive State Anxiety Inventory (CSAI),
which measures state anxiety (Gould & Krane, 1992).

Optimal Zones of Functioning Theory. The Soviet sport psychologist Yuri Hanin
posited the optimal zones of functioning theory in 1980. Based on Hanin’s observations
that regardless of sport, some athletes performed best at very low levels of anxiety and others at very high levels (Taylor & Wilson, 2002), this theory suggests that no single optimal level of state anxiety leads to optimal performance for all. Anxiety appeared to be a more important factor on the individual level than the group level (Raglin & Hanin, 2000). Hanin’s method uses observations of performance and assesses individual state anxiety using instruments such as the STAI and the CSAI (see Pons, Balaguer, & Garcia-Merita, 2001) to facilitate the identification of an individual zone of optimal functioning (IZOF).

According to Gould and Krane (1992), the high degree of individual variability in state anxiety scores commonly found in studies with different athletic subgroups makes it unlikely that a simple (e.g., moderate) universal level of arousal exists. In addition to differences among individuals within a sport for the same task, the level of arousal required for successful performance across tasks such as golf and football may be quite different. For instance, Boutcher and Zinsser (1993) found that both elite and beginning golfers exhibited significantly decelerated heart rate, a sign of physiological relaxation (Raglin & Hanin, 2000), during short and long putting performance, whereas elite golfers showed significantly more deceleration than beginning golfers. By contrast, Secunda, Blau, and McGuire (1986) found that aggressiveness in football, among other factors, predicted ability, which seems consistent with higher physiological arousal. Indeed, interventions aimed at elevating arousal have enhanced performance significantly more on strength tasks (Tynes & McFatter, 1987), endurance, and sprinting compared to tasks requiring more technical skill, timing, speed, and balance (Gould & Udry, 1994; Meyers et al., 1996).
In any event, IZOF theory suggests that individual differences should be taken into account and assessed prior to interventions that manage arousal (Raglin & Turner, 1993). The benefits of this model are evident by the process of establishing the IZOF using multiple sources of data from both recall and direct observational methods. Objective (e.g., golf scores) and subjective (e.g., satisfaction with score) measures of performance can also be used. In addition, Hanin’s method is widely used and has recently been improved. This approach was modified slightly by Pons and colleagues (2001) to improve accounting for individual differences by using a graphical method of establishing IZOFs with highly skilled (handicap under 8) junior golfers. Although the sample was small (N = 6), results indicated more golfers performed better using the graphical method of establishing IZOFs when compared to Hanin’s previous (direct and recall) methods.

Several studies have supported the optimal zones of functioning theory by showing that athletes have performed more effectively within respective pre-established IZOFs when compared with athletes whose arousal levels fall outside of the IZOF (Gould & Krane, 1992; Raglin & Turner, 1993). Nevertheless, the IZOF theory has been criticized for failing to explain the etiology of individually different levels of anxiety and arousal (Gould & Tuffey, 1996; Jones, 1995), for its obsolete narrow and one dimensional view of anxiety and arousal (Jones, 1995; Taylor & Wilson, 2002), for reliance on retrospective report (Taylor & Wilson, 2002), for significant results but small effect size (Russell & Cox, 2000), and for over-reliance on the STAI, which is not sport specific (Jones, 1995). Many of these issues have been addressed by using revised and sport specific anxiety measures (Jones, 1995) and by showing memory concerns related to
retrospective report may be exaggerated (Taylor & Wilson, 2002). Recent studies appear to reflect a broader view of the IZOF as it has been extended to additional emotional phenomena. Unfortunately, this extension has been extremely indirect. For instance, Ruiz and Hanin (2004) examined the use of symbolic metaphors used to prepare karate athletes for competition, which were similar to additional emotional phenomena (e.g., happiness, pride, relief, anger, anxiety, fright, sadness, and shame). Metaphors that reflected high readiness to perform were associated with best performance, whereas metaphors reflecting low readiness to perform lead to worst performance. Thus, evidence suggests that an individual optimal level of arousal, as measured by anxiety questionnaires, is plausibly related to optimal athletic performance, although these phenomena have been measured quite indirectly. The current study attempted to measure the actual inner experience of processes such as these more directly by interrupting participants during performance.

*Multidimensional Anxiety Theory.* Multidimensional anxiety theory emphasizes the importance of the physical and mental elements of anxiety. Davidson and Schwartz (1976) proposed two subcomponents of anxiety – cognitive and somatic anxiety. Cognitive anxiety is conceptualized as awareness of unpleasant feeling whereas somatic anxiety refers to physiological arousal. Somatic anxiety has been measured via biofeedback (e.g., heart rate, galvanic skin response, cortisol) and even by self-report, although the validity and reliability of the latter has been criticized because responses may be distorted by social desirability, demand characteristics, social and experimental expectations, reactivity (Hackfort & Schwenkmezger, 1989; Hackfort & Schwenkmezger, 1993; Raglin & Hanin, 2000). Cognitive anxiety is typically
characterized by negative concerns, inability to concentrate, and disrupted attention, whereas somatic anxiety includes directly assessed or perceived bodily symptoms of anxiety or perceived autonomic arousal (Krane & Williams, 1992). Thus excessive cognitive anxiety is thought to be distractive and therefore should interfere with performance. Martens, Burton, Vealey, Bump, and Smith (1982, 1990) applied the multidimensional theory to athletic performance by suggesting that cognitive and somatic anxiety were related to athletic performance. The multidimensional theory suggested that cognitive anxiety is negatively related to performance whereas somatic anxiety forms an inverted-U relationship with performance (Jones, 1995). One of outgrowth of this theory was the development of the Competitive State Anxiety Inventory-2 (CSAI-2) and its short form (Cox, Russell, & Robb, 1998). The CSAI-2 measures cognitive anxiety, perceived somatic anxiety, and state confidence with sport performance.

Research in the multidimensional tradition has supported several factors that may influence the cognitive-somatic anxiety and performance relationship. Competitive experience was associated with increased cognitive anxiety, and trait anxiety was correlated with increased somatic anxiety for wrestlers (Gould, Petlichkoff, & Weinberg, 1984). Examining these factors in golf, Krane and Williams (1986) found competitive trait anxiety predicted both cognitive and somatic anxiety, whereas how well an athlete performed in the past predicted somatic anxiety. Unfortunately, evidence of moderating variables has excessively relied on indirect measures, which extend even beyond limitations of self-report. For instance, cognitive and somatic anxiety was found to be greater for individual than team figure skaters and lower for those later in birth order (Martin & Hall, 1997). Birth order was taken as indirect evidence of differential parental
expectations and socialization processes for first born versus later born children, which might lead to differing anxiety levels. Results indicated that later born athletes had less cognitive and somatic anxiety in the team event relative to the individual event, but the interpretation that this is due different contextual developmental factors (e.g., parental expectations, socialization processes) seems to extend well beyond what was directly measured (birth order).

Studies examining the relative influence of cognitive and somatic anxiety on athletic performance have yielded extremely mixed results. One the one hand, studies have demonstrated that, compared to cognitive anxiety and confidence, somatic anxiety was a better predictor of athletic performance. For instance, Gould, Petlichkoff, Simons, and Vevera (1987) examined pistol-shooting performance and anxiety using the CSAI-2. Cognitive anxiety was unrelated to performance, confidence was negatively related to performance, and somatic anxiety was related to performance in a curvilinear (inverted-U) fashion. By contrast, Barnes, Sime, Dienstbier, and Plake (1986) found the opposite with male college swimmers; that is, cognitive anxiety was a significant performance predictor whereas somatic anxiety was not. Further mixed evidence was found as state confidence was the strongest predictor of female collegiate golf performance (Krane & Williams, 1987). On the other hand, a meta-analysis of 29 studies using the CSAI-2 by Craft, Magyar, and Becker, (2003) indicated weak support for the relationship among performance and the CSAI-2 subcomponents cognitive anxiety, somatic anxiety, and confidence. In addition, several studies failed to find any relationship between the CSAI-2 subcomponents and performance (Craft et al., 2003).
Krane, Williams, and Feltz (1992) administered the CSAI-2 to 100 female college golfers prior to first-round and prior to second-round competition at a golf tournament. The purpose of this study was to test a multidimensional theoretical model that suggested that competitive trait anxiety and precompetitive cognitive anxiety significantly influenced pre-first round state confidence. Results of a path analysis indicated, not surprisingly, that past performance was the best predictor of actual performance. However competitive trait anxiety and precompetitive cognitive anxiety influenced baseline state confidence. First round cognitive anxiety predicted pre-first round state confidence. In addition, first round state confidence predicted pre-second round cognitive and somatic anxiety, both of which in turn predicted pre-second round state confidence. Thus the authors suggested that reciprocal relationships were found between state-confidence and cognitive and somatic anxiety; however none of these processes influenced first-round performance expectations whereas past average score did. Performance expectations predicted cognitive anxiety, providing partial support for the multidimensional model.

In summary, the dynamics of anxiety and arousal during sport performance have been examined by studies from the multidimensional theory perspective. Although consistent empirical support for the multidimensional model has been lacking, a few studies have provided supportive findings for this theory (Gould & Krane, 1992; Krane & Williams, 1992), two of which used golfers (Krane & Williams, 1986; 1992). The continued used of the CSAI-2 and efforts to improve it may strengthen this theoretical model. Furthermore as Baron and Kenny (1986) noted, “most areas of psychology...treat phenomena that
have multiple causes" (p. 1176). As such, multidimensional models such as this one are logically appealing, albeit in need of much improvement.

Less optimistically speaking, multidimensional theory studies appear to be more invested in testing theoretical models by asking for ratings of bodily and cognitive anxiety before and after but never during performance. This is problematic for many reasons that will later be discussed. But a major problem arises from asking participants to report retrospectively about anxiety and arousal because this assumes that: 1) participants had an inner experience related to anxiety and arousal; 2) they were aware of it; 3) they encoded in their memory; and 4) they later retrieved it without problem despite the possibility that participating in sport performance and simultaneously remembering inner experience for future self-report is a difficult combined task. Rather than focusing on the actual experience of arousal and anxiety related to sport performance, these studies are subject to the limitations of retrospective self-report. To overcome these problems, the current study attempted to measure the actual inner experience of processes such as these by interrupting participants during performance.

*Catastrophe Theory.* Catastrophe theory is a multidimensional nonlinear approach to conceptualizing sport performance with roots in systems theory. This theory was applied to sport performance to account for apparently contradictory findings. For instance, one study found that performance improved in cognitively anxious individuals before competition when both somatic anxiety (e.g., reported) and physiological anxiety (e.g., directly measured) were low (Parfitt & Hardy, 1994). Several studies have shown mixed positive and negative effects with somewhat higher somatic and physiological arousal when cognitive anxiety was high (see Parfitt, Jones, & Hardy, 1990). Catastrophe theory
accounts for these findings by applying a nonlinear model that explains the dynamics of three factors: 1) physiological arousal, which can be measured directly instead of via self-report; 2) cognitive anxiety, which is measured via self-report; 3) and performance, which can be measured by objective observation (Hardy, 1996a; Hardy et al., 1996).

Cognitive anxiety is thought to mediate the relationship between physiological arousal and performance: 1) The Yerkes-Dodson relationship between physiological arousal and performance is thought to exist when cognitive anxiety is low. Thus a moderate level of arousal facilitates performance; 2) When cognitive anxiety and physiological arousal both reach a moderate point called the critical threshold, bifurcation point, or cusp, two opposite levels of performance are possible – optimally high or drastically low. At the bifurcation point, the path that performance takes is analogous to the pitchfork, which is determined by the exact level of physiological arousal (Hardy et al., 1996). As cognitive anxiety (or physiological arousal) surpasses this critical point, performance descends catastrophically. Once this point has been reached, “it can only be reversed by a considerable reduction in physiological arousal beyond the point where the original decrement in performance occurred” (Hardy et al., 1996, p. 152). This is not predicted by continuous theories, which suggest the immediate reversal of performance from positive to negative would occur with decreased cognitive anxiety and/or physiological arousal; 3) When physiological arousal is already high, a simple negative correlation between cognitive anxiety and performance is predicted to exist, indicating that cognitive anxiety interferes with performance; 4) Finally, when physiological arousal is low, a positive correlation is expected to occur between cognitive anxiety and performance (see Biddle, 1995; Hardy, et al., 1996).
Hardy (1996a) compared two slightly different multidimensional models, one without and one with self-confidence, to three similar versions of catastrophe theory in eight experienced golfers. Cognitive and somatic anxiety were measured using the CSAI-2, and physiological arousal was measured using heart rate during golf putting performance in a tournament. Using multiple regression, the proportion of variance in putting performance accounted for by the first respective multidimensional anxiety theory model was 5%, which was not statistically significant. When self-confidence was added to the second multidimensional model, 7% of the variance in performance was accounted for, which was significant. The three catastrophe models accounted for 57%, 57%, and 58% of the variance in performance, and self-confidence did not add to the proportion of variance accounted for. Confidence was found to be at least partially independent of cognitive anxiety. In any event, support was found for both models, and results strongly favored catastrophe models. In 2004, Hardy, Woodman, and Carrington found evidence supporting a moderating role for self-confidence in a catastrophe model of anxiety using male golfers. In a low self-confidence condition when somatic anxiety was low (i.e., “my body is relaxed”), cognitive anxiety (i.e., “worry”) was negatively related to performance as predicted. In a high self-confidence condition, an interaction resulted between cognitive and somatic anxiety – cognitive anxiety (i.e., “worry”) was more positively associated with performance when somatic anxiety was high than when low. The worst performance, however, resulted from the high self-confidence, high cognitive, and low somatic anxiety condition (i.e., “confident and worried” but “body is relaxed”), an unpredicted finding logically difficult to interpret. Nonetheless, emerging evidence suggests self-confidence may moderate the anxiety and performance relationship.
A critical response to Hardy’s anxiety theory and the use of the CSAI-2 in general was presented by Burton and Naylor (1997), who suggested that current theories and related measures confound anxiety with “positive affective states, such as challenge, excitement, or self-confidence” and may have mislabeled these phenomena as facilitative anxiety. In fact, Hale and Whitehouse (1998) attempted to induce either “challenge” (i.e., positive appraisal) or “pressure” (i.e., negative appraisal) reactions in soccer players via a combined relaxation video and imagery audiotape intervention. The challenge condition produced significantly more self-confidence and significantly less somatic anxiety. In addition, Burton and Naylor (1997) stated that competitive anxiety theory overlooks the temporal patterns of anxiety, particularly the notion that anxiety prior to performance may be necessary for preparation, whereas anxiety during performance may not be facilitative. Furthermore, current anxiety theories may overlook athletes’ interpretation of anxiety symptoms, which “is more predictive of performance than the intensity of the symptoms experienced” (Burton & Naylor, 1997, p. 299). The authors’ final recommendations included “measuring anxiety during breaks in competition with field measures of state anxiety” (p. 301).

In summary, the catastrophe model accounts for different relationships found between arousal and performance. According to Hardy (1996a) and Hardy and colleagues (2004), the anxiety and performance relationship may be moderated by self-confidence; the arousal and performance relationship may be mediated by cognitive anxiety according to Biddle (1995). These relationships are best represented graphically in three dimensions as demonstrated by Biddle (1995) and Gould and Krane (1992). The drawbacks to catastrophe theory may be its inherent complexity and relative difficulty testing its...
predictions. Although the model has been supported via modeling (e.g., Hardy, 1996a; Hardy et al., 2004), catastrophe theory constructs and processes have been criticized for being excessively difficulty to measure (Hardy, 1996b) and can be tailored to meet the theoretical or empirical needs of models (Hardy et al., 2004). Furthermore, dynamic systems are thought to exhibit sensitive dependence on initial conditions and are thought to be quite unstable (Gleick, 1987; Masterpasqua, 2004). Thus, measuring dynamic processes may alter the processes themselves (e.g., reactivity). Evidence for nonlinear, chaotic, dynamic processes exhibiting sensitive dependence on initial conditions has been found by Kelly, Heath, and Longstaff (2001) and Prorokovic and Gregov (2004) in psychomotor processes (reaction time). Thus catastrophe theory has increasing empirical support (Biddle, 1995; Prorokovic & Gregov, 2004; Kelly, Heath, & Longstaff, 2001) in golf performance (Hardy, 1996a; Hardy et al., 2004), and scientific examination of complexity in the anxiety and arousal-performance relationship appear inevitable.

The dynamics of anxiety and arousal during sport performance has been examined by studies from the catastrophe theory perspective. Rather than focusing on the actual experience of arousal and anxiety related to sport performance, these studies appear to be more invested in testing theoretical models by asking for ratings of bodily and cognitive anxiety before and after but never during performance. This is problematic for many reasons that will later be discussed, but the current study attempted to measure the actual inner experience of processes such as these by interrupting participants during performance.

Reversal Theory. According to reversal theory (RT) (Apter, 1992), polar opposite “metamotivational” states exist in four pairs: 1) a telic (characterized by low arousal,
planning, and goal directed behavior) and paratelic (e.g., high arousal, lack of planning, and nongoal directed behavior) pair, 2) a negativist (e.g., autonomous and rebelling against norms) and conformist (to norms) pair, 3) an autic (e.g., focus on self) and alloic (e.g. focus others) pair, and finally 4) a mastery (e.g., desire to dominate over competition and compete with others) and sympathy (e.g., desire to be nurtured by and cooperate with others) pair. The relationship between anxiety/arousal and affect is thought to depend on cognitive appraisals of the individual’s level of anxiety/arousal, which is typically indirectly measured. This model predicts that if anxiety/arousal and stress are high, the individual is over-stimulated. If anxiety/arousal and stress are low, the individual is closer to a state of sleep. If the level of anxiety/arousal is high and stress is low, the individual is excited or “psyched-up,” a state predicted to yield optimal performance. Finally, under conditions of low anxiety/arousal and low stress, boredom is experienced. Until recently, little empirical evidence supported this theory (Gould & Krane, 1992; Biddle, 1995).

In 2002, Hudson and Walker conducted one of the few qualitative investigations of internal processes in golf. Because this study attempted to examine inner experience related to sport performance in golf, which the current study was designed to examine, and because it did so qualitatively, this study will be extensively reviewed. The strengths and weaknesses of the study will be discussed, and it will become apparent that improvements to studies such as this are warranted. Methods to improve the study of inner experience in sport performance will be discussed in the next chapter.

Hudson and Walker (2002) sought to examine RT in golf. Their interpretation of RT related to sport performance suggested that individuals can experience reversals between opposite states within a given pair due to: 1) frustration that the needs of current state
aren't being met, 2) satiation (e.g., where time dictates reversal), or 3) a contingent event or environmental stimulus (e.g., cue) demanding a switch between metamotivational states. Metamotivational states and reversals were examined among five competitive golfers who participated in a round robin tournament for the study. The authors used a modified version of the Metamotivational State Coding Schedule (MSCS) structured interview (Potocky, Cook, & O’Connell, 1993) with participants within 24 hours, a measure aimed at reducing memory problems associated with retrospective self-report. Reversals in state occurred when participants reported a change from one state to another. A total of 17 reversals in states were reported, with a range of one to five reversals, and 65% were attributed to contingent events, 29% to frustration, and 6% to satiation. Reversals were not associated with winning (53%) or losing (47%), and all but one reversal occurred between the 5th and 16th holes. The most frequent states reported were paratelic conformity (29%), telic conformity (27%), and autic state (27%).

The authors indicated more similarities than differences in metamotivational state profiles. The major similarity was in the frequently-experienced paratelic conformity combination, followed closely by telic conformity and the autic state. Qualitative descriptions of participants’ metamotivational states during performance were also provided by the authors. For instance, the winner of the tournament displayed a consistent pattern of telic conformity (e.g., low arousal, planning, goal directed behavior), and autic states. According to the authors, this player experienced a reversal from the paratelic to the telic state that was attributed to a contingent event, saying “on the last hole I tried to veer it round the corner…tried something different…. I think if it was closer I wouldn’t have tried it, I would have hit it straight” (p. 208). In contrast, the last
place player had a higher incidence of the paratelic state. One of the strengths of this study was the collection of data from a naturalistic sport context, which may enhance ecological validity. Although this study collected data within 24 of competition, which may have somewhat reduced of memory problems, it is likely that forgetting and reconstruction would have occurred at a higher rate that if participants were interrupted during performance and asked to briefly report about inner experience for later interviews. Studies such as Hudson and Walker’s (2002) contained several weaknesses that should be considered for the development of improved qualitative research: 1) Although authors speculated that telic conformity “is likely to facilitate attentional focus on factors associated with performance success” and may “attenuate” the “focus on factors that may be detrimental to performance,” this interpretation is based on an extremely small homogeneous sample with regard to skill (handicap 1.5 to 6). This interpretation may have been better tested by including a comparison group of novice golfers. 2) Although authors present an appealing and sensible theory, the use of a deductive approach with a priori predictions may have led to experimenter expectancies, influencing results in unanticipated ways. 3) The authors described the MSCS as a “powerful, reliable tool for assessing metamotivational states,” but they failed to provide evidence of this from past studies of their interview process or from measurements obtained from their study. 4) The interview schedule was provided in their publication, and many of the items were open-ended questions. Unfortunately, questions like “did this make you feel uncomfortable or was the feeling unpleasant?” are leading. This question reveals the researchers’ assumptions that a) participants were aware of some type of inner experience, b) this phenomenon caused them to experience an emotion that can
accurately be labeled either as discomfort or unpleasantness and not c) some other emotion, thought, behavior, or nothing at all. Furthermore, an affirmative answer to the question above leads to a misunderstanding about experience even if all of the assumptions above are valid because answering “yes” could actually suggest the presence of either discomfort or unpleasantness or both. Without adequate follow-up questions, there is no way of determining the actual nature of inner experience. Several additional questions may have been nearly as leading. For example, “would you say you were feeling generally serious or light hearted” a) assumes and emotion occurred, b) suggests only two possible expressions of the emotion, c) assumes participants were aware of the emotion or should have been, and d) fails to allow or at least limits the expression of other possible phenomena. Dichotomous questions such as this (e.g., “did it feel like the match was a job you had to do or were you simply going to enjoy it because it was fun” italics added) were delivered a minimum of four times and in many cases repeated throughout the interview. The leading nature of many of these items and the exclusion of alternative experiential phenomena constitute a significant threat to the construct validity of this study. 5) Interview responses were coded by the two sport psychologists, and “in the majority of cases, the two analysts agreed on the metamotivational states, timing and nature of reversals reported, and the factors affecting these reversals.” According to the authors, the majority of cases reflected agreement, “however, some discrepancies were apparent in the independent analyses of these data…. [and] no pattern could be discerned in the observed discrepancies.” Unfortunately, the authors failed to report how frequently disagreements occurred, calling into question the reliability of results and subsequent interpretations. 6) Finally, three of the 17 interviews were not completed, and authors
failed to explain why. Although the authors minimized this 15% loss of data, they did not address the possibility of a systematic cause for mortality, a significant threat to the internal validity of the study.

In conclusion, although Hudson and Walker’s (2002) study may have partially reduced problems associated with retrospective report, but further measures could easily be taken to further reduce memory problems. Although this study produced more descriptive data about inner experience during golf performance, this study contained many limitations such as the use of leading questions. Fortunately, many of these limitations can be easily corrected. The current idiographic investigation provided measures to addresses each of the limitations of Hudson and Walker’s (2002) study. Specific methods to improve the study of inner experience in golf performance will be discussed in the next chapter, but first we will summarize this section on anxiety and arousal theories, then we will briefly discuss anxiety and arousal interventions, and then we will continue the review of emotions in sport.

Anxiety & Arousal Theories: Summary. Conceptualizations of the arousal-performance relationship have generally improved in terms of descriptive, explanatory, and predictive ability. However as empirical inconsistencies have emerged, the general trend has been toward increasing consideration of multidimensional and complex relationships between proliferating numbers of factors. The relationships among these factors on performance have only begun to be studied. Additional factors that may mediate the dynamics of the arousal-performance relationship include self-confidence (Hardy, 1996a; Hardy et al., 2004), attentional focus (Bäckman & Molander, 1986), task type (Gould & Udry, 1994; Meyers et al., 1996; Tynes & McFatter, 1987), task
complexity, task familiarity, skill level, perceptions of the anxiety-arousal context, previous experience with arousal changes, perceived ability to manage or control arousal, experience with the task, presence of observers or competitors, importance of performance in the context, and coping skills (Meyers et al., 1996). Anxiety and arousal studies typically focused on anxiety, arousal, and self-confidence perhaps because the CSAI-2 is one of the most popular self-report measures. These studies have failed to examine the possible presence of other possible inner experiential phenomena, only a few of which have been mentioned as potential mediators of the anxiety/arousal and sport performance relationship. As we shall see, the current study openly examined whatever inner experience occurred during performance in golf. As such, the presence or absence of anxiety/arousal experiences and other potential mediators were equally explored.

Arousal and anxiety research in sport psychology has been limited by the overwhelming reliance on retrospective self-report and indirect measurement of these phenomena. Definitional problems may weaken the support for anxiety and arousal theories and weaken our understanding of these phenomena. Future research could more accurately and consistently examine emotional phenomena by using direct and immediate methods of measurement. Despite the existence of methods that interrupt participants in the midst of an activity to more directly and immediately assess inner experience, as we will continue to see, very few studies have used them.

Anxiety & Arousal Management Interventions. Despite theoretical and methodological problems of anxiety and arousal research, anxiety and arousal management interventions have proliferated. These strategies can be divided between interventions that attempt to reduce anxiety and arousal, relaxation techniques, and those
that attempt to intensify arousal, “psyching-up” approaches. Although conceptual models may not receive empirical support, both “psyching-up” interventions (Whelan et al., 1990) and relaxation interventions (Kendall, Hrycaiko, & Martin, 1990) have been effective for particular athletes on specific tasks. “Psyching-up” and relaxation interventions will be briefly described, example studies will be provided, and the effectiveness of these interventions will be discussed.

*Psyching-up: Increasing Anxiety/Arousal.* “Psyching-up” interventions attempt to increase arousal prior to performance. Without formal sport psychology interventions, athletes may use their own strategies to increase arousal prior to performance. Gould and colleagues (1980) examined the particular strategies used during non-standardized “psych-up” interventions. Strategies that were reported as most frequently-used were attentional focus (self-administered instructions to narrow attention to task relevant movements and skills), imagery (visualizing optimal task performance), and preparatory arousal (“emotionally charging-up”) during the “psyching-up” period.

Gould and colleagues (1980) subsequently examined the relative effectiveness of these strategies in 15 male and 15 female undergraduate students. A Latin square design was used to examine the effects of five different mental preparatory conditions (i.e., attentional focus, preparatory arousal, imagery, counting backwards control, rest) on a leg-strength task. Of the mental preparatory conditions, preparatory arousal and imagery techniques led to significantly greater output than the other conditions. Performance in the arousal and imagery groups were not significantly different with regard to leg-strength.
Meta-analysis by Meyers and colleagues (1996) reported a large effect size \( (d = 1.23, SD = .73) \) for arousal elevation interventions, but this was based on only 5 studies. Although it is far too early to conclude that strategies for increasing arousal are effective, and the generalizability of these results across different performance tasks and contexts remains tentative (Meyers et al., 1996) several patterns have emerged.

One key research finding has been that mental preparation involving arousal elevation techniques are more effective on motor tasks requiring strength (Tynes & McFatter, 1987), endurance, and sprinting than on tasks requiring more technical skill, timing, speed, and balance when compared to attentional focus, imagery, distraction tasks, and controls (Gould & Udry, 1994; Meyers et al., 1996). Nevertheless, it is not apparent whether arousal elevation techniques typically increase states of arousal or athletes' perceptions of arousal (Meyers et al., 1996; Whelan et al., 1990). Several factors that may mediate the arousal-performance relationship have been cited, including the nature of the task, individual experience or task familiarity, and cognitive aspects of the task including attentional focus (Whelan et al., 1990). In summary, with the possible exceptions of tasks requiring strength, endurance, and sprinting, interventions seeking to increase levels of arousal alone have been insufficient for enhancing performance.

Relaxation: Decreasing Anxiety/Arousal. Several techniques have been implemented to moderate the debilitating effects of excessive anxiety and arousal on performance. These strategies parallel developments in cognitive-behavioral approaches to reduce anxiety. Relaxation is associated with parasympathetic dimensions of physiological arousal such as decreased heart rate, breathing, muscle activity, and brain activity. Through cognitive behavioral relaxation strategies, physiological arousal may be
attenuated. Relaxation strategies have been more rigorously evaluated empirically and more widely used in performance enhancement than psyching-up approaches, although both have actually been used in combination.

Progressive muscle relaxation interventions have been used to decrease anxiety and arousal. Progressive muscle relaxation employs several exercises involving brief instructed muscular tension followed by relaxation of systematically targeted muscle groups. Because relaxation is incompatible with tension, retraining the muscles to relax is thought to reduce involuntary and inefficient muscular activation associated with excessive arousal or anxiety. Similar to several performance enhancement approaches, self-regulation and external instructions may be provided. It is typical for relaxation techniques to move from initial instruction by a coach or sport psychologist to self-regulation that encourage athlete self-efficacy (Singer, Murphey, & Tennant 1993).

Patrick and Hrycaiko (1998) demonstrated the effectiveness of a mental training package including progressive relaxation on endurance performance (1600-m) for four runners using a multiple baseline design across individuals. Social validation results indicated positive reactions from athletes and coaches concerning the enjoyment and significance of the results, respectively. A review by Greenspan and Feltz (1989) reported positive effects of relaxation training on performance in two of nine interventions, whereas under less stringent criteria (e.g., when causality was disputable), all the interventions demonstrated positive effects on performance, suggesting that relaxation strategies are generally effective in enhancing performance. Meta-analysis by Meyers and colleagues (1996) reported a moderate effect size \(d = .73, SD = 1.64\) for relaxation interventions based on 25 studies.
Anxiety & Arousal Management Interventions: Summary

Both psyching-up (Gould & Udry, 1994, Meyers et al., 1996; Tynes & McFatter, 1987) and relaxation strategies (Greenspan & Feltz, 1989, Patrick & Hrycaiko, 1998) have tentatively demonstrated effectiveness, although the effectiveness of the former seems confined to a narrower set of performance tasks than the latter (Gould & Udry, 1994; Meyers et al., 1996; Tynes & McFatter, 1987). Research on psyching-up interventions, however, demonstrated a large effect size, whereas a moderate effect size was found for relaxation strategies (Meyers et al., 1996). Several suggestions for future research expressed throughout the literature on the arousal-performance relationship call for increased methodological thoroughness, examination of the processes through which interventions operate, the extension of outcome studies to the field, the need to consider multidimensional mediating individual factors (Hardy et al., 2004), and the effective mechanisms of instructing athlete populations in arousal management (Gould & Udry, 1994). Clearly further evaluation of the conditions under which specific interventions may be indicated is echoed throughout the literature, and studies in performance profiling and treatment matching have emerged in response (Jones, 1993; Doyle & Gaynor, 1997).

Anxiety & Arousal Summary

Anxiety and arousal are widely thought to be related to performance. These phenomena are likely to be related to other psychological phenomena as well. Anxiety and arousal management interventions may interact with increases in task mastery, self-efficacy, and other cognitive and affective variables (Gould & Udry, 1994). Several studies have shown relationships between anxiety, arousal, and self-confidence (Hardy, 1996a; Hardy et al., 2004). While optimal arousal and even anxiety at times appear to be
necessary conditions for performance, an athletes’ perceptions of anxiety and his or her ability to manage it may be more significantly related to performance according to Meyers et al. (1996). This notion invokes the distinction between the measurement of arousal and anxiety as phenomena and athletes’ understanding of arousal and anxiety. The concordance between retrospective self-reports of arousal and anxiety and the actual phenomena in performance has been largely unexamined. As we shall see however, a lack of concordance has been found between retrospective self-reports and daily reports of coping (Ptacek, Smith, Espe, & Rafferty, 1994). Furthermore, Raglin and Hanin (2000) stated that self-report measures are limited because their validity and reliability may be influenced by participants’ verbal ability and self-awareness (Hackfort & Schwenkmezger, 1989), social desirability, demand characteristics, social and experimental expectations, and reactivity due to repeated assessments. Although optimal levels of anxiety and arousal have been suggested, research findings have failed to support several explanations of these processes consistently (Whelan, Epkins, & Meyers, 1990). It seems plausible that the limitations of retrospective self-report measures may explain the prevalence of inconsistent findings in sport psychology research. Despite these criticisms, “most researchers agree that appropriately used, validated self-report measures provide accurate assessments of anxiety” (Raglin and Hanin, 2000, p. 94). It seems clear that the limitations of retrospective self-report have been conveniently dismissed with little consideration of alternative methods. Alternative methods of examining internal processes such as directly investigating emotional experience during sport performance may illuminate athletes’ experiences of arousal and anxiety processes and overcome the inherent limitations associated with retrospective self-report.
Stress & Coping

The majority of research examining emotional processes has been directed at the relationship among anxiety, arousal, and performance. Relatively less attention has been devoted to other emotions and processes such as stress and coping, which is problematic (Anshel & Anderson, 2002) because the capacity to respond effectively with stress associated with athletic performance is thought to be essential to performance success (Hardy et al., 1996). Conversely, ineffective coping strategies can be deleterious in terms of performance outcome (Anshel, Brown, & Brown, 1993). According to Hardy and colleagues (1996), the progress of stress and coping research has been hindered “by the failure of researchers to make a clear distinction between the basic constructs of stress, anxiety, [and] arousal…” (p. 141).

Jones (1990) and Hardy and colleagues (1996) operationalized stress as a state involving the introduction of a demand placed on the individual who must cope with the situation. For the purposes of this review, stress will be viewed as relatively orthogonal from arousal and anxiety with the recognition that the distinction among these constructs is not completely established and understood. Nonetheless, stress will be seen as an initial general reaction to a stimulus. Coping has been viewed as a general strategy to respond to stress. Together, stress and coping are considered bidirectional processes in which coping mediates emotional states depending on the individual’s appraisal of the stressor (Folkman & Lazarus, 1988).

Lazarus (2000) provided theoretical recommendations for research in sport performance that emphasized stress and emotion as well as appraisal, coping, and relational meaning. In addition, Lazarus (2000) suggested that, although process and
structure are necessary in research, process should be considered more essential in stress and emotion research. Thus, stress as well as other emotional phenomena should be considered. Lazarus (2000) suggested that discrete emotional categories should be used, and appraisal, coping, and relational meaning are essential theoretical constructs for stress and emotion.

Anshel and colleagues (1993) found that an acute stressor (i.e., negative verbal feedback) impeded performance in dart-throwing, increased muscle tension, and increased negative affect, whereas an effective coping skills intervention enhanced performance and increased positive affect compared to controls. Anshel and Anderson (2002) found significant correlations between coping styles, a trait-like conception of coping tendency, and state-like coping strategies used during table tennis performance. Coping style was dichotomized as approach (e.g., positive preparation, engagement, vigilance, attention) or avoidance (e.g., negative avoidance, distraction, ignoring, disengagement). Stress was induced by standardized negative feedback delivered to all players and pressure from coaches. Anshel and Anderson (2002) found that negative affect increased significantly after stress inducements. Individual coping style, measured initially, predicted self-reported coping strategy after stress inducements and performance, suggesting that players used strategies selectively as a function of coping style and situational factors. In addition, approach coping styles predicted performance in preliminary task tasks, whereas a combination of positive affect, avoidance coping, and negative affect best predicted performance in later task trials. The latter finding was particularly unexpected and difficult for the authors to interpret. The authors speculated that since better performance resulted from a change from initial approach to later...
avoidance strategies, this suggested that athletes may have changed strategies “rapidly following an unpleasant experience” (p. 206). This suggests that coping styles may have some influence on performance outcome, although it is not apparent exactly how coping is related to performance.

Anshel and Wells (2000) examined coping strategies in 147 basketball players asked to reconstruct their experiences of coping immediately after a basketball game. All players experienced at least one occurrence of four events predicted to invoke coping strategies — missing an easy basket, receiving physical abuse from an opponent, losing the ball to an opponent, and receiving a perceived bad call from the referee. Approach strategies were reported at a higher rate than avoidance strategies in situations where rough physical play occurred, an easy basket was missed, and the player lost the ball. Participants did however report using avoidance in coping with a bad call from the referee. Results indicated that personal and situational variables predicted coping with acute stress in basketball. Cognitive appraisals and perceived stress intensity also strongly influenced the participants' reported use of coping strategies, both of which accounted for 34% of the variance. Finally, competitive basketball players' coping strategies were consistent with cognitive appraisals in response to stressful situations.

Studies have been recently conducted on stress and coping in golf. A qualitative, descriptive study was performed using semi-structured interviews with 11 golfers by Giacobbi, Foore, and Weinberg (2004) to examine sources of stress as well as coping responses. Skilled and moderately skilled golfers reported using coping strategies and emotional management techniques related to stress including cognitive strategies, relaxation attempts, efforts on the golf course and off the course, avoidance coping, and
emotion-focused coping strategies. Nicholls, Holt, and Polman (2005) conducted semi-structured interviews with 18 male Irish golfers and phenomenological analysis of coping effectiveness during golf competition. Data were analyzed using the Interpretive Phenomenological Analysis (Smith & Osborn, 2003). Golfers reported that competition involved stressors “relating to outcome, mistakes, score, evaluation and opponents” (p. 121). Coping strategies perceived and self-reported by athletes to be effective included “rationalizing, reappraising, blocking, positive self-talk, following a routine, breathing exercises, physical relaxation, and seeking on-course social support” (p. 111). Ineffective self-reported strategies included “trying too hard, speeding up, routine changes, negative thoughts, [and] lack of coping” (p. 111).

One of the greatest limitations of the majority of sport psychology studies described here is their reliance on retrospective self-report. Ptacek and colleagues (1994) examined the accuracy of self reports about coping compared with more immediate daily coping reports. The correspondence between daily coping reports and retrospective report of coping as the was moderate at best, as “daily reports obtained during the stressful event revealed only a moderate degree of correspondence, sharing at best only 34% common variance in correlational analyses” (p. 46). Thus Ptacek et al. (1994) criticized the accuracy of self-reports of subjective experiences related to actual coping strategies because of “potential contaminating influences of defensive processes and response biases such as social desirability, acquiescence, and extreme responding” (p. 42). Furthermore, they argued that ability to accurately recall coping efforts is reduced over time, and long retrospective self-reports should be avoided.
Another limitation of self-report methods in examining internal phenomena includes the possibility social desirable responding. Krane and Williams (1992) conducted a study with 112 competitive female golfers study to determine the influence of social desirable responding on anxiety, stress, and coping. The authors measured anxiety (Sport Competition Anxiety Test) and socially desirable responding (Marlowe-Crowne Social Desirability Scale), which led to four categories of responding styles: true anxious consisted of low-anxious (LA)/low-social-desirability (LSD) reports, defensive reports were high-anxious (HA)/high-social-desirability (HSD), HA/LSD reports were considered truly high-anxious, and LA/HSD reports were labeled the repressor style of responding. Results indicated that biased responding on the CSAI-2 occurred only for those with the repressor style. Confidence was higher among golfers with the repressor style compared to the low-anxious style, whereas high-anxious and defensive high-anxious golfers reported the lowest levels of self-confidence and highest cognitive anxiety. The authors suggested that “future researchers examine whether or not athletes classified as repressors present themselves favorably when responding to anxiety and confidence questions” (p. 134). Thus researchers have acknowledged some of the inherent limitations of self-report methods in sport psychology but have generally proceeded to conduct studies without addressing these problems to any extensive degree.

Much like studies that have been conducted on anxiety and arousal, few stress and coping studies have been conducted on performance in golf. In addition, most studies have strongly relied on methods using retrospective self-report, despite limitations that have even occasionally been acknowledged. No studies could be found that directly assessed stress and coping phenomena by training participants in observing and reporting
inner experience, interrupting performance, and examining whether these processes occur by directly questioning about internal phenomena.

Additional Emotions in Sport Performance

The majority of sport psychology research on emotion has been directed at the relationship among anxiety, arousal and performance, although stress and coping research has grown considerably in the last decade (Giacobbi et al., 2004). Compared to the extensive research on anxiety, arousal, stress related to sport performance, considerably less attention has been devoted to a wider array of emotions. Beyond anxiety, arousal, and stress, there are other emotions that have been studied with respect to sport performance. The research that has been conducted on additional emotions related to sport performance has focused on mostly on anger, hostility, and aggression; however, a few studies have examined mood states and additional positive emotions independent from anxiety, arousal, and stress. Research examining these additional emotions will be briefly reviewed, with an emphasis on studies examining emotion in golf performance.

Anger, Hostility, & Aggression. Examples of behavior typically associated with anger, hostility, and aggression occur with some degree of frequency in sport, although the most dramatic displays take the form of aggressive behaviors as evidenced by the recent Detroit Pistons vs. Indian Pacers professional basketball brawl between players of both teams and even fans (Associated Press, 2005a).

Isberg (2000) provided a multidimensional definition of anger as a psychobiosocial state including cognitive and motivational, affective, bodily-somatic (i.e., increases in heart rate and blood pressure), and behavioral components (e.g., aggressive behavior). Isberg (2000) proposed that stress, arousal, context, and personality factors may lead to
anger, hostility, and aggression in sport, which he conceptualizes and overlapping phenomena that may be facilitative or debilitative with respect to performance. According to Isberg (2000), it is not apparent how components of anger, hostility, and aggression interrelate with behavioral components of these phenomena, and whether an optimal level of anger intensity exists is undetermined. Future research including the current study may illustrate how frequently emotional, cognitive, and behavioral components occur and to what extent they may co-occur.

Several non-sport specific assessment measures of anger, hostility, and aggressive behavior have been available for decades, and sport-specific measures have emerged more recently. Of the seven sport-specific instruments described by Isberg (2000), only five reported reliability, four of these focused on adult populations, and three examined anger, hostility, and aggression in athletes as opposed to spectators – the Bredemeier Athletic Aggression Inventory (Bredemeier, 1975), the Rice Reactive Aggression Measure for Baseball (RRAMB) (Rice, Ostrow, Ramsburg, & Brooks, 1989), and the Sport Aggression Questionnaire (SAQ) (Thompson, 1989). Two of these three were general sport measures, the RAAGI and the SAQ, and one was intended for use in specific sports, the RRAMB for baseball. Of the remaining three emotional measures, none were published in peer-reviewed journals, and no empirical studies examining these measures could be found in published peer-reviewed journals. Thus it appears that little attention has been given to the assessment of anger, hostility, and aggression in sport.

In 1978, McCarthy and Kelly found that ice hockey players who self-reported higher levels of aggression scored significantly more goals and shots on goal than did those with lower levels. No significant differences were found for assists. McCarthy and Kelly
(1978) suggested that anger may be associated with higher energy output and efficiency, leading to enhanced performance in ice hockey. Consistent with this, McGowan and Miller (1989) found that successful karate athletes had significantly higher anger than did less successful athletes. In addition, aggressiveness predicted of football ability (Secunda et al., 1986).

Of the studies that have been conducted regarding anger, hostility, and aggression, many have been examined these phenomena in youth sport. Stephens and Bredemeier-Light (1996) found that female soccer players' aggressive behaviors were related the teams' moral context (i.e., aggressive norms, perceptions of team norms, coaches' characteristics, and players' moral motives for behavior), consistent with Isberg's (2000) conceptualization of contextual influences. A replication of this study with male and female youth soccer players found players' perceptions of pro-aggressive team norms was the primary predictor of likelihood to aggress for both genders, and moral motivation and perceived ability also contributed to the prediction equation for the boys whereas perception of coach's ego orientation predict girls aggression (Stephens, 2000).

Guivernau and Duda (2002) examined the relationship between the sport context and athletes' self-reported tendencies toward aggression in adolescent soccer players. Athletes' perceptions of pro-aggressive team norms were predictive of self-reported tendencies toward aggression. Both genders reported higher likelihood to aggression when behavior was perceived to be supported by coaches.

Maxwell (2004) applied the concept of anger rumination defined as “the propensity to think almost obsessively over past experiences that have provoked negative affect in the form of anger” (p. 279) to sport behavior. High levels of anger rumination are thought to
be associated with an increased propensity toward aggressive behavior. Although no differences were found between males and females or between competitive levels on anger rumination, aggressive behavior was higher in males compared to females, and anger rumination was significantly correlated with athletes' reported aggressive behavior. In addition, athletes who participated in individual sports reported lower levels of aggression than did those participating in team sports. Although this study relied on retrospective self-report, this study appears consistent with the multidimensional conceptualization of anger because relationships were found among context (i.e., type of sport), affect, and self-reported behavior.

Although examples of anger, hostility, and aggression seem evident and accessible, these phenomena have not been examined extensively in athletes. Research that has been conducted reveals tentative relationships between anger and aggression and performance suggest for ice hockey and karate (McCarthy & Kelly, 1978; McGowan & Miller, 1989). Much like the research on anxiety, arousal, and stress, few studies have explored these phenomena without relying on retrospective self-report questionnaires focusing entirely on specific phenomena. Thus equal weight is typically not given to the possible presence of other similar phenomena. Unfortunately this leaves much of the research open to internal validity threats including experimenter expectancies, demand characteristics, and construct validity problems. Thus it is difficult to accurately infer the presence, frequency, and individual experience of these phenomena based on existing research.

*Mood & Sport Performance.* Research examining mood related to sport performance has focused on positive as well as negative states. Mood states have been investigated mainly by methods incorporating retrospective self-report and correlational designs,
although some patterns may have emerged. Stevens and Lane (2001) examined strategies athletes used to self-regulate mood dimensions assessed by the Profile of Mood States (POMS), which evaluates anger, confusion, depression, fatigue, tension, and vigor. The most common general emotional regulation strategies were changing location, exercising, and listening to music, whereas unique strategies included trying to be alone for anger, analyzing the situation for confusion, engaging in pleasant activities for depression, and relaxation for tension. Thus athletes appear to use general and emotion-specific regulation strategies to regulate mood.

Terry, Carron, and Pink (2000) examined group cohesion among netball, rowing, and rugby teams after administration of the Group Environment Questionnaire and the POMS. Results indicated that participants' high level attraction to the group predicted low tension and anger. High group integration predicted low depression. High attraction to the group predicted low tension, low depression, and high vigor. Thus it is plausible that group affiliation and cohesion attenuate negative emotions such as tension, anger, and depression, and vigor may be enhanced as well, although more research is needed to demonstrate the connection among the reduction of negative emotions and the increase of positive emotions in groups.

Alcohol use may have a negative influence on emotion with athletes (Green, Burke, & Nix, 1995), although the direction of this relationship is tenuous. Athletes who used alcohol scored significantly higher on the anger subscale of the POMS than the alcohol nonusers. Alcohol nonusers also scored significantly higher on state anxiety about receiving a scholarship to college than did alcohol users. In addition, males felt more pressure to win than did females. The POMS did not predict successful performance.
McGowan and Shultz (1989) examined differences in preseason measures of affect with college football players. Vigor scores on the POMS were significantly higher for defensive than offensive players, and linemen scores were higher than others' as well. Authors suggested that participants appeared to use anger as a pre-event motivating strategy for simple tasks.

In 1985, Miller and Miller developed an anxiety and emotional state instrument. The Scale of Eight Emotions was validated with 27 female high school gymnasts before and minutes after performance. Significant correlations resulted between the overall 8 emotion predictors (enjoyment, fear, depression, anxiety, surprise, anger, shame/guilt, and attentiveness/interest) and motor performance (0.72). State anxiety was negatively correlated with performance (-0.58).

Performance outcome appears to have a considerable effect on athlete moods. Using the Profile of Mood States (POMS), Hassmén and Blomstrand (1995) assessed female soccer players' mood immediately and two hours after the games. Results indicated playing soccer, "especially if the game ended in a tie or a loss, had a massive influence on the mood states of the team" (p. 297). Participants reported significantly less tension, depression, anger, and confusion after wins than losses or ties.

Rowley, Landers, and Kyllo (1995) performed a meta-analysis of 33 studies utilizing the POMS to determine the extent to which mood profiles discriminate between successful and unsuccessful athletes. This study sought to test the iceberg profile, which states that athletes exhibiting low tension, confusion, anger, and fatigue along with high vigor and non-depressed mood are more likely to succeed (a profile graphically similar to an iceberg when plotted on the POMS profile sheet). Overall effect size was very low.
(0.15), albeit significant, but the variance accounted for was less than 1%, once again questioning the predictive utility of the POMS as well as the iceberg profile. Nonetheless, results seem to reflect the general trend that successful athletes had slightly more positive moods than do less successful athletes, although “claiming that successful athletes tend to be mentally healthy is not a provocative concept,” and “psychopathology and success at nearly anything should be inversely correlated” (Rowley et al., 1995, p. 186).

Beedie, Terry, and Lane (2000) conducted two meta-analyses of POMS research studies to examine relationships between mood and athletic achievement (N =13) and between mood and performance outcome (N = 16). Low effect sizes resulted for level of achievement, consistent with Rowley et al. (1995). Larger effects were found for the performance outcome meta-analysis. “Effects were moderate for vigor, confusion, and depression, small for anger and tension, and very small for fatigue” (p. 49) and effects were larger in short duration and open skills sports (Beedie et al., 2000).

Research on the mood in sport performance has yielded promising findings, but methodological limitations have been pervasive. Mood states have been frequently investigated by methods incorporating retrospective self-report and correlational designs, although many studies have collected self reports relatively soon after performance. Studies incorporating retrospective self-report risk reduced internal validity due to problems of recall, especially after significant time delays. Evidence of memory problems emerged from a zone of optimal functioning inspired study by Russell and Cox (2000), who compared actual and recalled optimal positive and negative affect using the Positive and Negative Affect scales. Significant differences in initially-reported and later-recalled positive affect were found in basketball, although no significant differences were
detected in actual and recalled negative affect for football and basketball. Despite this potential limitation, several studies have found that mood predicts successful performance (Beedie et al., 2000), although the practical utility of this effect has been questioned as studies have failed to consistently discriminate between successful and unsuccessful athletes based on mood (Rowley et al., 1995). Mood does seem to be effected considerably by performance outcome or degree of performance success however (Hassmén & Blomstrand, 1995). Considering both of these findings, it seems plausible that performance outcome may have a stronger influence on mood than the latter has on the former, as performance appears to be relatively less influenced by mood states, with the exception of anxiety and arousal, which have been shown more consistently to influence performance depending on the type of task. Future investigations into emotional phenomena may begin to illustrate more precisely how emotions are related to performance.

Similar to other research examining emotions in sport, mood research has strongly relied on retrospective self-report questionnaires that fail to give equal weight to the existence of other emotional phenomena. Retrospective self-report measures have been frequently used even in light of observed memory distortions (Russell & Cox, 2000), and very few studies have focused on direct measures of internal phenomena that reduce these potential problems.

Evidence of Other Emotions in Sport. Ruiz and Hanin (2004) offered evidence, albeit quite indirect, that other emotions may be present during sport performance. Sixteen high-level Spanish karate athletes generated “extensive functionally meaningful metaphors” and interpretative descriptors of feeling states prior to, during, and after
performance. Interpretative emotional descriptors were idiosyncratic and context-specific. These descriptors were considered similar enough to reflect eight basic emotions including happiness, pride, relief, anger, anxiety, fright, sadness, and shame. Palmer (1993) explored floor hockey players’ emotional states, and found evidence of aggression as well as humor. Criticism has been directed at the field of sport psychology for excessive focus on pathological processes over positive experiences such as joy and fun (Jackson, 2000) and the potential confounding of positive affective states (e.g., excitement, challenge) with negative states such as anxiety (Burton & Naylor, 1997).

Indeed, initial, recreational, competitive, and even perhaps professional participation in sport would be difficult to explain without the possibility that participants’ experience positive emotions at some point in the process, possibly even during participation. If the principles of positive psychology (Seligman & Csikszentmihalyi, 2000; Seligman, Steen, & Park, 2005) influence the direction of empirical investigations, it seems likely that future research may examine positive internal experiences more extensively.

Emotions: Summary

A significant degree of attention has been directed at anxiety, arousal, and stress in sport performance compared to other emotions. This focus would be justified if: 1) these emotions were examined more directly and carefully with much less reliance on retrospective self-report based on the deduction from theory that these emotions must be present; 2) these emotions were found to occur consistently during performance using improved methods of research; and 3) a known level of these emotions was consistently found to facilitate successful performance. These criteria have not nearly been satisfied. The dominant focus on anxiety, arousal, and stress has occurred at the possible expense
of an understanding of others. The breadth of human emotional experience during sport performance is probably much less restricted than what is reflected by the dominant focus of sport psychology research. Additional emotional experiences of positive (e.g., happiness, pride, relief, challenge, excitement), negative (e.g., anger, hostility, aggression, sadness, shame), and perhaps even benign dimensions may be prevalent, but the wider array of possible emotional phenomena has rarely been carefully examined in sport contexts with athletes. No studies could be found that directly and immediately examined emotional phenomena while giving equal attention to the possible presence of any and all emotional experiences. Hardly any research has explored emotional phenomena without relying on retrospective self-reports focusing entirely on expected phenomena. This may shape our sense of which emotions occur in sport, how frequently they occur, how they influence performance, and of course how interventions should be designed to respond to emotional phenomena. Qualitative investigations into emotional phenomena may begin to illustrate more precisely how emotions are related to performance by providing the degree of resolution and richness of detail required to understand phenomena.

*Cognition & Sport Performance*

According to sport psychologist Bob Rotella (1995), “when great players are playing well, trust becomes a habit. The golfer executes” the “shots without being aware” of “trusting” the “swing. [They] simply [pick] out a target, envision the kind of shot..., and hit it.... [They] trust... [the] body will produce the swing needed for the shot [they] envision...” (p. 44).
As this profile of the ideal mental processes needed for successful golf illustrates, cognitive phenomena are thought to have considerable influence on sport performance. The most widely recognized sport-related cognitive phenomena include self-talk, attentional focus, imagery, as well as self-confidence and self-efficacy. Considerable empirical attention has been devoted to these processes by sport psychology research. These cognitive domains will be reviewed with a general emphasis on major findings and specific emphasis on findings in the sport of golf and similar performance tasks. Much like the existing research examining emotional phenomena in sport performance, it will become evident from this review that almost no studies have been conducted that directly assessed cognitive phenomena. Empirical investigations have generally avoided the direct and immediate assessment of cognitive phenomena in sport in favor of casual and indirect retrospective report measures.

Self-Talk, Self-Instruction, & Self-Monitoring

A common element connecting many cognitive-behavior interventions in performance enhancement is self-talk. Although self-talk is one of the most frequently-used strategies reported by coaches across several sports (Gould, Hodge, Peterson, & Giannini, 1989; Weinberg & Jackson, 1990), the construct has been inconsistently defined. Hardy and colleagues (1996) called for better specification of “precisely what constitutes self-talk” (p. 37) because “past researchers have been too ‘loose’ in their operationalization of self-talk” (p. 37-38). According to Williams and Leffingwell (2002), “broadly defined, self-talk occurs whenever an individual thinks, whether that individual is making statements internally or externally” (p. 81; see also Williams & Leffingwell, 1996). This is evidently a belief shared by Bunker and Williams (1980), who
stated “anytime you think about something, you are in a sense talking to yourself” (p. 236; see also Bunker, Williams, & Zinsser, 1993). It seems evident that the pervasiveness of self-talk has been overstated, reflecting “the widely held prejudice that all thinking is in words” (Hurlburt, 1997, p. 947). Thus researchers have defined self-talk both broadly and narrowly, but definitely not carefully. In fact, self-talk has been used to describe statements said aloud (Van Raalte, Brewer, Rivera, & Petipas, 1994), internally (Williams et al., 1993), and even statements delivered by others such as coaches that athletes may somehow process internally (Gould, et al., 1989; Weinberg & Jackson, 1990).

In practice, researchers examining the effectiveness of self-talk interventions have typically requested that participants speak out loud so manipulation checks can be performed (Theodorakis, Chroni, Laparidis, Bebetsos & Douma, 2001; Van Raalte, Brewer & Lewis, 1995), although the degree of similarity between external and internal self-talk is not apparent. Thus self-talk or self-instruction will be defined as statements directed inward in which the individual interprets thoughts and feelings and responds with instructions and reinforcement (Hackfort & Schwenkmezger, 1993; Hardy et al., 2001).

Self-talk investigations have sought to test the assumption that positive self-talk improves performance, whereas negative self-talk impedes performance. Van Raalte and colleagues (1994), found that junior tennis players who reported using negative self-talk were more likely to lose matches. During matches, nearly 90% players reported using negative self-talk at least 13 times. In addition, participants who reported believing in the utility of self-talk won more points than others. Using a between subjects design, Van
Raalte and colleagues (1995) found the performance of dart throwers' was significantly better in a positive self-talk versus a negative self-talk condition. Van Raalte, Cornelius, Hatten, and Brewer (2000) examined the antecedents and consequences of observable positive and negative self-talk via the Self-Talk and Gestures Rating Scale (STAGRS) to adult competitive tennis players. The STAGRS is a behavioral measure completed by trained observers. Results indicated that match circumstances predicted negative self-talk for all players, whereas positive and instructional self-talk was predicted only by these circumstances for some players. Highlen and Bennett (1983) surveyed the use of self-talk in elite divers and wrestlers and found that self-reported self-talk discriminated closed-skilled divers more than open-skilled wrestlers. Open-skill tasks involve reaction to teammates or competitors in a dynamic competitive context, whereas closed-skill tasks involve reaction to constant competitive context (Highlen & Bennett, 1983; Meyers et al., 1996). Results suggested that self-talk distinguished qualifiers from non-qualifiers in closed-skill diving better than in open-skill wrestling. Successful divers reported using more self-talk during training and competition and more self-instructions in competition. However, non-qualifiers used more positive self-talk by praising themselves during competition, in opposition to self-talk assumptions. Self-talk did not distinguish qualifying wrestlers from non-qualifiers. Finally, Rotella, Gansneder, Ojala, and Billing (1980) found that positive and negative self-talk actually had no effect on performance. Thus the notion that positive self-talk improves performance, whereas negative self-talk impedes performance, has been empirical supported, although inconsistent results have been found.
Wegner's (1989) ironic processes theory of mental control suggests that mental control interacts with thoughts, emotions, and behaviors. Janelle (1999) applied this theory to sport performance. Under conditions of high cognitive load, which are thought to be common in sport performance, self-regulation effectiveness is thought to be reduced. Janelle (1999) stated that breakdowns in mental control may explain paradoxical effects observed in sport performance. When mental control resources are compromised, attempts to suppress negative thoughts may increase the occurrence of these thoughts and interfere with performance. Janelle speculates that ironic processes may include motor control problems stemming from negative self-talk, problems controlling attentional focus, mood states, negative expectations, negative images, arousal management problems, and confidence loss. Thus ironic processes theory is use to account for paradoxical findings that occur when, for instance golfers think “whatever you do, don’t hit the ball in the water” and proceed to execute the action in opposition to this thought.

Hall, Hardy, and Gammage, (1999) suggest that other theories can equally or better explain some of the losses of mental control (e.g., loss of self-confidence, development of negative images) experienced by athletes; and it is not apparent how researchers and practitioners may benefit from using the theory of ironic processes compared to these other theories. Based on Van Raalte et al. (1994), Hall and colleagues (1999) speculated that “negative thought processes are mostly verbal” (p. 223), especially when compared to negative imagery, and that ironic processes occur verbally more frequently than nonverbally. They suggest that this is because attentional resources may be allocated differently in these two systems, which may be why elite athletes use more imagery to avoid negative thoughts.
Self-talk interventions typically involve efforts to identify, evaluate, and modify self-talk prior to and during performance. These interventions are grounded in the premise that positive self-talk results in affective improvements such as reduced anxiety, increased effort, and higher self-confidence (Finn, 1985; Weinberg, 1988) with behavioral change (e.g., performance enhancement) as the end goal. Positive preparatory self-statements are thought to improve physiological preparation (Rushall, 1982; 1984). Self-talk may be used for basic instructional assistance (Chorkawy, 1982; Zinnser, Bunker, & Williams, 1998). Several studies suggest that self-talk increases motivation, facilitates encouragement, and benefits performance (Desiderato & Miller, 1979; Kirschenbaum & Bale, 1979; Weinberg, Jackson, & Smith, 1984). Thought content prior to performance may be directed toward positive mood words and task-relevant content as well (Anderson, 1997).

Theodorakis, Weinberg, Natsis, Douma, and Kazakas (2000) evaluated the potential performance effects of motivational and instructional self-talk using an innovative design. Motivational and instructional conditions were separately compared to a control across four different performance tasks. This was carried out by conducting a series of four treatment outcome studies, each with a different sample. Significantly better performance was predicted for the instructional intervention (i.e., “I see the net, I see the target,” “I move fast and strong”) in tasks involving greater technique skill, timing, and precision (i.e., soccer accuracy test, badminton service test). The motivational intervention (instructions to say “I can” immediately prior to the task) was predicted to lead to statistically significant improvements in strength and endurance tasks (e.g., knee extension test). In the first study, 72 male high school soccer players were matched for
accuracy in an empirically validated soccer passing test and subsequently assigned to the motivational condition, instructional condition, or a control condition in which they heard no self-talk instructions. After the matching trial, participants performed the soccer test a total of four more times. Consistent with predictions, instructional condition participants performed significantly more accurate passes than control and motivational participants. Forty-eight university students volunteered for the second study, which used a similar experimental design for performance on a badminton serve test. Consistent with the first study, instructional participants performed significantly better than participants in the other control and motivational conditions. Using a similar design, the third study examined the performance of 54 high school students on three minutes of sit-ups. No significant performance differences emerged; however motivational condition participants performed more sit-ups during the last trial than participants in the other conditions. The fourth and final study examined strength and endurance with 63 university students on a test measuring leg extension performance. After being matched for performance, participants were assigned to one of the three experimental conditions. Results of this study indicated that the motivational and instructional participants performed significantly better in the leg extension test than those in the control condition. In summary, these four studies suggested that instructional interventions are indicated for tasks requiring fine motor movements and precision, whereas, for strength and endurance performance, instructional and motivational tasks are equally effective. Far from being an entirely novel notion, this conclusion is consistent with several studies that have demonstrated the effectiveness of instructional strategies for complicated technical tasks. Rushall and Shewchuk (1989), for example, reported performance improvements for
swimmers following self-talk focused on task-relevant content, positive mood words, and other positive thinking strategies.

Even simple cues such as “step, swing” in tennis appear to stimulate cognitive associations that encourage the acquisition of appropriate task execution (Bunker, Williams, & Zinsser, 1993; Zinnser et al., 1998). Self-talk that is rehearsed prior to performance can improve speed and volume of work output for athletic tasks during practices, leading to improved skill execution in competition (Rushall, Hall, Roux, Sasseville, & Rushall, 1988). Despite the empirical support for these strategies, the methods of implementation (i.e., instructions from others, self-instructions) have varied across studies, and optimal methods have not been determined.

Hardy and Jones (1994) called for the development of techniques for gathering and evaluating self-statements because, despite the apparently important role of self-talk in sports performance, they believed that the amount of research in this area was disappointing. Expressed throughout the performance enhancement literature is a call for increased methodological thoroughness, examination of the processes through which interventions operate, extension of research to the field, the need to consider multidimensional mediating individual factors, and the identification of effective mechanisms of instructing athlete populations in use of interventions (Gould & Udry, 1994; Hardy & Jones, 1994; Meyers et al., 1996). Frequently suggested throughout the literature is further evaluation of the conditions under which specific interventions may be indicated. Studies in performance profiling and treatment matching appear promising (Jones, 1993; Doyle & Gaynor, 1997).
Research that has examined self-talk, self-instruction, and self-monitoring has relied rather strongly on retrospective self-report and indirect measures of these processes. The narrow focus on these processes at the expense of understanding cognitive processes is evident in the blatant prejudice that all thinking is in words. Thus research appears to have been conducted deductively, driven by the theoretical assumption that self-talk, instruction, and monitoring must exist in cognition and may therefore be associated with sport performance. The present study incorporates methods to capture internal processes such as self-talk and a wider array of other internal phenomena that occur during sport performance using inductive exploration rather than a confirmatory deductive procedure.

Attention

Attentional focus strategies posit the existence of difference types of attention related to performance. For instance, Nideffer (1986) proposed two dimensions of attention: width and direction. These dimensions theoretically allow four patterns of attention – broad-external, broad internal, narrow-external, and narrow-internal. Depending on the nature of the performance task, an athlete is thought to shift between different these types of focus. Different sports are thought to require different types of focus. Attentional focus strategies may be directed at enhancing performance directly through concentration on sensory or motor processes (Mallet & Hanrahan, 1997). These strategies may also be directed at influencing other internal processes thought to be associated with successful performance such as managing arousal levels, increasing or decreasing them depending on the task demands, in order to facilitate concentration (Nideffer, 1986).

Several investigations have demonstrated attentional differences between athletes of different skill levels. In an early study of attentional styles, Kirshenbaum and Bale (1980)
found better golfers reported high sensitivity to external distractions, struggled more with overly narrow attentional focus, and experienced specific worry more than did less skilled golfers. Highlen and Bennett (1983) found that reported concentration distinguished qualifiers from nonqualifiers in wrestling and diving, with qualifiers reporting greater ability to concentrate.

Other attention studies have examined associative and dissociative strategies, especially in endurance tasks (e.g., long-distance running, aerobic exercise, rowing). Associative strategies involve directing attention toward performance, whereas dissociative strategies involve directing attention away from performance. One major finding indicates that experienced athletes tend to report utilizing associative strategies (Tammen, 1996), whereas inexperienced athletes tend to report incorporating dissociative strategies (Brewer, Van Raalte, & Linder, 1996; Connolly & Janelle, 2003; Morgan & Pollock, 1977; Ungerleider, Golding & Porter, 1989), but this finding may be restricted to endurance tasks.

Attention research has also examined the effects of attentional strategies on task performance. Using a within-subjects design, Beilock, Carr, MacMahon, and Starkes (2002) had participants engage in a putting task under two attentional conditions: skill-focused and dual task. In the skill-focused condition, participants were instructed to attend specifically to their golf-putting swing (e.g., monitor the swing, follow through, and say “stop” out loud). In the dual-task condition, participants putted while listening to randomly occurring target and distractor tones. Upon hearing the target tones, they were instructed to say “tone” out loud. The single focus condition, which instructed a step-by-step attentional focus process, led to increased performance on tasks for which athletes
had lower relative skill. Conversely, the same step-by-step attentional focus strategy was debilitative when used by athletes for whom tasks were well learned whereas a divided attention distraction task appeared to facilitate performance. These results were demonstrated for both golfers and soccer players. Skilled soccer players dribbling with their dominant (right) foot performed best under a distraction (dual-task) condition. In the skill-focused (e.g., step-by-step) condition, skilled soccer players dribbled more accurately with their non-dominant (left) foot than the dual-task condition. Both dominant and non-dominant novice dribbling performance was optimal under the skill-focused condition. A similar pattern of results was found for skilled golfers. Putting accuracy was highest for skilled golfers under the dual-task condition. The authors concluded that “whereas novices and the less-proficient performances of experts benefit from online attentional monitoring of step-by-step performance, high-level skill execution is harmed” (Beilock et al., 2002, p. 6). However, this finding was not replicated for higher skilled putters as accuracy did not significantly differ on single versus dual-task condition in a different study (Beilock, Wierenga, & Carr, 2002). The authors of both studies stated the evidence did support the notion that well-learned skills are more automated and requires less attentional resources.

More recently, Poolton, Maxwell, Masters, and Raab (2006) found that attentional focus has an effect on learning to putt. Groups learned to putt under different conditions either 1) being instructed to focus on the movement of the putter (external focus) or 2) on their hands (internal focus). The external group’s performance remained robust, whereas the internal group’s performance dropped significantly.
The efficacy of attentional focus interventions has been mixed. Developing focus plans based on managing arousal via attentional focus has been shown to be effective for 100 meter sprinting performance (Mallet & Hanrahan, 1997) with elite sprinters using a multiple baseline design. Meta-analysis by Meyers and colleagues (1996) reported a large effect size ($d = 1.21$) for attentional focus interventions; however, standard deviations were so large ($SD = 1.61$) that the effect size was nonsignificant.

Research on attention in sport performance has often used retrospective and indirect measures of this cognitive phenomenon rather than dealing with attention more directly and immediately. The experiments by Beilock and colleagues (2002) and Poolton, and colleagues (2006) are exceptions to this due to the lack of reliance on self-report. Even so, the observation of different performance for more and less experienced athletes under different experimentally manipulated conditions was not replicated and still deals with attention quite indirectly. Thus research on attention in sport performance could also be improved with more direct and immediate methods.

**Imagery**

Imagery is one of the most studied internal processes in sport psychology and the most frequently used mental rehearsal strategy (Meyers et al., 1996). Imagery has been described as internal visual experience in the absence of visual stimuli. In the context of athletic performance, imagery has been defined as broadly as using all of the human senses to re-create or create an experience in the mind (Vealey & Greenleaf, 2001) and as narrowly as “symbolic sensory experiences that may occur in any sensory mode” (Hardy et al., 1996, p. 28).
Several theories have been posited to explain why imagery might facilitate performance (e.g., psychoneuromuscular, symbolic learning, bioinformational, attentional-arousal), but most suggest that imagery interacts with other mental (e.g., attention, arousal, learning) and physical (e.g., muscles memory) processes (Vealy & Greenleaf, 2001). Paivio (1985) offered a parsimonious conceptualization, suggesting that the function of imagery in sport performance is cognitive and motivational. According to Paivio, specific or general performance goals may be accomplished using cognitive or motivational imagery. Hall, Buckolz, and Fishburne (1992) also considered imagery to have “both a motivational and a cognitive role in mediating behavior” (p. 19).

Imagery use by athletes has been reported to be as high as 99% (Orlick & Partington, 1988), but imagery ability has been shown to be individually different (Hall & Martin, 1997; Overby, 1990). Olympic athletes reported that attentional focus and imagery were the most important mental skills at the Olympics (Orlick & Partington, 1988).

Imagery use has been linked to performance success. Highlen and Bennett (1983) found self-reported use of imagery distinguished qualifiers from nonqualifiers in wrestling and diving. Crews and Boutcher (1986) found that successful LPGA golfers used significantly longer full swing and preshot routines compared to lower-ranked players, a result that led Crews and Boutcher to speculate that successful LPGA golfers might have more developed visualization and imagery strategies. McCaffery and Orlick (1989) interviewed golf professional instructors and top touring professional players and asked them what factors they believed were related to excellence. Commonly reported factors included commitment, goal setting, practice and tournament planning, tournament focus control, distraction control, tournament evaluation, mental preparation, and
imagery training. Somewhat more direct investigations of the relationship between imagery and performance followed, but no study has directly investigated imagery use in golf during performance.

The potency of imagery for motor performance was demonstrated for tasks requiring the acquisition of new skills. Rawlings, Rawlings, Chen and Yilk (1972) examined motor performance acquisition on a rotary pursuit tracking task with three practice conditions (mental, physical, no practice control). After 10 days of practice with 24 females, the physical practice and mental rehearsal groups were superior to the no-practice control condition, and between group comparisons indicated both physical practice and mental rehearsal groups were equally proficient. For 20 males, a combined mental and physical practice group learned faster than the physical-practice-only group. Although physical practice is typically more facilitative of performance, mental rehearsal, including techniques such as imagery, is typically more effective at enhancing performance than controls (Feltz & Landers, 1983; Hall et al., 1992; Meyers et al., 1996). According to Hall and Bernoties (1995) and Hall and colleagues (1992), imaginal practice may be more effective on certain occasions due to the nature of the motor task, the imagery abilities of the individual, and the type of imagery used.

The relationship between imagery and performance has been studied quite extensively in golf. Because much of the research has been based on novices on putting tasks in artificial laboratory conditions in skill acquisition studies, the generalizability of these findings to competition in natural environments is questionable. It is also not apparent how well these studies related to higher skilled and elite athletes. Despite these limitations, which extend to the entire field of sport psychology (see ecological validity

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problems as discussed by Meyers et al., 1996), imagery strategies employing positive thought content have typically been associated with improved performance.

Woolfolk, Murphy, and Gottesfeld, (1985) investigated the effects of using imaginal strategies incorporating positive and negative outcomes in a controlled experiment with 50 male students on a simple motor skill accuracy task (putting a golf ball). Findings indicated lower performance in conditions employing negative outcome imagery. Enhancement of performance resulted from positive outcome imagery. Self-efficacy was correlated with performance. The authors interpreted this as being most likely due to “the strong relationships between these variables and performance on the previous trial.” Nonetheless, imaginal strategies related sport outcome had stronger influence on performance than brief mental rehearsal of movements. In a different controlled study, Woolfolk, Parrish, and Murphy (1985) examined imagining positive and negative outcomes on golf putting using 30 students. Positive imagery led to significantly more improvement compared to controls, whereas negative imagery resulted in worse performance. Imagery influenced self-confidence as well.

Meacci and Pastore (1995) studied the effects of different imagery modalities for golf putting acquisition and retention with 80 student participants who registered for beginning golf classes. Putting performance was measured for visual contact with imagery, nonvisual contact with imagery, visual contact, and control conditions. Putting acquisition was significantly higher among the combined no vision and visual imagery condition participants than it was among the combined visual practice with the ball and no imagery participants. In addition, no differences were found for the no vision imagery condition compared with visual imagery for acquisition or retention of putting skill.
Martin and Hall (1995) conducted a controlled experiment with 39 beginners to examine the influence of a golf putting-related imagery intervention on golf putting practice and task specific self-efficacy. The imagery group used significantly more putting practice, set higher goals, had more realistic self-expectations, and had higher outside lab practice adherence than did controls.

Imagery functions are thought to be cognitive and motivational and may be directed toward specific or general performance goals (Hall et al., 1992; Paivio, 1985). Short, Bruggeman, and Engel (2002) conducted a controlled experiment with 83 participants to examine the potential interaction between imagery function and imagery direction on golf putting performance. Participants were randomly assigned to either a 1) cognitive specific only; 2) motivational general mastery only; 3) cognitive specific and facilitative imagery; 4) cognitive specific and debilitative imagery; 5) motivational general mastery and facilitative imagery; 6) motivational general mastery and debilitative imagery, only; or 7) a no imagery control group. A 3 (imagery direction) × 3 (imagery function) × 2 (gender) ANCOVA indicated higher mean performance for the facilitative compared to the debilitative group. Results reflected an interaction as predicted, which suggested that “imagery direction and imagery function can affect self-efficacy and performance and that males and females respond differently to imagery interventions” (Short et al., 2002, p. 48).

Smith and Holmes (2004) conducted a controlled investigation of different modalities of delivering imagery interventions go experienced golfers. Participants were randomly assigned to control or experimental conditions. Experimental participants were delivered personalized image interventions via either written, audio, or video scripts. Control
participants spent equivalent time reading golf literature. Post-tests indicated video and audio groups performed significantly better than did written script and control groups, suggesting that imagery intervention format is important for intervention success (Smith et al., 2004).

Not all studies have found that imagery facilitates performance. Lutz, Landers, and Linder (2001) found that mentally practicing a good task outcome produced better performance than mental practice of task form with golfers. The effectiveness of imagery depended on level of skill, however. Highly skilled golfers' performances actually deteriorated after mental practice, whereas performance improved for less skilled participants. Studies using imagery have also demonstrated no effects on performance (Andre & Means, 1986).

Paradoxical effects have been studied in imagery as well. A paradoxical effect may occur when negative imagery suppression leads to the opposite experience, the activation of the negative imagery, making reduced performance more likely. Beilock, Afremow, and Rabe (2001) examined the frequency and impact of paradoxical performance in golf using a controlled 3 x 2 imagery type (positive, suppression, suppression-replacement) by imagery frequency (before every or every third putt) factorial design using 126 novice golfers. The positive imagery group was instructed to imagine motor functions leading to eventual performance success. The suppression group was instructed not to imagine missing. The suppression replacement condition was instructed not to imagine missing, but they were instructed that if they did, they should try to replace the image with one of performance success. Performance in the positive imagery condition improved for both imagery frequencies. The suppression and suppression-replacement imagery groups'
accuracy improved with low frequency imagery, but performance deteriorated with higher frequency (i.e., when imaging before every putt). The author concluded that suppressive imagery was deleterious to performance and that efforts to replace negative images with positive ones did not restore performance to positive levels (Beilock et al., 2001).

Interventions incorporating imaginal rehearsal are thought to improve performance by better preparing athletes for competition. "By confronting possible problems, practising [sic.] means of coping with them, and overcoming them in mental imagery, the athlete should be better able to cope in the reality of the sports competition (Biddle, 1995, p. 185)." The diverse collection of practices that constitute imaginal rehearsal typically includes closing the eyes and visualizing motor skills, and can include auditory, visual, and emotional stimuli (Suinn, 1993). Research suggests that more experienced athletes benefit from mental practice when compared to novices (Suinn, 1993), although many studies demonstrate the positive effects of imagery on performance for novices as well, and inconsistent finds are prevalent. Imaginal rehearsal has been shown to be effective alone (Lutz et al., 2001; Rawlings et al., 1972; Short et al., 2002, Smith et al., 2004; Woolfolk et al., 1985a; 1985b) and when combined with additional interventions (Kendall et al., 1990).

Imagery has been studied quite extensively in relation to sport performance. As we have seen throughout this review, this research has used retrospective and indirect measures rather that dealing with imagery more directly and immediately. The present study will attempt to examine whether imagery and other inner experiences occur during
golf performance using a more direct and immediate method of examining inner experience.

**Self-Confidence & Self-Efficacy**

According to Bandura (1977), psychological processes influence self-efficacy, one’s perceived capability for successful action, and related expectations determine behavior. Self-efficacy is thought to be determined by performance accomplishments, vicarious experience, verbal persuasion, and physiological states, with the more consistent experiences being more influential on self-efficacy (Bandura, 1977). This theory has been extended to sport performance behavior, as the relationship between previous and subsequent performance is thought to be mediated by self-efficacy (Krane & Williams, 1992). Like most internal process related constructs, Hardy and colleagues (1996) suggest that research is characterized by a “general lack of consensus over how self-confidence should be both conceptualised [sic] and operationlised [sic].” Nonetheless, Hardy and colleagues (1996) conceptualize confidence as a being both a global construct “associated with overall performance expectancies in sport” (p. 45) as well as a state-like phenomenon related specifically to performance tasks. Self-efficacy is typically seen as “situation-specific self-confidence” (Hardy et al., 1996, p. 46).

Two specific types of statements received prior to performance appear to improve performance. Motivational statements seem to inspire greater effort, generate a positive mood, and increase self-confidence, whereas task-relevant instructional statements may enhance performance by directing desired behavior on tasks through focusing on strategy execution (Hardy et al., 1996). Motivation and attention to technical skills appear to be key factors in performance enhancement efforts.
Efficacy is thought to lead to effort and determination and is typically enhanced via modeling, observational learning, ensuring successful accomplishments in practice, and verbal persuasion. Through enhancing efficacy, arousal, which is cognitively appraised as readiness for performance, may increase, thus increasing the probability of enhancing performance (Singer et al., 1993). Anxiety has been proposed as being inversely related to self-efficacy as performance expectations may lead to worry, negative thinking, and behavior change (Feltz, 1992). Thus performance expectations are believed to directly influence an athlete's level of cognitive anxiety, or worry, and athletic performance (Krane & Williams, 1992). Self-efficacy strategies, self-statements, and simply focusing on arousal to increase arousal state self-awareness have been incorporated within with mental preparation strategies to improve performance (Meyers et al., 1996).

Unfortunately, efficacy may be an effect of successful performance rather than its cause, a possibility overlooked by correlational designs. Research has identified a tentative reciprocal influence between performance and self-efficacy (Feltz, 1982, 1988; Feltz & Mugno, 1983). Krane and Williams (1992), however, failed to find support for the relationship between performance and state confidence, citing different measurement techniques as a likely cause. State confidence was the best predictor of golf performance in a different study of female college golfers, however (Krane & Williams, 1987).

Despite the hypothesized relationship between self-efficacy and performance, the direction of the relationship is difficult to determine. For instance, Highlen and Bennett (1983) found that self-reported confidence distinguished qualifiers from nonqualifiers in wrestling and diving. Woolfolk and colleagues (1985a) found that imagery was positively related to self-confidence in golf. Nonetheless, it is not evident whether confidence leads
to performance success or reverse causation occurs. Unfortunately, simple linear deterministic views of the confidence-performance relationship are omnipresent in conventional circles, and to some extent this has been encouraged by researchers such as Bob Rotella, the author of Golf is a Game of Confidence (1996). An example of when simple unidirectional models fail occurs when, similar to arousal and anxiety, excessive confidence may be deleterious to performance. In fact Kirshenbaum, O'Connor, and Owens (1999) found that when golfers of different skill were overly optimistic (e.g., positive illusions) about their skill, decreased performance success on challenging holes resulted. The authors suggested this may have resulted from overly aggressive shot selection. In addition, McAuley (1985) found that precompetitive anxiety measures did not predict performance among college golfers, but golf performance significantly predicted post competition cognitive state anxiety and self-confidence. Thus self-confidence may be an effect of successful performance rather than its cause. Finally, recall that Hardy et al. (2004) found that self-confidence played a moderating role between anxiety and performance. Self-confidence may therefore be related to performance other in a more complex multidimensional manner.

In summary, self-confidence and self-efficacy have been studied quite extensively in relation to sport performance. Consistent with our recurring theme, research on imagery in sport has used retrospective and indirect measures rather than dealing with self-confidence and self-efficacy more directly and immediately. The present study will attempt to examine whether these and other inner experiences occur during golf performance using a more direct and immediate method of examining inner experience.
Performance Enhancement Interventions that Target Cognitive Processes

As evident from the review of emotion research in sport performance, interventions from the cognitive-behavioral perspective dominate the field of sport psychology. Over the last few decades, several researchers examining performance enhancement interventions adopted the fundamental assumptions that 1) behavior is determined by internal processes such as thoughts and emotions and, 2) cognitive processes can be modified to facilitate optimal performance behaviors. Albert Ellis (1982), as well as Williams and Leffingwell (1996), acknowledged the pervasiveness of irrational beliefs in sport, which are so common they have become clichés (e.g., “no pain, no gain,” “winning isn’t everything, it’s the only thing”). Thus performance difficulties were hypothesized to be related to disturbed cognitive patterns, which could be identified and restructured into logical and positive cognitive patterns. Optimal internal processes, desired behavior, and enhanced performance were expected to follow.

Thought content associated with optimal performance has been examined in several investigations. Greenspan and Feltz’s (1989) review of performance enhancement interventions suggested that successful athletes have reported using cognitive strategies differently than did less successful athletes, and the authors speculated that this may have led to better performance. In a qualitative study, Gould, Eklund, and Jackson (1992) interviewed all 20 members of the 1988 Olympic wrestling team and found that wrestlers reported their best performances after using mental preparation techniques targeting confidence, optimal arousal, focusing attention, and tactics. In addition, golfers reported more self-confidence in tournament competition preceded by cognitive reinforcement strategies (Cohn, 1991). Hundreds of studies have evaluated the effectiveness of
cognitive-behavioral interventions, many of which seem to be multi-component interventions (Greenspan & Feltz, 1989).

Meyers and colleagues (1996) performed a meta-analysis of the efficacy of several of the rapidly proliferating cognitive-behavioral interventions, including goal setting, imagery and mental rehearsal, cognitive self-management, arousal management (as previously discussed), and multi-component interventions that combine components of many of these interventions. Goal setting emphasizes near term, midterm, and long term performance goals that are specific, concrete, and measurable. Challenging and realistic goals are evaluated in terms of attainment with emphasis on process and effort over the performance outcome. The effectiveness of goal setting strategies on performance has been equivocal, but research has been promising, and a small number of studies demonstrated moderate effectiveness \( d = 54, SD = .15 \) according to Meyers and colleagues (1996). Imagery and mental rehearsal involves interventions incorporating strategies for visualizing specific factors assessed as essential to optimal performance. The diverse collection of practices that constitute imaginal rehearsal typically includes closing the eyes, visualizing motor skills, and can include using auditory, visual, and emotional stimuli (Suinn, 1993). Research suggested that more experienced athletes benefit from mental practice when compared to novices (Suinn, 1993). Imaginal rehearsal has been shown to be more effective when combined with additional interventions, and multi-component interventions have been efficacious (Meyers et al., 1996). Mental rehearsal was combined with relaxation and self-talk by Kendall and colleagues (1990) and found to be effective for enhancing basketball performance during games. Cognitive self-management interventions include attentional focus, self-instruction, self-monitoring,
and cognitive restructuring. With the exception of attentional focus and self-instruction strategies, all interventions have demonstrated at least moderate efficacy when compared with controls, according to Meyers and colleagues (1996). In addition, multi-component interventions, consisting of a combination of the aforementioned interventions, have demonstrated efficacy in controlled studies. Thus two existing literature review supported the efficacy of several cognitive-behavioral interventions (Greenspan & Feltz, 1989; Meyers et al., 1996). Although these interventions have demonstrated efficacy, it is not apparent how these interventions operate in relation to inner experience because few studies have directly addressed this.

Cognition Summary

The notion that successful performance depends on control of mental processes is pervasive throughout the field of sport psychology. The understanding of these processes is limited by the overwhelming reliance upon retrospective self-report evident in the field of sport psychology. Rather than directly assessing the experience of these phenomena during sport performance, the majority of studies have dealt with cognitive processes indirectly and retrospectively. Because the results of so many studies depend on the method of retrospective self-report, embarrassingly little is actually understood about the actual cognitive processes that occur during performance in general and golf performance in particular.

Emotion & Cognition Conclusion

A multitude of internal processes have been associated tentatively with successful performance including optimal arousal, successful coping with stress, positive mood states, positive and even negative emotions, positive self-talk, attentional focus, positive
self-confidence, and positive imagery, although findings have been inconsistent. Although cognitive-behavioral interventions have been generally effective (Greenspan & Feltz, 1989) for both team and individual sports, for open-skill tasks such as soccer and closed-skill tasks such as golf, and for tasks requiring accuracy, strength, and endurance (Meyers et al., 1996), this does not imply the mechanisms through which these interventions operate are understood.

Investigations of inner experience in sport performance that have been conducted to date have typically been retrospective and indirect. Most of these studies have been conducted under the apparent assumption that athletes have the capacity simultaneously to compete and to report about internal processes without significant distortions. This assumption is contradicted by the acknowledged limitations of retrospective self-report — these methods may be limited by participants’ verbal ability and self-awareness (Hackfort & Schwenkmezger, 1989), social desirability, demand characteristics, social and experimental expectations, and reactivity due to repeated assessments (see Raglin & Hanin, 2000). A lack of concordance between retrospective self-reports and daily reports has also been found (Ptacek, Smith, Espe, & Rafferty, 1994). Problems with retrospective self-report may lead to fundamental misunderstandings about inner experience. The limitations of retrospective self-report measures may explain the prevalence of inconsistent findings in sport psychology research. Despite this, self-report measures are quite frequently used to study inner experience in sport performance with little consideration or use of alternative methods. Alternative methods of examining internal processes such as directly investigating inner experience during sport performance may
illuminate athletes' experiences and overcome the inherent limitations associated with retrospective self-report.

Few explorations have extensively examined inner experiences that occur during sport performance, and even fewer have done so in golf. No study has ever been conducted that that directly, immediately, and thoroughly examined the wide array of inner experiences in sport performance while giving equal attention to the presence of any and all possible inner experiences. The explorations of these internal processes that have been conducted to date have typically been retrospective, indirect, and rather narrowly-focused. Notable exceptions to the latter include Klinger et al. (1981) and Hudson et al. (2002), and these studied could easily be improved. Few studies have examined the phenomenological frequency of internal processes (e.g., emotions, thoughts, etc.), the degree of individual differences or similarities, and even the presence versus the possibility they may be absent during athletic performance and competition. Without methods that directly assess internal phenomena, the presence of these phenomena during any period of time is questionable. Conversely the a priori assumption that specific internal phenomena are present during performance combined with the delivery of specific retrospective self-report instruments to measure them may encourage unintended response biases.

The current study sought to examine these processes extensively, methodically, and inductively during sport performance in a naturalistic context with both moderately and highly skilled athletes, following past methodological suggestions (Greenspan & Feltz, 1989; Hardy et al, 1996; Meyers et al, 1996). Idiographic descriptions provided by the method may further illuminate the experience of internal processes assumed to exist in
sport performance, processes that are far from well-understood. Findings generated by the current study may support or undermine existing theories or observations, but in either case, information will be provided to better inform future investigations. The following chapter will describe methods for how this will be accomplished by considering inner experience sampling methods in general, the rationale for the current study, and a methodological overview of the current study. Thus the following chapter largely departs from research in sport psychology and discusses inner experience sampling methods, with a notable emphasis on studies that have been conducted in sport performance when they have been conducted.
INNER EXPERIENCE SAMPLING METHODS

The purpose of this chapter is to examine inner experience sampling methods relevant to the current study. This will be accomplished in two ways. First, methods of sampling inner experience in general will be reviewed. Second, a rationale and an overview of the methods for the current study will be provided.

Methods of Exploring the Phenomena of Inner Experience: A Review

In this section, five methods of sampling inner experience will be sequentially reviewed. Examples of studies from each of the different methods will be used. Specific emphasis will be placed on studies that have been conducted in sport performance if they could be found. If no studies were found, examples of studies will be used from outside the field of sport performance. Finally, the relative strengths and weaknesses of these methods will be examined.

Introduction

Renewed interest in the study of inner experiential phenomena such as cognitions and emotions has led to the development of methods to examine inner experience (Ericsson, 2003). Methods that attempt to circumvent the inherent limitations of both retrospective self-report as well as those of traditional introspection have emerged in recent decades. The five sampling procedures that will be described target specific moments of inner experience immediately after their occurrences in order to reduce memory distortions.
(Hurlburt & Melancon, 1987) and enhance ecological validity by sampling phenomena in more natural environments (Hormuth, 1986).

The think aloud method has participants report their thoughts out loud continuously while performing a task of interest. Thought and Mood Sampling randomly or quasi-randomly prompts participants to respond to questionnaires related to their thought content and often their emotional experience. Ecological Momentary Assessment (EMA) prompts participants to report about inner experience phenomena as they occur in the natural environment using a broad range of flexible measures (Jones-Forrester, 2004), and information about the elements of the environment related to momentary experience is also collected (Stone, Shiffman, & DeVries, 1999). The Experience Sampling Method (ESM) typically asks the same set of questions about thinking, mood, and the environment, typically using a narrower range of self-report measures than does EMA. The latter collects more information about the elements of the environment related to momentary experience (Stone, Shiffman, & DeVries, 1999). Descriptive Experience Sampling (DES) randomly prompts participants to report about momentary inner experience and provides narrative descriptions of the details of experience. All of these methods attempt to reduce distortions of memory associated with retrospective self-report and enhance ecological validity. Of these methods, we will see that DES 1) is the least likely to be influenced by the limitations of self-report because it avoids using these measures to examine inner experience, 2) goes to the greatest length to reduce experimenter bias, 3) goes to the greatest length to facilitate accurate reporting by extensively training participants in the method, and 4) provides the most extensive description of momentary inner experience.
Researchers have described momentary experience sampling methods by their inherent attributes (Ericsson & Simon, 1993; Payne, 1994), the techniques they use and the type of data they generate (Hurlburt, 1997), the degree of focus on environmental factors (Stone, Shiffman, & DeVries (1999), and the interval used to signal participants’ reporting (Reis & Gable, 2000). Ericsson and Simon (1993) described the think aloud method by its attributes. The think aloud approach has participants continuously report their thoughts out loud while performing a task of interest (Payne, 1994) such as a problem-solving task, and many times verbalizations are recorded on tape (Yang, 2003), after which the researcher analyzes and codes verbal reports. In 1997, Hurlburt reviewed three experience sampling methods: Thought and Mood Sampling, ESM, and DES. The common feature described included that fact these methods have participants carry beepers that signal at random or quasirandom intervals, and sampling occurs in natural environments. Two of these methods, Thought and Mood Sampling and ESM, were lumped together as “loose categories of quantitative methods” (p. 941), as both typically have participants fill out quantitative questionnaires at beeped intervals. The third, DES was categorized as qualitative because it has participants write a short narrative description of the experience and attend a subsequent interview. Stone, Shiffman, and DeVries (1999) distinguished EMA from ESM as the former examines elements of the environment related to momentary experience as well as momentary inner experience. Other researchers even have categorized sampling methods based on the interval used to signal participants’ reporting (Reis & Gable, 2000). Reporting can depend on an event that occurs (event-contingent), a chosen time period (interval-contingent), or a randomly
generated signal (signal-contingent), and the latter has been more typically recommended due to its potential to reduce sampling bias (Scollon, Kim-Prieto, & Diener, 2003).

Although researchers have described momentary experience sampling methods in several ways, this review will use methodological attributes and the type of data they generate to distinguish them from one another. As we will see, the common feature of these methods is their purpose. These sampling procedures all target specific moments of inner experience immediately after their occurrences in order to reduce memory distortions (Hurlburt & Melancon, 1987) and seek to enhance ecological validity by sampling phenomena in more realistic if not natural environments. The five prominent methods for sampling inner experience that will be reviewed are the think aloud method, Thought and Mood Sampling, EMA, the ESM, and DES. These five methods will be reviewed because of their similar purpose.

Studies that have explored inner experience related to sport performance using these methods will be used as examples methods during this review. Since few studies have accomplished this however, examples of sampling studies outside of sport performance will be discussed when sport studies are absent. Thus sampling literature will be reviewed by providing two types of studies: 1) sampling and 2) sport-related sampling studies. Finally, the strengths and weaknesses of experience sampling methods will be presented.

The Think-Aloud Method

The first sampling method that will be described is the think aloud method. This method has participants report their thoughts out loud continuously while performing a task of interest (Payne, 1994). Examples of tasks include problem-solving as well as sport performance-related processes. Verbalizations are often recorded on tape (Yang, 2003).
Finally, researchers organize, analyze, and code verbal reports (Ericsson & Simon, 1993). In this section, first the think aloud method will be described in more detail. Next, five studies that were found that used the think aloud method to examine thoughts related to sport performance will be described. Finally, the strengths and weaknesses of this method will be discussed.

In 1980, Ericsson and Simon developed a framework for using verbal reports of thoughts as data. Ericsson and Simon (1980) believed that accurate verbal reports could be obtained by having participants think aloud rather than relying solely on retrospective self-report. Think aloud participants have been instructed to “say out loud everything that you say to yourself silently” (p. 376) or “tell me EVERYTHING you are thinking” (p. 378) while in the process of doing something such as solving math problems or anagrams. Concurrent verbal reports were recommended so processing and verbal reports could coincide in time, thus avoiding reliance on participants’ inferences about their mental processes and memory distortions (Ericsson & Simon, 1980, 1993). To accomplish this, think aloud studies have tape recorded verbal reports for later analysis (Ram & McCullagh, 2003). Thus the goal of the think aloud method is to examine the actual concurrent sequences of thoughts from verbal reports during experimental activities (Ericsson & Simon, 1993).

Five think aloud studies were found that examined thoughts related to sport performance. Four of these studies sampled experience indirectly related to sport performance by sampling outside of the actual competitive setting, using the think aloud method in skill acquisition, analogue sport situations, and during an intervention. Only one study examined thinking directly by interrupting sport performance. First, the four
indirect studies will be described. After this, the only study to directly examine inner experience by interrupting actual sport performance will be described.

The first of these studies, by McPherson (1993), used the think aloud method to examine the influence of player experience on problem solving during a baseball batting analogue situation. Twelve experts (college baseball players), one of their coaches, and 12 novices (undergraduates) watched one half-inning of a college baseball game and were instructed to assume the role of the batter and think out loud during standard fixed intervals immediately before batting and between each pitch of their simulated at bat. Verbal reports were transcribed verbatim and coded into 3 categories — conditions, actions, or goals. Conditions were reports related to the performance situation (e.g., the pitch, the pitcher, the base runner). Actions involved performance behaviors (e.g., hitting, movement, visual tasks). Goals were experiences directed at influencing the outcome of the game (e.g., driving in a base runner, avoiding a double-play, winning). Results indicated that experts reported a significantly greater number of thoughts about conditions ($M = 69.3$, $SD = 30.3$) than did the novices ($M = 40.2$, $SD = 23.2$). In addition to the number of thoughts reported, which were greater on average for experts compared with novices, the relative within-group frequencies of condition, action, and goal related thoughts were reported. No differences in the relative frequency of these categories of thought were found between the groups as groups reported similar frequencies of conditions, actions, and goals. Experts’ reported thoughts were categorized as much more sophisticated and based on problem-solving strategies compared to novices. For instance, most experts thought about four well-defined condition concepts: a) past patterns, b) their position as a hitter, c) game status, and d) the position of the runners. Thus the rules that
were described from experts' reports reflected “more tactical, refined, and associated
compared to novices’ rules” (p. 304). In other words, thinking processes that emerged
from experts’ reports were more sophisticated, more extensive, more specific, and more
task-relevant than those of novices. Expert reports also more frequently reflected self-
regulatory strategies that allowed them to generate and modify their predictions of pitcher
characteristics. The coach’s responses were generally similar to those of the players.

This study was an indirect examination of inner experience in sport performance
because a simulated videotaped analogue game situation was used. A direct examination
would sample inner experience during actual performance. Thus it is somewhat
ambiguous whether experts would use similar strategies during actual performance.
Nonetheless, differences between experts and novices would most likely stem from the
obvious difference between the groups in terms of expertise. As both quantitative of
qualitative data reflected, relatively consistent differences between experts and novices in
information processing during an analogue sport situation. This study demonstrates the
quality of information that may be gained from immediate methods of sampling inner
experience related to sport performance.

The second think aloud study found was a skill acquisition study that indirectly
examined of inner experience related to sport performance. Hare & Graber (2000)
investigated thinking misconceptions related to sport performance with fifth-grade
children (10-11 years of age) learning floor hockey and soccer skills in physical
education classes. They non-randomly chose four participants including two high ability
males, one average ability female, and one low ability male from a class with 27 students.
Thoughts were collected during class instruction in sport skills. During this, participants
were instructed to think aloud at non-random times in the presence of a researcher who encouraged participants to “say what you are thinking” (p. 62) into a wireless microphone that transmitted to a receiver and was recorded via tape cassette. Raters then rated these tapes to examine participants’ misconceptions. Misconceptions were assessed by observations, interviews, open-ended daily question self-report cards, and interviews asked about thinking that occurred after the think aloud procedure. Participants had three to four recorded think aloud sessions each and were subsequently interviewed by researchers in videotape-recorded session, although the authors failed to indicate how much time elapsed between tape recordings and interviews. According to the authors, the think aloud interviews were “the least valuable of all procedures employed” because “students had tremendous difficulty describing what they were thinking” (p. 71) and were even discouraged from reporting by teachers for being “disruptive” (p. 71). Many times they were silent or failed to comply. Thus participants only rarely conveyed what they were thinking. Additional methodological problems occurred with the interviews including short duration and limited compliance with participation, and daily question self-report cards indicated participants’ difficulty in answering questions. These problems call into question the results of the study, which were qualitatively analyzed, but this did not prevent the authors from drawing conclusions that misconceptions were “best described as naïve conceptions” (p. 73), conclusions based mainly on interviews. Thus it appears essential to consider individual factors (e.g., verbal ability, cognitive ability) as well as contextual factors (e.g., group size) and interactions in designing sampling studies.
A third study by Ram and McCullagh (2003) used the think aloud method during an intervention. Five intermediate-level volleyball players were administered an intervention in a multiple baseline design. First, a baseline videotape of other athletes performing unrelated tasks in other sports was shown to participants to train them in the think aloud task prior to the self-modeling intervention. The think aloud method instructed participants to "verbalize what you notice on the videotape and how the videotape makes you feel" (p. 228) while watching the video. Then, the think aloud method was used to examine inner experience during a self-modeling intervention aimed at enhancing volleyball performance and self-efficacy. This intervention had participants observe videotaped segments of their best serve prior to performing 10 serves. Increases in serve accuracy were observed, but the intervention was not found to be effective in terms of increasing reported self efficacy. Five themes emerged from the verbalizations in volleyball: description of the sequence of movement (e.g., hitting the ball), description of movement process (e.g., keep eye on the ball), description of scenery (e.g., "there is white on the wall in the background"), thoughts and affect (e.g., "this guy is sort of boring," "I love it"), interpretation of the physical action (no examples provided), and surprise and shock. Regarding the latter, participants found the images of themselves on videotape to be "shocking," saying phrases such as "Oh God it's myself" and "Oh my goodness" (p. 234). Participants reported no shock seeing others during the baseline video. One participant said "I hope this isn't going to be seen by anybody else" and "my first reaction to it was that I looked horrible" (p. 238). Think aloud results indicated that participants verbalized 24% fewer words in the intervention compared with the baseline condition. A greater amount of silence was also observed in the intervention compared
with the baseline condition. The authors interpreted the greater amount of silence and fewer number of words during think aloud and the intervention implied the intervention was “demanding of cognitive resources” (p. 220), which is consistent with Ericsson and Simon’s interpretations when fewer words have been elicited (1993). In addition, the authors believed that cognitive attention may have been “diverted from verbalization to images of the self” (p. 238), however without directly addressing this in a more detailed interview, it seems difficult to explain exactly what “shocking” meant, and whether it was experienced similarly or differently among participants. Nonetheless, the think aloud method generated information during the intervention that would likely have otherwise been missed, which could explain the lack of intervention effectiveness. Relatively detailed description of inner experience is an advantage of this method, although it will become evident that the method to be used in the current study generates even more extensive descriptions of inner experience.

The fourth study was the first think aloud study to be found that sampled inner experience directly during sport performance. Fuhrer (1985) examined the thinking process with 22 table tennis beginners by having them think aloud during experimentally inserted interruptions of the game. This study was a direct examination of inner experience in sport performance because it interrupted inner experience during actual performance. As such, this study partially resembles the Thought and Mood Sampling method, which will later be described. Verbal reports suggested “a high percentage of reported cognitions were related to the action of playing table tennis” (p. 194), which Fuhrer stated was consistent with the notion that “playing table tennis is thought to
involve action-related cognitions” (p. 194). No differences however were found between winners and losers in terms of action-related or non-action-related thoughts.

The fifth study also directly examined inner experience during performance. In 1995, Langley examined cognitive focus with 20 undergraduate participants learning how to bowl in a 10 week bowling class, a skill acquisition situation. Four sources of data were collected: daily participant reports (written responses to a 20-item skill learning questionnaire), researcher observations and interpretations of behavior, informal interviews, and verbal reports of participants’ thoughts during think aloud sessions. During these sessions, a subset of the sample including 7 participants were instructed to “tell what you are thinking” (p. 28) and reported their thoughts into a wireless microphone that transmitted a signal to a tape-recorder for 20 minutes during practice of the bowling task. Results revealed that participants’ perspectives and thoughts were generally related to mechanical errors and psychological mistakes during task performance. Results from the think aloud sessions reflected “a central theme involving error in task performance” (p. 30). According to Langley, “physical and psychological states” (p. 30) and “improper bowling mechanics” were major cause[s] of errors” (p. 31). This study was also a direct examination of inner experience in sport performance and partially resembles the Thought and Mood Sampling method, which will later be described.

Davison, Robins, and Johnson (1983) modified the think aloud method to create the Articulated Thoughts in Simulated Situations (ATSS) method. This method provides open-ended verbal reporting of thoughts as they are experienced during an emotional reaction. In the ATSS method, participants listen to an audiotaped scenario and image that they are an active part of the interaction. After a brief segment of the tape is played, they are asked to articulate their thoughts for 30 seconds. The tape
then continues, followed by another pause for articulation, and so on. (Eckhardt, Barbour, & Davison, 1998, p. 260).

As an example, Davison and colleagues sought to examine thoughts in laboratory conditions that simulated social situations with 33 male undergraduates. Participants listened to experimental and control tapes of simulated situations and were instructed to imagine themselves in the recorded event. Experimental tapes had participants imagine 1) talking with a teaching assistant to increase their grade or 2) overhearing others speak negatively about the participant in conversation. The control tape consisted of overhearing a conversation unrelated to the participant. After listening to these scenarios, participants were instructed to speak their thoughts aloud into a tape recorder. Both experimental and control situations led to reports of thoughts related to evaluation, but more thoughts related to critical evaluation, harm, positive evaluation of and defense of self were reported after experimental conditions. ATSS methods provide participants with analogue situations, have participants report thoughts, and use a broad range of situations to elicit thoughts. ATSS methods have been used to examine thoughts predictive of smoking cessation and relapse (Haaga, Davison, McDermut, Hillis, & Twomey, 1993), thoughts in maritally violent men during anger (Eckhardt, Barbour, & Davison, 1998), and thoughts of about antigay hate crimes Rayburn & Davison, 2002), but no studies could be found that used ATSS in sport situations.

Issues of compliance, reactivity, and validity in think aloud studies have been reviewed. Compliance problems were evident in the study by Hare & Graber (2000). Ericsson and Simon (1993, 1998) believed compliance could be enhanced by extensive training in the think aloud method, and that non-reactive reports of cognitive processes can be obtained when the think aloud method relies on thinking as inner speech. Thus the
authors suggested that the think aloud method focus on actual concurrent verbal thought process rather participants’ explanations and inferences about how and why thoughts happen. In 1993, Ericsson and Simon addressed the validity of the think aloud method by reviewing studies that used different instructions for verbalization. One type of study instructed simple concurrent think aloud reports. The second type of study included concurrent think aloud reports as well as asking participants for the reasons and explanations for thoughts. Instructions to think aloud only changed the accuracy of performance compared to silent controls with the second type of instructions. The second type of question, which calls for causal inferences into thought processes, was later referred to as “overshadowing” (Ericsson, 2002, p. 981). In 2002, Ericsson stated that the think aloud method encourages participants to give free and spontaneous verbal thought expression elicit valid and non-reactive verbal reports. In contrast, overshadowing procedures require participants to produce prescribed types of verbalizations (e.g., telling them how to verbally describe thoughts). So question like “how did that make you feel” that have been used (Ram & McCullagh, 2003) should be strictly avoided. Ericsson believed the reactive effects of overshadowing were due to the requirement of producing prescribed verbalizations and are not caused by spontaneous verbal expression of thought.

The think aloud method has allowed participants to provide thoughts in laboratory conditions while solving problems or analogue situations. As such, this method has made inherent improvements compared to retrospective self-report methods. Think aloud studies have evident strengths and weaknesses. Strengths of the think aloud method include the examination of thoughts more immediately, thus overcoming memory
distortions, and typically less reliance on participants' causal inferences about thoughts. In addition, more detailed inner experience is typically provided. By sampling experience that more closely resemble natural settings rather than relying on retrospective generalization about past inner experiences the think aloud method provides enhanced ecological validity compared to retrospective self-report methods. Compared with the other sampling methods that will subsequently be described however, think aloud studies have been more frequently conducted in laboratory or analogue situations, which increases the degree of experimental control over situations presented to participants. Nevertheless, the think aloud method has inherent weaknesses. Nisbett & Wilson (1977) criticized the use of verbal reports about inner experience in general because they believed that people have little ability to observe directly or report accurately about inner experience, this criticism is valid for think aloud methods that fail to sufficiently train participants in the method. Another concern related to the think aloud method has been the potential for the reporting process to alter the experience being reported, which was discussed by Payne (1994) This may more likely occur with the think aloud method compared to the other four sampling methods because the think aloud method samples thoughts non-randomly, which may allow participants' expectations to intrude upon thinking and verbal reports (e.g., reactivity), although think aloud protocols have included training in the method to reduce this problem (Ericsson & Simon, 1993). In addition, since the think aloud method has focused specifically on thoughts that are verbalized, reports may have more readily focused on inner speech at the possible expense of other thought processes (e.g., images) and emotions that may be related to domains of interest. Think aloud studies that used self-report questionnaires may have
been susceptible to socially desirable responding as well (see Schwarz, 1999). Finally, think aloud studies have typically been conducted in laboratory or analogue situations, which may reduce ecological validity compared with the following four methods of sampling experience. Overall, think aloud studies have added improvements over the more traditional retrospective self-report methods in sampling inner experience, but we shall see how other sampling methods may further improve the examination of inner experience.

Thought and Mood Sampling

The second sampling method, Thought and Mood Sampling, originated from research in 1974 independently by Hurlburt (1976) and Klinger (1978-1979; Hurlburt, 1997). This method will be described, examples of studies will be provided, and one study related to sport performance that was found will be reviewed. Reliability of Thought and Mood Sampling will also be discussed. Finally the strengths and weaknesses of the methods will be described.

Thought and Mood Sampling methods have prompted participants to sample at random or quasi-random intervals into their natural environments. Some methods have had researchers deliver prompts at quasi-random intervals and let events determine prompts (see Klinger, Barta, & Glas, 1981), but other methods have had participants carry beepers that signaled randomly (Klinger & Cox, 1987-1988; Hurlburt & Sipprelle, 1978). After the signal, participants have been instructed to write narrative descriptions of internal experience, respond to rating scales, or both (Hurlburt, 1997) in their natural environments.
Klinger and Cox (1987-1988) examined consciousness or thought content in everyday life with 29 undergraduate students, who were given a random beeper for 7 days. Participants used the beeper for as much of each sampling day as they comfortably could. When the device signaled, participants completed four brief questionnaires: a thought-sampling questionnaire, a questionnaire about what they were doing, a state measure of depression, and a state measure of anxiety. Participants completed the thought-sampling questionnaire by reporting immediate thought content and rated their thought content on 4-point scales such as how clear or specific the inner experience was, how much detail or color there was, how visual or auditory the experience was, and whether there was interior monologue. Participants described inner experience for a total of 1,425 moments. Factor analyses yielded eight independent factors including Visual Modality, Auditory Modality, Operantness, Attentiveness to External Stimulation, Controllability, Strangeness, Past Time Orientation, and Future Time Orientation. In addition, the authors noted that inner speech and the "visual modality" (p. 105) was reported for most individuals. Finally, about one-third of thought was reported as undirected, one-third was reported as "stimulus-independent," and "about one-quarter contained at least traces of dream-like elements" (p. 105).

Hurlburt and Sipprelle (1978) described the case of a 48-yr-old male with debilitating anxiety attacks. The cause of the attacks was difficult to determine because he described a highly satisfying family life and career and a pleasant upbringing by his two parents. The participant was given a pocket-sized beeper that signaled randomly (an average of once every 45 minutes) through an earpiece. Upon hearing the random signal, the participant was instructed to write down the thought or thoughts he experienced and rate
his level of anxiety at the moment just before the signal, and samples were discussed with researchers. From an analysis of two days of thought sampling, a large percentage of his thinking was categorized as feelings of annoyance with his 3 young and active children to whom he was emotionally attached. His anxiety was dramatically alleviated by discussion and acceptance of his feeling of annoyance.

The first sampling study of experience directly related to athletic performance was conducted by Klinger and his colleagues in 1981. Thus study investigated thoughts during brief slumps and hot periods during basketball play to examine attention and content of performance-related thoughts. The authors speculated that slumps may occur because "something in the game — perhaps a slight reversal or strong challenge — distracts attention from the flow of concentrated play and focuses it instead on a self-conscious interaction with oneself" (p. 113). They suggested that "this may then impede play further, thus producing a vicious circle that constitutes the slump" (p. 113). Due to the limitations of sampling internal processes during an open skill team sport, players on the bench were interrupted semi-randomly by the researcher and thoughts were sampled by audio tape. In addition, thoughts were sampled non-randomly when athletes came off of the court due to substitution. Responses were coded into a priori constructed categories with acceptable interrater agreement. Few thoughts were unrelated or irrelevant to performance, whereas most were more suggestive of associative attention. In addition, significantly more negative self-exhortation/evaluation thoughts were found during slumps, whereas task-related problem-solving/perceptual were significantly more common during hot periods. Thus results seem to support the positive relationship between team performance and associative thought.
Two studies examined the properties of Thought and Mood Sampling. In 1979, Hurlburt proposed examining the cognitions in everyday life by randomly sampling thoughts and behaviors. Interrater reliability of narrative descriptions was coded by two independent raters on six categories including tense, affect, sex, aggression, interpersonal, and relatedness. Interrater reliabilities ranged from 0.66 to 0.89 for these scales. Questionnaire and thought sampling data were compared by Hurlburt and Melancon (1987b) by conducting five studies with different student participants using different methodologies on the imaginal processes inventory (IPI) data. Methods of gathering data were manipulated by immediate versus retrospective recall, single versus multiple-moment questions, and questions about specific thoughts or general observations were delivered in a between-subjects design. The main comparison of interest was immediate, single moment, specific methods such as thought sampling against other methods. Results suggested that “questionnaires and thought sampling methodologies provide broadly similar results” (p. 698); however a closer look revealed that retrospective questionnaires may have lead to distortions of how frequently internal processes occur, minimizations of the strength of affect, and a misinterpretation of the relationship between specific internal processes. As we shall see, this has important implications for experience sampling procedures.

The strengths and weaknesses of Thought and Mood Sampling methods will now be discussed. An added advantage over think aloud studies includes the potential reduction in reactivity involved in Thought and Mood Sampling with beepers that emit a random signal, which may reduce the intrusion of expectations. In addition, Thought and Mood Sampling studies have focused not only on thoughts, but emotions have been examined
as well. Thought and Mood Sampling studies have also been extended beyond laboratory or analogue situations, which may increase ecological validity. Thought and Mood Sampling studies have yielded both quantitative (e.g., Klinger & Cox, 1987-1988) and qualitative data (e.g., Hurlburt & Sipprelle, 1978), demonstrating the versatility of the approach. Reliability of Thought and Emotion Sampling has also been adequately demonstrated. The weaknesses of Thought and Mood Sampling compared with the think aloud method are fewer in number and it seems less likely they would seriously impact Thought and Mood Sampling methods. The possibility that verbal reports about inner experience have been subtly influenced by participants' causal inferences exists (see Nisbett & Wilson, 1977). Data from Thought and Mood Sampling studies that used self-report questionnaires may have been influenced by socially desirable responding as well (see Schwarz, 1999). Reactivity may have been less likely, especially with studies that used random intervals, although to some extent it may have still existed due the use of repeated measures.

**Ecological Momentary Assessment**

The third method, Ecological Momentary Assessment (EMA), has participants immediately report inner experience in natural environments on different schedules. Although no studies could be found that used EMA in sport situations, EMA studies will be briefly described with example studies provided. Next, computerized sampling will be described. After this, compliance and reactivity will be addressed. Finally, the strengths and weaknesses of this method will be discussed.

EMA is a method that obtains information from participants' reports about inner experience phenomena as they occur in the natural environment on a signal- and or event-
contingent schedule. Information about the elements of the environment related to momentary experience is also collected (Stone, Shiffman, & DeVries, 1999). Random signal-contingent schedules occur when a beeper device or wristwatch signals the moment about which to respond on a random time interval. This schedule has been used to reduce sampling bias over event-contingent methods that ask participants to respond immediately after the occurrence of an event, potentially allowing participants greater influence over when to respond (Barrett & Barrett, 2002; Christensen, Barrett, & Bliss-Moreau, 2003). Regardless of the sampling schedule, EMA requires participants to respond to relatively specific items on a questionnaire immediately after the specified moment. Thus this procedure samples inner experience in natural settings using self-report questionnaires to yield quantitative data, but unlike most Thought and Mood Sampling Studies, EMA also collects data about the environment.

Shiffman and colleagues (1994) used EMA to explore the link between smoking and drinking behaviors in the natural environment. Participants were 57 cigarette smokers enrolled in a smoking cessation program. Participants retrospectively reported their smoking history (e.g., how much they tried to restrain drinking) at baseline and how many drinks they consumed in a typical week. Hand-held computers randomly prompted participants to enter data about inner experience during smoking and non-smoking periods during all waking hours of the day. After participants were trained to use the hand-held computers, sampling began. Closed-ended questions were administered on the computers including questions about whether alcohol had been consumed within the past 15 minutes, negative mood, arousal, attention disruption, activity (e.g., work, eating/drinking, leisure, social interaction, inactivity), intrinsic interest in the current
activity (e.g., was this something you wanted to do?), smoking regulation (e.g., were you permitted to smoke in the setting?), social setting (i.e., alone or with others), and finally location (e.g., home, work, bar or restaurant, vehicle). Data confirmed an association between drinking and smoking that was independent of situations. The hypothesis that alcohol increases smoking by disinhibiting a person’s restraint was not supported because alcohol use had no more effect on smoking among those who reported attempting to limit their smoking than those who did not. Drinking was equally likely to cue smoking regardless of how much arousal or cognitive impairment was reported during sampling.

Compliance to the EMA method has been addressed. Litt, Cooney, and Morse (1998) used EMA to assess the antecedents to relapse in 27 treated alcohol abusers. Participants recorded urge to drink alcohol, mood state, situation, and alcohol on 5 x 7 inch cards on a random schedule from a wristwatch. Although compliance was reported as 81% and drinking and drinking urges were reported relatively rarely, significant methodological problems such as long delays in recording from about 5 minutes to several hours were may have compromised the results. Collins, Morsheimer, and Shiffman (1998) used EMA to assess predictors of self-reported excessive drinking in a sample of heavy drinkers. This study found high participant compliance in terms of EMA use and reporting. The authors suggested this may have resulted from EMA training. Thus compliance appears to be enhanced when participants are trained in EMA.

The advent of handheld computers and other similar devices has provided additional options for signaling and recording responses in experience sampling methods. Handheld computers and similar devices may be used by most if not all of the five experience sampling methods reviewed, but since EMA and ESM have often used these devices,
computerized sampling will be discussed here. Computerized sampling procedures reflect the effort toward increased automation in sampling studies. Computerized sampling can be used in ESM or other sampling procedures by incorporating hand-held computers or personal data assistants (PDA's) that typically serve the dual function of signaling the moment about which to respond and providing a media through which to record the response (Barrett et al., 2002; Christensen et al., 2003). Cellular phones have even recently been used. Collins, Kashdan, and Gollnisch (2003) compared the responses of social drinkers randomly assigned to either paper-and-pencil (PP) self-monitoring or cellular phone (CP) monitoring conditions. Ten PP participants were instructed to “randomly choose 4 times each day” (p. 76) to write responses on cards whereas ten CP participants responded at randomly generated intervals into a voice interactive system over their cell phones. In general, the authors found fewer significant group differences between PP and CP in terms of alcohol use, compliance, and satisfaction than non significant differences, but compliance with self-monitoring was actually significantly lower in the CP group (e.g., failure to report drinks). Conversely, the PP group reported significantly greater difficulty remembering to complete morning sampling, but they perceived themselves as more successful at overall Reporting. Despite these problems, since more similarities in responding were found than differences the authors cautiously suggested that CM could provide useful advantages such as instantaneous entry of data, date and time stamping of data, and easy integration into daily life. Higher compliance in the PP group however, seems to suggest than paper-and-pencil methods may be safer.

The advantages of automatized computer sampling include precisely controlled timing of signals, better tracking of participant compliance, potentially reduced human
error (Barrett et al., 2002; Christensen et al., 2003), and the higher appeal to participants, which is seen as an advantage to recruitment (Barrett et al., 2002). The ease of data entry may be increased as well (Collins, Kashdan, & Gollnisch, 2003). This advantage could plausibly lead to the recruitment of individuals with lower motivation and interest in the study however, which could possibly even increase attrition if the novelty of the technology is insufficient to maintain participant interest. Training the user is also a potentially time-consuming issue for samples less experienced with technology, although this is perhaps less of a problem with college student samples. Disadvantages include programming the software, setup and maintenance (e.g., errors, storage, restricted battery life) (Barrett et al., 2002), practical problems with PDA’s (e.g., participants playing with palmtops and wasting battery life), damage, loss, cost, and data management (Christensen et al., 2003).

Hufford, Shields, and Shiffman (2002) examined behavioral and motivational reactivity with EMA among 33 undergraduates identified as having drinking problems using palmtop computers. Participants completed questionnaires that assessed alcohol abuse and dependence, positive and negative, self-efficacy, motivation for change, and social desirability. After this, participants were trained to use electronic diaries on the palmtop and were instructed regarding about how to record when they consumed any alcohol and when they experienced any change in temptation to drink. Random signals prompted participants to respond to questions about activities, setting, mood, and alcohol urges. Data entry was disallowed after two minutes by the computer program to ensure immediate reporting. In addition, participants were instructed enter data on an event-contingent basis whenever they experienced any subjective increase in their
temptation to drink or if they consumed any alcohol. Compliance was high (over 80%), and real-time monitoring of drinking behavior for short periods did not produce significant overall changes in drinking quantity and frequency, suggesting participants’ level of reactivity to EMA is small. This was quite different from the mixed evidence of behavioral reactivity and lower compliance by Collins and colleagues (1998). Hufford and colleagues (2002) suggested their findings of less reactivity were due to the short (two-week) period they used compared to the long (eight-week) period used by Collins and colleagues (1998) (8 weeks). Thus shorter intervals may lessen reactivity.

To summarize, EMA collects data about participants’ environment and inner experiences immediately after their occurrence using event and/or signal contingent sampling schedules. Compared with methods such as Thought and Mood Sampling and ESM, EMA collects more information about the environment and uses broader and more flexible measures (Jones-Forrester, 2004). One of the strengths of this method is enhanced ecological validity compared to retrospective self-report methods (Shiffman & Stone, 1998), and this is a relative strengths over many think aloud studies as well. Reactivity may be less problematic than with think aloud studies, especially when random signal-contingent strategies are used because the likelihood of intrusions of expectation influencing inner experiential phenomena is probably reduced. EMA studies have also been broader in focus than think aloud, Thought and Mood Sampling, and ESM. EMA studies have been extended beyond the exclusive focus on thoughts — studies have examined emotions as well. Reactivity and compliance to EMA is acceptable, and is may be better over shorter intervals. Weaknesses of EMA include some problems with compliance and reactivity due most likely to repeated measures and
extended intervals (Collins et al., 1998). Although EMA samples immediate experience in natural environments, EMA has often relied on self-report, which depends on the awareness and accurate description of experiences by participants. In addition social desirability may influence responses (Scollon et al., 1993). Finally, rich detailed descriptions afforded by idiographic studies have usually been shunned in favor of the opportunity to generate nomothetic comparisons.

**Experience Sampling Method**

The fourth method, the Experience Sampling Method (ESM) uses random signals notifying participants to complete self-report questionnaires (e.g., Experience Sampling Form) immediately after the beep (Csikszentmihalyi & Larson, 1992). Well over 300 articles and dissertations have been conducted using different methods of experience sampling according to Scollon, Kim-Prieto, and Diener (2003), and hundreds of articles and dissertations have used ESM. Despite this, only two studies could be found that used ESM to sample experience related to sport performance. ESM will be described in further detail, examples of ESM will be provided, and validity and reliability will be discussed. Next, the two ESM sport performance studies will be reviewed. Finally the strengths and weaknesses of the method will be examined.

ESM uses devices that emit signals on fixed or random intervals to prompt participants to respond to self-report questionnaires (Larson & Csikszentmihalyi, 1983). This method has been distinguished from EMA, as the latter tends to examine more elements of the environment related to momentary experience as well as momentary inner experience (Stone, Shiffman, and DeVries, 1999) and tends to use broader and more flexible measures (Jones-Forrester, 2004). ESM methods attempt to obtain
ecologically valid momentary samples of inner experience to overcome the memory
distortions associated with retrospective self-report. ESM requires participants to respond
to relatively specific items on a questionnaire immediately after the specified moment.
Thus this procedure samples inner experience in natural settings using self-report
questionnaires to yield quantitative data.

ESM studies have examined a broad range of topics related to inner experience. For
example, studies have been conducted on work activities (Csikszentmihalyi & Figurski,
1982), the relationship between attachment styles and emotions (Torquati & Raffaelli,
2004), and the relationship between environmental factors and happiness
(Csikszentmihalyi & Hunter, 2003), and the relationship between mothers’ self-esteem
and activities (Wells, 1988). Computerized sampling, described earlier, has also recently
been used in ESM (Barrett & Barrett, 2002; Christensen et al., 2003). Thus ESM is one of
the most widely-used experience sampling methods (Scollon et al., 2003).

ESM evolved from observations of everyday experience using dairy techniques
(Larson & Csikszentmihalyi, 1983), which later advanced to the use an electronic pager
that signals randomly borrowed from the behavioral paradigm. Eventually this device
was applied to inner experiential states (e.g., activities, thoughts, feelings) by having
participants report experience each time the pager signaled on self-report measures such
as questionnaires (Hunter & Csikszentmihalyi, 2003). In practice, ESM studies typically
sample many participants, generate a large number of ratings, and involve quantitative
analyses. For instance, Csikszentmihalyi and Figurski (1982) used ESM to sample inner
experience (e.g., thoughts, feelings) during work activities with 107 adults over 7 days,
which yielded over 4,800 self-reports.
Specifically, respondents are given an electronic paging device to carry for eight days: one practice day, a full work week, and one week-end. This instrument emits signals (beeps) according to a schedule randomized within two-hour periods. Accompanying the pager is a booklet of Random Activity Information Sheets [questioning] the respondent’s activity, thoughts, and moods “as you were beeped....” The responses to these items provides the data. (Csikszentmihalyi & Figurski, p. 17-18, 1982).

A positive relationship was found between emotional experience and perceived voluntariness. Self awareness, on the other hand, was associated with emotional experience depending upon perceived volition — when an activity was reported to be voluntary rather than obligatory, self-awareness was associated with lower affect, activation, and personal involvement. Thus self-awareness was reported as an aversive experience depending on the voluntariness of the task (Csikszentmihalyi & Figurski, 1982).

ESM has also examined the relationship between personality and inner experience. Considering the positive relationship between secure attachment and psychological well being, Torquati and colleagues (2004) sought to examine the relationship between social context (e.g., alone, with others) and attachment style (e.g., secure, insecure) with inner experience. Social contexts and emotions of 69 young adults who differed in global attachment style were sampled using ESM. Participants initially completed an attachment style questionnaire. Sampling occurred during 2-hour blocks of time between 9:00am and 9:00pm during the school semester, and signals occurred randomly. After the signal, participants responded to a questionnaire on social connection and energy level as well as several different emotions later categorized as positive or negative with moderate to high internal consistency. Significantly more positive affect, higher levels of energy, and more connection were reported among secure individuals when they were alone. In social

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contexts and in isolation participants that scored high in attachment reported more extreme positive emotions, whereas those that scored low in secure attachment reported more extreme negative emotions, but this was especially true when both groups were alone. Thus the emotional experience of young adults with secure and insecure attachment tendencies differed in social contexts and in isolation (Torquati et al., 2004).

Csikszentmihalyi and Larson (1992) reviewed studies that supported the reliability and validity of ESM. ESM reports correlated highly with diary methods (Robinson, 1977; Szalai, Converse, & Feldheim, 1972), \( r = 0.93 \) (Csikszentmihalyi & Larson, 1992). Individual consistency over a week has been estimated as moderate to high. Participants’ self-esteem was measured in an ESM study using data from the first half and second half of the week, which yielded a correlation of \( r = 0.86 \) (statistically significant) and Cronbach’s alpha of 0.94 (Wells, 1985). Pawlick & Buse (1982) correlated students’ the frequency of responses from the first and second half of the week and obtained correlations of 0.75 for locations, 0.76 for moods, and 0.80 for motives. So despite the possibility that behaviors and internal states may fluctuate, ESM responses appear to have been relatively reliable (Csikszentmihalyi & Larson, 1992). Evidence of the convergent validity of ESM measures has been inferred from the convergence of diary and ESM measures (Csikszentmihalyi & Larson, 1992). Additional psychometric support of ESM, as reviewed by Csikszentmihalyi and Larson (1992), includes: 1) ESM reports of behavior correlated predictably and significantly with the physical conditions such as heart rate (Hoover, 1983); 2) reports of self-esteem were predictably significantly different when mothers were taking care of children than when involved with leisure (Wells, 1985); 3) reports of psychological states correlated with situational factors such
as activity, location, and social context (Larson, Csikszentmihalyi, & Graef, 1982); 4) measures of individual differences based on ESM (e.g., motivation, activity) correlate with independent measures of similar constructs (e.g., enjoyment) (Hamilton et al., 1984); 5) and ESM reports differentiated significantly and predictably between disordered groups such as those with schizophrenia and other patient groups such as those with affective disorders on severity of disordered thought, thought-action congruence, and affect (devries et al., 1986; devries, 1983). Although these studies seem to support the reliability and validity of ESM, activity stability (Csikszentmihalyi & Larson, 1992) and convergent validity has not always been found. Petra & Baltes (1999) found little convergence between interviews and ESM with older adults, and this was only partially explained by older age and declining cognitive ability. Reactivity due to repeated measures has also been mentioned as potentially problematic (scollon et al., 1993). Lack of compliance with the sampling task has been problematic with blue collar workers but not with clerical workers (Csikszentmihalyi & Larson, 1992), and appropriate incentives for participating may increase motivation and compliance (scollon et al., 1993).

Two ESM studies were conducted on inner experience in sport performance using ESM with martial arts athletes. Both of these studies sampled inner experience indirectly insofar as they sampled inner experience prior to performance but did not sample during performance.

The first the two ESM sport studies was conducted by Cerin and colleagues (2001) to examine whether the Experience Sampling Method (ESM) is appropriate for assessing emotions prior to competition. Participants were 66 male tae-kwon-do practitioners that were randomly assigned to one of three groups. Two groups had momentary assessments:
1) the ESM group was assessed randomly (3 times a day 1 week before and 1 hour before competition), and 2) the repeated measurements was assessed non-randomly (7 days, 4 days, 1 day, and 1 hour before competition). The last group was 3) a retrospective assessment group that was assessed non-randomly and retrospectively (2 days after the competition). The ESM group was assessed on pre-competitive emotions (e.g., anxiety) using the CSAI-2, positive and negative emotions using the Positive–Negative Affects Questionnaire, and cognitive intrusions using a single item – “To what extent is/was the competition occupying your mind at this/that stage?” (p. 31). Participants were prompted randomly to report by a pager. Immediately after this participants responded to these measures at three random times a day for one week before the competition and finally one hour before competition. The repeated measures group was assessed on a less frequent schedule (7 days, 4 days, 1 day, and 1 hour before competition) with the same questionnaires as the ESM group, albeit non-randomly. All three groups were finally assessed retrospectively two days after the competition, and of course this was only the second assessment of the retrospective group. This meant that the two momentary groups were sampled immediately after experience whereas the retrospective group was asked two days after competition to recall how they felt 7 days, 4 days, 1 day, and 1 hour before competition. The authors suggested that ESM might “artificially increase intensity of negative emotions and cognitive intrusion and affect temporal patterns of pre-competitive emotions” (p. 27) because the repeated assessment of psychological variables may cause changes in people’s experience, an issue of reactivity. Evidence of this was not found as no differences between the timing and intensity of emotions were detected between the ESM and the repeated measures groups, however, the ESM group reported less cognitive...
intrusions. The retrospective group was compared to the two momentary groups on responses to emotion and cognitive intrusion questions. A between-group comparison revealed differences in recalled positive affects between the momentary and retrospective assessments. Differences were also found between momentary and retrospective assessments on negative affect as well as cognitive intrusion; the retrospective group gave less accurate ratings of pre-competitive emotions, which suggested memory distortions. Surprisingly, significant differences between the ESM and the repeated measures group in accuracy of recall of emotions and thoughts were observed, with the latter group being more accurate; however the authors suggested that the repeated measures group may have responded according to what they recalled their responses being because they only had one report per day. This may have artificially inflated their recall.

The second of the two ESM sport studies was conducted by Cerin in 2004. This study used ESM with 22 martial artists to examine affect, proximity of competition and personality traits as predictors of anxiety direction, and the role of personality in moderating the relationship between anxiety direction and affective states. These participants completed personality measures that assessed neuroticism and extraversion, which were measured initially. Participants were given a pager and were paged three random times a day for one week prior to a competitive event. Participants responded to momentary measures on this schedule including intensity and direction of competitive anxiety (CSAI-2) and positive and negative affect. Results of a multi-level regression analysis indicated cognitive anxiety intensity, positive affect, proximity to competition and extraversion were significant predictors of cognitive anxiety direction. Several
complex interactions were found including proximity to competition and neuroticism, neuroticism and negative affect on cognitive anxiety direction, and "somatic anxiety direction was a function of positive affect, somatic anxiety intensity, proximity to competition and the interaction effects of neuroticism and somatic anxiety intensity and neuroticism and proximity to competition" (p. 497). In light of these two studies, Cerin (2004) stated ESM could potentially contribute greatly to the explanation of intra- and inter-individual differences in anxiety direction.

ESM typically samples experience in natural settings rather than relying on reactions evoked in laboratory conditions that may not necessarily reflect real-life situations (Csikszentmihalyi & Larson, 1992). Thus enhanced ecological validity is one of the relative strengths of ESM over many think aloud studies. Reactivity may be less problematic for ESM than with other nonrandom sampling methods because ESM studies have used random signals more often, thereby probably reducing intrusions of expectation that could influence inner experiential phenomena. As with EMA, ESM studies have also been broader in focus than previous methods, studying processes beyond the exclusive focus on thoughts – studies have examined emotions as well. The validity and reliability of ESM appear to be strong (Csikszentmihalyi & Larson, 1992), although not all studies have supported these properties with ESM (Csikszentmihalyi & Larson, 1992; Petra & Baltes, 1999). Weaknesses of ESM include problems with compliance (Csikszentmihalyi & Larson, 1992) and reactivity due to repeated measures. Although ESM randomly samples immediate experience in natural environments, ESM has typically relied on self-report, which depends on the awareness and accurate description of experiences by participants. In addition social desirability may influence
responses (Scollon et al., 1993). Finally as with EMA, ESM has shunned rich detailed
descriptions afforded by idiographic studies have in favor of the opportunity to generate
nomothetic comparisons.

Descriptive Experience Sampling (DES). The fifth sampling method. Descriptive
Experience Sampling (DES) sampling experience in natural settings by using random
signals to notify participants to immediately write down information in a notebook to cue
them about inner experience for interviews that are conducted within 24 hours. Since no
studies have used DES to sample experience related to sport performance, DES will be
described in detail, examples of DES studies will be provided, validity and reliability will
be discussed, and finally the strengths and weaknesses of the method will be considered.

DES evolved from the Thought and Mood Sampling method. The goal of DES is to
describe the main characteristics of inner experience by randomly sampling immediate,
single, specific moments in time. The most substantial difference between DES and other
methods is the type of data generated. DES provides narrative descriptions of inner
experience, and therefore qualitative data. This is accomplished by a process containing
four steps (Hurlburt & Heavey, 2002): 1) Participants wear a device that emits a random
audible tone (beep) via earpiece. Using this device in their natural environment,
participants record their discrete inner experience at the moment of the beep in a journal
or notebook when the beep signals. Between 5 and 8 instances of inner experience are
recorded per session. 2) Participants are interviewed within 24 hours, either the same day
or the next day, about their inner experience. Interviews about inner experience
phenomena are conducted in a methodical, non-leading manner (Hurlburt, 1990; 1993;
Hurlburt & Heavey, 2002), in which experienced researchers "obtain as detailed a
description of that particular sampled inner experience as possible, all the while suspending our own preconceptions about what that person’s experience might be like” (Hurlburt, 1990, p. 18). This continues over a series of sampled moments as inner experiences are described with the cooperation of the participants. Next, researchers write descriptions of inner experience. 3) Researchers review the set of all descriptions and describe and summarize patterns of inner experiences or other salient characteristics. 4) Researchers examine, summarize, and describe frequent characteristics of participants’ inner experience (see Hurlburt & Heavey, 1999). Thus the results of the expositional interviews are narrative descriptions of inner experience generated from interviews between participants and researchers. In addition, inner experiences are coded based on categories derived from prior studies such as inner speech, image, just doing, unsymbolized thinking, feeling, and sensory awareness (Hurlburt & Heavey, 1999; Hurlburt, Koch, & Heavey, 2002); however, DES is an open method, which means that new categories are created if experiences fall outside the range of pre-existing categories (see Monson & Hurlburt, 1993).

DES studies have established the existence of different forms of inner experience. In 2000, Hurlburt and Heavey developed a codebook for 16 different categories of inner experience (see Appendix A). The reliability of DES was examined by Hurlburt & Heavey (2002). Results indicated acceptable reliability as interobserver-reliability kappas from .52 to .92 were found on five categories of inner experience, and median reliability was 0.76. Spearman-Brown adjustments indicated reliabilities of .92 to .98. This was described as “comparable to highly reliable questionnaires” (p. 135). These five were the most frequently-occurring categories, and although participants experienced the other
eleven categories of inner experience, the five most frequent were analyzed "because reliability statistics may be unstable" (p. 139) with less frequent categories. These categories of inner experience will be described to illustrate some of the forms through which inner experience has been found to take shape.

The most frequently occurring five categories of inner experience found by Hurlburt and Heavey (2002) were images (referred to in current DES research and from now on in this study as inner seeing), inner speech, unsymbolized thinking, feeling, and sensory awareness. First, inner seeing is seeing something internally that is known not to be externally present. Second, inner speech is the experience of speaking words in one's own normal voice without the external sound actually being produced. It is typically experienced as very similar to how one might speak aloud, but it typically contains no external sound. Third, unsymbolized thinking is the experience of a mental event without the experience of words, inner seeings, or any symbol of inner experience. It may be, for instance, a hoping, wishing, or wondering thought process without inner speech or inner seeing. Fourth, feeling is an emotional experience that includes such experiences as anger, guilt, sadness, and so on. Fifth, sensory awareness an internal (e.g., hotness, coldness, itchiness) or external (e.g., brightness, shininess, blueness) sensory experience that is, in and of itself, a major theme of an inner experience. Sensory awareness is often experienced as being absorbed in the sensory details of an inner experience (see Hurlburt & Heavey, 1999).

DES has been used to study inner experience in normal samples as well as samples suffering from psychological disorders, but to date, no study has ever been conducted on the inner experience of sport performance using DES, and few sampling methods have
been used to accomplish this to any extent. Because no DES sport performance studies exist, DES studies will be described to illustrate the application of the method.

DES emerged in the 1980s with the publication of an article that described the inner experience of individuals with schizophrenia (Hurlburt & Melancon, 1987a). DES was extensively described when Hurlburt compared normal individuals and those with schizophrenia using DES (1990). Large difference between the groups came to light, differences that had not been found by other methods. For instance, individuals with schizophrenia had “extremely clear emotional experiences” (p. 254) rather than shallow or blunted affect and this occurred even when affect appeared to be externally blunted. In addition, color seemed to have more prominence in inner experience for individuals with schizophrenia than others, and inner visual experience occurred more frequently as well. Quite surprisingly, images occurred even “more concretely for schizophrenics than for normals” (p. 255), but images were frequently “ goofed up” as well (Hurlburt, 1990, p. 256; see also Hurlburt & Melancon, 1987a). For instance,

Bob described an image of a sweater that was in reality being knitted by the person next to him, except that the imagined sweater was blue and white tweed while the real sweater was blue and green stripes; Sally described an image where the books and papers were missing from a clearly seen shelf. (Hurlburt, 1990, p. 256).

It appeared to take individuals with schizophrenia much longer to experience the beep compared to normal participants. Words were seen to move in schizophrenic experience and were even experienced as independent objects “stripped of their meaningful connections” which allowed “the words of a sentence to be seen in jumbled order” (p. 257). When decompensating, individuals with schizophrenia may have had no inner experience at all. Thus Hurlburt suggested that schizophrenia may be a disorder that consists of image disorganization rather than the commonly-held belief that
schizophrenia is a disorder of association. In addition, Hurlburt suggested that depressive symptoms found in schizophrenia may not result from negative self-thoughts. Instead, depression may stem from the relative absence of words and images.

Also in 1990, Hurlburt found evidence of a mental process described by participants as “implied or assumed experience” (p. 78), or understanding “with unspoken meaning” (p. 90). Hurlburt referred to this process as unsymbolized thinking. In 1993, Hurlburt described the inner experiences of individuals with psychological disturbances. Unsymbolized thinking was defined as a thought process with clear meaning, but without:
1) any type of symbol,
2) without words,
3) without images, and
4) without bodily sensations.

Unsymbolized thinking was frequently experienced by almost all of the participants of this study, and individuals who were depressed, anxious, or bulimic generally experienced a large number of unsymbolized thinking experiences. The features of unsymbolized thinking were complex and differentiated, specific, and usually very difficult to describe, perhaps because of the prejudice that all thinking is in words (Hurlburt, 1993; 1997). In fact unsymbolized thinking was often first reported in words but with much less confidence, more confusion, and/or discomfort. As participants became more experienced in the sampling procedure further investigations in the interview setting could rule out the presence of words at least in the participants’ awareness (Hurlburt, 1993), increasing certainty as to the presence of unsymbolized thinking. In other words, participants may think that all thinking occurs in words, but what they often find is that they lose confidence in this and find that there is thinking that occurs that uses no words, which surprises them. The process of unsymbolized thinking is a wonderful example of the potential of DES to uncover inner experiential phenomena.
that are unrecognized or perhaps even misunderstood and/or misreported by other methods.

Descriptive experience sampling collects data about inner experience at random intervals immediately after the occurrence of internal phenomena. This method has inherent strengths and weaknesses. Participant causal inferences about inner experience (see Nisbett & Wilson, 1977) are much less likely to distort data than with studies that have relied on retrospective self report and even other sampling methods because: 1) in an interview setting, DES researchers may often observe when this happens in sampling training (e.g., I was having an image about my mother because she made me angry), 2) researchers take measures to reduce future reoccurrences by direct communication of the goals of DES with participants (e.g., focusing on the actual inner experience rather than causes of it), 3) researchers avoid the deliverance of questions leading to causal inference responses (e.g., why did you have that image?). Thus DES participants become better trained observers of inner experience than are participants of other methods that causally accept self-reports with little training or scrutiny. In addition since researchers meet with participants after each sample is obtained in interviews, simple methodological problems (e.g., how to best wear the beeper, what situations may be less appropriate), noncompliance, and reactivity can be discussed and reduced in sampling training sessions prior to experimental sessions. Questions and confusions can also repeatedly be addressed. Reactivity may be less problematic for DES than with other nonrandom sampling methods because due to the exclusive use of random signals, which probably reduce intrusions of expectation (e.g., when the beep will occur) that could influence inner experiential phenomena (e.g., by changing situations or behaviors). Addition
methods to reduce reactivity and measure noncompliance include allowing participants to keep certain experiences private and asking them to report when this happens and when beeps are spoiled or missed. As with EMA, ESM, and later Thought and Mood Sampling studies, DES studies have studied thoughts, emotions, behaviors, and situations. DES goes further than these methods however, by using 1) an open system of evolving categories rather than assuming all experiences will fit into a few a priori categories, 2) a bottom-up approach to coding that maintains the integrity of inner experiences rather than forcing them to conform to categories, and 3) an inductive approach to generalizing about participants that is shaped by empirical observation rather than a deductions from a priori theories or personal presuppositions. DES samples experience in natural settings, so enhanced ecological validity is one of its relative strengths over many think aloud studies that have collected data in artificial settings. Interobserver reliability was found to be strong for the predecessor of DES, Thought and Mood Sampling (Hurlburt, 1979), as well as the method itself (Hurlburt & Heavey, 2002). Weaknesses of DES include potential problems with compliance, although this is evident in other sampling methods as well. In addition social desirability may influence responses, however the presence of interviewers that may build rapport, observe, and encourage even socially undesirable but accurate reports constitutes and improvement over other sampling methods. Thus the weaknesses of DES are fewer and may be repeatedly observed and compensated for when one considers those of other methods. Finally, the most significant improvement afforded by DES compared to other methods is the provision of rich idiographic descriptions that enable researchers to uncover processes that could otherwise go unrecognized by participants and researchers.
Disadvantages and Advantages to Experience Sampling Methods

A brief summary of the disadvantages and advantages of experience sampling methods will now be provided. It is suggested that DES provides the greatest number of advantages of the experience sampling methods reviewed.

One common criticism of methods that seek to examine inner experience was also directed at introspection. This issue will be discussed with an emphasis on how DES most sufficiently addresses it. Nisbett and Wilson (1977) critically reviewed of introspective endeavors that have advanced inferences about higher order mental processes by assuming that internal processes mediate the relationship between stimuli and responses. The authors criticized introspective approaches for reliance on reports from individuals who may be unaware of 1) the existence of a stimulus that may have influenced a response, 2) unaware of the response itself, and 3) unaware if stimulus affected the response. Thus Nisbett and Wilson (1977) suggested that introspective reports “are based on a priori, implicit causal theories, or judgments about the extent to which a particular stimulus is a plausible cause of a given response” (p. 233). Nisbett and Wilson (1977) were more critical of causal inferences based on introspective reports than they are on the content of introspective reports. In fact they stated that accurate reports “will sometimes” occur “when influential stimuli are salient and are plausible causes of the responses they produce” (p. 233).

It seems likely that there are regularities concerning the conditions that give rise to introspective certainty about cognitive processes. Confidence should be high when the causal candidates are (a) few in number, (b) perceptually or memorially salient, (c) highly plausible causes of the given outcome (especially where the basis of plausibility is an explicit cultural rule), and (d) where the causes have been observed to be associated with the outcome in the past. (Nisbett & Wilson, 1977, p. 255)
Thus the ability of people to provide information about causal relationships is in doubt. (Examples of questions about cognitive processes criticized by the authors are mainly “why” questions.) It is possible that the investigation of internal processes may more safely proceed if individuals’ reports are separated from a priori causal theories, and if their levels of confidence and the clarity of their experiences are considered. Techniques for achieving this use more disciplined, contemporary methods of sampling experience, and in the case of DES, skillful judgments are made about the specific nature of inner experiential phenomena that occur at discrete moments observed in time, which are separated from a priori causal theories.

Perhaps the greatest advantage to experience sampling methods is the enhanced ecological validity that is provided by sampling inner experience in natural settings. Experience sampling procedures are not immune to weaknesses. As would be expected with repeated measures, reactivity may increase self-reflective awareness, influence phenomena, but this may be less of a problem (Cruise et al., 1996) because the stability of emotion ratings across time is fairly good (Feldman Barrett, 1998). And as Barrett and Barrett pointed out (2001), additional evidence suggests that reactivity has occurred when participants try to change the behavior of interest (McFall, 1970). This may be reduced by random sampling, although participants ultimately have a high degree of control over when they sample. In addition, compliance has been mentioned as a potential burden to participants (Feldman Barrett, 1998), although a review by Hurlburt (1997) suggests that compliance is typically favorable, and DES provides practical suggestions for discrete use of the beeper. Participant attrition can be considerable given the series of repeated measures, and thus a large degree of effort is requested from participants. Nonetheless,
attrition has been higher than that of most laboratory studies according to Barrett and colleagues (2002). In response to this, Barrett and colleagues (2002) have used an incentive schedule to keep motivation high and express appreciation (e.g., movie ticket, earned lottery tickets to win palmtops, university clothing, gift certificate donated by local businesses). Thus many of the limitations of experience sampling procedures may be easily addressed, and as previously discussed, DES goes to greater lengths to maximize the strengths of sampling inner experience in natural environment and minimize inherent weaknesses.

Current methods of exploring inner experience provide seven advantages over retrospective self-report methods: 1) Immediate, single-moment, specific investigations of inner experience see to minimize memory distortions by less reliance on memory and reconstruction (Larson & Csikszentmihalyi, 1983). 2) Experience sampling methods can be conducted in natural environments, allowing the researcher to gain access to ongoing internal experiences that are otherwise difficult to examine, especially in artificial laboratory settings. Thus sampling methods enhance ecological validity (Hormuth, 1986). 3) Although discrete moments may not be representative of others, (Hurlburt & Melancon, 1987b) if a sufficient number of single moments are collected, representativeness may increase, especially in comparison to retrospective self-report. 4) Sampling methods increase the resolution of internal processes by placing a higher degree of focus on immediate inner experience. 5) Higher fidelity of individual descriptions results from the participants’ immediate observation of internal processes and the researchers’ subsequent examination, although we shall see how the extent to which researchers examine this processes varies by sampling method. 6) Richer
description of internal experiences is afforded by the reduction of memory distortions and the opportunity to engage in qualitative examination of subjective experience (Hurburt & Heavey, 2001; 2004). Finally, sampling methods ground of responses in concrete experiences in place of generalities. Sampling methods are more grounded in immediate concrete moments and potentially less filtered by participants' generalities about themselves (see Christensen et al., 2003; but also see Nisbett & Wilson, 1977). This makes it more likely that reported inner experience was observed when and how it actually occurred, thus improving the accuracy of reports (Hurburt & Heavey, 2001; 2004). These advantages have important implications for the exploration of inner experience in sport performance. In the following section we will examine these implications and describe the present study.
CHAPTER 3

THE CURRENT STUDY

Rationale for the Current Study

Unlike other subfields of psychology, sport psychology has devoted more attention to the development and evaluation of effective interventions. Relatively less attention has been directed to assessment (Anderson, 2002; McCann, Jowdy, & Van Raalte, 2002), that is, the evaluation of inner experience during performance. When internal processes have been evaluated, sport psychology research has traditionally relied on retrospective self-report obtained well after performance. These methodologies are susceptible to a wide range of problems that lead to questionable validity of obtained results because

1) reporting bias may be present on the part of participants due to memory problems such as the hindsight bias (see Hawkins & Hastie, 1990), foresight bias, and/or overconfidence (see Koriat & Bjork, 2005), availability and/or representative heuristics (Tversky & Kahneman, 1974); 2) participants may exhibit inaccurate styles of responding such as minimization or exaggeration (Overholser, Spirito, & Difilippo, 2000); 3) researchers may unwittingly influence results by imposing demand characteristics on subjects, researchers may frame leading questions, and/or subjects may tailor their responses based on researchers' interests (Norenzayan & Schwartz, 1999); 4) participants may be unable to accurately engage in the cognitive and motor functions necessary for effective performance and, simultaneously, to attend, process, encode, store, and later retrieve the
phenomena of internal processes during performance. Competing effectively and simultaneously remembering aspects of inner experience are difficult behavioral and cognitive tasks, and the ability of participants to accurately report the about internal processes under sport performance conditions is largely unknown. Nonetheless, participants' abilities to accurately sense, perceive, remember, and report their internal processes during performance are unfortunately widely unquestioned, if not taken completely for granted. This has made it difficult to know more precisely what is happening in metaphorical "the space between your ears" during sport performance. More literally, the present study proposed a less restricted, broader, novel approach for examining the internal processes that occur during golf performance.

When internal processes have been assessed, sport psychology research had traditionally used two main methods—questionnaires and interviews. Previous sport psychology research has relied on retrospective self-report, but more immediate self-report techniques and a greater reliance on interview techniques have recently emerged. Thus attitudes toward utility of qualitative methodologies have become more favorable (Hardy et al., 1996). The current study seeks to advance the trend of using a qualitative methods of examining internal processes related to athletic performance using descriptive experience sampling, (DES), a method that relies on random-sampling of internal experience and subsequent interview.

The genesis of the present study was rooted in 1) the need to address the limitations of traditional sport psychology research examining golf performance, and 2) the expectation that a less restricted, broader, novel approach for examining the internal processes that occur during golf performance may provide a more accurate and consistent
picture of inner experience with the potential to uncover processes previously unrecognized.

This study was the first descriptive experience sampling study to be conducted during performance. It sought to demonstrate that DES could be used to advance the existing knowledge about inner experience that occurs during human performance by better observing and describing the factors thought to influence performance.

The current study sought to explore inner experience during golf performance to address very basic scientific questions including 1) what is inner experience during golf performance, 2) what are the similarities and differences between golf and daily life inner experiences, and 3) what is the relationship between inner experience and the quality of golf performance, if any?
CHAPTER 4

METHOD

Participants

Twelve golfers were recruited from contacts in the Las Vegas community. Two participants dropped out of the study. One moderate handicap group participant dropped out before starting sampling for unknown reasons. The other was a low handicap group participant that dropped out before golf sampling due to an injury incurred outside of the study. The remaining ten participants all completed the study. Five participants represented the moderate handicap (moderate skill) group, and the other five represented the low handicap (high skill) group. Within the moderate handicap group, handicaps ranged from 13 to 26 with a mean of 17.6. Three of these five participants (60%) had registered handicaps. Within the low handicap group, handicaps ranged from 2 to 7 with a mean of 4.2. All five participants (100%) had registered handicaps.

Materials

Beeper. This device is 4.15 by 2.4 by 0.85 inches and emits an audible signal or beep at random intervals through an earpiece that can be worn with minimal interference with behavior (Hurlburt, 1979). This device can be worn using its clip on the waistline or within a pocket. When the device is “on,” it emits an audible continuous 700 Hz tone that is reset with the push of a button. Volume can be adjusted by the user during sampling.
Notebook. A 3 x 5 inch notebook was issued to participants to record any notes they needed to cue themselves about the details of their inner experience that occurred at the moment of the beep. In addition, participants filled out a label that they stuck to the notebook page where they described the details of their inner experience. This label asked them to record when beeps occurred (i.e., which hole and stroke) and what they were doing at the moment of the beep (e.g., waiting, hitting the ball, etc).

Local Golf Course. The final stage of the study took place on at Tuscany Golf Course in Henderson, Nevada.

Demographic Form. Basic demographic information including age, gender, and ethnicity was obtained using a paper and pencil form. In addition, participants were asked to provide their handicap and current telephone number(s). (See Appendix B.)

Procedure

Twelve adult golfers were recruited through contacts within the local community for this study and ten completed the study. The duration of the study was approximately six months, taking place from about March to October 2006. Participants took part in the study for approximately one month each.

This study contained two phases: 1) standard DES training and daily life sampling and 2) an on-the-course golf tournament.

Phase 1: Standard DES Training

Participants were trained in the DES method for approximately three sessions (range two to four) during the first stage of the study. Participants were instructed on how to use the beeper, options for wearing it, and how to use the notebook to record anything they needed to cue themselves about the details of their inner experience that occurred at the
moment of the beep, about which they were asked during interviews. For training sessions, participants were asked to wear beepers during times of their choosing until they collected six beeps. Within 24 hours, participants met with the researcher for the DES expositional interview about those beeps. Beeps collected outside of 24 hours were not analyzed. The expositional interview asked open-ended, non-leading questions to explore inner experience. All interviews were videotaped. The specific number of training sessions depended on individuals' time needed to train to the task of reporting about inner experience, which was determined via agreement between the two primary investigators of the study. After training was complete, participants moved on to Phase 2.

**Phase 2: On-the-Course Golf Tournament**

The 18-hole on-the-course golf tournament took place at Tuscany Golf Club. Participants were greeted by the researcher and provided space in which to warm-up for approximately 15 minutes. After warm-up, participants wore the beeper during competition in the on-the-course golf tournament. Participants completed a record of their scores, which were verified by researchers. When the beeper signaled, golfers were trained first to note the features of their experience in the notebook; then to write down what they were doing at the moment of the beep, the hole on which they were competing, and their current stroke. In the event that a participant is in the act of swinging at the moment of the beep, they were required to take a “do-over” shot at the place of the original shot. Participants competed in groups of 2, 3, or 4 participants, and participants individually competed for one overall tournament first place cash prize of $50. Beepers were worn for the duration of competition (18 holes). The beeper was set to randomly
signal at an average frequency of one signal every 25 minutes. Finally, golfers were interviewed within 24 hours in a standard DES expositional interview.
CHAPTER 5

INTRODUCTION OF RESULTS

This study presents two types of results. First, idiographic descriptions will illustrate the salient characteristics of each individual participant’s inner experiences. One chapter will be devoted to each of the 10 participants. These chapters are organized by the skill group membership of the participants. Thus the salient characteristics of each of the five moderate handicap (moderate skill) group participants will be described, including John, Brad, Caleb, Samuel, and Will. This will then be followed by the five low handicap (high skill) group participants, Tom, Chris, Mike, Ryan, and Aaron. Second, nomothetic results will be described. This will include across-participant descriptions that will illustrate the most salient characteristics of all participants’ inner experiences together during golf and daily life as well as between group descriptions that will illustrate the most salient characteristics of the two separate skill group inner experiences during golf and daily life.

The Categories of Inner Experience Defined

In the DES subsection of Chapter 2, it was noted that DES research has shown that inner experience takes different forms. The most frequently-occurring forms of inner experience were described as five reliable categories of inner experience by Hurlburt and Heavey (2002). These included what used to be termed images and what we now refer to as inner seeing as well as inner speech, unsymbolized thinking, feeling, and sensory awareness. To refresh the reader, these categories will be briefly revisited and defined. To
further prepare the reader at the outset of exploring inner experience during golf
performance, examples of each of these inner experiences will be provided from the
participants of this study.

First, inner seeing is seeing something internally that is known not to necessarily be
externally present. John experienced inner seeing in Sample 2.1, for example. At the
moment of the beep he is innerly seeing himself and his friend sitting under a tree
smoking cigars as he sees a green tree, metal tables, and two chairs as well as himself and
his friend in less detail.

Second, inner speech is the experience of speaking words in one's own normal voice
without the external sound actually being produced. It is typically experienced as very
similar to how one might speak aloud, but it typically contains no external sound. In
Tournament Sample T.2, Aaron was lining up to make a putt saying to himself internally,
"This is left to right," and externally seeing a brown spot on the green where he will aim
the ball. The phrase he is saying internally is an example of inner speech.

Third, unsymbolized thinking is the experience of a mental event without the
experience of words, inner seeings, or any symbol of inner experience. It may be, for
instance, a hoping, wishing, or wondering thought process without inner speech or inner
seeing. In Tournament Sample T.10, John experienced unsymbolized thinking when he
was looking at the swelling in his finger to and is wondering if it has gotten bigger
without words or inner seeing present.

Fourth, feeling is an emotional experience that includes such experiences as anger,
guilt, sadness, and so on. John also experienced a feeling in Sample 2.1. At the same time
he is experiencing an inner seeing of himself and a friend smoking cigars in this sample, John is also experiencing relaxed enjoyment at the moment of the beep.

Fifth, sensory awareness is an internal bodily (e.g., hotness, coldness, itchiness) or external (e.g., brightness, shininess, blueness) sensory experience that is, in and of itself, a major theme of an inner experience. Caleb experienced sensory awareness in Tournament Sample T.6 when he was absorbed in the brightness of the sun’s reflection shining on the metallic coin. Sensory awareness is often experienced as being absorbed in the sensory details of an inner experience (see Hurlburt & Heavey, 1999).

In Chapter 2, it was also mentioned that DES is an open method, which means that new categories are created if experiences fall outside the range of pre-existing categories (see Monson & Hurlburt, 1993). As we will see, this occurred during the current study with three categories of inner experience – perceptual awareness, golf-related content, and mental preparation strategies. These categories of inner experience will now be defined to further prepare the reader for what follows.

Perceptual awareness is a process of focusing on objects of the environment for their objective or instrumental qualities, often for the purpose of a task. Perceptual awareness is a form of inner experience that is often visual, as the seeing of an object as part of conscious experience for its objective, instrumental qualities. Perceptual awareness is different from sensory awareness. Sensory awareness, by contrast, focuses awareness on the sensory aspects of an object, regardless of the object’s objective or task-related qualities.

Mike’s Tournament Sample T.10, for instance, is an example of perceptual awareness. Mike was preparing for a shot, planning where he is going to hit the ball. This
is experienced as actively looking down the right side of the fairway, an external visual experience. There are two carts out there, but Mike is looking past them, focused on the fairway as part of his planning of where to hit the ball. His focus is broad and without much specific detail aside from the general area of the fairway in his visual awareness. This is a perceptual awareness because Mike is viewing this scene for its instrumental significance: he is looking to see where he should hit his next shot. He is not absorbed in the sensory aspects of the scene: he is not particularly interested in the shade of green of the grass, the patterns of shadow the trees throw, or the like.

In contrast, Caleb’s Tournament Sample T.6, which was previously-mentioned, is an example of sensory awareness. Caleb was reaching down to pick up his ball mark, a coin, off the green. At the moment of the beep, Caleb is paying attention to the brightness of the sun’s reflection shining on the metallic coin. Caleb is absorbed in the brightness of the coin and experiencing a mild sense of aesthetic satisfaction with the brightness of the coin. This is a sensory awareness because Caleb is more involved in the sensory aspects (brightness) than the instrumental aspects (ball marker) of the coin.

Perceptual awareness is a specific category of inner experience we refer to as a form of inner experience. Perceptual awareness describes how the inner experience occurs. In contrast, golf-related content is a category of inner experience we refer to as the content of inner experience. The term golf-related describes what the contents of the inner experience were. In Tournament Sample T.10, Mike’s experience of the general area of the fairway in his visual awareness is golf-related. In contrast, Caleb’s involvement in the sensory brightness of his coin is non-golf-related. He is absorbed in the brightness of the coin as opposed to the objective, golf-related, ball marker qualities of the coin.
Mental preparation strategies are inner experiences with future-oriented golf-related content that serves the purpose of preparing for a golf (or sport) performance task. Mike’s Tournament Sample T.10, for instance, is also an example of a mental preparation. In this sample, Mike was getting ready to make a shot and was looking down the fairway of the last hole. At the moment of the beep, Mike is planning where he is going to hit the ball by experiencing perceptual awareness of the right side of the fairway. Mike also experienced a mental preparation strategy, but during golf practice when he was collecting samples in his daily life in Sample 1.1. In this sample, he was on the driving range hitting balls to warm up before beginning his round. He is addressing the ball when the beep catches Mike in his backswing innerly saying the word “Tempo” to himself rhythmically in his own voice. Also at the moment of the beep, Mike is actively focused on the ball, paying attention to the center of the ball by looking at it, an instance of perceptual awareness.

An evident advantage of categorizing inner experiences as we have done to this point is the heuristic value of illustrating inner experience in an organized manner that expedites the reader’s understanding of inner experiences. As Monson and Hurlburt (1993) explain, however,

categories we might advance to organize phenomena of inner experience will not have clear, unambiguous borders; categories of inner experience do not end abruptly but fade into one another… introspectionists’ referred to a ‘continuum of vagueness (p. 25).’

Thus the reader is advised to take advantage of these categorizes in order to illustrate and organize inner experience with the cautionary caveats that 1) the borders of categories of inner experience are imprecise, 2) nascent categories such as perceptual awareness, golf-related content, and mental preparation strategies are more likely to be imprecise.
compared to the more established categories, and 3) these nascent categories are open and may naturally evolve as DES research progresses.

The following 10 chapters will provide idiographic descriptions to illustrate the salient characteristics of each individual participant's inner experiences during golf and daily life. The aforementioned categories will be evident throughout these idiographic descriptions of the inner experiences of John, Brad, Caleb, Samuel, and Will as well as Tom, Chris, Mike, Ryan, and Aaron. After this, nomothetic results will be described.
CHAPTER 6

JOHN

John is a 44 year-old moderately-skilled golfer with a handicap of 13. He was recruited by one of the researchers. He completed his first two sampling days by obtaining 12 samples from his daily life at work, driving, and at home. He collected his daily life samples at the end of the spring. He participated in the golf competition sampling in the beginning of the fall and collected 12 golf samples. John shot 83, which is 11 strokes over par, 2 strokes lower than his handicap of 13. As a result, John finished 5th in the golf competition.

John took to the sampling method with relative ease; he became adept at describing his inner experience very quickly. He was very engaged in exploring his inner experience, and he seemed quite interested in the nature of his own inner experience. John exhibited a very good ability to apprehend his inner experience at the moment of the beep, and he had little difficulty describing the details of his inner experience throughout all three of his sampling days.

Perceptual Awareness

In 7 of 24 or 29% of John’s samples, he was experiencing perceptual awareness at the moment of the beep. Of these experiences, only two occurred during John’s daily life samples; both were instances of active, goal-directed perceptual awareness. For example, in Sample 1.2 John was starting up his new laptop, staring at the screen waiting for the
laptop to run its initial security programs so he can open his file. At the moment of the beep, John is visually going back and forth from looking at his screen and looking at his finger on the mouse pad. He is not sure whether his screen or his finger is in his awareness, but he is sure only one of these is in his awareness at the moment of the beep. This visual process is the most prominent aspect of his awareness at the moment of the beep. Also at the moment of the beep, John is experiencing a mental feeling of impatience in his head that is related to waiting for his laptop.

John also experienced active, goal-directed perceptual awareness in Sample 2.6 when he was working on his computer with several windows open. He had received a message that told him to log on and put in a password. At the moment of the beep, John is taking in the visual scene with conscious awareness, studying it actively to see if one of the 5 windows cues him to which one has the password. Also at the moment of the beep John is wondering, without any words or inner seeing associated with it, which of the five open windows has his password on it. Thus this is a clear active visual process with an associated mental wondering, both clearly present at the moment of the beep.

Most John’s perceptual awareness experiences were active, goal-directed experiences. John had one passive, idly-looking perceptual awareness experience, but it still had an active aspect to it present just before the moment of the beep. In Tournament Sample T.9, John’s bunker shot had come up short. He was inspecting a divot he had made in the bunker. He wanted to see where he started to take the sand compared to where the ball had been. He had already made the decision that he had been way behind the ball, about five inches fat. At the moment of the beep, he is having an experience of externally seeing. In addition to this seeing, he was looking with awareness at the big divot at the
moment of the beep. He is not aware of the previous analysis of how fat the swing was; he is just externally looking and aware of his divot. There are no other thoughts or emotions present at the moment of the beep. At the moment of the beep, this is a passive perceptual awareness experience in that he is looking without the active process he had been engaged in being present (the perceptual inspection process). Since his judgment occurred before the moment of the beep, John’s momentary experience is passive external looking with awareness of the divot at the moment of the beep. This passive idle looking experience was different than the purest passive idle looking in that John had a sense of setting it in motion actively just before the moment of the beep, whereas intentionality was often absent in other participants’ pure experiences of passive perceptual awareness even just before the moment of the beep.

The majority of John’s perceptual awareness was active focusing on visual stimuli as the function of a task. So far we have seen how his perceptual awareness occurred in his daily life; however, as we will see, most of his perceptual awareness occurred during the golf tournament. Half of John’s perceptual awareness experiences co-occurred with other forms of inner experience at the moment of the beep.

Unsymbolized Thinking

In 6 of 24 or 25% of John’s samples, he was experiencing unsymbolized thinking at the moment of the beep. In Sample 2.2, John experienced unsymbolized thinking with no other inner experience present at the moment of the beep. Before the beep, John was leaving the house and his hands were full, so he was closing the gate with his foot. He was walking away from the gate and waiting to hear the gate shut; he does not like it when the gate does not shut. Still before the beep, he was looking across the street at a
Terminex truck and thinking to himself, “why would any of our homes have termites out here.” At the same time as this, but still before the beep, he wanted the gate to be closed, and he was waiting for it to close. The gate made a rattling sound as it finally closed. At the moment of the beep, John is in the process of turning his head to look, not yet seeing the gate, and he is experiencing a mental sense of conquering the gate without words, inner seeing, or emotions. His sense of conquering the gate is experienced as if to say “Yeah, you better have closed,” although no words are present at the moment of the beep. At the moment of the beep, he has no words, inner seeing, or feelings in his conscious experience, nor is he aware of walking, the things in his hands, or worrying about dropping them. He is also in fact raising one of his eyebrows as if he has conquered the gate by getting it to close, but this is not part of his conscious awareness at the moment, nor is anything other than his unsymbolized mental sense of conquering the gate.

John experienced unsymbolized thinking with a simultaneous inner seeing during Sample 2.4. John was driving to work in a car he was borrowing at about 65 or 70 miles per hour with the rest of the traffic, slightly faster than his usual speed he drives in his convertible, which is 60 miles per hour. Before the moment of the beep, he was approaching a red beat-up Toyota in the middle lane that is driving slower, about 55 or 60 miles per hour, than other cars that have been passing. John passed the Toyota on the inside lane and was looking back in his rear view mirror at the front of the slower car, condemning the other car with frustration, and thinking “what an idiot,” still before the moment of the beep. At the moment of the beep, John is looking through the rear view mirror and experiencing an understanding of the other driver by considering a number of reasons all at once that might be causing him to drive slower. It is occurring to John that
this is how he drives when he drives his convertible slower than the other traffic, that
maybe there is some reason why the driver has to do this, maybe this is the car's top
speed, maybe the wind is too loud to hear his radio (like in John's convertible). This is a
mental epiphany that is justifying the other driver's slowness, a mental understanding of
several attributions all at once. He is experiencing this as just getting it, that the other
driver may be having the same experience John has in his convertible. There are no
words or feelings associated with this epiphany at the moment of the beep. At the
moment of the beep, John is also seeing an external image of his car, transposed upon the
Toyota. John is projecting an image of the front of his silver Mercedes upon the red beat-
up Toyota, seeing the front of his car as if it is externally out there. To summarize, at the
moment of the beep John is experiencing a simultaneous unsymbolized thinking and
external image. He has an epiphany, an understanding all at once, of the slower driver,
and he is having and an external image of his slower car transposed upon the red beat-up
Toyota. He is no longer condemning the other car with frustration and no longer thinking
"what an idiot" at the moment of the beep.

Of John's instances of unsymbolized thinking, 5 of 6 or 83% co-occurred with other
forms of inner experience (e.g., perceptual awareness, sensory awareness, inner seeing)
present at the moment of the beep. The content of John's unsymbolized thinking
experiences included three instances of wondering and one instance each of having a
mental sense, experiencing understanding, and hoping.

Feeling

In 6 of 24 or 25% of John's samples, he was experiencing a feeling at the moment of
the beep. In Sample 1.6, for instance, John was in the office at the printer picking up
some paper from a project he was working on. Before the moment of the beep, he saw someone in the corner of his eye in the waiting room, and he was wondering if the person in the waiting room was waiting for him. At the moment of the beep, John was having a mental irritation experience, being bothered that this person might be waiting for him (which, incidentally, would interfere with completing his project, not in his awareness at the moment). John is not sure whether the person is still in his visual awareness at the moment of the beep, but they had been before the moment of the beep.

In Sample 2.1, John experienced a feeling with a simultaneous inner seeing. John was retrieving a missed call on his cell phone. He saw the number on his phone that indicated the call was from a friend of his, Anthony, whom he will meet the next morning at Starbucks. At the moment of the beep, he is innerly seeing himself and Anthony sitting under a tree smoking cigars. He sees a green tree, metal tables, and two chairs. He also sees two people without much detail to them that are known to be himself and Anthony. John also is experiencing relaxed enjoyment at the moment of the beep. This emotion is felt physically as tension going away in his shoulders. Together the inner seeing and the emotion are experienced almost as if he is there at Starbucks.

In 4 of John's 6 feelings, 67%, he was experiencing co-occurring other forms of inner experience including inner speech, inner seeing, sensory awareness, and perceptual awareness. In 4 of 6 or 67% of his feelings, John's feelings that were experienced mentally, whereas 2 of 6 or 33% were experienced bodily. John's feelings included a mental feeling of impatience, mental irritation, mental excitement, mild mental sorrow, bodily panic, and the bodily experienced relaxed enjoyment.
Inner Seeing

In 5 of 24 or 21% of John’s samples, he was experiencing an inner seeing at the moment of the beep. As previously discussed, John experienced a feeling along with a simultaneous inner seeing in Sample 2.1 when he imagined being at Starbucks and experienced relaxed enjoyment. In Sample 2.5, John experienced an inner seeing with no other inner experience present at the moment of the beep. He was editing a page on his company’s website. He had just finished typing some text, saved it, and had posted it to the site. At the moment of the beep, he is internally visualizing the text within the borders of the website to see if it fits. He is seeing the text in deep blue-colored 18-point Book Antiqua font on a white background. In the same inner seeing, he is also seeing the edges of the website with green on the left side and off-gray on the right. His seeing is the way he thinks it will look rather than how it actually looks. There is no central focal point in the inner seeing. Both the text and the borders are equally prominent in his awareness. No awareness of what he is looking at externally is present at the moment of the beep.

John’s unsymbolized thinking experience in Sample 2.4 occurred with a simultaneous seeing experienced externally. At the moment of the beep, John has an epiphany about the slower driver, and he is seeing an external seeing of his slower car transposed upon the red beat-up Toyota. John is projecting an image of the front of his silver Mercedes upon the red beat-up Toyota, seeing the front of his car as if it is externally out there.

Of John’s inner seeings, 4 of 5 or 80% were experienced internally, and 1 was experienced externally as projected on the visual field. As we will see, 1 of these 5 was a kinesthetic inner seeing. Two of his 5 inner seeings or 40% co-occurred with other forms of inner experience (feeling, sensory awareness).
**Inner Speech**

In 4 of 24 or 17% of John’s samples, he was experiencing inner speech at the moment of the beep. During Sample 1.4, for instance, John was driving his car. He was mentally listing out things he had to do in chronological order and had arrived at the realization that there is no liquor in the house, and he is thinking if he wants a Martini he should stop at Von’s for some gin and olives. At the moment of the beep, John is saying internally “I should probably stop at Vons and pick up some gin and olives” one word after another at the same speed and tone of his own normal voice. This is said definitively, and it is the last item of the list he had been mentally experiencing before the moment of the beep.

During Sample 1.5, John was in the office, editing a word document. He was reading the first line of a proposal letter he had written last year and editing it to make it relevant to this year. He was three quarters of the way through the first line of the letter. At the moment of the beep, John is reading the word “Golf.” He is saying the words to himself internally blurred altogether, “Golf,” as if they are all one word. He is reading and saying this word to himself in his own normal internal reading voice. John’s eyes are aimed at the words, but he is not aware of them. John is only aware of his inner-spoken blurred-together words. All of John’s inner speech involved his normal voice spoken internally, and only 1 of 4 or 25% of these had a co-occurring other form of inner experience (e.g., feeling) present at the moment of the beep.

**Inner Experience During Golf**

John collected 12 Tournament Samples. His perceptual awareness, unsymbolized thinking, inner seeing, inner speech, and feeling experiences will be described as well as
his mental preparation and emotion regulation strategies and his golf-related content. Finally, a comparison of his inner experience during golf and daily life will be provided.

*Perceptual Awareness*

John experienced perceptual awareness in 5 of 12 or 42% of his golf tournament samples. Although perceptual awareness did not occur with as much frequency during his daily life samples (2 of 12 or 17%), it was the most frequent category of his golf tournament samples.

In Tournament Sample T.2, John experienced perceptual awareness with no other co-occurring experience. John was on the 2nd hole, his 3rd stroke. He was feeling like his group was not playing quickly enough, like they needed to hurry up. John had turned his head to look at the group of golfers behind him to see if they were holding the other golfers up. At the moment of the beep, he is looking broadly at the other group consciously to evaluate whether his group is holding the others up. He is making external visual contact at the moment of the beep, without having yet arrived at a perceptual evaluation. (After the beep, he saw his group was not holding the others up.) This was an active form of perceptual awareness that consisted of looking broadly and actively for the purpose of evaluation without evaluation having occurred yet at the moment of the beep.

In Tournament Sample T.3, John experienced active perceptual awareness along with co-occurring unsymbolized thinking. John was on the 2nd hole. Will was on John's putting line. John was hoping Will would hit his ball all the way to the hole so John could see the break. At the moment of the beep, John is looking at the black inset on the face of Will's putter as Will is getting ready to putt. He has no awareness of the details of the rest of the putter; his eyes are just focused on the center part of the black inset of the putter's face.
This is an active process of putting a good deal of attention into looking at the putter, a clearly focused external visual activity. The hope that Will will hit the ball close to the hole is most likely still in his awareness at the moment of the beep, although John is not completely certain about this. This hope occurs without words or inner seeing present at the moment of the beep.

Of his perceptual awareness experiences during golf, one was a passive instance of not doing much but looking and remainder were active looking as a function of a task experiences. Of these perceptual awareness experiences, 4 of 5 or 80% perceptual awareness occurred with no other simultaneous inner experience during golf. In contrast, both of his perceptual awarenesses during daily life had co-occurring inner experience at the moment of the beep. Four of five or 80% of his perceptual awarenesses during golf were related to golf in content.

Unsymbolized Thinking

In Tournament Sample T.10, John experienced unsymbolized thinking. John’s finger had been in pain. At the moment of the beep, he was looking at the swelling in his finger to determine if it has gotten bigger since the last swing. He is looking to get information but has not yet had time to make a perceptual judgment about whether it has gotten bigger. Also at the moment of the beep, he is wondering if it has gotten bigger without words or inner seeing present. The wondering is the most prominent aspect of his inner experience at the moment of the beep. He is not feeling pain at the moment of the beep.

All but one of John’s unsymbolized thinking experiences, 5 of 6 or 83%, co-occurred simultaneously with other forms of inner experience (e.g., perceptual awareness, sensory
awareness). Only 1 of 3 or 33% of his unsymbolized thinking experiences was related to
golf in content.

*Other Inner Experiences During Golf*

John experienced 2 of 12 instances of inner seeing, the same amount of inner speech,
and the same amount of feeling experiences during golf (17% each).

In Tournament Sample T.12, John experienced a shapeless inner seeing with no other
form of inner experience present. John is on the tee of the 17th hole. He had been looking
for the tee box marker, which is purple. He had found a marker, but he could not see if it
was green or purple. Then he saw it was purple. At the moment of the beep, John is
having an inner seeing, a shapeless uniform field of purple. This is not an after-image of
the actually seen marker, but an inner seeing, which John experiences as being the answer
to his question about whether the tee box is green or purple.

In Tournament Sample T.7, John had both a feeling and inner speech present at the
moment of the beep. John was waiting for his 4th stroke of the 6th hole. He was watching
Will’s shot, which is traveling too fast, roll across the green. At the moment of the beep,
John is experiencing a negative feeling and saying something to himself internally in
words. John is feeling bad for Will, a feeling mild sorrow that is experienced mentally
and not bodily. At the same time as this feeling, he saying to himself “bad shot” in his
own internal voice in a sorrowful way. John is also visually focusing on Will’s white ball
moving across the green about half way to the hole; he is narrowing focused visually on
the ball.
In both of John’s tournament feeling samples, and in both of his tournament inner speech sample experiences, he had golf-related experiences. He had golf-related content in only one of his two inner seeings at the moment of the beep.

*Mental Preparation & Emotion Regulation Strategies*

The beeper captured one mental preparation and one an emotion regulation strategy that John was using at the moment of the beep.

In Tournament Sample T.11, John was engaged in a kinesthetic inner seeing for mental rehearsal. John was in his cart before his tee shot on the 15th hole, which is a par 3. The distance to the hole is the same as the par 3 a few holes back. He had hit a bad shot and missed the green on that hole. At the moment of the beep, he is mentally rehearsing his next shot. He is internally picturing his backswing. He sees a little bit of his shoulder, his feet, and the ball as if he is over the ball at the top of his backswing getting ready to hit the ball. This inner seeing also has two kinesthetic, bodily components. The first is what he would like to do; he is purposefully trying to lead with his hips. The second kinesthetic component is less prominent in his experience; he is feeling what his hips are doing in the inner seeing rehearsal, which feels like he is not leading enough with his hips. This is an imaginary process with two related kinesthetic experiences of purposefully leading with his hips and feeling what his hips feel like in the inner seeing. This is a less a visual experience and more of a kinesthetic experience.

In Tournament Sample T.4, John was experiencing inner speech during an emotional regulation strategy. John was on the 3rd stroke of the 5th hole. He had just lit a cigar, taken a puff, and he was thinking he had had a bad stroke with the nine iron on the last hole. At the moment of the beep, John is saying “that nine iron was a bad shot; it’s time to smoke”
in his own internal words, just as if he had said it out loud. He has already taken a puff, so this thought is like a reflection back, a thought validating his smoking. John has a sense that this phrase is in the future tense, but the meaning of the phrase is in the past tense; he has already lit up. (Incidentally, John reported that his routine is to light up a cigar when he has made a bad shot to take the edge off, to keep from getting too frustrated with the game. He does this to give himself something to "fiddle around with," something to do to derail the negative emotional process. This was apparently working because he was not experiencing frustration at the moment of the beep.)

*Golf-Related Content*

Of John’s Tournament Samples, 8 of 12 or 67% contained golf-related content. Examples of golf-related content experiences include thinking and having a feeling about another golfer’s performance, looking actively or passively at golf-related stimuli, and mental preparation or emotion regulation strategies.

*Comparing Inner Experience During Golf and Daily Life*

In both golf and daily life, John was engaged in what he was doing. His golf and daily life inner experiences were typically related to what he was doing at the moment of the beep. During golf, he had 67% golf-related content, and during his daily life, he had 75% doing-related content (e.g., working on his computer and having an inner seeing of what he was looking at). His inner experiences were also typically very clear and detailed during both golf and daily life.

John had fewer feelings during golf than daily life. He had feelings during 2 of 12 or 17% of his golf samples and during 4 of 12 or 33% or his daily samples. Half of his four feelings during daily life were positive (e.g., relaxed, excited), whereas both of his two
feelings during golf were negative but neither were about his own performance (e.g., panic about being in the wrong place, sorrow for another golfer’s performance).

John had more perceptual awareness during golf than daily life. He had perceptual awareness in 6 of 12 or 50% of his golf samples and 2 of 12 or 17% of his daily samples. Two of these during golf were passive instances of not doing much but looking and remainder were active looking as a function of a task experiences.

Discussion

John took to the sampling method with relative ease, and he was very engaged and seemingly interested in exploring his inner experience. John’s inner experience was typically quite clear, detailed, and differentiated in comparison to some of the other participants.

John’s most salient inner experience was perceptual awareness. The majority of his perceptual awarenesses were active focusing on visual stimuli as the function of a task. Only one experience was passive perceptual awareness, and John had a sense of setting this in motion actively just before the moment of the beep, unlike in other participants’ experiences of passive perceptual awareness as we will see.

John’s next most salient inner experience was unsymbolized thinking. The content of John’s unsymbolized thinking experiences included several instances of wondering, a mental sense experience, an understanding, and a hoping experience; these occurred in the absence of associated words or inner seeing. He experienced about an equal amount of unsymbolized thinking in his daily life and golf samples. John experienced as many feelings as he did instances of unsymbolized thinking. Most of his feelings were experienced mentally, whereas a couple were experienced bodily. John’s mental feelings
included a impatience, irritation, excitement, and sorrow; whereas his bodily feelings included panic and relaxed enjoyment.

John experienced a variety of inner seeings. Most of were experienced internally. In contrast with this, one inner seeing was experienced externally as projected on what he was seeing with his eyes, and another was a kinesthetic inner seeing for golf preparation. All of John’s inner speech involved his normal voice spoken internally.

Nearly half of John’s Tournament Samples contained perceptual awareness, which was an increase in frequency from his daily life samples. All but one of these experiences contained golf-related content. He also experienced several unsymbolized thinking, inner seeing, inner speech, and feeling experiences. In both of John’s feeling and inner speech tournament sample experiences, he had golf-related experiences. Only one of his two inner seeings had golf-related content.

The beeper caught John using two mental preparation strategies and one emotion regulation strategy. One of his mental preparation strategies involved clearing his mind, and the other involved inner seeing. His emotion regulation strategy involved inner speech related to smoking a cigar, which was apparently working given the absence of emotion at the moment.

Most of John’s Tournament Samples (67%) contained content related to golf at the moment of the beep including thinking and having a feeling about another golfer’s shot, looking actively or passively at golf-related stimuli, and mental preparation or emotion regulation strategies.

In both golf and daily life, John was engaged in what he was doing; his inner experiences were typically related to what he was doing at the moment of the beep. John
had fewer feelings during golf than daily life and more negative feelings during golf than
daily life. He had more perceptual awareness during golf than daily life. His inner
experiences were typically very clear, detailed, and differentiated during both golf and
daily life.
CHAPTER 7

BRAD

Brad is a 30 year-old moderately-skilled golfer with a handicap of 15. He was recruited by one of the researchers. Brad was a previous participant in DES training, which involved repeated DES sampling and interviewing to assist in the training of new DES researchers. Thus Brad was very familiar with the DES procedures. He completed his first two sampling days by obtaining 10 samples from his daily life in at the end of the spring. He participated in the golf competition sampling at the beginning of the fall semester collected 7 golf samples. Brad shot an 87, which is 15 strokes over par, even with his handicap of 15. As a result, Brad finished 6th in the golf tournament.

No Inner Experience

In 5 of 17 or 29% of his samples, Brad had no inner experience present at the moment of the beep. All but one of Brad’s instances of no inner experience at the moment of the beep occurred during golf competition. Brad had a sense that some of these instances of no inner experience were somewhat closer to the threshold of awareness than were others, but he was convincing about the absence of inner experience at the moment of the beep in all these cases. Tournament Sample T.1 was the closest to the threshold of an experience in conscious awareness. Brad was on the 3rd hole and had just pulled his cart up to the tee box. It had been about an hour without having had a beep, and Brad was turning the volume dial of the beeper when the beeper went off. At the moment of the
beep, Brad's eyes are aimed at the dial, and he is turning the dial of the beeper with his finger. He has no visual awareness of looking at the dial and no tactile awareness of feeling the dial as he turns it. Brad thinks this experience is akin to driving with no awareness. Nothing is present in his inner experience at the moment of the beep, but of Brad's instances of no inner experience, he thinks this experience is the closest to the threshold of having visual awareness at the moment of the beep.

In Tournament Sample T.2, Brad was on the 5th stroke of the 5th hole, and he was standing on one side of the green with the beeper in his pocket. At the moment of the beep, he was looking across the green, his eyes aimed at fellow golfer John standing on the far side of the green. However, neither John nor the green itself were in his awareness; in fact, nothing seemed to be in his awareness at the moment of the beep. This was very similar to the last instance of no inner experience, except in one case his eyes were aimed at the beeper and in the other his eyes were aimed at a fellow golfer. In both cases, he does not think he ever would have been aware of what he was looking at if not for the beep.

In Tournament Sample T.5, Brad had no inner experience with a sense of even less awareness. Brad was sitting in the cart having just finished the 10th hole. At the moment of the beep, Brad's eyes were aimed at the beeper and there was nothing in his awareness. This experience was similar to the other instances of no inner experience just described, but this time there seems to be even less awareness. He knows his eyes were open, but he somehow has even less awareness.

Brad had little difficulty articulating these instances of no inner experience, but he apologized and said he felt guilty for having no inner experience. He was serious about
articulating his inner experience, but in several instances, no inner experience could be found. He had more instances of no inner experience during golf; during golf, 4 of 7 or 57% of his samples contained no inner experience. Brad’s instances of no inner experience were clear, but for some of these instances, Brad thought it was more possible than others that he had could have had very slight awareness usually of visual stimuli. These instances ranged from having very slight possible awareness usually of visual stimuli to much less possibility of awareness present at the moment of the beep.

Unsymbolized Thinking

In 4 of 17 or 24% Brad’s samples, he experienced unsymbolized thinking. In Sample 2.5, Brad was reading an abnormal psychology textbook. He then began typing the word “social” on his computer. At the moment of the beep, Brad is wondering if there is a DSM diagnosis for social anxiety. He knows that social phobia is in the DSM at the moment of the beep but is wondering if social anxiety is in the DSM. This is a mental process without words, inner seeing, or other inner experiences. In Tournament Sample T.3, Brad was on the 8th hole standing at the tee and talking to John. Before the beep, Brad had just said his beeper has only gone off twice. After this but also before the beep, he had experienced an inner seeing of another beeper that is in his bag, along with a sense that he could switch to that beeper. At the moment of the beep, he is having two related thoughts. First, he is thinking about switching beepers to his second beeper. This thought about switching beepers is an unsymbolized, mental sense, an understanding that he could switch beepers. Second, he is thinking about the beeper in the bag. This unsymbolized thought is related to the other and was about where the beeper was in his
Both thoughts are equally prominent. Brad’s unsymbolized thinking experiences were clear inner experiences without words or inner seeing.

Other Inner Experience

Brad experienced an equal number of several other forms of inner experience at the moment of the beep. These include two instances of each of the following: inner seeing, inner speech, feeling, and multiple awareness. These forms inner experience each occurred in 2 of 17 or 12% of his samples. One example of each of these instances will be described. After this, an example of inner hearing, the only one that occurred during sampling, will be described.

Brad experienced an inner seeing during Sample 2.6. At the moment of the beep, Brad is imagining talking in front of his class as if he is giving a presentation there. He is innerly seeing the room of his one o’clock class without motion as if he is on the right side of the room looking up and slightly to the left corner of the room. The entire room is more dim in lighting than his class would typically be. At the center of the inner seeing is the side wall on the left hand side of the room. He sees a few students (two or three) where they typically would sit outside the center of what he is seeing. He sees these things with relatively equal clarity. Further outside of this in terms of direction, he is seeing an obscured section of the room as if is right cheek is blocking this imagined vision. One additional component of this inner seeing experience is that it experienced as if he is somehow having more inner experience coming through his right side than his left.

During Tournament Sample T.7, Brad experienced inner speech. Brad was on the 15th hole after his first stroke. He was sitting in the golf cart watching his fellow golfer, John.
John had a wooden club that he used for short distances. John had called it a “5” wood before, and Brad couldn’t believe it was because he hit the ball so short with it. At the moment of the beep, Brad is saying to himself “What is that wood?” in his own voice, which is normal in volume with an inquisitive tone. This is an instance of clear inner speech at the moment of the beep with not much doubt about it.

Both of Brad’s feelings co-occurred with other forms of inner experience. One of these, Sample 2.4, occurred when Brad was playing online chess with a human opponent named Joe. At the moment of the beep, Brad is looking at the Joe’s knight take Brad’s bishop as part of his inner experience. This visual perceptual awareness is about 70% prominent in his conscious experience. In addition to this, Brad is experiencing an aggressive feeling in his chest just below the surface of his skin, which is an aroused experience. He feels a sense of stimulated lightness as if there is increased blood flow to his chest. This is a bodily and an emotionally negative experience that is not very intense, about 3 out of 10 (if 10 were to be the highest). This feeling is about 30% prominent.

Brad had a multiple awareness experience in Sample 2.3. This was a co-occurring instance of experienced listening to a voice recording and a looking and unsymbolized thinking about chess. Brad was listening to his answering machine at work while playing online chess, again with a human opponent named Mark. At the moment of the beep, the most prominent part of Brad’s experience (about 65%) is listening to the person he works with, Sarah, on the recording say “just got to know one.” Brad is tracking the sound of the Sarah’s voice and some of its meaning, but he is not very focused on the details of what she is saying. Also at the moment of the beep Brad is looking at his Mark’s bishop, which is in the process of moving and taking Brad’s knight. This experience of looking is
more than merely his eyes being aimed at the screen with no awareness at the moment of
the beep. The experience of looking is a conscious aspect of his experience at the moment
of the beep. The looking experience is less prominent than the experience of listening
(about 25%). Brad is also wondering why his Mark is moving, which is experienced both
as a sense of mental confusion and emotional negativity without bodily awareness. This
is a mental process with an emotional quality, a thought/feeling, without words or inner
seeing and is the least prominent of his three simultaneous inner experiences (about
10%).

Brad experienced just one instance of inner hearing. In Tournament Sample T.6, Brad
was on his 4th stroke of the 11th hole. He was walking across the green to the ball on the
back of the green. He had a Bob Dylan song in his head frequently during the day. At the
moment of the beep, it was fainter than usual it had been, but he is hearing Bob Dylan
singing a phrase. He is hearing it just as it is in the real song with some words unclear
because Bob Dylan mumbles when he sings. He is hearing “you can take your [mumble]
put it in a [mumble].” Brad is experiencing the song as if it is coming at him at the
moment of the beep, but before the moment of the beep, the thinks he had started the
song playing himself. It is possible that another inner experience is also present at the
moment of the beep. If so, it is even fainter and therefore not possible to determine if it is
actually present. This possibly present inner experience is a feeling of surprised
satisfaction about the shot he just hit that had been diminishing before the moment of the
beep.
Inner Experience During Golf

Brad collected seven Tournament Samples of inner experience during golf competition. Most of these samples, 4 of 7 or 57%, were instances of no inner experience at the moment of the beep. Brad also had an unsymbolized thinking, an inner speech, and an inner hearing experience during golf, which were described earlier. Brad’s golf-related content will be discussed, followed by a comparison of Brad’s golf and daily life inner experiences.

Golf-Related Content

Of the Tournament Samples collected during golf performance, 6 of 7 or 86% were not related to golf in content. Since 4 of these 6 Tournament Samples were instances of no inner experience at the moment of the beep, it seems unlikely there could be content without inner experience. Taking the instances of no inner experience out of consideration, 2 of Brad’s remaining 3 inner experiences or 67% were not related to golf. Thus most of Brad’s Tournament Samples of inner experience during golf competition were not related to golf.

Comparing Inner Experience During Golf and Daily Life

Brad’s inner experiences from his golf samples were similar to his daily life samples with respect to two forms of inner experience; these forms were inner speech and unsymbolized thinking. His inner experiences from his golf samples were different from his daily life samples with respect to one form of inner experience; this form was no inner experience at the moment of the beep.

Brad experienced a similar amount of inner speech during his daily samples (1 of 10 or 10%) as he did during his golf samples (1 of 7 or 14%). He had also a fairly similar
amount of unsymbolized thinking during his golf samples (1 of 7 or 14%) as he did his daily samples (3 of 10 or 30%).

Brad experienced more instances of no inner experience during his golf samples than during his daily samples. Brad had instances of no inner experience at the moment of the beep in 4 of 7 or 57% of his golf samples and in 1 of 10 or 10% of his daily samples.

Brad’s inner experiences during golf compared with his daily life were similar with respect to the amount of inner speech he had and fairly similar with respect to the amount of unsymbolized thinking he had. His inner experiences were different during golf compared with his daily life with respect to no inner experience. Brad had a notable increase in no inner experience present at the moment of the beep during golf.

Discussion

Brad’s inner experiences were typically very clear and differentiated. Brad had previously sampled, and he took to the sampling process with ease. This was a notable difference in comparison with some of the other participants in this study. Brad frequently experienced unsymbolized thinking during daily life, and he had one unsymbolized thinking experience during golf. He also frequently experienced instances of no inner experience present at the moment of the beep during golf, and had one of these during daily life. In addition, Brad experienced an equal number of instances of inner seeing, inner speech, feeling, and multiple awareness. When he was golfing, his inner experiences were most often not related to golf in content. His golf inner experiences were similar to those of his daily life with respect to the amount of inner speech and unsymbolized thinking he had, and different with respect to the amount of no inner experience he had.
CHAPTER 8

CALEB

Caleb is a 64 year-old moderately-skilled golfer with a handicap of 16. He was recruited by one of the researchers. He completed his first three sampling days by obtaining samples from his daily life, sometimes at work, but mostly at home. The samples from Caleb’s first day were not analyzed because they were collected three days before the expositional interview. The remaining three expositional interviews were conducted within 24 hours of his sampling – two daily life sampling days and his golf tournament sampling day. These last three sampling days were used for the descriptions of Caleb’s inner experience that follow. He collected his 15 usable daily life samples at the end of the spring. He participated in the golf competition sampling in the middle of the same summer collected 9 golf samples. Caleb shot an 85, which is 13 over par, 3 strokes lower than his handicap of 16. As a result, Caleb finished in a tie for 3rd in the golf competition.

Perceptual Awareness

In 9 of 24 or 38% of Caleb’s samples, he was experiencing perceptual awareness at the moment of the beep. Caleb experienced two different kinds of perceptual awareness. In some of his samples, he was not doing much other than looking at something at the moment of the beep. In these instances, he was just idly looking with much less concentration on what he was looking at, a passive form of perceptual awareness. In other
samples, he was looking at something with much more concentration at the moment of the beep, an active form of perceptual awareness. This active looking typically served the task he was doing or a task he was preparing to do.

*Passive Perceptual Awareness: Idly Looking*

In Tournament Sample T.2, Caleb experienced not doing much other than passively looking at something at the moment of the beep. Caleb had just finished his tee shot on the fourth hole and was picking up his tee. At the moment of the beep, he is looking at the tee and picking it up. He has no awareness of the task he is doing other than idly looking at it, and he is not particularly interested in the details of the golf tee; he is visually focused on the tee and just picking it up with no other inner experience at the moment of the beep. In Tournament Sample T.3, Caleb was on the 5th hole watching Chris tee up his ball and address it. At the moment of the beep, Caleb has no inner experience other than just watching what Chris is doing. He is not particularly focused on the details of what he is looking at; he is just idly watching Chris. Thus there is not much inner experience at the moment of the beep, he is just passively focusing in what is visually present.

*Active Perceptual Awareness: Goal-Directed Looking*

In Sample 2.5, Caleb experienced the type of perceptual awareness that involved actively concentrating on what he was looking at as a function of the task he was doing. Leading up to the moment of the beep in this sample, Caleb is taking inventory of spare sprinkler parts. At the moment of the beep, he is looking at parts and noticing he has only two riser caps. This is a mental process of recognizing that he has only two parts as a function of looking at the parts, which incidentally means he needs to buy more (although
the latter is not in his awareness at that moment). In Sample 2.7, Caleb was cleaning rust off of his gate prior to the moment of the beep. At the moment of the beep, Caleb is visually inspecting the top horizontal crossbar of the gate to check the gate for rust. This is a visual inspection process Caleb was doing to figure out which part of the gate he would later sand; this process occurs with no other simultaneous inner experience.

Whether they were active or passive experiences, Caleb’s perceptual awareness experiences were matter-of-fact visual experiences. His perceptual awareness experiences were often related to the tasks he was doing, but they lacked the richness and depth of experience he had with other inner experiences (with the exception of two just doing and one just listening experiences). Caleb experienced his perceptual awareness as not having much inner experience at the moment of the beep other than passive visual experience or active visual experience related to a task at hand.

**Sensory Awareness**

In 9 of 24 or 38% of Caleb’s samples, he had sensory awareness experiences. He experienced two different types of sensory awareness. Caleb had sensory awareness experiences that involved bodily sensation (6 of 9) and also visual sensory experiences (3 of 9). Bodily sensory awareness instances involved experiences of internal physical sensations. Visual sensory awareness involved being absorbed in the sensory qualities of external visual stimuli.

Caleb experienced visual sensory awareness in Sample 2.1, where he was getting ready to take an Aspirin pill. At the moment of the beep, Caleb is paying particular attention to the yellowness of the pill. He is particularly immersed in the intense mustard yellow color of the pill, being impressed by its shade of yellowness. Caleb experienced
one instance of external sensory awareness during golf. During Tournament Sample T.6, Caleb was on the 11th hole. He had picked up his ball and marked it; now he was reaching down to pick up the ball mark on the green and replace the ball. At the moment of the beep, Caleb is paying attention to the brightness of the metallic coin, the reflection of the sun shining on the coin. Caleb is absorbed in the brightness of the coin and experiencing a mild sense of aesthetic satisfaction with the brightness of the coin he is seeing. This satisfaction is part of the experience of being absorbed in the brightness of the coin.

Caleb experienced bodily sensory awareness during Sample 2.4. At the moment of the beep, Caleb is experiencing stiffness, soreness, and tingling in his right hand. The stiffness and soreness are equally prominent in his experience, and the tingling is less prominent by comparison. These painful sensations are mild in intensity at the moment. In addition to this, Caleb is sorting out whether these pains are due to carpal tunnel syndrome, arthritis, or a cut on his finger, and Caleb is considering consulting his physician. This is a mental process that occurs without any words present in his experience. The mental process is more prominent than the stiffness and soreness. Caleb also experienced an instance of bodily sensory awareness during golf. In Tournament Sample T.7, Caleb had finished his third stroke on the 14th hole. At the moment of the beep, Caleb is feeling weak from the heat and saying to himself “it's getting steamy” in his own normal voice. His inner speech is the most prominent of the experiences at the moment of the beep. At the same time, however, Caleb is feeling weak, which is experienced as tiredness felt mostly in his arms. He may also have a slight headache as part of the weakness experience at the moment of the beep. Caleb was sure he was hot, and had been attending to this as a very constant bodily experience around this time, but
he is not attending to it at the moment of the beep. At the moment of the beep, Caleb is saying “it’s getting steamy” internally and feeling weakness in his arms.

Caleb’s sensory awareness experiences had much more personal conscious involvement, richness, and depth than his perceptual awareness experiences. His sensory awareness experiences involved being absorbed or immersed in the qualities of external visual phenomena or the qualities of personal internal physical sensations such stiffness, soreness, tingling, and weakness.

Unsymbolized Thinking

In 5 of 24 or 21% of Caleb’s samples, he had unsymbolized thinking experiences. In Sample 2.2 for instance, Caleb had been aware that the beeper had not gone off in a while leading up to the moment of the beep. At the moment of the beep, Caleb was wondering if the beeper was turned off. This was a mental process without words. This process was the most prominent part of his awareness. In addition to this, Caleb was checking the beeper in his pocket to see if it was turned off, which is a simple physical action that he is doing at the moment of the beep. The wondering experience is directly related to the physical doing process at the moment of the beep.

In Sample 2.6, Caleb had a feeling and an unsymbolized thinking experience. At the moment of the beep, Caleb was in his garage retrieving a piece of wire that has dropped on the floor while retrieving a can of naval jelly. In addition to this action, Caleb is feeling mildly irritated and frustrated at the fact of having to get in an awkward position to perform this action at the moment of the beep. This irritation/frustration is experienced to be an emotional process that takes place in his head. Finally, Caleb is experiencing an unclear mental awareness that the activity he is doing, picking up the piece of wire he
dropped, is not directly related to his overall goal of fixing his sprinklers. This mental process occurs without words at the moment of the beep. These two experiences are both equally prominent at the moment of the beep.

Caleb's unsymbolized thinking often co-occurred with other forms of inner experience. In 4 of 5 of his unsymbolized thinking experiences, there were co-occurring inner experiences such as sensory awareness, feeling, or just doing a task.

**Inner Speech**

In 3 of 24 or 13% of Caleb's samples, he had inner speech experiences. For example, in Sample 3.5 Caleb was walking down the hall to get his sampling notebook. At the moment of the beep, Caleb is rehearsing what he is going to write for the prior beep. He is saying the phrase “reaching for a loaf of bread” in his own normal voice. This is a clear, unambiguous inner experience. Also at the moment of the beep, Caleb is walking down the hall and feeling the coldness and hardness of the tile floor, which feels good, but Caleb is not entirely certain that this sensory awareness is in his awareness at the moment of the beep. He thinks it more likely than not that it is remotely in his awareness, a much less prominent experience than his inner speech. Caleb is walking at a faster pace than normal, but he not entirely certain about whether or not this faster pace is in his awareness at the moment of the beep. He thinks it is more likely his fast walking pace is not part of his conscious awareness of it at the moment of the beep. Caleb also experienced inner speech during golf. In Tournament Sample T.7, which was described earlier, Caleb is saying “it’s getting steamy” internally in his own normal voice and feeling weakness in his arms at the moment of the beep.
Caleb’s inner speech experiences involved words internally said in his own normal voice. Two of his three inner speech experiences co-occurred with other forms of inner experience, and all three were clear inner experiences. Caleb may have experienced a fourth inner speech experience during Tournament Sample T.5, but he was not exactly sure if words were present, as we shall see.

Feeling

In 2 of 24 or 8% of Caleb’s samples, he experienced feelings. In the previously-described Sample 2.6, Caleb had a feeling of irritation/frustration along with an unsymbolized thinking experience at the moment of the beep. In Tournament Sample T.5, Caleb had a partially unclear multiple awareness that involved a very unclear inner mental experience, a clear anxiety feeling, and looking at the moment of the beep. In this sample, Caleb was riding from the 9th green to the 10th tee with Chris. At the moment of the beep, Caleb is wondering if his beeper is working. This seems to be a mental process of some kind. It is not entirely apparent whether this is a pure mental process without words or inner seeing or if Caleb has words related to it. If there were words, Caleb thinks he is saying to something to himself in his own normal voice with words like “I hope this device is plugged in and working. I’d hate to be messing up this experiment.” Caleb is not sure of the exact words, so the actual words may be different from these but with the same meaning. This is the most prominent of Caleb’s inner experiences. Also at the moment of the beep, Caleb is experiencing an anxious feeling related to whether his beeper is working. He is not aware of any bodily experience of anxiety. This anxiety is more of a mental experience related to but separate from the wondering process that may or may not have been in words. Finally, Caleb is also looking at the color codes on the tee.
markers to identify which one is his at the moment of the beep, but this is a less
prominent aspect of his inner experience. He is just looking for his tees, which were red.
This is a multiple awareness experience that has a very unclear inner mental experience
with or without words, a clear anxiety feeling, and a looking at the moment of the beep.

Both of Caleb’s feelings co-occurred with mental experiences. His feelings also had
much more personal conscious involvement, richest, and depth than his perceptual
awareness experiences.

_Inner Experience During Golf_

Caleb experienced perceptual awareness in 4 of 9 or 44% of his golf tournament
samples. For comparison, perceptual awareness occurred in 5 of 15 or 33% of his non­
golf samples. Of his perceptual awareness experiences during golf, two were passive
(instances of idly looking) and three were active (looking as a function of a task)
experiences.

Caleb’s two passive perceptual awareness experiences were Tournament Samples T.2
and T.3, described earlier. In Tournament Sample T.2, Caleb is idly looking at the tee and
picking it up no awareness of the task he is doing and without interest in the details of the
golf tee. In Tournament Sample T.3, Caleb is idly watching Chris tee up his ball and
address it with no inner experience other than just watching what Chris is doing.

Caleb experienced three instances of active perceptual awareness. As an example of
these, in Tournament Sample T.1, Caleb had just finished his first shot of the day. He was
putting his golf club back into his bag. At the moment of the beep, Caleb is looking in his
bag to try and locate the place where the club belongs. He is paying visual attention to the
bag for the purpose of finding the place where his club belongs. At the moment of the

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beep, he has not yet found it but is in the process of visually finding it. This is an active visual perceptual activity. In Tournament Sample T.4, Caleb was on the 7th hole and watching Chris tee up. He has started looking at the group ahead of them to see if they are out of Chris’s range. At the moment of the beep, Caleb is looking at the group ahead of them and in the process of making a perceptual judgment about whether or not they are out of Chris’s range. He has not arrived at an actual judgment about whether or not they are out of range, rather he is in the active process of making the judgment to see if they are far enough out of Chris’s range for Chris to safely hit the ball.

Caleb had two sensory awareness experiences during the golf tournament (22% of his golf tournament samples). In Tournament Sample T.6, Caleb experienced visual sensory awareness. He is paying attention to the brightness of his metallic coin; he is absorbed in its brightness and experiencing a mild sense of aesthetic satisfaction. In Tournament Sample T.7, also described earlier, Caleb is experiencing a bodily sensory awareness along with inner speech as he is feeling weakness in his arms from the heat and saying to himself “it’s getting steamy” in his own voice.

Caleb had several other inner experiences once each during the golf tournament including an inner speech, an unsymbolized thinking, a feeling, a just doing experience, and a multiple awareness experience. In 5 of 9 or 56% of his inner experience during the golf tournament, Caleb’s inner experience was related to golf in content. In all but one of these instances, Caleb experienced perceptual awareness related to golf as he was looking either passively or actively at objects related to golf. His perceptual awareness experiences during golf were mostly matter-of-fact visual experiences lacking the richest, depth, and personal conscious involvement that was apparent in his sensory awareness,
inner speech, unsymbolized thinking, a feeling experiences. His just doing experience was much more matter-of-fact, similar to his perceptual awareness experiences.

*Golf-Related Content*

Of Caleb's Tournament Samples collected during golf performance, 5 of 9 or 56% were related to golf in content. Examples of golf related content include paying visual attention to finding the place where his golf club belongs by looking in his bag, focusing visually on his tee while just picking it up, just passively watching what another golfer is doing, looking at the group ahead in the process of making a perceptual judgment about whether they are out of range, deciding as unsymbolized thinking about whether to hit the ball over the water with a safer eight- or riskier nine-iron to the green.

*Comparing Inner Experience During Golf and Daily Life*

Caleb's inner experiences from his golf samples were similar to his daily life samples with respect to six forms of inner experience; these forms were perceptual awareness, inner speech, feeling, just doing, and multiple awareness. His inner experiences from his golf samples were different from his daily life samples with respect to two forms of inner experience; these were sensory awareness and unsymbolized thinking.

Caleb experienced a similar amount of perceptual awareness during his golf samples (4 of 9 or 44%) as he did during his daily samples (5 of 15 or 33%). He also had a similar amount of inner speech during golf (1 of 9 or 11%) as he did during his golf samples (2 of 15 or 13%). Caleb had a similar amount of feelings, just doing, and multiple awareness during his daily samples (1 of 9 or 11% for each of these three) as he did during his golf samples as well (1 of 15 or 7% for each of these three).
Caleb experienced less than half as many instances of sensory awareness during his golf samples (2 of 9 or 22%) as he had during his daily samples (7 of 15 or 47%). Caleb also had less than half as many instances of unsymbolized thinking during his golf samples (1 of 9 or 11%) as he had during his daily samples (4 of 15 or 27%).

Caleb’s inner experiences during golf compared with his daily life were similar with respect to the amount of perceptual awareness, inner speech, feeling, just doing, and multiple awareness he had. His inner experiences were different during golf compared with his daily life with respect to sensory awareness and unsymbolized thinking. Caleb experienced about a decrease in sensory awareness and unsymbolized thinking during golf. Thus Caleb’s inner experience during golf was mostly similar to his inner experience during his daily life.

Discussion

Caleb was surprised that most of his samples were task specific and did not include much of what he considered inner experience. His inner phenomena were often matter-of-fact occurrences that lacked the richness and depth that he expected to find. Whether they were active or passive experiences, for instance, Caleb’s perceptual awareness experiences were typically matter-of-fact visual experiences often related to the tasks he was doing, but lacking the richness and depth of experience he had with other inner experiences such as sensory awareness. Caleb experienced his perceptual awareness as not having much inner experience at the moment of the beep other than passive visual experience or as active visual experience related to a task at hand. His unsymbolized thinking, inner speech, and especially his just doing experiences also lacked the depth and richness he expected to find.
Caleb's feelings and sensory awareness experiences had more depth and richness than his perceptual awareness, unsymbolized thinking, inner speech, and just doing experiences. His feelings had more depth and richness, and in addition to this, his sensory awareness experiences also had more personal conscious involvement as he was absorbed or immersed the external visual phenomena or internal physical sensations.

Caleb's inner experience during golf also contained a high frequency of perceptual awareness (44%), of both passive and active forms. He also had 2 sensory awareness experiences during the golf tournament (22% of his golf samples). He had one instance of each of the following during golf: inner speech, unsymbolized thinking, feeling, just doing experience, and multiple awareness. In 5 of 9 or 56% of his inner experience during the golf tournament, Caleb's inner experience was related to golf in content. In all but one of these instances, Caleb experienced perceptual awareness related to golf, looking at objects related to golf either passively or actively.

Only about half of Caleb's inner experiences during golf had golf-related content. Caleb's golf inner experiences were similar to that of his daily life with respect to the amount of perceptual awareness, inner speech, feeling, just doing, and multiple awareness he had. His golf inner experiences were different from his daily life with respect to his decrease sensory awareness and unsymbolized thinking during golf. Caleb's golf inner experience was mostly similar that of his daily life.
SAMUEL

Samuel is a 43 year-old moderately-skilled golfer with a handicap of 18. He was recruited by a contact of one of the researchers. He completed his first three sampling days by obtaining 15 samples from his daily life either at work or at home. He collected his daily life samples at the end of the spring. He participated in the golf competition sampling in the middle of the same summer and collected 9 golf samples. Samuel shot a 92, which is 20 over par, 2 strokes higher than his handicap of 18. As a result, Samuel finished 7th in the golf competition.

Perceptual Awareness

In 9 of 24 samples, or 38%, Samuel experienced perceptual awareness at the moment of the beep. Samuel experienced two different kinds of perceptual awareness. In some of Samuel’s samples, he was not doing much other than looking at something at the moment of the beep. In these instances he had much less concentration on what he was looking at, he was just idly looking without doing much else. In other samples, he was concentrating on what he was looking at right at the moment of the beep. This typically served the task he was doing or a task he was preparing to do.

Idly Looking

In Sample 2.2, for instance, Samuel was not doing much but looking. Samuel had just clicked the mouse key and a blank window had come up on his computer. At the moment
of the beep, Samuel is looking at the window that had come up, which is blank. He may also be waiting for something to come up in the blank window and expecting it to be filled, but if he is, this is a very faint, matter-of-fact experience that is much less prominent than his experience of just looking at the blank window. At the moment of the beep, this a basic visual task experienced as idly looking, along with a possible waiting experience.

In Sample 3.2, Samuel was also not doing much but looking. Samuel had been watching a TV show, and his attention became drawn to his wife's face. At the moment of the beep, he is seeing her face in the periphery of his vision on the right side. His attention is drawn to her face and the TV show has disappeared from his awareness. She is closer to him than he was previously aware, although this is not part of his experience. This is a simple visual experience since Samuel is just looking at his wife's face using his peripheral vision without any other inner experience.

One of Samuel's experiences of not doing much but looking came during the golf tournament. In Tournament T.1, Samuel was on the first hole addressing the ball in preparation for his first shot. He has set the ball on the tee and has the club in his right hand. He has just begun to put both hands on the club. At the moment of the beep, Samuel is looking at the ball without attention to anything else and without attention to any particular details about the ball. He is not aware of the fact that he is preparing to hit the ball or thinking about anything else.

**Goal-Directed Looking**

In Sample 2.3, Samuel experienced the other type of perceptual awareness, which was concentrating on what he was looking at as a function of the task he was doing.
Samuel had been part of a telephone conference call leading up to the moment of the beep and using his computer. At the moment of the beep, he is looking at a tab on the computer to bring up a particular program. He is looking at the box in the bottom right hand corner of screen, and looking specifically at the 3rd choice on a list of boxes called “ideas.” He is seeing the box as a target to click and is focused mostly on the box. This is an experience of performing a skilled visual task. The voice from the conference call is in his awareness, but very much in the background. He is hearing the voice that is speaking, but is not listening at all to the details of what is being said.

Two of Samuel’s perceptual awareness experiences that involved concentrating on what he was looking at as a function of a task occurred during the golf tournament. In Tournament Sample T.2, Samuel was on the second hole. He was crouched down looking and reading the green to prepare for a putt. At the moment of the beep, Samuel is trying to visualize the path his ball will take to the hole. He is doing this at the moment by looking externally along a curving line. This experience has a sense of motion involved. He does not see the ball. This is an experience of externally looking along a curving line that represents the path his ball could take to the hole. At Tournament Sample T.4, Samuel was on the 6th hole. He was watching Mike’s putt to see which way the ball will break while Samuel was holding the flag. The ball was three quarters of the way to the hole. At the moment of the beep, Samuel is concentrating on the ball, watching it move to note its trajectory. This is a clear and simple inner experience of watching the ball to see where it is going to go.

All of Samuel’s perceptual awarenesses were visual. In some of these experiences, Samuel was not doing much other than looking at the moment of the beep. In others, he
was concentrating more visually on the process of doing something (or preparing to do something). Because the borders of these experiences are less clear than with other forms of inner experience, it is difficult to arrive at an exact number for how many times each of these two different types of perceptual awareness occurred. Samuel's not doing much but looking experiences did have an idle, almost passive quality to them, whereas his concentrating visually and doing or preparing experiences had more of an active quality to them.

*Inner Speech*

Samuel experienced inner speech in 4 of 24 or 17% of his samples. He experienced one of these during his daily life samples. In Sample 3.1, Samuel was going through his wife's shopping bag to find a notebook. At the moment of the beep, he is looking at a purple Tupperware container that had been missing that he has now found. He knows that it is purple, but is not caught up in the sensory aspects of the purpleness; he is more interested in the perceptual awareness of the Tupperware in that it is now found. Also at the moment of the beep, Samuel is innerly saying to himself “Oh, the purple Tupperware” in his own normal voice. Samuel is also aware of moving his hand by seeing it and feeling his hand on the Tupperware and other objects in the bag, but this is a less prominent part of his awareness.

Samuel experienced his other three instances of inner speech during golf performance. In two of these three instances, Samuel had inner speech that was self-directed and negative in content. In Tournament Sample T.5, Samuel was watching the ball that Mike has putted. At the moment of the beep, he is berating himself for leaving a putt 10 feet short earlier by saying something in words. By the time of the interview, he is
not sure of the exact words, but they would have been something like “stupid ass” or “fucking idiot” or “moron.” It is not apparent to us or we think to Samuel exactly which words were present at the moment of the beep; by the time of the expositional interview, he had forgotten which occurred exactly at the moment. This is spoken by himself to himself and said in his head with a scolding tone of voice and inflection. Samuel is not experiencing any emotion separate from this inner speech. This is just an intense mental experience. Samuel also has the sense that whatever words are present are one of a serious of berating inner spoken words that had been ongoing leading up to the moment of the beep. His inner berating is 99% prominent, and seeing the ball is about 1% of his inner experience. Well before Tournament Sample T.8, Samuel had hit a bad shot sending it only about 8 yards. He had then felt irritated and had been berating himself with a series of internally spoken expletives. Then he had had stopped saying the expletives and had taken another shot. The result of this shot was better, and he began walking to his next shot. As he was walking, he started thinking about the bad shot again. Now, at the moment of the beep, Samuel is looking down at his feet and internally saying something like “fucking idiot” or “dumb ass” with a negative tone and inflection in his voice. These words are not as forceful as the previous expletives in Tournament Sample T.5. Samuel is not remembering the past shot, nor is he feeling irritated at the moment of the beep, but he is just berating himself in words at the moment of the beep. Outside the experience of saying internal expletives at the moment of the beep, Samuel thinks he had been having an ongoing series of expletives that he has turned on and off at various points in time. The last two samples occurred when the expletives had been on.
Most of Samuel’s sampled instances of inner speech were during golf performance. Two of his three inner speech instances during golf were self-directed berating comments that had been part of ongoing series before the moment of the beep. In both of these instances, Samuel’s inner voice also had a negative tone, whereas his daily life inner speech sample had a normal tone.

Just Doing

Samuel had instances of just doing experiences in 3 of 24 or 13% of his samples. He experienced one of these during his daily life samples and two during golf performance. In Sample 1.2, Samuel was at work. He was visually scanning a list of stocks until one catches his eye. He was not looking for any specific stock and was not aware of the scanning process. At the moment of the beep, Samuel is still scanning. This is an automatic process without awareness, a skilled activity with no conscious experience. Samuel thinks he is prepared to be stopped if he finds the right stock. The TV is on in the background, but he’s not listening or paying attention to it. In Sample 3.3, Samuel had had an inflamed sore in his mouth for which he rinses his mouth with saltwater. At the moment of the beep, Samuel is swishing saltwater in his mouth. He is concentrating on making the water in his mouth move in a swishing motion. In addition to this, he is feeling a stinging sensation in the right side of his mouth that is located in his gums and teeth. The most prominent experience is the action of trying to make the water swish. Although the stinging is an intense sensation, it is secondary to the swishing effort in prominence.

In Tournament Sample T.3, Samuel was on his second shot of the 5th hole. He had just hit his shot and watched where it had gone. He was leaning down to pick up his
putter from the ground. At the moment of the beep, he is looking down and seeing his putter externally as well as picking up his putter. This is a simple and process of looking at the putter and picking it up at the moment of the beep. This is a clear simple inner experience.

Sensory Awareness

In 2 of 24 samples, or 8%, Samuel experienced sensory awareness at the moment of the beep. In Sample 3.3, for instance, Samuel had had a sore in his mouth for which had to rinse his mouth with saltwater. At the moment of the beep, Samuel is swishing saltwater in his mouth. He is concentrating on making the water in his mouth move in a swishing motion. In addition to this, he is feeling a stinging sensation in the right side of his mouth that is located in his gums and teeth; this is the sensory awareness portion of this sample. The most prominent experience is the action of trying to make the water swish, an example of a doing experience at the moment of the beep. Although the stinging is an intense sensation, it is secondary to the swishing effort in prominence. In Sample 3.6, Samuel experienced one sensory and one perceptual awareness. At the moment of the beep, Samuel is washing his hands under the water to rinse the soap off. He is particularly interested in the temperature, noticing that it feels moderately warm. Also at the moment of the beep, he is seeing the wetness and soapiness of his hands, a simple perceptual awareness. Samuel experienced sensory awareness twice during his daily life samples. In both of these, his sense of touch was the mode through which Samuel experienced sensory awareness.
Inner Experience During Golf

Samuel played the back nine in the golf competition. He collected nine Tournament Samples of inner experience during golf competition. Perceptual awareness occurred in 4 of 9 or 44% of these samples. Samuel experienced both not doing much but looking as well as looking as a function of a task during golf competition. Inner speech occurred in 3 of 9 or 33% of these samples, and 2 of these 3 were self-directed berating inner speech. Just doing experiences occurred in 2 of 9 or 22% of his Tournament Samples. Most of Samuel’s inner experiences during golf were clear, noticeably clearer than some of Samuel’s inner experiences collected during daily life. All of his sampled inner experiences during golf included just one form of inner experience at the moment of the beep.

Golf-Related Content

Of the Tournament Samples collected during golf, 8 of 9 or 89% were related to golf in content. The only inner experience not related to golf was collected during a break from golfing. Examples of golf-related content include looking at the ball without attention to its details, externally looking along a curving line that represents the path his ball could take to the hole, seeing his putter externally and just picking it up, concentrating on the ball another golfer has just hit as it moves, looking at another golfer’s GPS device and saying something internally like “wow, that’s cool,” watching another golfer address the ball and focusing visually on the place where the ball and the club meet, and berating himself about his golf performance with inner expletives with a scolding tone of voice (two samples).
Comparing Inner Experience During Golf and Daily Life

Samuel’s inner experiences from his golf samples were similar to his daily life samples with respect to just one form of inner experience; this was perceptual awareness. His inner experiences from his golf samples were different from his daily life samples with respect to three forms of inner experience; these were just doing, inner speech, and sensory awareness.

Samuel experienced nearly the same amount of perceptual awareness during his golf samples (4 of 9 or 44%) as he did during his daily samples (6 of 15 or 40%). Samuel had more just doing experiences during his golf samples (2 of 9 or 22%) than he had during his daily samples (1 of 15 or 7%). Samuel also had more inner speech during his golf samples (3 of 9 or 33%) than he had during his daily samples (1 of 15 or 7%). Samuel had less sensory awareness during his golf samples (0 of 9 or 0%) than he had during his daily samples (2 of 15 or 13%).

Samuel’s inner experiences during golf compared with his daily life were similar with respect to the amount of perceptual awareness he had. His inner experiences were different during golf compared with his daily life with respect to just doing, inner speech, and sensory awareness.

Discussion

Perceptual awareness was Samuel’s most frequent inner experience in his daily life and golf tournament samples. Samuel experienced two kinds of perceptual awareness – not doing much but looking and looking as a function of a task. The former were passive experiences with not much attention and interest in the visual stimuli, whereas the latter were active experiences with much more attention and interest in the visual stimuli.
and the task at hand. Samuel’s next most frequent inner experience was inner speech. Samuel experienced two inner speech instances where the content of what he was saying and his tone of voice were both normal and benign. He experienced two self-berating inner speech experiences than were negative in content and tone of voice. Samuel also had three just doing experiences, in which he was just doing a task at the moment of the beep with no awareness of thinking about it at the moment of the beep. He had two sensory awareness experiences, both of which involved his sense of touch. Samuel’s most frequent inner experience during golf competition was perceptual awareness, and nearly all of his golf competition inner experiences were related to golf in content. Samuel’s had about the same amount of perceptual awareness during golf as he had in his daily life, but he had more just doing and inner speech inner experiences and less sensory awareness during golf than in his daily life.
CHAPTER 10

WILL

Will is a 30 year-old moderately-skilled golfer with a handicap of 26. He was recruited by one of the researchers. He completed his first two sampling days by obtaining 11 samples from his daily life at work. He collected his daily life samples at the end of the summer. He participated in the golf competition sampling in the middle of the fall and collected 11 golf samples. Will shot 106, 34 strokes over par, 8 strokes higher than his handicap of 26. As a result, Will finished 9th in the golf competition.

Feeling

Will experienced feelings in 9 of 22 or 41% of his samples. During Sample 2.3, for instance, Will was at work researching fantasy football leagues and feeling relaxed and bored. At the moment of the beep, Will is feeling mildly relaxed and bored. This is experienced mentally and not physically, and as one feeling of relaxation and boredom. Also at the moment of the beep, Will is thinking about what to do after work; this may occur to him as an inner seeing, but he is not sure because the details of this inner seeing are very ambiguous. Will is not sure if he is innerly seeing himself doing a chore or errand, himself working out, or himself watching TV, but he thinks he sees himself in the inner scene. It is not apparent from what perspective he is involved in the inner seeing, whether he is seeing himself as if from a third person perspective or whether he sees objects in the inner seeing from the first person perspective. He thinks this inner seeing is
in motion and color. He also thinks he had been having several inner seeings near the moment of the beep but is only seeing one at the moment of the beep. This is a fairly clear feeling of relaxation and boredom with an unclear inner experience that might be an inner seeing at the moment of the beep. (Researching fantasy football is not in Will's conscious experience at the moment of the beep.)

In Sample 2.5, Will experienced another feeling and a simultaneous inner seeing. Will is in his office preparing for a meeting at work. At the moment of the beep, Will is thinking about the best way to summarize the project. This is experienced as an inner seeing of the meeting in progress. Will sees people around a table in motion in some of the same colors that are in this meeting room in reality. He sees different people wearing different clothes with different hair colors; for example, he sees a woman with blonde hair, a woman with black hair, a man with black hair, and others. Also at the moment of the beep, Will is experiencing a positive feeling of being occupied. This is experienced as an overall feeling of bodily contentment. Will's inner experience at the moment of the beep consists of a clear and differentiated visual and a rather clear internal emotional experience.

Will experienced feelings of bodily frustration, happiness and amusement, bodily energized satisfaction, mental excited confident optimism, intense mental satisfaction, mildly mental relaxation and boredom, overall bodily contentment, bodily over-stimulation (like having too much adrenalin), and mental frustration. Five of 9 or 56% of these were positive feelings (e.g., happiness, satisfaction), 3 of 9 or 33% were negative feelings (e.g., frustration), and 1 of 9 or 11% was mixed (relaxation and boredom). Will experienced 4 of 9 or 44% of these feelings bodily, the same number mentally, and one
was not experienced as having a location. In 7 of 9 or 78% of Will’s feeling experiences, co-occurring inner experiences were also present at the moment of the beep. These included inner speech, inner seeing, inner hearing, unsymbolized thinking, and doing with awareness. Of his feelings, 4 of 9 or 44% were experienced in his body, 5 of 9 or 56% were experienced as mental, and 2 of 9 or 22% he was did not apprehend enough detail to know if they were experienced in his body or as mental.

*Inner Seeing*

Will experienced inner seeing in 8 of his 22 or 36% of his samples. During the previous Samples 2.3 and 2.5 described in the Feeling section, Will had an inner seeing with a simultaneous feeling present at the moment of the beep. In Sample 2.2, he experienced inner seeing with no other simultaneous inner experience. During this sample, Will had been working on a report at work when somebody distracted him by giving him a birthday card to sign for his friend Tom. At the moment of the beep, Will is thinking about writing something personal in the birthday card. This thought process involves multiple inner seeings of Tom. In one of these, he is seeing Tom playing golf. This is a clear inner seeing of Tom golfing on a green golf course on a sunny day with three other people. This inner seeing has bright colors and vivid details. Will thinks this inner seeing may be a memory of having seen Tom golf because he knows he had seen this before, although this knowledge comes to him well after the beep. Also at the moment of the beep, Will is simultaneously experiencing an inner seeing of people in an office at work joking around. He is seeing people, including Tom, talking and laughing in more dull colors and much less vivid detail than his other co-occurring inner seeing.
Will’s golf inner seeing is more prominent in his experience at the moment of the beep than the office inner seeing.

In Tournament Sample T.4, Will experienced an inner seeing with no co-occurring inner experience. He was on the 2\textsuperscript{nd} stroke of the 3\textsuperscript{rd} hole, and he previously had hit a poor tee shot. He had had a series of inner seeings in which he was seeing the negative aspects of the course before the moment of the beep. At the moment of the beep, Will is preoccupied with an inner seeing specifically about the green of the course. He is seeing at the moment of the beep a slow, wet, thick, soft, green with long grass. This a clear inner seeing of the grass on the green, a clear and vivid inner seeing he is seeing as if he is standing and looking down at the green.

Will's inner seeings were typically detailed and differentiated experiences. In 5 of 8 or 63\% of his inner seeings, Will apprehended the details of these inner experiences, and in all these instances, he made distinctions between different aspects within the inner seeing (e.g., color versus black and white, motion versus static), and he also made distinctions among co-occurring but separate inner experiences (e.g., feeling, inner speech). In 4 of 8 or half of Will’s inner seeings, Will had co-occurring inner experiences, 3 of which were co-occurring feelings, and 1 of which was co-occurring inner speech.

**Inner Experience During Golf**

Will experienced inner speech during 7 of his 11 golf samples (64\%). He had inner seeings in 4 of his 11 golf samples (36\%), feelings in 2 of his 11 samples (18\%), and 1 instance of inner hearing (8\%). He had golf-related content in his inner experience in 9 of 11 of his inner experiences during golf competition (82\%). Will’s inner experience
during golf will be described including his inner speech, inner seeing, and feelings. This will be followed by a description of his golf-related content. Finally, comparison of Will’s inner experience during golf and daily life will be conducted.

Inner Speech

All of Will’s instances of inner speech occurred during the golf competition. He experienced inner speech in 7 of 11 or 64% of his golf samples, and 0 of 11 or 0% of his non-golf samples. During Tournament Sample T.2, for instance, Will was on the 2nd stroke of the 2nd hole. He had just taken his 2nd stroke and could not take a full backswing because he was right next to a tree. At the moment of the beep, Will is saying to himself internally “tree’s in the way.” This is said in his own normal voice. (Will thinks this inner spoken phrase was a way to minimize his frustration.) Also at the moment of the beep, but less prominent than his inner speech, Will is feeling mental frustration, experienced as felt in his head. This is a negative feeling that is certainly mental, but it is not apparent to us or Will, we think, exactly how this feeling takes place. He may be experiencing the feeling as a lack of mental clarity, a mental jumbledness, a feeling experienced as closer to a thought and/or somehow experienced as located in his head; this is a less prominent inner experience than his inner speech, so it is difficult for Will to determine if this mental frustrations is experienced as a lack of mental clarity and mental jumbledness at the moment of the beep. Thus Will is experiencing golf-related inner speech and a less prominent feeling of negative mental frustration that is certainly a feeling, certainly negative, and possibly felt as a lack of mental clarity and mental jumbledness.
In Tournament Sample T.5, Will was on the 5th stroke of the 6th hole. He had just finished chipping onto the green from directly behind a tree. He was walking to the green and starting to relax, feeling less frustrated. At the moment of the beep, Will is thinking that there were not enough options for hitting because of the tree. This is experienced as saying “not enough options for a good shot” or “not enough good options” or “not enough options;” he does not remember if the word “good” was part of the inner experience at the moment of the beep because he did not write it down right after the beep, but he does remember the words “not enough” and “options” were present. Will was not experiencing a feeling or any other inner experience in his conscious experience at the moment of the beep. Will thought that he was having an ongoing dialogue in inner speech about this shot before the moment of the beep as well.

In Tournament Sample T.9, Will was on the 7th stroke of the 14th hole. Will had just finished putting and was feeling fatigued physically and mentally, but also more relaxed and was not caring as much about the result of his swings. At the moment of the beep, Will is saying to himself internally “I’m ready to quit” for the day, said in a fatigued and slower manner than normal. The phrase means he is happy with how much he has played, does not need to play any more, and he could quit right now. The thought that he could quit is partially separate from the inner spoken phrase at the moment of the beep, but it is not exactly clear how it is separate from the inner speech experience. He is not experiencing fatigue at the moment of the beep as he had been before the moment.

**Inner Seeing**

Will’s had inner seeing in 4 of 11 or 36% of his golf samples. In Sample T.1, for instance, Will was on the 4th stroke of the 1st hole. He was waiting to putt and feeling
nervous, jittery, and disoriented. He was also thinking about how slow the speed of the
green was and how he will need to adjust to this. Will had difficulty sorting out exactly
what was in his inner experience and what was not when the beep occurred. At the
moment of the beep, Will is certain he is imagining the sound the putter will make when
he hits the ball. He experiences this as innerly hearing the clicking sound the putter will
need to make to hit the ball hard enough. Will is much less certain about other things that
may be in his inner experience. For instance, he may also be experiencing a kinesthetic
imagined feeling in his hands also at the moment of the beep, but he is not sure about
whether this is also present at the moment of the beep. Will may also be experiencing
something related to how hard he should hit the ball, but he was very uncertain about this
and lacked details to describe whether this was present at the moment. Will is certain
about his inner hearing of the clicking putter, but any of these others processes may or
may not have been in his inner experience. To speculate, Will may be uncertain about the
presence or absence of other inner experiences because they were less prominent than his
inner hearing, or they may have occurred before or after the beep, leading to uncertainty
about their relation to the moment of the beep, or both of these options. Will had felt
nervous, jittery, and disoriented before the moment of the beep, but none of these feelings
are present at the moment of the beep.

Feelings

Will experienced feelings in 2 of 11 or 18% of his golf samples, and 7 of 11 or 64%
of his non-golf samples. During Tournament Sample T.2 for instance, which was
discussed in the previous Inner Speech subsection, Will experienced a negative feeling of
mental frustration, which was less prominent than his co-occurring golf-related inner
speech. During Tournament Sample T.3, Will experienced another negative feeling with co-occurring inner speech. Will was on the 5th stroke of the 2nd hole. His group had just finished the 2nd hole, and he was sitting in the golf cart. Will had been feeling like he had too much energy, and leading up to the moment of the beep, he was having an inner dialogue about why he had too much energy and not enough focus. At the moment of the beep, Will is thinking about how he feels by saying internally to himself the words “too much adrenalin,” a clearly spoken inner phrase. Also at the moment of the beep, Will is experiencing the feeling of the too much adrenalin and energy. This is a feeling that he experiences throughout his whole body, but more so in his head. Also at the moment of the beep, Will’s body was hot, but he is not experiencing this in his consciousness at the moment of the beep.

Both of Will’s feelings during golf were negative feelings with co-occurring inner speech. Thus 2 of 2 or 100% of his feelings during golf were negative, whereas 5 of 7 or 71% his feelings during his daily life were positive, and 1 of 7 or 14% was mixed. The content of one of these was external, a tree being in the way, and the other was internal, feeling too much adrenalin and energy.

*Golf-Related Content*

Nine of 11 or 82% of Will’s Tournament Samples contained golf-related content. Examples of golf-related content include internally hearing the sound the putter will make when he hits the ball, internally saying to himself something to himself like “tree’s in the way” and simultaneously feeling mental frustration felt in his head, internally seeing a slow, wet, thick, soft, green with long grass, internally saying a phrase about how there were not enough options for a good shot, internally saying “disjointed” to
himself and simultaneously internally seeing the parts of his disjointed swing, internally seeing what his final score would be if he shot 7 on every hole by seeing “18 x 7” in black, internally saying “better” about the green conditions, saying to himself internally “I'm ready to quit” for the day in a fatigued manner, and remembering the best par 5 he ever played by internally seeing the ball flying toward the hole from the side as if it is on TV.

Comparing Inner Experience During Golf and Daily Life

The most salient feature of Will’s inner experience during golf was inner speech. He had seven instances of inner speech during his golf samples and none during his daily samples, as was noted previously in the Inner Speech section. He had inner speech in 7 of 11 or 64% of his golf samples and none during his daily samples. Five of 7 or 71% of his inner speech during golf contained golf-related content.

The most salient feature of Will’s inner experience during daily life was feeling. Will had fewer feelings during golf than daily life. He had feelings in 2 of 11 or 18% of his golf samples and 7 of 11 or 64% of his daily samples. One of 2 or 50% of his feelings during golf contained golf-related content. Both of Will’s feelings during golf were negative feelings with co-occurring inner speech. Two of 2 or 100% of his feelings during golf were negative, whereas 5 of 7 or 71% his feelings during his daily life were positive, as mentioned in the previous Feeling subsection.

One of the other salient features of Will’s inner experience during both golf and daily life was inner seeing. Will experienced the same amount of inner seeing in his golf samples as his daily samples (36%). All four or 100% of his inner seeings during golf contained golf-related content. Another salient feature of his inner experience was clarity.
As noted previously in the Clarity subsection, Will had inner experiences that were unclear in different ways during golf and daily life. During golf he had two unclear inner experiences, and during his daily life he had two unclear indeterminate inner experiences.

Discussion

Will's golf and daily life inner experiences were typically fairly clear and detailed. Will's most salient inner experience during golf was golf-related inner speech. He also had salient golf-related inner seeings and feelings during golf.

During the golf competition, Will experienced seven instances of inner speech and inner seeing. He also experienced two feelings and an inner hearing. Most of his golf competition samples contained golf-related content. His golf samples were similar to his daily life with respect to the amount of inner seeing he experienced. His golf samples were different from his daily samples with respect to the amount of inner speech and feelings he experienced. His golf samples had a more inner speech and fewer feelings.

The feelings Will did have during golf were both negative feelings with co-occurring inner speech. In contrast, 5 of 7 or 71% his feelings during his daily life were positive.
CHAPTER 11

TOM

Tom was a 19 year-old intercollegiate golfer with a handicap of two. He was recruited from a friend of one of the researchers from the community. Tom participated in the study during the summer, and he was practicing golf regularly during this time. He chose to sample for his first two days during golf practice instead of other life activities so he could see what his inner experience was like during golf, and because it worked best with his summer schedule. For the purpose of this study, we will refer to golf practice such as this with the term recreational golf from this point forward (More on this in the nomothetic Chapter 16). Tom collected 12 samples during these two days.

On the third and final sampling day, Tom chose to wear the beeper during a two-versus-two competition with his friends the day before a college tournament. He requested that he be allowed to do this instead of competing in the golf tournament designed for the study because he thought he would take the task more seriously, and because he thought it would be a more realistic approximation of how he is in natural competitions. Although Tom’s team of two was in the lead for most of the competition, they lost after their opponents overcame their lead on the 18th hole. During Tom’s golf competition, he shot 70, 2 strokes under par, which is 4 strokes lower than his handicap of 2. Tom’s individual score was the 2nd best score in this study. He collected six golf samples.
In 56%, or 10 of his 18 samples, Tom had inner seeing. These experiences were typically very clear and differentiated. Most were golf-related in content as well. Tom’s inner seeing typically co-occurred along with other forms of inner experience (e.g., inner speech, sensory awareness).

Tom had three samples in which inner seeing co-occurred simultaneously with inner speech at the moment of the beep. Sample 1.6, as an example, occurred on the first sampling day while Tom was practicing golf. Tom had just hit a “bad” tee shot. His coach had previously given him a “Nine Step Rule” to deal with anger, which consists of allowing oneself to experience angry while walking. For nine paces, he can experience anger, but by the tenth he must move on. At the moment of the beep, Tom is innerly seeing the number “6” in large black font with a small caption above it with the word “six.” Tom is also counting to six and is saying the number “6” to himself internally in his own normal voice at the moment of the beep.

Another example of an inner seeing with inner speech, Sample 2.6, occurred when Tom was finished with golf practice on the second sampling day. Tom was pulling out of the parking lot on his way home when he saw his friend Joe, with whom he has an intense, but friendly, disagreement about the quality of a restaurant, El Bravo. Tom believes that El Bravo has the best green salsa, but his friend does not. At the moment of the beep, Tom is experiencing an inner seeing of himself as if he is sitting at the bar. He sees his arm and hand as if they are viewed from his own eyes. Tom is reliving the taste and crunchiness of the chips and salsa along with the inner seeing of himself. Also at the moment of the beep, in his imagination, Tom is saying to Joe “you’re a real idiot” in his
own voice. This was a clear, detailed, and differentiated inner experience not related to
golf, but his inner seeing and inner speech are related in content.

Tom had several inner seeings that occurred simultaneously with a related sensory
awareness. For instance with Sample 1.3, Tom was practicing golf and was on the 7th
hole. His goal was to hit the ball over the water. He was taking a practice swing with his
left hand and his eyes were shut. At the moment of the beep, Tom is innerly seeing a
good result he had on the same hole yesterday. He is seeing a yellow flag internally and
the white ball from a close perspective. The ball is still and just a few feet from the hole,
and other details are known to be present but in the background such as the grass and
trees, but these are grey in color and out of the center of his awareness. Also at the
moment of the beep, Tom is aware of the sensation of nicking the grass with his golf
club, which he feels on the tips of his fingers and from his forearm to his upper arm. So
this is an inner seeing that occurs simultaneously with the sensory awareness of a
physical action.

Most of Tom’s inner seeings were very clear and differentiated inner experiences.
Sample 2.1, for instance, occurred early in the morning. Tom was practicing on the golf
course and had hit his ball into a very wet muddy spot where it imbedded. Before the
moment of the beep, he had been thinking about how it would “suck” if, in competition,
you did not get relief from a ball that imbeds as this one has. At the moment of the beep,
Tom is in reality looking at the lie with awareness of it and is simultaneously having an
inner seeing of himself hacking the ball out of the mud with a nine iron with the ball
dribbling out about nine to fifteen yards; in this inner seeing he is wearing the same
clothes he’s wearing in reality that day. The inner seeing of himself hacking is more
prominent than the ball he is looking at in the mud. He has no other inner experience at the moment of the beep. This was a clear, detailed, and differentiated golf-related inner experience.

The majority of Tom’s inner seeings were experienced simultaneously with other forms of inner experience such as inner speech, sensory awareness, feelings, and unsymbolized thoughts. These usually occurred with only one other different form of inner experience, but at one point it occurred with two other different forms. This occurred in Sample 2.3 after Tom had finished practicing golf and was now lifting weights. He is about half of the way through his set. At the moment of the beep, Tom’s arms are fully extended and he is staring at the smooth part of the barbell he is lifting and noticing the smoothness of the black shiny barbell and the way the light is hitting it to cause a lighter-than-black colored reflection, an example of sensory awareness. Also at the moment of the beep, Tom is imagining himself lifting weights with his arms fully extended from the perspective of a person who would be spotting for him. Also at the moment of the beep, Tom is saying to himself internally, “Man up!” vehemently in his own words as if to mentally pump himself up. All three experiences (sensory awareness, inner seeing, and inner speech) were clear, detailed, and differentiated.

Tom frequently experienced clear and differentiated inner seeings. Most of these experiences co-occurred with other forms of inner experience including inner speech, sensory awareness, and unsymbolized thinking. The co-occurrence of two or three forms of inner experience may not be uncommon, but it was certainly evident with Tom’s samples. Most of these co-occurring forms of inner experiences were related to one another in content. Since most of Tom’s samples were collected during either golf
practice or competition, most of these occurred when he was golfing. Of those that were collected during golf, 75% of his inner seeings were related to golf in content.

*Kinesthetic Inner Seeing*

A few of Tom’s inner seeings, 3 of 10, had kinesthetic components. As we saw before in Sample 2.6, for example, Tom was having an inner seeing of himself at the restaurant and is reliving the taste and crunchiness of the chips and salsa. Another instance of this occurred in Sample 2.4 after Tom had left the gym and was practicing putting on the putting green. He had been missing some of his putts and was scooping some balls out of the hole. At the moment of the beep, Tom is thinking he may need to change putters, which had been in words before the moment of the beep. At the moment of the beep, this unsymbolized residual idea is in his inner experience without words. Also at the moment of the beep, Tom is innerly seeing himself taking off the cover of another of his putters. He sees his arms taking off the red cover in motion and the insignia of the brand on the cover. Also at the same moment, Tom is hearing the velcro tearing internally along with the related inner seeing. He also feels the resistance of the velcro as if the putter cover is there and as if he's really feeling it at the moment of the beep. So Tom had an unsymbolized idea of changing putters in mind, and an inner seeing of himself getting out the putter that has inner sensory components, both kinesthetic and auditory, that are relived at the moment of the beep. This is a clear, detailed, and differentiated inner experience that is golf-related.

Tom experienced another inner seeing with kinesthetic components during golf competition, Tournament Sample T.1. Tom was playing a two versus two game against his friends to prepare for a college match the next day. He was walking to his second shot
on the second hole (a short par 4). He was trying to just stay in the moment, trying to maintain a good feeling he has had. He was also actively trying to keep a positive attitude. The swing he had made previously was very good, and he is trying to keep it in his head to duplicate it for the next shot. He had started the process of keeping it in his head and is doing so at the moment without effort. At the moment of the beep he is picturing the swing he had just made off the tee, seeing his arms go back in perfect position. He is seeing a previous good tee shot internally just like it is from the same view he had previously seen it externally. In the second seeing, he is seeing the swing and feeling it too in no particular place in his body, but this is a good feeling. This was a visual and kinesthetic re-experience used to prepare for the next shot.

Inner Speech

In 5 of 18, or 28%, of Tom's samples, he was experiencing inner speech. Most of these, 4 of 5 or 80%, were not golf-related. All of his inner speech experiences occurred along with other forms of inner experience such as inner seeing or sensory awareness. All of his inner speech experiences also were related to the other co-occurring forms of inner experience by the content of the inner experience.

Sample 1.2 is an example of an inner speech experience that is not related to golf. A few minutes before the beep, Tom was waiting for his 2nd shot on the fourth hole of the golf course when his cell phone rang. It was his doctor, who informed him that the growth on his leg is not cancer. At the moment of the beep, Tom is sitting in the cart feeling thrilled/relieved that he is healthy and saying to himself “what a relief!” internally in his own normal voice. The feeling of relief and the inner spoken phrase are both clear.
aspects of his inner experience. At the same time, Tom is sighing as he exhales. The sigh is not part of his conscious experience at the moment of the beep.

Sample 1.6 was Tom’s only sample with inner speech was an emotion regulation strategy related to golf. Tom was practicing and had hit a bad tee shot, and was now walking back to his cart. At the moment of the beep, Tom is innerly seeing the number “6” in large black font with a small caption above it with the word “six.” Tom was simultaneously saying “6” to himself in his own normal voice as he counts 1-2-3-4-5-6. This counting is part of a “Nine Step Rule” his coach had previously given him to help him deal with anger. This rule allows Tom to experience anger while walking for nine paces, but by the tenth pace he must leave the anger behind. At the moment of the beep, Tom is also thinking that he is almost done with the nine step process; this thinking takes place without words or inner seeing. Tom is probably angry in his body, but this is not part of his conscious experience at the moment of the beep. Incidentally, Tom said that his anger dissipated after this.

Tom experienced fairly frequent inner speech that co-occurred with other inner experiences. His inner speech was related to these other inner experiences by content, but his inner speech experiences were typically not golf-related.

Unsymbolized Thinking

Five of 18, or 28%, of Tom’s samples contained unsymbolized thinking. Most of these unsymbolized thoughts co-occurred with other forms of inner experience, and most were also golf-related in content.

Tournament Sample T.5 occurred during two-versus-two golf competition. Tom experienced unsymbolized thinking of a felt nature, like feeling like being in a specific
situation before, without any other co-occurring form of inner experience. Tom was on the 13th hole, which is a par 5. He had just pulled out his club to hit his second shot, trying to reach the green in two strokes. He was looking down at his bag and staring at both the three-wood and five-iron while simultaneously imagining himself on this hole in tomorrow’s tournament. This imagining occurs without words or inner seeing, an explicit thought process containing the idea of what he is going to do tomorrow, which club he'll use, and where he wants to be hitting his shot from. Garret’s experience is exactly like he's there at that moment while he's thinking about what place and club gives him the best chance.

In Tournament Sample T.6, Tom experienced an unsymbolized awareness of loss on multiple levels along with a feeling of disappointment. Tom was on the 18th hole. His buddy, who’s on the other team, was putting. Before the putt, Tom had been feeling confident that he’d win the match. But the buddy made the putt to win the hole and the match. At the moment of the beep, Tom is feeling disappointed and is simultaneously thinking, without words or inner seeing, that he has lost $20 and will be buying dinner. The disappointment was a feeling of failure in his body and mind, an emptiness feeling from the head down, like what he had been doing for the last couple hours just turned out to be crap. So at the moment of the beep, Tom is feeling disappointment and thinking he’s lost $20 and will be buying dinner.

**Feelings**

Tom experienced feelings in 4 of his 18 samples, or 22%. Three of these feelings occurred with other co-occurring forms inner experiences. Three were golf-related in content. As we just saw, Tom experienced a fairly significant feeling of disappointment
associated with unsymbolized thinking about his loss during competition, even though he performed very well himself, two points better than his handicap in fact.

During Tournament Sample T.3, Tom was on the 7th hole, which is the most difficult hole on the course. He had made a birdie to put his team up by three and had just picked up the ball out of the hole. He was looking at the ball, staring at it for dirt, turning it around in his fingers. At the moment of the beep, Tom is experiencing a confident feeling with the knowledge that he and his team are winning. This is experienced as more of a feeling than a thought process, but he has no bodily awareness at the moment of the beep. This confident feeling is almost a swagger, with the knowledge he and his team are up by three and it’s going to be difficult for the other team to come back and win. Also at the moment of the beep, Tom is thinking his team will win knowing that there is only 11 holes to go and his team is up by three, which is an understanding of the situation without words or inner seeing. His confidence and swagger were noticeable by a bounce in his step, which he has when he’s competing, but this is not part of his awareness at the moment of the beep.

Tom experienced another feeling during Sample 1.5 when he was practicing golf on the 11th hole. Tom had just hit a shot that feels crappy like it caught a lot of the grass and dirt. Before the beep, Tom has felt the crappiness and ugliness of the shot in his body. At the moment of the beep, Tom’s awareness of this bodily sensation has subsided, replaced by a very angry feeling. The feeling seems like a mental frustration, metaphorically similar to building pressure or building redness that needs to be let out. Garret believes that he is not displaying any external or physical signs of the anger.
Inner Experience During Golf

Tom collected six Tournament Samples. His most frequently-occurring inner experiences were unsymbolized thinking (50%), inner seeing (33%), feeling (33%), perceptual awareness (17%), and thought/feeling (17%), most of which were previously described. Two of Tom’s Tournament Samples included mental preparation strategies being used at the moment of the beep. One of these strategies will be described as well as his a feeling experience and his golf-related content.

In Tournament Sample T.2, Tom was mentally preparing himself to execute a putt. He was on the 4th hole, a par 3. When he had played this hole the day before on a practice match, he had made a 10 foot birdie putt to put his team up by two. Today as he was getting ready to putt, he had started visually scanning a line from the hole back toward his ball. He has visually traced this line starting from the hole and is now about midway back towards the ball. At the moment of the beep he is looking at a point of slight discoloration on the grass that was the midpoint of the line. This “spot-putting” is a visual and mental process, a visual mind scanning of the ground looking for something to spot and line up accordingly. He is completely concentrating his mind 100 percent on scanning the line, an instance of active perceptual awareness.

In Tournament Sample T.4, Tom experienced an emotional reaction to a golf outcome. He was on the 10th hole, a short par 4. He was walking up to the fairway and was looking at the other guy’s tee shot. Then he saw his ball up on the green when the beeper went off. At the moment of the beep, he is seeing the ball on green and thinking/feeling that he “hit the shit” out of it. This involves seeing an inner seeing of the blue tee box yard marker that says “Par 4” on one line and “307” on the line below. This

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inner seeing seems to be an exact copy of the marker that he had previously actually seen. Simultaneously he is having an inner experience that seems like both a thought and feeling of stunned disbelief. This feeling is mental insofar as he is aware that this distance is unusual – he doesn’t usually hit the ball this far at sea level. So hitting it this far seems to produce an experience of disbelief, an experience that is both thought and emotion together with no words present at the moment of the beep.

_Golf-Related Content_

Tom collected 10 of 12, or 83%, of his samples during either golf practice or competition. Of those that were collected during golf, 72% were related to golf in content. During the golf competition, 6 of 6 or 100% of his inner experiences contained golf-related content. Examples of experiences with golf-related content include internally seeing and feeling the swing he had just made, mentally preparing himself to execute a putt by looking at a spot on the grass, experiencing a confident mental feeling with the knowledge that he and his team are winning, innerly seeing an exact copy of the yardage marker that he had previously actually seen and simultaneously having a thought/feeling of stunned disbelief, experiencing an unsymbolized thinking of a felt nature of himself being on this hole in tomorrow’s tournament exactly like he is there while thinking about what club gives him the best chance, and experiencing an unsymbolized awareness of loss on multiple levels along with a feeling of disappointment after losing.

When he was having golf-related inner experiences, the content of Tom’s experiences frequently included details about his strategies to prepare himself mentally (e.g., memories of similar positive past golf experiences, preparing to putt by drawing a line, thinking about what to do on the same hole tomorrow) and details about his emotional
reactions to golf-related outcomes (e.g., surprisingly good shots, bad shots, losing, anger reduction). To summarize, Tom’s golf-related inner experiences included content related to what he was doing at the moment, preparation for what he was going to do later, emotional reaction, or management of emotion.

Discussion

Tom’s inner experiences were typically very clear and differentiated inner experiences that were also typically task-related. He was often golfing and his inner experiences were often related to golf. In addition, Tom took to the sampling process with great ease. This was true for both the technical procedure as well as the expositional interview. This was a notable difference in comparison with some of the other participants in this study. Tom experienced frequent inner seeing, and sometimes his inner seeings had a kinesthetic component. He also experienced fairly frequent inner speech. Most of his inner speech was not golf-related. He also experienced frequent unsymbolized thinking and feelings. These forms of inner experience most often co-occurred with one another, especially inner seeing and inner speech.
CHAPTER 12

CHRIS

Chris is a 36 year-old highly-skilled golfer with a handicap of six. He was recruited by one of the researchers through a contact in the community. He completed his first three daily life sampling days before the golf competition sampling. For the first two days, Chris obtained samples from his daily life at home. On the third day, he sampled while playing golf (recreational golf). He collected his daily life samples in the middle of the summer, and he participated in the golf competition sampling in the middle of the same summer. Chris shot 82, 10 strokes over par, 4 strokes higher than his handicap of 6. As a result, Chris finished 8th in the golf competition.

Inner Seeing

Chris experienced inner seeing in 8 of 25 or 32% of his samples. All but one of Chris’s inner seeings co-occurred with other forms of inner experience present at the moment of the beep. In Sample 2.3, for instance, Chris had been talking to his brother about how Chris’s nephew is struggling in summer-school algebra. At the moment of the beep, Chris is experiencing an inner seeing of himself helping his nephew with his algebra. He sees his nephew, himself talking, a brown table, white paper, a book, and the kitchen in its various orange/yellow and purple colors with sunflower designs more in the background behind himself and his nephew. Chris and his nephew are in the center of the
inner seeing, but his nephew is the focus of his awareness at the moment of the beep.
This was a clear and detailed inner seeing.

In Sample 3.4, Chris was playing recreational golf and driving toward the 12th green to look for his ball. He had just found his ball sitting on a hill behind the green almost in the “crap” after the ball had failed to cut as he had intended. At the moment of the beep, Chris is experiencing a small sense of relief in his inner experience. His relief seems to him to be a reaction to the fact that the shot is not actually in the “crap.” Chris does not recall the details of how this was experienced (e.g., mentally, bodily). Also at the moment of the beep, Chris is saying to himself out loud “Oof, almost in the gunch, long” in a somewhat relieved tone. Also at the moment of the beep, Chris is internally visualizing the path he had wanted the ball to take when he hit it, which looks like a solid, continuous, curving, three-dimensional line that starts low, then moves high, and then curves right. His preliminary target, the right edge of the green right next to bunker, is seen in the middle of his visualization. The focus of his attention is the path of the ball, a solid, continuous line. Chris is certain that that inner seeing was present at the moment of the beep, but he is uncertain about whether the following inner seeing was present at the exact moment of the beep. As near as he can tell, it occurred after the moment of the beep, but it may have overlapped with the first inner seeing of the path he wanted the ball to take. In this second inner seeing, Chris saw the path the ball actually took, saw that it didn’t cut right as he intended.

Chris experienced an unsymbolized thought and a feeling simultaneously along with an inner seeing at the moment of the beep in Sample 1.3. In this sample, Chris was watching a movie about Truman Capote; an actor had said something about Harper Lee.
At the moment of the beep, Chris is making a mental association between what he had heard about Harper Lee and how Truman Capote is really the character Duff in the book Lee wrote, *To Kill A Mockingbird*. Also at the moment of the beep, Chris is experiencing a mental feeling of satisfaction, a feeling of pleasure with himself at the knowledge he has. Also at the moment of the beep, Chris is innerly seeing a warning sign on the side of a road illuminated by upward-facing lights. The sign reads “Warning” in black letters, and continues something like “Don't be too smug, you bastard,” but although Chris knows the meaning of this continuation, he is not certain exactly of the words. The sign is in the center of the inner seeing, and he is also seeing two sign posts, a barbed wire fence, sagebrush, a small road, and mountains in the background. Chris is also seeing the sign getting bigger as if he is in motion approaching the sign. Chris understands this inner seeing as being a smugness-checking experience.

Chris frequently experienced inner seeing. All but one of Chris’s inner seeings co-occurred with other inner experiences at the moment of the beep. As he became more experienced in the sampling method, Chris’s inner seeings became clearer and more detailed at the moment of the beep. His inner seeings were typically clear and detailed.

*Feeling*

Chris experienced feelings in 8 of 25 or 32% of his samples. All of Chris’s feelings co-occurred with other forms of inner experience at the moment of the beep. In Sample 3.2, for instance, Chris experienced both internal and external speech along with a feeling of disappointment during recreational golf. He had just hit a putt toward the hole on the first green. The hole is about 35-40 feet away, and at the moment of the beep the ball is about 10 feet before the hole. At the moment of the beep, Chris has said “Oh, too hard”
out loud. Chris is also saying “too hard” internally at the moment of the beep. Both his external and internal speech are spoken in a similar disappointed tone of voice. This is a mental process that has been spoken out loud first, and to himself second, both in the vicinity of the beep. Also at the moment of the beep, Chris is experiencing a small amount of disappointment as he is realizing that he hit the putt too hard. Chris experiences this disappointment as a feeling that is closer to a mental experience than a bodily experience, but still not a thought. (After the beep, the putt ended up 4 feet past the hole.)

In Sample 1.4, Chris was online playing a game when his computer shut down, possibly due to lightning in the storm outside. At the moment of the beep, Chris is experiencing an intense feeling of anger. It is not apparent to us, or we think to Chris, exactly how he is experiencing this intense anger. It was difficult for Chris to articulate exactly how he experienced his anger at the moment of the beep. It seems to Chris that he could have been experiencing a feeling of hotness at the moment of the beep, but he is not certain that he is actually feeling it at the moment of the beep. It seems to Chris that he could have just as easily experienced anger as seeing red internally, although he is not exactly sure he was literally seeing red inside either. Chris thinks he also could have experienced anger as dissociating is some way from the event itself. Any and all of these are possible, but beyond experiencing anger, Chris is not sure exactly how he experienced his anger. He is certain he experienced anger somehow, but the details of this experience are very ambiguous. Also at the moment of the beep, Chris is internally seeing his computer screen shutting down, just as he had seen it externally about 4 seconds before. Chris is seeing a blip on the screen moving from the left to the right hand side of
the screen in yellow and purple colors as it shuts down. Chris thinks he may also have also been saying “Shit, shit, shit! Son of a bitch!” at the moment of the beep, but it is not apparent to us or, we think, to Chris whether this occurred at the moment of the beep or not; if it did occur at the moment it is not apparent whether it was said internally or out loud. It is not apparent exactly how he is experiencing his intense anger feeling, we think, because this sample was collected on Chris’s first sampling day.

Thus, feelings were frequent inner experiences for Chris. All of his feelings co-occurred with other inner experiences at the moment of the beep. Chris experienced three feelings as mental experiences (38%); one feeling as bodily experienced (13%), and the details of the other four were not clear enough to determine whether they were mentally or bodily experienced (50%).

Inner Speech

Chris experienced inner speech in 7 of 25 or 28% of his samples. All of Chris’s inner speech co-occurred with other forms of inner experience present at the moment of the beep. All but one of his inner speech experiences occurred during the golf competition.

All of Chris’s inner speech occurred while he was playing golf. Chris experienced his only instance of inner speech outside of the golf competition while he was playing recreational golf on his 3rd sampling day. This occurred in Sample 3.2, which was previously described in the Feeling section: he innerly said “too hard” while saying the same phrase aloud and feeling disappointed.

In Tournament Sample T.8, Chris experienced a perceptual and a sensory awareness along with a co-occurring instance of inner speech. He was walking to the tee on the 13th hole, which is a par 3. At the moment of the beep, Chris is looking at the green and
noticing passively that the flagstick is almost dead center on the green. Also the moment of the beep, Chris is taking a little practice swing, not a formal practice swing that is part of his routine but a shorter practice swing, and feeling a mildly painful twinge is his wrist. Also at the moment of the beep, Chris is saying to himself “A good swing's gonna hurt” in a complaining tone of his own voice.

Chris experienced inner speech in seven of his samples. All of Chris’s inner speech co-occurred with other inner experiences at the moment of the beep, and all occurred while golf competition. Chris experienced inner speech as himself speaking in his own voice. In two instances, one of which was described earlier (Sample 3.2), Chris experienced both internal and external experienced speech that were related in content.

**Sensory Awareness**

Chris experienced sensory awareness in 7 of 25 or 28% of his samples. For example, in Sample T.8 (just described), Chris was feeling a twinge of pain in his wrist. This wrist pain occurred in two other golf competition samples as well. In Sample T.7, for example, he was standing on the 12th tee and was putting his tee into the ground. At the moment of the beep, Chris is feeling a physical twinge in his wrist that is bothering him. This is a sharp intense bodily sensation of pain with a numb pinky finger. Also at the moment, Chris is saying to himself “hard turf” in his own normal voice.

In Sample 2.6, Chris was eating soup he has made for dinner, the same soup his grandfather used to make. At the moment of the beep, Chris is experiencing the silky, creamy, graininess of the soup, a sensory awareness that is somehow recognized as being very positive. Also at the moment of the beep, Chris is making a comparison of some kind between his and his grandfather’s soup, but he has no idea exactly how this inner
experience takes shape. He knows he is making a comparison, but he just does not know how, an instance of unsymbolized thinking.

During Sample 3.3, Chris was playing recreational golf and standing by the 4th green where he had a little chip shot to hit. At the moment of the beep, Chris is looking at the bunker and is sensing the waves of heat radiating from the direction of the bunker. This sensation is mostly in his face and possibly a little in his legs as well, but he is not entirely sure if he is also feeling heat in his legs. The experience of the heat is very intense, an almost overwhelming sensation of hotness coming from the direction of the bunker.

Chris experienced sensory awareness in seven of his samples. He experienced all of his sensory awareness bodily as opposed to visually. Five of 7 or 71% of these co-occurred with other forms of inner experience. Four of his sensory awareness experiences occurred during golf, and three during the golf competition were painful or discomforting twinges in his wrist as described in Tournament Sample T.7.

Perceptual Awareness

Chris experienced perceptual awareness in 5 of 25 or 20% of his samples. Four of 5 or 80% of these occurred during golf competition. In Tournament Sample T.9, for instance, Chris experienced perceptual awareness along with a sensory awareness and inner speech experience. During this sample, he was on the tee of the 13th hole just after the other golfer had teed off. At the moment of the beep, Chris is feeling a throbbing sensation in his wrist. It is not painful, but it is a noticeable throbbing experience. Also at the moment of the beep, Chris is saying to himself, “It's hot. We need to stop at that water jug before the next tee” with an accent on the word “need.” Finally, Chris is also seeing a
water jug on the golf course at the moment of the beep and making a mental note of it, an active visual perceptual process.

In Tournament Sample T.8, which was previously described in the Inner Speech section, Chris experienced inner speech and perceptual awareness when he is taking a practice swing, and is complaining to himself and saying “A good swing’s gonna hurt.” Also at the moment of the beep, Chris is looking at the green and noticing passively that the flagstick is almost dead center in the middle of the green at the moment of the beep, a less prominent passive visual perceptual process.

Chris experienced perceptual awareness in six of his samples. Five of 6 or 83% of these co-occurred with other forms of inner experience. He typically experienced perceptual awareness as active, although he had two passive perceptual awareness experiences. All but one of his perceptual awareness experiences occurred during golf competition, and of these, all but one were golf-related.

Speaking Aloud

Chris had instances of speaking aloud in 5 of 25 or 20% of his samples. These were instances of speaking out loud with awareness at the moment of the beep. In Sample 3.1, for instance, Chris was getting ready to play recreational golf. One of the golf teaching pros who used to give Chris lessons, whose nickname is “the guru,” was on the course. Before the round, Chris had been talking to the guru. Now, Chris is driving to the 1st tee of the golf course when the starter said “you’re a little late.” At the moment of the beep, Chris is saying “well, you gotta pay homage to the guru” out loud to the starter. This is the beginning of the social transaction between Chris and the starter. Also at the moment of the beep, Chris is wanting to ask the starter for another towel. This is an implicit
wanting experience that has no associated words or inner seeings at the moment of the beep. Chris experiences this as merely a thing to remember to ask for, an instance of unsymbolized thinking.

Chris also had instances of speaking aloud in Samples 3.2 and 3.4, which were previously described in the Feeling and Inner Seeing sections, respectively. In Sample 3.2, Chris says “Oh, too hard” out loud. Also in Sample 3.4, Chris is saying to himself out loud “Oof, almost in the gunch, long” in a somewhat relieved tone. In both instances, his externally spoken phrase was part of his conscious awareness at the moment of the beep. Three of 5 of his instances of speaking aloud occurred during recreational golf.

Chris was talking at the moment of the beep as part of his experience in 5 of his 25 samples. In all cases, Chris was aware of himself talking. Most of Chris’s speaking aloud was commentary said to himself out loud. All of his speaking aloud occurred simultaneously with other co-occurring forms of inner experience such as inner speech, feelings, inner seeings, and unsymbolized thinking.

*Unsymbolized Thinking*

Chris experienced unsymbolized thinking in 5 of 25 or 20% of his samples. In Sample 3.1, which was previously described in the Speaking Aloud section. Chris was experiencing an unsymbolized implicit wanting experience that has no associated words or inner seeings at the moment of the beep. In Tournament Sample T.2, Chris also experienced unsymbolized thinking. He was on the 1st hole, just walking back to the cart. He did not hit the last shot very well but got a good result anyway. At the moment of the beep, Chris is thinking about how he got lucky with the last shot. If expressed in words,
the thought would be something like “got lucky with that second one,” although no words are in his inner experience at the moment of the beep.

Chris experienced four instances of unsymbolized thinking. Three of 4 or 75% of his unsymbolized thinking co-occurred with other simultaneous forms of inner experience (e.g., feeling, inner seeing).

Inner Experience During Golf

Chris collected 11 Tournament Samples. His most frequently-occurring inner experiences were inner speech (60%), perceptual awareness (50%), sensory awareness (40%), inner seeings (30%), and feeling (20%), many of which were previously described. He also experienced one instance each of inner hearing, just doing, and speaking aloud. Four of Chris’s Tournament Samples included mental preparation strategies being used at the moment of the beep. These strategies will be described as well as his golf-related content.

Mental Preparation Strategies

The beeper captured four mental preparation strategies Chris was using at the moment of the beep, accounting for 36% of his golf competition samples. These inner experiences consisted of several forms of inner experiences with content that served the purpose of mental preparation for a golf related task.

In Tournament Sample T.3, Chris was on the 2nd stroke of the 2nd hole, over the ball, and he was just getting ready to hit the shot. He was going through a mental checklist in which he was thinking that he had 280 yards to the hole, and if he hits a 2 iron, it would leave him 60 to 80 yards to go, and it will cut a little from left to right, so he wants to start it from the left side of the course. At the moment of the beep, he is going through his
pre-shot mental instructions, saying to himself internally “start it left edge, and it should work right” in his own normal inner voice. Also at the moment of the beep, Chris is externally looking at where he wants the ball to land, which is the left edge of the green.

In Tournament Sample T.10, for instance, Chris had gone through a list of things in his pre-shot routine, and he was stepping in to take his shot on the 16th hole. He had just gotten ready to swing. At the moment of the beep, Chris is feeling confident that he has the right club. This confidence is experienced as a bodily feeling of well being, of feeling comfortable, although it is not apparent if this feeling has a specific or general location. Chris is also aware of the comfort feeling somehow at the moment of the beep, but he is not sure how he is aware of the feeling. Also at the moment of the beep, Chris is saying “good pass” out loud, slightly more intense than normal, which means make a good full swing.

**Golf-Related Content**

Chris’s experiences had golf-related content in 9 of 11 or 82% of his Tournament Samples. Examples of experiences with golf-related content include internal and external speech about golf; thinking he got a lucky result without words or inner seeings; looking at the hole with focus and imaging his clubs; taking a practice swing, feeling a painful twinge in his wrist, looking passively at the hole, and saying internally that a good swing will hurt; cleaning a golf ball, feeling relieved he is done golfing, and feel the sensation of heat outside; and the aforementioned mental preparation strategies.

**Comparing Inner Experience During Golf and Daily Life**

Chris’s inner experiences from his golf samples were similar to his daily life samples with respect to three forms of inner experience; these forms were inner hearing, inner
seeing, and sensory awareness. His inner experiences from his golf samples were
different from his daily life samples with respect to five forms of inner experience; these
were unsymbolized thinking, speaking aloud, feeling, perceptual awareness, and inner
speech.

Recreational golf was considered part of Chris’s daily life inner experience for the
purpose of this idiographic chapter; it will be taken out of golf and daily life analyses so
the settings are consistent across participants in the nomothetic results Chapter 16.

Chris experienced a similar amount of inner hearing during his golf samples (1 of 11
or 9%) as he did during his daily samples (1 of 14 or 7%). He also had a similar amount
of inner seeing during golf (3 of 11 or 27%) as he did during his daily samples (5 of 14 or
36%). Chris had a similar amount of sensory awareness during golf (4 of 11 or 36%) as
he did during his daily samples as well (3 of 14 or 21%).

Chris experienced less unsymbolized thinking and less speaking aloud during his golf
samples (1 of 11 or 9% for each of these two) than he had during his daily samples (4 of
14 or 29% for each of these two). Chris also had less feeling during his golf samples (2 of
11 or 18%) than he had during his daily samples (6 of 14 or 43%). Chris had a more
perceptual awareness during his golf samples (4 of 11 or 36%) than he had during his
daily samples (1 of 14 or 7%). He had even more inner speech during his golf samples (6
of 11 or 55%) than during his daily samples (1 of 14 or 7%), and the one instance inner
speech he had during his daily samples was actually when he was golfing on the third
daily life sampling day. Thus all of Chris’s inner speech occurred during golf, one during
practice and the rest during competition.
Chris’s inner experiences during golf compared with his daily life were similar with respect to the amount of inner hearing, inner seeing, and sensory awareness he had. His inner experiences were different during golf compared with his daily life with respect to the amount of unsymbolized thinking, speaking aloud, feeling, perceptual awareness, and inner speech he had. Chris experienced a decrease in unsymbolized thinking, speaking aloud, and feeling during golf. Chris experienced a notable increase in perceptual awareness and inner speech during golf. Comparing Chris’s golf and daily life experiences, it is apparent that he had a lower number of similar forms of inner experience compared to the number of different forms of inner experience. Thus Chris’s golf and daily life inner experiences were mostly different.

Discussion

Chris’s two most frequent inner experiences were inner seeing and feelings. Almost all of both co-occurred with other inner experiences at the moment of the beep. His inner seeings varied in their degree of clarity and level of detail. Most of his feelings were mental experiences, and only a few were felt in his body. Chris’s next most frequent inner experiences were inner speech and sensory awareness. Almost all of both co-occurred with other inner experiences at the moment of the beep. All but one of his inner speech occurred during the golf competition, and he also experienced simultaneous internal and external speech twice. He experienced all of his sensory awareness bodily as opposed to visually. Most of his sensory awareness occurred during golf, and several during golf competition were twinges in his wrist.
Chris typically experienced perceptual awareness as active experiences, and all but one of these occurred during golf competition; of these, most were golf-related. Most of Chris’s speaking aloud was said to himself out loud just same as if said internally. Chris typically experienced unsymbolized thinking as a mental inner experience without the presence of related words or inner seeings. The majority of his perceptual awareness, speaking aloud, and unsymbolized thinking co-occurred with other inner experiences.

Chris’s inner experiences typically clear in form and content. His most frequently-occurring inner experiences during golf competition were inner speech, perceptual awareness, sensory awareness, inner seeings, and feelings, many of co-occurred with one another. Four of Chris’s Tournament Samples included mental preparation strategies being used at the moment of the beep.

Most of Chris’s golf samples had golf-related content. Chris’s inner experiences during golf compared with his daily life were similar with respect to the amount of inner hearing, inner seeing, and sensory awareness he had and different with respect to the amount of unsymbolized thinking, speaking aloud, feeling, perceptual awareness, and inner speech he had. He had a decrease in unsymbolized thinking, speaking aloud, and feeling during golf, and a notable increase in perceptual awareness and inner speech during golf. Chris’s golf and daily life inner experiences were mostly different.
CHAPTER 13

MIKE

Mike is a 50 year-old highly-skilled golfer with a handicap of 7. He was recruited by one of the researchers through a contact in the community. All of the samples that were used to describe Mike’s inner experience were collected within 24 hours of the interview, but Mike collected several samples from two days before as well that were not used.

On his first sampling day, Mike arrived with five samples obtained from two days earlier and four samples obtained during golf within 24 hours. Only the samples from within 24 hours were discussed, and the samples he had obtained from two days earlier were not discussed. He completed his second sampling day by obtaining samples from his daily life at home. He experienced difficulty with work that resulted in having to reschedule his second day interview for later than originally planned. So that he would be experienced with sampling before the golf tournament, we discussed three samples during his second day that had been collected two days earlier (Samples 2.1-2.3) and the only two samples collected within 24 hours (Samples 2.4-2.5). Samples 2.1-2.3 were thrown out, and only his two samples collected within 24 hours (Samples 2.4-2.5) will be discussed. Mike participated in recreational golf in 4 of 6 of his daily samples.

To summarize, we used 4 of Mike’s samples from day one, 2 samples from day two, and the 10 samples collected from the golf tournament. This yielded a total of 16
samples. In the golf competition, Mike shot 74, 2 strokes over par, which is 5 strokes lower than his handicap of 7. As a result, Mike won the golf competition.

Unsymbolized Thinking

Mike experienced unsymbolized thinking in 4 of 16 or 25% of his samples. In Sample 2.5, for instance, Mike was listening to Howard Stern on the car radio while driving. The context of the show involves a character who is a “midget.” At the moment of the beep, Mike is experiencing a thought about what kind of people go on this show, as if he is asking himself this question, although no words are present at the moment of the beep. He is not certain about the nature of the thought, whether it is a mental wondering or questioning or something else, but Mike is confident that the thought was present at the moment of the beep with no inner seeings or words present. This is a fairly unambiguous instance of unsymbolized thinking in which Mike is thinking about what kind of people go on the Howard Stern show. At first, Mike thought the cars on the road must have been in his awareness because he was driving, but when we discussed how sometimes what we see while driving is in our awareness and other times not, Mike became much less certain about this.

In Sample 1.2, Mike experienced a clear sensory awareness with a co-occurring unsymbolized thought. Mike was playing golf on the 3rd hole, about 115 yards away from the hole using his 8 iron. He was in the action of his swinging his club when the wind came up and was blowing in his direction. The beeper catches him almost at the top of his swing. At the moment of the beep, Mike is looking at the back part of the ball and sensing the wind on his left side of his face. This is a clear sensory awareness. Also at the moment of the beep, Mike is wondering whether he has enough club to hit the ball where
he had intended. This wondering is a somewhat clear mental process that occurs without words. This was a mostly clear visual, sensory, and mental golf-related experience.

Although Mike was experiencing a distracting thought about the wind, he hit a great shot, only 5 feet away from the hole.

Mike’s descriptions of his unsymbolized thinking were different than some of the other participants. Whether Mike experienced unsymbolized thinking as wondering, anticipating, hoping, wishing, or understanding, as others did, was never quite apparent. He may have had difficulty describing his unsymbolized thinking or he may have had different unsymbolized thinking than other participants. Either way, his unsymbolized thoughts were less differentiated and more difficult to describe. Others were more certain about how they experienced their unsymbolized thinking than Mike, and had more differentiated unsymbolized thoughts that were easier to describe.

Perceptual Awareness

Mike experienced perceptual awareness in 3 of 16 or 19% of his samples. Mike experienced perceptual awareness during Tournament Sample T.10 when he was getting ready to make a shot and was looking down the fairway of the last hole. At the moment of the beep, Mike is planning where he is going to hit the ball. This is experienced as actively looking down the right side of the fairway, an external visual experience. There are two carts out there, but Mike is looking past them, focused on the fairway as part of the planning where to hit the ball. It is not apparent whether or not his decision to hit the ball down the right side is present at or after the moment of the beep. There is an active focusing process occurring at the moment of the beep, but his focus is broad and without...
much specific detail. It is also not apparent whether or not Mike is experiencing a thought in addition to this perceptual awareness at the moment of the beep.

Mike’s perceptual awareness experiences were typically clear experiences. Two of these three perceptual awarenesses were clearly active. Mike’s perceptual awarenesses were typically somewhat clear external visual awareness either without much detail or with more detail and activeness.

Unclear Indeterminate Inner Experience

Mike had experiences for which there was not sufficient information to identify the form of his inner experience in 3 of 16 or 19% of his samples. In Sample 2.4, for instance, Mike was sitting with his 3-month-old niece “Jill,” who is looking up at him and smiling. At the moment of the beep, Mike is somehow reacting to Jill’s smile. It is not apparent to us, or, we think, to Mike, exactly how that reaction takes place. Perhaps it is a thought, which if represented in words might be something like “What a beautiful smile!” although such words do not actually appear to be present. Perhaps it is a feeling, a warmth towards Jill, but that warmth is certainly not apprehended in his body nor is it experienced mentally, either. It is also not apparent to us, and possibly not to Mike either, exactly when that reaction takes place. It remained ambiguous whether Mike’s moved experience is present at the moment of the beep or after. It seems apparent that the beep occurs somewhere in the temporal vicinity of Jill’s smile, and that Mike is moved by it somehow, but beyond that little can definitively be said. Thus Sample 2.4 contained temporal ambiguity, and it was not possible to determine the form of Mike’s inner experience.
Another instance of indeterminate inner experience occurred during Tournament Sample T.5. Before the beep, Mike had hit a shot from the sand trap to about 15 feet past the hole on the 18th, and it had stopped about a second or two ago. At the moment of the beep, Mike’s eyes are aimed at the ball without apparent awareness of the ball, and he is having some kind of inner experience related about how bad the shot was. The content of his thought, that is, how bad it is, is unambiguously in his inner experience at the moment of the beep, but Mike is not sure about the form, if any, through which this inner experience takes place. He thinks it may take the form of words spoken internally with a negative intonation and the same meaning as “bad shot.” He thinks also may take the form of a feeling of some kind, but if there was one, Mike was not aware of it at the moment of the beep or thereafter. Once again, it seems apparent that the beep occurs during Mike’s inner experience of the bad shot, but not much beyond that can definitively be said. Mike was sure about the content of his inner experience, but he was not sure about the form of this inner experience.

Mike’s unclear indeterminate inner experiences consisted of instances in which he was unable to provide clear or sufficient details that could highlight the form, if any, that his inner experience took at the moment of the beep. The fact that we could not determine the form of his inner experience may have been due to the lack of clarity in his inner experience, his difficulty in describing it, our difficulty in helping him describe it, his inexperience with the method, some of these, or all of these possibilities. Mike did more clearly experience the content of these inner experiences. For instance, as was previously described, he experienced a moved reaction to his niece and a negative experience about his bad shot.
Other Inner Experiences

Mike experienced an equal number of inner speech, feeling, sensory awareness, and speaking aloud experiences. Each of these occurred in 2 of 16 or 13% of Mike’s samples.

One of Mike’s two instances of inner speech occurred in Tournament Sample T.7. In this sample, Mike had just hit his shot. He was watching the ball traveling in the air. At the moment of the beep, Mike was saying to himself internally “fairway, fairway, fairway” in his own voice. He said “fairway” more than once, and probably three times, but he does not remember whether it was said two or three times. There is no other inner experience present at the moment of the beep.

One of Mike’s two feelings occurred in Sample 1.4; the other occurred in Sample 1.3, which was previously described. During Sample 1.4, Mike was playing golf on the 11th hole. He had just made a 40 foot putt and won some money. At the moment of the beep, he had made the putt and was walking halfway to the hole to pick up his ball. He is experiencing a surprised, elated feeling at making the putt and winning money. This is a happy and relieved feeling of being very, very pleased both mentally (mostly) and bodily (slightly). He is experiencing this as a happy feeling mostly in his head, with a hint of bodily experience, but he does not remember where in his body he is experiencing it. It is not apparent to us, or, we think, to Mike, but he may also be re-experiencing an inner seeing in motion of the shot he made going into the hole. He does not remember whether this possible experience occurred, and its details are unclear.

One of Mike’s two instances of sensory awareness occurred in Tournament Sample T.8; the other occurred in Sample 1.2, which was previously described. In Tournament Sample T.8, Mike was on the 3rd hole getting ready to hit his first shot. He is waiting one
of the other golfers to hit. At the moment of the beep, Mike is experiencing a diffuse intense heat experience. The experience of feeling the heat is the most prominent aspect of his awareness present at the moment of the beep. Also at the moment of the beep, Mike was reaching out for his glass of ice with awareness. This is a physical process of reaching for the glass of ice with focus of some kind, but it is not clear how this awareness comes to him, whether it is visual or tactile or something else, so this is an unclear doing experience. Also at the moment of the beep, Mike is thinking about the heat somehow. It is not apparent to us, or we think to Mike, how this takes place. He may be saying to himself, "God it's hot," or he may be having some unsymbolized thought without words, but the form of this inner experience could not be determined. The experience of feeling the heat is the most prominent aspect of his awareness present at the moment of the beep. It is not apparent to us or Mike whether reaching for the ice is more prominent than his diffuse heat experience at the moment of the beep.

One of Mike's two speaking aloud experiences occurred in Tournament Sample T.4. Mike is on the 1st stroke of the 18th hole. He was walking up to the tee getting ready to hit a three wood off of the tee. He had been playing faster than he would have liked. The beep went off as he was walking up to the tee. At the moment of the beep, Mike is saying a phrase out loud to himself quietly. It is loud enough for him but not others to hear. He is not clear about the exact words or their order, but he is saying something like "Nice and slow, nice and slow tempo" or "Nice and slow tempo, tempo, rhythm" at the moment of the beep. This externally spoken phrase is Mike's process of preparing for his next shot. The phrase is part of his awareness at the moment of the beep, but this is not a very clear experience. It is not apparent to us whether or not Mike has any inner experience at the
moment of the beep, but Mike does not recall having any inner experience outside of just saying this phrase out loud to himself to prepare for his shot.

*Inner Experience During Golf Competition*

Mike played the back nine in the golf competition. During the competition, Mike experienced perceptual awareness during three of his ten samples (30%), and he had three indeterminate inner experiences as well (30%). Mike experienced both unsymbolized thinking and speaking aloud in 2 of his 10 samples (20%). He had one instance of sensory awareness, inner speech, inner seeing, and experienced doing (10%). Most of these inner experiences were unclear at least to some extent. He had golf-related content in his inner experience in 9 of 10 of his inner experiences during golf competition (90%). Mike’s golf-related content will be briefly discussed, followed by a description of part of Mike’s mental preparation routine engages in that involves “tempo,” and a comparison of Mike’s inner experience during golf and daily life will be conducted.

*Golf-Related Content*

Of Mike’s 10 collected Tournament Samples, 9 or 90% contained golf-related content. Examples of golf-related content experiences watching another golfer and simultaneously inner seeing of his own previous shot, experiencing an indeterminate thought about the badness of his shot, actively focusing visually on his ball with simultaneous unsymbolized thinking that he hit it way too long, saying a phrase out loud to himself to maintain a nice and slow tempo, an indeterminate inner experience about a previous “bad” shot, unsymbolized thinking about going to a golf meeting, saying to himself “fairway” internally and repeatedly after hitting a shot, feeling an internal diffuse heat sensation while simultaneously reaching for a glass of ice and experiencing an
indeterminate thought, and planning where to hit the ball by actively looking down the fairway.

Mike had two inner experiences while he was golfing in which he was engaged in what he described as his typical mental preparation routine. The first of these actually occurred during his first sampling day, whereas the second occurred during the golf competition. As part of his routine, he focuses on his tempo. Mike’s spoken “Tempo” is apparently part of his typical warm-up routine. He often says “Tempo” like a metronome during his practice swings to cue himself to swing nice and smooth and to stay behind the ball.

In Sample 1.1 for instance, Mike was on the driving range hitting balls to warm up before beginning his round. He is addressing the ball with his 8 iron, the last club he uses in his warm-up routine. The beep catches Mike in his backswing with the club at about waist height saying the word “Tempo” to himself rhythmically in his own voice. He does not remember if it is the same as his normal external voice or not. Also at the moment of the beep, Mike is actively focused on the ball, paying attention to the center of the ball by looking at it. Also at the moment of the beep, Mike is monitoring his swing in the sense that he would notice if he did something wrong in his swing so that he could fix it. However, this process is outside of his awareness at the moment. It is a fact of the universe that he is monitoring his swing, but he is not aware of that monitoring. The details of this inner experience are not very clear. Mike had difficulty separately what was actually in his inner experience at the moment of the beep from how he thinks his preparation routine occurs generally, which is common for the first few sampling beeps.
Mike’s other instance of speaking “Tempo” to himself occurred in Sample T.4, which was previously described. Mike is saying something like “Nice and slow, nice and slow tempo” or “Nice and slow tempo, tempo, rhythm” at the moment of the beep out loud to himself quietly. The externally spoken phrase is part of preparation for his shot.

Mike’s mental preparation routine apparently often involves the inner experience of “Tempo.” We captured two instances of this inner experience, one of which was internal speech whereas the other was external. Had we captured more, we might have been better able to determine whether or to what extent the form and content of this inner experience may vary.

Comparing Inner Experience During Golf and Daily Life

Two-thirds of Mike’s usable daily life samples were collected while golfing. Recreational golf was considered part of his daily life inner experience for the purpose of this idiographic chapter; it will be taken out of golf and daily life analyses so the settings are consistent across participants in the nomothetic results Chapter 16.

Mike’s inner experiences from his daily samples were mostly similar in form to those collected during the golf tournament. For instance, Mike experienced a similar amount of perceptual awareness during his daily samples (1 of 6 or 17%) as he did during the golf tournament samples (2 of 10 or 20%). He also experienced a similar amount of unclear indeterminate inner experience during his daily samples (1 of 6 or 17%) as he did during the golf tournament samples (2 of 10 or 20%). He experienced a similar amount of both inner speech and sensory awareness during his daily samples (1 of 6 or 17% for both) as he did during the golf tournament samples (1 of 10 or 10% for both). Mike had a fairly
similar amount of unsymbolized thinking during his daily samples (2 of 6 or 33%) as he did during the golf tournament samples as well (2 of 10 or 20%).

The only remarkable differences in Mike’s daily samples and his golf tournament samples were found in the number of feeling and speaking aloud experiences he had. Mike had feelings in 2 of 6 or 33% of in his daily samples and none in the golf tournament samples. He also had no speaking aloud in his daily samples and 2 of 10 or 20% in the golf tournament samples.

Mike was golfing during two-thirds of his daily samples and, of course, during all of his golf tournament samples. The similarities between Mike’s daily samples and his golf tournament samples were much more remarkable than the differences.

Discussion

Mike’s inner experiences were about average in clarity when compared to some of the other participants. A few of our participants’ experiences were frequently much clearer, and a few were frequently much less clear. When it occurred, Mike’s lack of clarity manifested itself as indeterminate inner experiences in which the form of his inner experience was unclear. When Mike had unclear indeterminate inner experiences, he did more clearly experience the content of his inner experiences, however. Despite some unclear indeterminate inner experiences, the majority of Mike’s inner experiences were clearer. For instance, his perceptual awareness experiences were clearer albeit often not richly detailed.

During the golf competition, Mike experienced two perceptual awareness and two indeterminate inner experiences. He also had a couple instances of unsymbolized thinking and speaking aloud. He had just one instance of sensory awareness, inner
speech, inner seeing, and doing experience. Almost all of his golf competition samples contained golf-related content. Mike's mental preparation routine apparently involves the inner experience of "Tempo," and we captured two instances of this inner experience. One of these involved internal speech whereas the other involved external speech. Mike was golfing during most of his daily samples and during all of his golf tournament samples, and the similarities in the form of his inner experiences during his daily samples and his golf tournament samples were much more noticeable than the differences.
RYAN

Ryan is a 48 year-old highly-skilled golfer with a handicap of 4. He was recruited by one of the researchers through a contact in the community. He completed his first three sampling days by obtaining 18 samples from his daily life. He collected his daily life samples in the middle of the summer, and he participated in the golf competition sampling in the middle of the same summer, collecting 13 samples. Ryan shot 88, 16 over par, 12 strokes higher than his handicap of 4. As a result, Ryan finished 10th or last in the golf competition.

Clarity

Ryan had more difficulty describing the form of his inner experience than did most other study participants. Ryan became increasingly able to describe his inner experience more easily and consistently as he gained sampling experience, but even at the end of sampling still had some difficulties. It was usually easier for him to identify the content of his inner experience than the form or features of it, although the content was difficult on occasion as well. When it was difficult to describe the content of his inner experience, Ryan was unable to provide many precise details about any aspect of his inner experiences.

Ryan had considerable difficulty apprehending or “zeroing in on” the moment of the beep. When asked what was present in his inner experience at the moment of the beep, he
often described content from well before or after the moment of the beep, making it
difficult to determine what was present at the moment of the beep. That is frequent
among many subjects on their first sampling day; this persisted to some degree
throughout Ryan’s sampling. Thus Ryan had difficulty both describing in his inner
experience as well as difficulty apprehending when his inner experience occurred in
relation to the moment of the beep.

With practice, Ryan improved somewhat in his ability to describe the form of his
inner experience, and he also somewhat improved in his ability to describe content.
Ryan’s relative unclarity cannot be ascribed to lack of effort or interest in the sampling
process. He seemed interested throughout; he attended all scheduled sampling sessions
without canceling any; he attempted to answer all interview questions and was
comfortable saying why he thought it was difficult to describe his inner experience; he
kept track of the exact time when each beep went off; all are indicators of a conscientious
approach to the task. As an example of his interest in the sampling, Ryan was curious
enough to ask what we had learned about his inner experience twice during different
sampling interviews.

He often described the same inner experience in different ways. When asked to
elaborate, he could do so somewhat more consistently as he gained sampling experience,
but inconsistencies still remained. He frequently used subjunctifiers and often seemed to
change his mind about what was present at the moment of the beep. By the golf
tournament, Ryan had gradually improved in his ability to describe the form and content
of his inner experiences, however it remained difficult for him to apprehend and describe
his inner experience in relation to the moment of the beep throughout all of his sampling
days.

All five of Ryan’s samples from the first sampling day were so unclear that the form
could not be determined. It was not apparent whether this was due merely to difficulty
acquiring the sampling method, whether Ryan’s inner experience was unclear, or both.
Whatever the reason, these inner experiences were described in a manner much more
unclear than most of the other participants. On the second sampling day, Ryan had three
unclear inner experiences out of six. On the third sampling day, Ryan had one unclear
inner experience and two unclear indeterminate inner experiences out of six. During the
golf tournament, Ryan had no indeterminate inner experiences and clearer inner
experiences with respect to form and content for all of his samples compared to his daily
life; however some ambiguity about the timing of his inner experience in relation to the
moment of the beep remained.

In Sample 3.3, Ryan had an unclear just doing experience. Before the moment of the
beep, Ryan was replacing the grip on his putter. He was cutting some lead tape to put on
the putter and trying not to cut himself. At the moment of the beep, Ryan is just cutting
the tape and being careful not to cut himself. He is also looking at his putter, but he is not
aware of the putter; he is absorbed in the doing of his cutting behavior. It was very
difficult for Ryan to decide whether or not an inner seeing was present at the moment of
the beep or not. At first he thought there was an inner seeing of his putter at the moment
of the beep, but the more we asked Ryan to describe it, the more uncertain he became.
Later, he came to think an inner seeing may have been present before the beep rather than
at the moment of the beep, but he was never entirely sure. So Ryan came to think no
inner seeing was present at the moment of the beep and that he was just cutting the tape and being careful at the moment of the beep. This is a just doing experience with ambiguity about the timing of the moment of the beep as well as the possible presence or absence of another form of inner experience, an inner seeing, at the moment of the beep.

In Sample 3.2, Ryan had an unclear indeterminate inner experience. Ryan was in his garage, putting his golf clubs in his car, and looking at the interior of his car. At the moment of the beep, Ryan is aware of the spots on the carpet of his car. These spots are in his awareness somehow. It is not apparent to us, or we think to Ryan, exactly how this inner experience takes shape. Ryan advanced several possibilities: perhaps he was having an inner seeing of what the carpet will look like when it’s clean, but if so, he does not remember the details. Perhaps he was thinking about having the outside of the car cleaned in words, but if so, he cannot remember the exact words. Perhaps there were several inner experiences present at the moment of the beep. Perhaps he was just noticing the spots on the carpet visually. This is a very unclear inner experience for which Ryan cannot provide any or many details, probably because no or not many details were there. Ambiguity about the form of this inner experience was present as Ryan was never able to apprehend and describe its form, nor could we. Ambiguity about the general nature of the content of this inner experience (e.g., the spots) was not present; however, Ryan was never able to apprehend and describe much about the specific details (e.g., what his experience of the spots was like), and so of course, nor could we. He knows the beep catches him somehow involved in the noticing of the spots on the carpet, but the form and specific content of this experience were unclear.
Despite the lower clarity of some of Ryan’s experience, as he became more experienced in the sampling method, fewer of his inner experiences were unclear, especially with respect to the form and content of his inner experiences. These clearer inner experiences included perceptual awareness, sensory awareness, feeling, and inner speech.

**Perceptual Awareness**

Ryan experienced perceptual awareness in 8 or 31 or 26% of his samples. In Sample 2.1, Ryan was working on the golf course and taking a break. He had seen a shady place under a tree and decided that was where he would go. At the moment of the beep, Ryan is looking at the shade under the tree where he had wanted to go with visual awareness. Ryan does not know whether or not he is thinking about going to this spot at the moment of the beep as part of what he is looking at or whether he had already thought about going and now is just looking at the shady place, but he is certain that he is looking at the shady place with conscious awareness at the moment of the beep. Ryan is looking with awareness at the shady place, but he is simply uncertain about whether he is also thinking about going there at the moment of the beep.

In Sample 3.7, Ryan had a clear passive perceptual awareness. Ryan was backing out of the garage in his car and looking at the white garage door. At the moment of the beep, Ryan is just looking at the garage door go down without being particularly absorbed in what he is looking at. He is just looking at the garage door go down, a passive visual experience. This was different from some of Ryan’s previous inner experiences in that he could easily tell that this was the only inner experience present at the moment of the beep and that there was no other inner experience present at the moment of the beep. He was
not thinking about where he is going, about golf later that day, or anything else; he was just noticing the garage door at the moment of the beep.

Both of the perceptual awarenesses Ryan experienced during his daily life samples were basic visual experiences in his conscious awareness. The remaining six of Ryan’s perceptual awarenesses came during golf competition, which will be described in the Inner Experience During Golf section.

_Sensory Awareness_

Ryan experienced sensory awareness in 6 of 31 or 19% of his samples. In Sample 3.6, Ryan had a sensory awareness in which he was absorbed with the clearness of his vision. The use of the term clear in this sample refers to the clarity of his actual visual sensory process at the moment of the beep rather than how the term has been used until this point to refer to the clarity of his inner experience. In Sample 3.6, Ryan was wearing the wrong glasses and was seeing how unclear they make his vision. Leading up to the moment of the beep, Ryan put on the correct pair of glasses. At the moment of the beep, Ryan is particularly noticing how clear his vision is with the correct glasses. His being absorbed in the clarity of his vision is an unambiguous external visual inner experience. At first, Ryan was not sure if another inner experience was present at the moment of the beep, but he eventually decided that that occurred after the beep. After the beep, Ryan was thinking that he has to put a tag on his glasses so he can tell which is the correct pair.

Unlike many of his other daily life samples, in Sample 3.6, Ryan was experiencing a visual sensory awareness that was clear with respect to the form and content of his inner experience as well as the timing moment of the beep. Parallel to this, the content of this inner experience was the clarity of his vision, and Ryan was particularly interested in this
clarity as if, we speculate, it was somehow novel, perhaps different than his previous inner experiences. Whatever the reason he is interested in this clarity, which will probably never be known, Sample 3.6 marks a critical point in Ryan’s sampling because his inner experience was much clearer for the first time and remained clear in all of his subsequent samples. In fact in the next sample he collected, Sample 3.7, which was previously described in the Perceptual Awareness Section, Ryan had a clear passive perceptual awareness of his garage door; he could easily tell that this was the only inner experience present at the moment of the beep. As we will see, this clarity continued from Ryan’s first Tournament Sample T.1, which will be described in the Perceptual Awareness subsection of the Inner Experience During Golf section to follow. His clarity continued throughout the rest of his golf samples.

All five of Ryan’s sensory awareness experiences involved being absorbed in external visual sensations, and Sample 3.6 marked a turning point in the clarity of Ryan’s momentary inner experience.

Feeling

Ryan experienced feelings in 4 of 31 or 13% of his samples. Three of these were very similar in content and intensity: Ryan was “fuming” at the moment of the beep. In two of these three experiences, which will be described next, Ryan was fuming at his employees. In the third, which will be described later, he was fuming at himself.

Fuming

In Sample 2.4, Ryan was driving and looking for a couple of his employees that had not been able to find the site of their job even though they had told Ryan they knew where it was. At the moment of the beep, Ryan is fuming, a feeling without any clear
details. He does not know if he was experiencing this feeling mentally or bodily, but he
his sure is he fuming at his employees and this fuming is an extremely intense feeling at
the moment of the beep. Ryan is also looking at the Circle K at the moment of the beep,
but he does not know whether this is in his inner experience. Ryan has a sense that there
are several other things going on inside him at the moment of the beep, but because he is
driving, looking for his employees, and fuming, all in the vicinity of the moment of the
beep, it was too difficult for Ryan to remember exactly whether anything else was in his
inner experience at or near the moment of the beep.

In Sample 2.5, Ryan was driving and looking for his lost employees still. At the
moment of the beep, Ryan is fuming at his employees, which he experiences as the same
feeling as the feeling in Sample 2.4, a fuming feeling without any clear details that is
extremely intense. Ryan has a sense that there are several other things going on inside at
the moment of the beep, but again because he is driving, looking for his employees, and
fuming, all in the vicinity of the moment of the beep, it is too difficult for Ryan to
remember the details of his inner experience. Of all of these things going on in the
vicinity of the moment of the beep, Ryan thinks the extremely intense fuming feeling
may have destroyed his apprehension of additional details about this inner experience.

Ryan was fuming intensely at his employees in both the previous samples. He had a
sense that there are several other things going on inside near and possibly at the moment
of the beep, but in neither case was Ryan able to remember the details of what else may
have been going on, nor could he exactly tell when the beep may have occurred in
relation to these difficult-to-apprehend and difficult-to-describe other inner experiences.
This difficulty may have been due to the fact he was engaged in driving and having
intense fuming experiences that could have overwhelmed the other inner experiences. Ryan’s other two feelings occurred during the golf tournament. In Tournament Sample T.8, which will be described later in the Inner Experience During Golf section, Mike was also fuming, this time at himself about his poor golf performance, but he did apprehend as simultaneous speaking out loud experience in this instance.

**Inner Speech**

Ryan was speaking to himself in an inner voice in 4 of 31 or 13% of his samples. Three of Ryan’s four inner speaking experiences occurred during the golf tournament. One inner speaking, Sample 3.1, occurred during everyday life, but that inner speaking was experienced as being secondary to a sensory awareness. Thus in none of Ryan’s 18 daily samples was inner speech the prominent aspect of his experience.

In Sample 3.1, Ryan experienced a sensory awareness with a secondary, not confidently apprehended experience of inner speaking. Ryan was watching a news program about sex offending and looking at the suit the newsperson is wearing. At the moment of the beep, Ryan is noticing the suit the newsperson is wearing. Ryan is particularly aware of the plaid pattern of the brown suit, which has thin lines. Ryan also has a sense of words being present in his own voice, but he cannot describe the exact words. When asked to describe the exact words, he gave at least three versions of what he might have been saying, the last of which was something like “He’s worn this suit before.” Ryan was fairly certain he was saying something internally, but he did not remember exactly what. Also, Ryan was watching TV but he is paying less attention to story, so it is doubtful the story is in his inner experience. More attention is devoted toward the suit and the words that he might have been saying, but we never approached a
very solid understanding of his inner speech experience with much certainty about its precise content. Ryan is sure that he was no longer aware about the content of the story, however. Ryan's other three instance of inner speech occurred during the golf tournament was will be described in the Inner Experience During Golf section.

*Inner Experience During Golf*

Ryan played the back nine in the golf competition. Ryan collected 13 Tournament Samples. His most frequently-occurring inner experiences were perceptual awareness (46%), inner speech (23%), sensory awareness (23%), and feeling (15%). Ryan's Tournament Samples will be described, followed by his golf-related content. Finally, a comparison will be made between Ryan's inner experience in his golf samples and his daily samples.

*Perceptual Awareness*

Ryan had instances of perceptual awareness in 6 of 13 or 46% of his Tournament Samples. Ryan had four instances of active perceptual awareness that involved actively looking and judging golf shots. In Tournament Sample T.1 for instance, Ryan was on the first hole about 75 yards away from the green. He had just taken a shot, the ball is in the air, and he knew it was a good shot. The beep goes off when the ball is in the air about 20 feet from the hole. At the moment of the beep, he is watching the ball come down and knowing it is a good shot. This is an experience of externally seeing the ball in the air and evaluating and recognizing it is as a good shot, which is a positive experience. This is an active perceptual experience of watching the ball and knowing it is a good shot. After the beep, the ball landed within 5 feet of the hole.
Tournament Sample T.1 was the second sample collected after Ryan's inner experience became clearer in Sample 3.6, which was previously-described in the Sensory Awareness section. It included a clear perceptual awareness inner experience, unlike many of the previously-described daily life inner experiences.

**Inner Speech**

Ryan had instances of inner speech in 3 of 13 or 23% of his Tournament Samples. In Tournament Sample T.9, Ryan experienced inner speech not-related to golf in content. Before the moment of the beep, Ryan was driving the golf cart and looking at the houses around the golf course, and he was looking at the brownness of the house, a sensory awareness experience of being captivated by the brownness, and he was somehow thinking about how horrible the house looks. At the moment of the beep, he is looking at the landscaping in the back yard of a particular house and thinking about how horrible it looks. This occurs to Ryan as saying to himself inside “Look at that piece of shit!”

Ryan’s other two instances of inner speech had golf-related content. For instance in Tournament Sample T.3, Ryan was in conversation with another golfer and saying “bullshit” internally to himself about the unfair point system of another golf tournament, and in Tournament Sample G.12, he was internally saying “He’s got a long putt,” or “He’s got to hit this ball,” or something to that effect; he forgot the exact words.

**Feeling**

Ryan had feelings in 2 of 13 or 15% of his Tournament Samples. Both of these were negative feelings directed at his poor golf performance.

**Fuming.** In Tournament Sample T.8, Ryan experienced a fuming feeling similar to his fuming experiences that were previously described in the Feeling section (Samples 2.4
and 2.5); however this time, Ryan apprehended a co-occurring speaking aloud experience. In Sample T.8, before the beep, Ryan had hit a tee shot and was frustrated because he could see his ball out of bounds. At the moment of the beep, Ryan is fuming at hitting a bad shot. This is a feeling experience, but Ryan does not know if he is experiencing this mentally or bodily, he just knows he is fuming. This feeling occurs at the same time he is speaking out loud. He is saying a series of expletives out loud such as “you fucking idiot” or “motherfucker” or “how could you hit the ball over there?!”. After the beep, Ryan realized this was actually not his ball, and he became relieved.

Sensory Awareness

Both of Ryan’s sensory awarenesses were non-golf-related distracting experiences. In Tournament Sample T.4, for instance, Ryan was on the 18th hole after he hit a good shot. He had been playing terribly and decided not to ride in the golf cart before the moment of the beep. As he was walking, the waterfall on the 18th hole caught his eye, and he before the beep he was thinking about walking through the waterfall on this hot day, thinking about how refreshing it would be, although he did not want to get his socks wet. At the moment of the beep, Ryan is looking at the waterfall with admiration. He is noticing how colorful the waterfall stones are and how neat the shape of the flowing water looks as it is coming down. He is absorbed in the sensory aspects of the waterfall.

Golf-Related Content

Ryan had golf-related content in 9 of 13 or 69% of his Tournament Samples. Examples of golf-related content include seeing his ball in the air and recognizing it as a good shot, actively looking at an opponent’s ball and knowing that it is short (two inner experiences), watching an opponent’s ball travel and judging it to be too slow, saying an
expletive to himself internally in reference to an upcoming golf tournament’s unfair point system in the midst of conversation about golf, fuming at having hit a bad shot while saying a series of expletives out loud, looking at his ball and recognizing it to be his, saying to himself that his opponent has a long shot, and feeling pissed at himself about his poor golf performance.

**Comparing Inner Experience During Golf and Daily Life**

Ryan’s inner experience during golf was clearer than his inner experience during daily life. The onset of Ryan’s clarity was punctuated by his clear sensory awareness experience in Sample 3.6, and it continued in sample 3.7; Ryan had no unclear indeterminate inner experiences during his golf samples whatsoever (0 of 13 or 0%), whereas during his daily samples he had much more (7 of 17 or 41%). Thus Ryan’s inner experience was clearer during golf.

The increase in the clarity of Ryan’s inner experience may be due to intrinsic or extrinsic reasons. The intrinsic explanation is that Ryan’s inner experience became clearer much later and less gradually than for most of the other study participants. It could be that Ryan’s inner experience was fundamentally and inherently less clear prior to Sample 3.6. Ryan’s inner experience cleared up dramatically at or around this point. This spurt in clarity coincided with his gradually increasing experience with the sampling method, but unlike his gradually increasing experience, his clarity jumped forward faster. The disparate increases in his rate of technical prowess and clarity may mean that Ryan’s inner experience was fundamentally and inherently less clear before Sample 3.6 and more clear after for intrinsic rather than technical reasons. The extrinsic explanation is that Ryan’s inner experience became clearer during golf because something about golf made
his inner experience more clear. This explanation is supported by the observation that all of his inner experience during golf was much clearer than most of his inner experience during his daily life. This explanation also argues that his Sample 3.6 and Sample 3.7 clarity was, at least in part, a random occurrence. That is, random fluctuations in clarity may have been occurring, and these samples captured two of them.

We believe that both of these explanations are probably true; that is, Ryan’s daily life inner experience was often unclear intrinsically and not for technical reasons, and something about the extrinsic activity of golf made his inner experience more intrinsically clearer.

Discussion

Ryan’s inner experience during his daily life was less clear than most of the other participants. Ryan specifically emphasized that describing his inner experiences was difficult because so many things were going on in his inner experience just before, during, and after the moment of the beep. Another possibility is that we lacked the ability to help Ryan get to a more definitive understanding of his inner experience. Our understanding is that either Ryan’s inner experiences were often complicated, overlapping, asynchronous, and therefore difficult to describe especially when it came to apprehending his inner experience as well as the timing of the moment of the beep, or we could not assist Ryan very well, or both; any of these options may have been the case, and some may have applied to some samples more than others. We believe it is most likely that the majority of Ryan’s daily life instances of unclarity were of the fundamental inherent type. This is to say that we believe Ryan’s inner experience prior to Sample 3.6 was often complicated, overlapping, asynchronous, and therefore difficult to describe.
rather than due to any lack of technical prowess in using the sampling method. One reason for this is that his clarity came all at once, whereas his technical prowess increased gradually, in our observation. Furthermore, Ryan approached the sampling task very conscientiously, so it seemed unlikely that his difficulty describing his inner experience came about as a result of the technical lack of effort or inattention to what he was doing. To the contrary, he often would describe exactly where he was, what he was doing, and even sometimes what time it was when the beep occurred, but when he looked to describe his inner experience, nothing but ambiguity and difficulty in described it was often observed during the many of the daily life interviews. We also believe that Ryan’s inner experience during golf may generally be fundamentally and inherently more clear, as it was when he collected his golf samples.

Whatever the reason(s), Ryan’s inner experience was described with less ease and clarity, sometimes with respect to the form of his inner experience, on a few occasions with respect to the content, but mostly with respect to the timing of the moment of the beep. His first clear sensory awareness experience at the end of the third sampling day marked a turning point in the clarity of his inner experience that continued throughout the golf tournament as Ryan became better able to describe the form and content of his inner experiences. It remained difficult for him to apprehend and describe his inner experience in relation to the moment of the beep throughout all of his sampling days, somewhat less so during golf, however.

Why might Ryan’s inner experience have been so unclear for so many of his daily life samples, only to become clearer during golf? It seems to us that several possible explanations could account for this. The first possibility is that the golf situation brings
out clarity in Ryan’s inner experience. The second is that it just took Ryan longer to do
the task for no apparent reason. The third is that he did have an epiphany, suddenly
“getting” the sampling method and acquiring technical prowess coincidental with golf.
The forth is that Ryan could have been sampling during a problematic time in his daily
life. If this were the case, perhaps his life is stressful, golf is an escape from stress, and
with less stress, his inner experience was clearer.

Ryan’s most salient daily life inner experiences were perceptual awareness, sensory
awareness, feelings, and inner speech. His salient golf inner experiences were the same
four forms of inner experience. The content of his inner experiences were somewhat less
frequently-related to golf than most of the other participants in this study. In fact, two of
his inner experiences during golf were distracted sensory awareness experiences. The
main difference between Ryan’s inner experiences during golf compared with his daily
life was the dramatic increase in clarity of his inner experience during golf.
AARON

Aaron is a 54 year-old highly-skilled golfer with a handicap of two. He was recruited by one of the researchers through a contact in the community. He completed his first three sampling days by obtaining samples from his daily life. He collected his 15 daily life samples in the middle of the summer. He participated in the golf competition sampling in the middle of the same summer and collected 6 golf samples. Aaron shot 71, 1 stroke under par, 3 strokes lower than his handicap of 2. As a result, Aaron finished in a tie for 3\textsuperscript{rd} in the golf competition.

Aaron had an unusually difficult time learning to use the beeper. On the first scheduled sampling day, Aaron tried to collect several samples in the beeper’s “chirp” mode, most likely because he had failed to press the button that resets the beeper to send it back into the random sampling mode. The beeper goes into “chirp” mode when a random beep goes off and the user fails to press the reset button. When the beeper goes into “chirp” mode, a battery saving feature, it beeps every 10 seconds to remind the participant/researcher to either reset or turn off the device. Although the task of resetting the device was demonstrated during our initial meeting, and he correctly practiced it in the researcher’s presence, he still had difficulty that affected his beeps collected on the first day. The beeps collected this first day are considered spoiled because he responded
to the “chirp” every 10 seconds instead of the random beep. Aaron was given a different beeper in case the original one was broken, but after it was tested, it appeared normal.

During the second attempt at sampling for the first day, Aaron called the researcher with the same difficulty – the beeper had once again gone into “chirp” mode. After reminding him to press the reset button, Aaron made another attempt at collecting beeps. He was told to call with any difficulties he might have. After what seemed to Aaron to be an hour of waiting for a beep, Aaron called expressing concern that he was not using the device correctly because he had not yet heard a beep. After being told he to turn off the beeper and turn it on again, he eventually started collecting beeps and interviewed at the sampling lab the next day.

During the first successful sampling day, Aaron had a difficult time describing his inner experience at the moment of the beep. Inner experiences before and after the moment of the beep, as well as his own general ideas about himself, intruded on his discussion of what was in his inner experience at the moment of the beep. It is difficult to determine whether he had difficulty with the sampling task, both with initially using the beeper and describing momentary inner experience, and clearly defined inner experience, or whether he had some sort of inner experience that made the sampling task difficult such as unclearly defined inner experience.

**Unclear Indeterminate Inner Experiences**

Aaron had inner experiences that were so unclear that the form of his inner experience could not be determined in 6 of 21 or 29% of his samples. Even by his third sampling day, the sampling task had not become easier for him; that is quite different from most other DES subjects. In Sample 3.1, for instance, Aaron was on the phone with
his hair dresser to make an appointment. He was in the process of leaving a message about his appointment on the answering machine. At the moment of the beep, Aaron is having some kind of inner experience that serves the purpose of getting ready to make his appointment. It is not apparent to us, or we think to Aaron, exactly how this is experienced at the moment of the beep. Aaron may be anticipating without words or inner seeing of the person’s response when they pick up the phone. Aaron may also have some appointment times in mind at the moment of the beep, but this is also very ambiguous. It seems that Aaron is anticipating the person’s response in some way, and he may even have some times in mind somehow (e.g., an inner seeing of his schedule), or these may in fact be the same inner experience, but this is a very unclear inner experience in both form and content. For this reason, beyond the possibility that Aaron is anticipating a response and/or perhaps having some times in mind, not much can definitively be said. Aaron was also not very certain about when the beep occurred.

In Sample 3.2, Aaron was reading an article about Muhammad Ali’s daughter, Laila. At the moment of the beep Aaron is reading about one of Laila’s professors, Nate Bynum, who is helping Laila get into the movies. Aaron is having some kind of inner experience related to what he is reading, but it is very difficult for us to ascertain the characteristics of this experience. Our best understanding is that Aaron’s experience was unclear to him, resulting in his difficulty in telling it to us. It is possible that he is just passively reading. It is possible that Aaron is experiencing the words he is reading somehow internally. Both of these seem equally possible ways in which Aaron’s inner experience may have occurred. In addition to this being a very unclear inner experience, Aaron was also not very confident about when the beep occurred.
In Sample T.3, Aaron experienced an instance of unclear inner experience with two instances of perceptual awarenesses, one of which was clear. He was on his 4th stroke of the 17th hole, a par 5. It is not entirely apparent where the beep occurs in this inner experience, but just before the beep or perhaps even at the moment of the beep, Aaron is setting up to hit the ball, looking at the spot where he will hit it, and thinking about where to hit it. He is looking externally at the spot where he plans to hit the ball to see the line from where the ball will go, which he thinks is left to right, although Aaron is not sure whether left to right is in his awareness or not. This is a clear perceptual awareness with ambiguity about the moment of the beep. Also near the moment of the beep, he is deciding where and how to hit the ball. This is experienced as an unclear thought process about a number of factors (e.g., there’s a hill, a backdrop, should he hit it high or low?). The details of this inner experience and exactly how it occurred are very ambiguous as is the timing of the beep. Also at some point as he is mentally preparing to hit the ball, he sees the “cart girl,” Angie, pull up. It is not apparent when the beep occurred exactly, whether it was just before or just after the moment of the beep, but Aaron is seeing and recognizing Angie driving up the green and getting distracted from golf. Aaron’s momentary experience contained a clear perceptual awareness experience with ambiguity about the timing of the beep, an unclear indeterminate thought process, and a perceptual awareness of being distracted also with ambiguity about the time of the beep.

Aaron had several inner experiences in which the form and content were unclear. These inner experiences also often lacked specific details. In most of these instances, it was also difficult for Aaron to identify the timing of the beep in relation to his inner experience. He did have fewer unclear indeterminate inner experiences during the golf
competition. During his daily life samples, 5 of 15 or 33% of his inner experiences were unclear and indeterminate, whereas during golf competition, 1 of 6 or 17% were unclear and indeterminate. Aaron also had slightly fewer difficulties identifying the moment of the beep in relation to his inner experience during the golf competition. Despite the slight decrease in unclear indeterminate inner experience during golf, several of his Tournament Samples still contained unclear inner experiences of some of the following forms.

*Inner Seeing*

Aaron experienced inner seeing in 4 of 21 or 19% of his samples. In Sample 2.2, for instance, Aaron was talking to his friend Tom on the phone; Tom had just asked how Aaron's other friend John is doing after recovering from a surgery. At the moment of the beep, Aaron is saying “He’s doing real well” externally to his friend on the phone. At the same time, Aaron is internally seeing of John in the motion of golfing, seeing a scene that had taken place a few days earlier. Aaron does not know whether the inner seeing is in color or black and white and cannot say much about the details of this inner seeing.

In Sample 3.5, Aaron was climbing his staircase, getting ready for dinner, and he was half way to the stairs. At the moment of the beep, Aaron is thinking about the color of the shirt he will choose to wear. He is internally seeing of the edge of his blue colored shirt hanging in his closet, and he is noting specifically the blueness of the shirt. He is not aware of details beyond the blueness of the shirt as viewed from its edge. This is a fairly clear inner seeing that Aaron is experiencing at the moment of the beep without many details. Aaron is not having any inner experience related to walking up the stairs. Aaron was also very confident about when the beep occurred in relation to his inner experience.
Aaron experienced his clearest inner seeing in his daily life samples when he had a
golf-related inner seeing during a phone conversation in Sample 3.3. Aaron was on the
phone with a friend who was in Boston, where Aaron will be playing golf in the next few
days. His friend had been joking that someone was playing mind games with them by
putting them on a course in a tournament in which they all have to walk up hills in 90
degree heat and humidity. At the moment of the beep, Aaron is internally imagining
himself struggling to climb up a par 4 hill to get to his ball. He sees himself walk as if a
camera is at the ball looking back down the fairway at him. He is seeing himself in
motion walking up the hill, and sees the green grass and trees. This is a clear and detailed
inner seeing experienced at the moment of the beep. Aaron experienced this as a very
clear and memorable inner experience, one about which he had little or no doubt. At the
moment of this beep, Aaron may also be somehow anticipating what it will be like to be
at this golf course in a manner that goes beyond inner seeing, such as thinking about it in
a different way or feeling what it may be like to be there, but the details of this possible
inner experience are so ambiguous that not much about it can be said with certainty; it is
also possible that this may just be part of the inner seeing at the moment of the beep, an
additional metaphor to describe it, or an inner experience that occurred after the moment
of the beep. (Incidentally, when Aaron was asked a few weeks later how well this inner
seeing matched how the golf course turned out to be, he said it was scary how close the
course in general and two holes in particular were to this inner seeing.)

Aaron experienced all of his inner seeing during his daily life; none were captured
during golf performance. His inner seeings varied in detail and clarity, from having
sparse detail and not much clarity to being clear and detailed.
Speaking Aloud

Aaron was speaking aloud with no other inner experience in 4 of 21 or 19% of his samples. In Tournament Sample T.1, Aaron was on his 2nd stroke of the 11th hole, a par 5. Aaron was in the process of telling another golfer he is entitled to relief. At the moment of the beep, Aaron is saying the word “entitled” out loud. There was nothing else in his awareness at the moment of the beep. Aaron is also looking at the other golfer, but he is paying attention to what he is saying rather than the golfer he is looking at.

In Tournament Sample T.5, Aaron had just finished the 8th hole and was checking out another player’s score. At the moment of the beep, Aaron was saying “Samuel, what did you make?” out loud. Aaron’s awareness of his own score has come and gone before the moment of the beep, and at the moment of the beep his inner experience is only that of asking the other golfer about his score out loud. There is no other inner experience present at the moment of the beep.

Aaron’s two other instances of speaking aloud occurred along with co-occurring forms of inner experience (i.e., inner seeing). Aaron’s speaking aloud inner experiences were clear inner experiences; the words he was saying at the moment of the beep were clear in 3 of 4 of his speaking aloud experiences.

Just Doing

Aaron had instances of just doing in 2 of 21 or 10% of his samples. In Sample 2.5, for instance Aaron was getting ready to go to the store and putting his key in the car door. At the moment of the beep, Aaron is just in the process of putting his key in the car to go to the store with no other inner experience. This is just a process of putting the key in the car with no other inner experience at the moment of the beep.
In Sample 3.6, Aaron was getting ready to leave for dinner and was putting moisturizer on and seeing himself in the mirror. At the moment of the beep, Aaron is looking at his skin for spots of dryness. This is experienced as a visual process of directing himself to where to put the moisturizer, a process that involves no thinking, just an activity he is doing. It is not exactly apparent to us or we think to Aaron, but it seems that he was not aware of what he was looking at; instead, this is an activity he is doing without a mental or perceptual process. There is no other inner experience present at the moment of the beep.

Aaron’s just doing experiences were activities he was doing without thought. One of his just doing experiences was quite clear, whereas the other was somewhat unclear.

**Inner Speech**

Aaron experienced inner speech in 2 of 21 or 10% of his samples. In Sample 2.6, Aaron was internally speaking about an item on a grocery list and listening to the radio. Before the moment of the beep, Aaron was listening to sports on his car radio while he is driving to the store. At the moment of the beep, he is driving his car and reciting internally about the items on his grocery list. The words may be “ice cream” (or “hot dogs”) said in his own internal voice. This is a clear instance of inner speech, but he is unsure about its specific content (e.g., “ice cream,” “hot dogs”). Its general content is grocery list-related. He is also tracking the sports program on the radio by listening, but this is much less prominent than what he is saying to himself. Driving is automatic and not a part of his inner experience at the moment of the beep.

In Tournament Sample T.2, Aaron was on the 6th hole, a par 3; he has addressed the ball and is lining up to take a putt. At the moment of the beep, Aaron is saying to himself
internally, "This is left to right" in his own words. Aaron is quite confident about this.

Also at the moment of the beep, Aaron is seeing the line where he will hit the ball. This is an experience of looking externally with focus and perceiving a brown spot on the green. [Incidentally, this is the approach that Aaron typically takes to putting, finding a spot on the green between the ball and the hole (spot putting).

Both of Aaron’s inner speech experiences co-occurred with other forms of inner experience (i.e., just listening, perceptual awareness). His inner speech varied in detail and clarity, from having sparse detail and not much clarity to being clear and detailed.

*Inner Experience During Golf*

Aaron played the back nine in the golf competition. He collected six Tournament Samples. His most frequently-occurring inner experiences were speaking aloud (50%), perceptual awareness (33%), and inner speech (17%) many of which were previously described. In 5 of 6 or 83% of his samples, Aaron is either externally or innerly talking.

Two of Aaron’s Tournament Samples included mental preparation strategies present at the moment of the beep. These strategies will be described first, followed by descriptions of his external and inner speech and finally his golf-related content.

*Mental Preparation Strategies*

The beeper captured two mental preparation strategies Aaron was using at the moment of the beep, accounting for 33% of his golf competition samples. Both included perceptual awareness.

In Tournament Sample T.2, described above in the Inner Speech section, Aaron was lining up to make a putt saying to himself internally, “This is left to right,” and seeing a brown spot on the green where he will aim the ball. In Tournament Sample T.3, described
above in the Unclear Indeterminate Inner Experiences section, Aaron is preparing to hit
the ball and looking externally at the spot where he will hit the ball. Also near the
moment of the beep, he is thinking about a number of factors to decide how to hit ball in
some manner, but the details of this are not clear. Aaron at some point is also seeing and
recognizing Angie driving up the green and getting distracted from golf, a clear
perceptual awareness with ambiguity about the timing of the moment of the beep.

Both of Aaron’s mental preparations strategies contained perceptual awareness, but
they differed in Aaron’s apprehension of the moment of the beep. One was clear, and the
other was unclear with respect to the timing of the beep.

External Talking and Inner Speech

In 5 of 6 or 83% of Aaron’s Tournament Samples, he was either talking out loud with
no other inner experience or experiencing inner speech. For instance Aaron was speaking
aloud, as we saw previously in Tournament Sample T.1, when he was saying the word
“entitled” out loud to inform another golfer he was entitled relief. Also in Tournament
Sample T.5, he was asking Samuel “what did you make?” out loud. Aaron experienced
inner speech in Tournament Sample T.2 (also previously described) when he was
preparing for his put. This occurred by saying to himself internally “this is left to right” in
his own words.

Golf-Related Content

All of Aaron’s Tournament Samples were inner experiences with golf-related content.
Examples of golf-related content include talking out loud about golf to another golfer
with no other inner experience, asking another golfing question about golf with no other
inner experience, talking out loud in a quite tone of voice to make a joke to another golfer
about how his handicap should be lower than he has claimed, talking to himself internally about the distance of the hole in his own voice, and the two aforementioned mental preparation strategies.

Comparing Inner Experience During Golf and Daily Life

Aaron experienced fewer inner seeings during the golf tournament than during his daily samples. None of his golf samples contained inner seeing, whereas during his daily life, Aaron had inner seeing in 4 of 15 or 27% of his samples. Aaron experienced more perceptual awareness during golf than during his daily life. During golf, Aaron had perceptual awareness in 2 of 6 or 33% of his samples, whereas during his daily life, none of his samples contained perceptual awareness. The clarity of Aaron’s inner experiences was greater during golf than during daily life. During golf, he had 1 of 6 or 17% unclear indeterminate inner experience (and even there it was possible to determine that the form of inner experience was inner speech), whereas during his daily life, Aaron had unclear indeterminate inner experiences in 5 of 15 or 33% in his samples.

Discussion

Aaron had difficulty learning to use the beeper. After a couple unsuccessful attempts, he caught on. In the first sampling day, he had difficulty describing his experience at the moment of the beep; inner experiences before and after the moment of the beep, as well as his own general ideas about himself, tended to intrude upon momentary experience.

Aaron also had several unclear indeterminate inner experiences, the form of which could not be determined due lack of clarity; these were often unclear in both form and content and often lacked specific details. It was also often difficult for Aaron to identify moment of the beep precisely. Although he did have slightly fewer unclear indeterminate
inner experiences during the golf competition, several of his Tournament Samples still contained unclear inner experiences.

Aaron’s lack of clarity may have been the result of: 1) difficulties with the sampling method that obscured otherwise clear inner experiences, 2) difficulties with the sampling and actual unclear inner experiences, or 3) difficulties with the sampling because of unclear inner experiences. We think either of the latter possibilities were most likely the case, that Aaron had difficulties with the sampling and/or because of unclear inner experience. One reason for this is that, despite increased practice with the sampling method, Aaron still had instances of unclear indeterminate inner experiences and unclear inner experiences throughout his daily life and golf samples. So as the method became apparently easier, the relative lack of clarity remained.

All of Aaron’s inner seeing occurred during his daily life samples; none were found during golf. His inner seeings varied in detail and clarity, from sparse detail without much clarity to being clear and detailed. Aaron’s speaking aloud experiences were typically clear. His just doing experiences were varied in clarity. Both of Aaron’s inner speech experiences co-occurred with other forms of inner experience. His inner speech varied in both detail and clarity, from having sparse detail without much clarity to being clear and detailed.

During golf, Aaron’s most frequently-occurring inner experiences were speaking aloud and perceptual awareness. Both of the mental preparations strategies Aaron collected contained perceptual awareness and they varied greatly in clarity. One was quite clear, and the other was unclear in form, content, and the timing of the beep. Aaron had several external talking and inner speech experiences during golf as well. All of
Aaron’s Tournament Samples had golf-related content. Aaron experienced less inner seeing during golf than during his daily life, more perceptual awareness during golf than during his daily life, and less unclear indeterminate inner experiences during golf than his daily life.
CHAPTER 16

NOMOTHEtic RESULTS & DISCUSSION

This study presents two kinds of results. The previous section (Chapters 5 through 15) presented the first kind of results, idiographic descriptions of the salient characteristics of inner experiences within each individual participant, one participant at a time. The current section (Chapter 16) presents the second kind of results, nomothetic results across participants taken together, one characteristic of inner experience at a time. There are three ways that we will discuss these nomothetic results: (1) across-all-participant descriptions of experience during golf; (2) discriminating between during golf and daily life experience; and (3) discriminating between the two separate skill groups.

Table 1 presents the participants’ most frequent characteristics during golf and daily life. These results are presented in descending order starting with the most frequently-occurring characteristics of inner experience during golf. Because participants can and did experience more than one co-occurring inner experience, the percentages of participants’ characteristics will not add up to 100 percent. To calculate these percentages, the numerator was the number of samples in which the particular type of inner experience occurred, and the denominator was the total number of samples collected by the setting in which they were collected. For example, John had 2 samples in which perceptual awareness occurred during his 12 daily samples, for a 17% frequency.
### Table 1: Percentages of Inner Experience During Golf and Daily Life

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Jo=John, Br=Brad, Ca=Caleb, Sa=Samuel, Wi=Will; To=Tom, Ch=Chris, Mi=Mike, Ry=Ryan, Aa=Aaron.
### TABLE 1: PERCENTAGES OF INNER EXPERIENCE DURING GOLF AND DAILY LIFE (CONTINUED)

<table>
<thead>
<tr>
<th>Category</th>
<th>Setting</th>
<th>Moderate Handicap Group</th>
<th>Low Handicap Group</th>
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<td></td>
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<td>Category</td>
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Jo=John, Br=Brad, Ca=Caleb, Sa=Samuel, Wi=Will; To=Tom, Ch=Chris, Mi=Mike, Ry=Ryan, Aa=Aaron.
Table 1 contains an exhaustive list of all categories of inner experience captured during the golf tournament to display all inner experiences that occurred. For comparison, the frequencies of these same categories are also presented during daily life. The nomothetic descriptions that follow focus on a shorter list of the most salient nomothetic characteristics experienced by our study participants with an emphasis on inner experience during the golf tournament.

All 10 of our participants sampled during golf competition and during daily life, a heterogeneous set of daily activities including work and leisure. Thus the simplest and most useful way of characterizing participants' activities for nomothetic analysis considers golf samples and daily life samples separately. It should be noted that three of our 10 participants, Tom, Mike, and Chris, played golf during their daily life samples. We call this recreational golf to distinguish it from the tournament golf samples. Tom engaged in recreational golf in 10 of 12 or 83% of his daily samples, Mike did so in 4 of 6 or 66% of his daily samples, and Chris did so in 4 of 14 or 29% of his daily samples. Because only these three participants engaged in recreational golf during some of their daily life samples, and because recreational golf was a hybrid activity (similar to the tournament golf but also similar to the daily life activities), these recreational golf samples were excluded from the analysis of nomothetic results. This left a total of 2, 2, and 10 daily life samples for Tom, Mike, and Chris, respectively (see Table 1). The other seven participants did not engage in recreational golf.

It should also be noted that this study was an exploratory qualitative study with a small number of participants in each group, making tests of statistical significance futile.
Thus observations from this study such as these are worth mentioning as potentially interesting, potentially preliminary trends that might be examined by future research.

**Golf-Related Content**

The most salient characteristic of our participant group as a whole during the tournament was golf-related content. Golf-related content included thoughts/awarenesses about the golf course and its conditions, the characteristics of the hole they were on (e.g., tee box, grass, green, hole), other groups' golfers on the course (e.g., if they are out of range to begin addressing a shot), the characteristics of their own or others' golf equipment (e.g., clubs, ball, tee, bag), the characteristics of their own or others' performance (e.g., swing, result of a shot), and mental preparation strategies (e.g., internal planning ahead for performance).

*Across all participants.* The most salient characteristic of our participant group as a whole was golf-related content. There were 71 instances of golf-related content out of 94 total samples during the tournament (76%). All of our study participants had inner experiences related to golf in content during the golf tournament (see Table 1). In fact, this was the only salient characteristic that all of our participants experienced during the golf tournament. Golf-related content was salient both across our study participants and between the two participant groups as well.

Across our participants, the overall average frequency of golf-related content during the tournament was 76%, the highest frequency of all categories. Thus golf-related content was present in most of our participants' tournament samples most of the time. The exception to this was Brad, who experienced golf-related content in only 1 of 7 or 14% of his tournament samples. This was at least in part because 4 of 6 or 67% of his non-golf-content tournament samples were instances of no inner experience at the
moment of the beep. With the exception of Brad’s anomalous relative lack of golf-related content, the remaining participants’ golf-related content ranged in frequency from a low of 56% in the case of Caleb to a high of 100% in the cases of both Tom and Aaron.

*Between golf and daily life.* Not surprisingly, our participants experienced more golf-related content during golf than daily life. There were 71 instances of golf-related content out of 94 total samples during the tournament (76%) but only 6 instances of golf-related content out of 110 total samples during daily life (5%).

More instances of golf-related content were found when our participants were golfing than when they were not. Thus the content of our participants was very consistent the behavior of our participants, with the exception of Brad’s anomalous lack of golf-related content and no inner experience during golf. This is consistent with findings of Hurlburt, Koch, and Heavey (2002) that demonstrated the connection between observable behavior and inner experience. Their study found that participants with high rates of external speech had significantly less inner speech than a normal comparison group. The present study shows that golfers experience more golf-related content when they are golfing than when they are not.

*Between low and moderate handicap groups.* Between our two participant skill groups, the lower handicap group had a slightly higher mean frequency of golf-related content (85% of the tournament samples) than did the moderate handicap group mean of 67%. The moderate handicap group mean was skewed by Brad’s anomalous relative lack of golf-related content, but dropping his result from consideration, the golf-related frequency from the remaining four participants becomes 76%, still slightly lower than the low handicap group.
Low handicapper Ryan had the lowest frequency of golf-related content in the low handicap group. He experienced golf-related content in 69% of his samples compared with his group's mean of 85%. He also performed very poorly on tournament day, shooting 12 points above his handicap and finishing last in the golf tournament. His golf tournament gross score of 88 is comparable to the average gross score of the moderate handicap group of 91, and he experienced a similar frequency of golf-related content. The first, second, and third placed performers, Mike, Tom, and Aaron, had high frequencies of golf-related content at 82%, 100%, and 100%, respectively. Also, three of Ryan's tournament samples were experienced as being distracted. These included being absorbed in the sensory aspects of a waterfall on the course, being absorbed in the blueness of another golfer's shirt, and looking at a shady spot under a tree on the golf course. Ryan was well aware of being distracted during the golf tournament and said he thought this was why he performed poorly during our golf tournament in particular and during his other past poor performances in general. We cannot be certain whether there was a relationship between Ryan's distracted inner experiences and his performance in particular or in general beyond our observation that he was distracted on a day that he did not shoot well; however, the aforementioned observations may point toward a positive relationship between golf-related content and the quality of golf performance.

A qualitative difference in the inner experience of golf-related content was observed between our two participant skill groups. The golf-related content of our low handicap participants tended to be more elaborate and sophisticated than that of the moderate handicap participants. For instance, the low handicap participants had more mental preparation strategies and more detailed golf-related content experiences than did the
moderate handicap participants. As an example, low handicapper Mike’s golf-related content included three mental preparation strategies. In Tournament Sample T.4, for instance, Mike was mentally preparing himself for his next shot by saying a phrase aloud to himself to maintain a nice and slow tempo as part of his conscious experience. Also in Tournament Sample T.10, Mike was mentally preparing for his next shot. In this sample, he was planning where to hit the ball by actively looking down the fairway. In contrast, moderate handicapper Samuel had golf-related content experiences that included looking actively or passively at golf-related stimuli such as the characteristics of his own and opponent’s golf equipment. In Tournament Sample T.4, for instance, Samuel was concentrating on the ball by actively watching it move to note its trajectory. In Tournament Sample T.1, however, Samuel was passively looking at the ball with attention to the ball itself and without attention to anything else.

**Summary and Discussion.** All of our study participants, with the exception of Brad, thought, felt, and otherwise had frequent experiences about golf during the golf tournament. Golf-related content was the most salient characteristic of our participant group as a whole during golf. All of the study participants had inner experiences related to golf during the golf tournament. Our participants experienced golf-related content about the golf course and its conditions, the characteristics of the hole they were on, other groups of golfers on the course, the characteristics of their own and their opponents’ golf equipment, their own performance and their opponents’ performances, and mental preparation strategies. Golf-related content was the only salient characteristic that all of our participants experienced during golf.
Between golf and daily life, the content of our participants was very consistent with the behavior of our participants, with the exception of Brad’s anomalous lack of golf-related content and no inner experience during golf. The congruence between inner content and behavior is consistent with findings of Hurlburt, Koch, and Heavey (2002) that demonstrated the connection between observable behavior and inner experience. In the field of sport psychology, interventions that enhance performance recommend athletes direct the specific content of their inner experiences toward the performance task (Suinn, 1996; Suinn, 1997). Our findings suggest that golfers can direct their awareness toward golf content frequently.

Between the participant groups, a slightly different frequency of golf-related content between the groups was observed that bears further study. Low handicappers had slightly more golf-related content and more elaborate and sophisticated golf-related content, such as mental preparation strategies, compared to the moderate handicap participants.

Mental Preparation Strategies

Mental preparation strategies (a subset of golf content) are inner experiences with future-oriented golf-related content that serves the purpose of preparing for a golf performance task. There were 13 instances of mental preparation out of 94 total samples during the tournament (14%). Mental preparation strategies were experienced by seven of our ten study participants including four of the five low handicap participants and three of the five moderate handicap participants. Mental preparation strategies were a salient characteristic across our study participants and between the participant groups as well.

Across all participants. Mental preparation strategies were experienced across our study participants during the golf tournament. Low-handicappers Mike, Tom, Aaron, and
Chris as well as moderate-handicappers Caleb, John, and Samuel all experienced mental preparation strategies during the golf tournament. The mental preparation strategies used by all of these study participants were typically very clear and differentiated golf-related inner experiences that obviously served the purpose of preparing for a subsequent golf-related task such as hitting the next shot. The most common mental preparation strategy occurred during preparation for putting, when three of our participants experienced perceptual awareness by externally looking to find a line along which to make their putt. This mental preparation strategy, which Tom called “spot-putting,” was found in 3 of 13 or 23% of the mental preparation strategies across the study participants. The remaining mental preparation strategies were idiosyncratically experienced and contained perceptual awareness, inner speech, inner seeing, unsymbolized thinking, sensory awareness, feeling, and speaking aloud. The most common form of inner experience that occurred during mental preparation strategies was perceptual awareness, which occurred in 7 of 13 or 54% of mental preparation samples. For comparison, the mean frequency of perceptual awareness during golf across all study participants was only about half of this at 27%.

Mental preparation strategies occurred before upcoming shots in a variety of settings; they were experienced while sitting in the cart before a tee shot, standing on the course before a tee shot, walking up to address a tee shot, standing on the fairway, walking on the fairway, and while lining up to make a putt after having addressed the ball.

*Between golf and daily life.* Because our participants were engaged in a heterogeneous variety of mostly non-golf-related tasks during their daily life samples, because the main purpose of the current study was to examine inner experience during golf performance, and because mental preparation strategies are defined as being sport-
specific, we did not analyze daily life samples for the presence of mental preparation strategies. Thus Table 1 shows "na" for not available during daily life samples. This is not to say that our participants did not have inner experiences related to what they were doing at the moment of the beep during daily life, such as Caleb's Sample 3.4 when he was experiencing sensory awareness and more prominent perceptual awareness for the purpose of making a chicken salad sandwich, but rather task-related mental preparation strategies during daily life samples were not considered relevant because they were not sport-specific, such as making a chicken salad sandwich.

*Between low and moderate handicap groups.* Both across and between the participant groups, mental preparation strategies were experienced fairly idiosyncratically aside from the most common mental preparation content, spot-putting, and the most common form, perceptual awareness. There were no apparent qualitative differences in the way mental preparation strategies were experienced across or between the participant groups.

Although mental preparation strategies were experienced by both participant groups, three low handicappers experienced two mental preparation strategies, and one experienced four, whereas the moderate handicappers experienced at most one mental preparation strategy. The low handicap group mean frequency for mental preparation strategies was 22%, compared with the moderate handicap group mean frequency of 6%. There were more than three times as many mental preparation strategies in the low-handicap group (10) than the moderate-handicap group (3). The low handicappers who used these strategies never displayed less than two; moderate handicappers never displayed more than one mental preparation strategy. In the low handicap group, Tom,
Aaron, and Mike each experienced two mental preparation strategies that were captured during the golf tournament. Chris experienced four mental preparation strategies.

Two samples illustrate low handicap participants' mental preparation strategies during golf. Mike was speaking aloud the words “nice and slow tempo” to slow his rhythm down for the next shot (Sample T.4), and Tom was preparing himself to execute a putt by externally and visually scanning a line from the hole back toward his ball (Sample T.2). In the moderate handicap group, John, Caleb, and Samuel each experienced one mental preparation strategy that was captured during the golf tournament. These participants, respectively, experienced mental preparation strategies that included innerly and kinesthetically seeing his body position at the top of a backswing, deciding in unsymbolized thinking whether to make a safer or more risky shot, and trying to visualize the path the ball will take to the hole by externally looking along a curving line (see Samples T.11, T.9, and T.2, respectively).

A relationship between mental preparation strategies and golf performance was also observed. The best three performers in the low handicap group in terms of both their gross and net scores each experienced two mental preparation strategies during the golf tournament. The best two performers in the moderate handicap group, again using both raw score and rank, each experienced one mental preparation strategy during the golf tournament. The worst performers in each of the two skill groups, Will and Ryan, had no mental preparation strategies during the golf tournament. This suggests a possible positive relationship between mental preparation strategies and quality of golf performance may exist; however, because neither 1) an a priori reliable operational definition for mental preparation strategies was specified, nor 2) an a priori prediction
Regarding the relationship between mental preparation strategies and golf performance was specified, it was beyond the scope of this study to examine the mental preparation strategies statistically. Future research using DES may examine this relationship if these conditions are met and these conditions can be properly bracketed as potential presuppositions to avoid becoming demand characteristics.

Summary and Discussion. Mental preparation strategies were experienced by seven of ten of our study participants and were a salient characteristic both across our study participants and between the participant groups. These mental preparation strategies were typically very clear and differentiated golf-related inner experiences that prepared the participants for subsequent shots. Spot-putting was the most common mental preparation strategy during golf in 3 of 13 or 23% of samples, and perceptual awareness was the most common form found in 7 of 13 or 54% of the mental preparation strategies across the study participants; however, a variety of other forms of inner experience including inner speech, inner seeing, unsymbolized thinking, sensory awareness, feeling, and speaking aloud were also involved. Most of the mental preparation strategies were idiosyncratically experienced and occurred in a variety of settings including putting, driving, on the fairway, and in the golf cart. The preliminary signs of a possible positive relationship between mental preparation strategies and the quality of golf performance were evident, but establishing this relationship more definitively was beyond the scope of the current study.

The possible positive relationship between mental preparation strategies and quality of golf performance we observed is very consistent with findings in the sport psychology literature. For instance, Thomas and Over (1994) surveyed 165 men (aged 20-74 yrs)
with golf handicaps ranging from 5 to 27 and found that golfers with lower handicaps reported greater mental preparation than did those with higher handicaps. McCaffrey and Orlick (1989) individually interviewed 14 top professional golfers and 9 golf course teaching professionals and found mental preparation was one of the common factors described as being important for quality golf performance. Similar findings have been reported with interventions that teach mental preparation pre-shot routines and show improved performance (Cohn, Rotella, & Lloyd, 1990). Cohn (1990) reviewed the efficacy of cognitive-behavioral performance preparation interventions and stated that “research on such strategies shows that athletes can learn to develop consistent, highly systematic preparatory routines and also that routines benefit performance, but the findings of the effects of routines on performance have been erratic” (p. 306). Cohn attributes this to time frames being too far removed to determine whether improvements were the result of interventions or physical practice (or both).

Consistent with past methodological suggestions for improving knowledge about the nature of inner experience during performance (Greenspan & Feltz, 1989; Hardy et al., 1996; Meyers et al., 1996), and to overcome problems of retrospective self-report as discussed by Cohn (1990) and others (Hackfort & Schwenkmezger, 1989; Ptacek, Smith, Espe, & Rafferty, 1994; Raglin & Hanin, 2000), the current study explored momentary inner experience during sport performance in a naturalistic context. To date, this is the first study to directly access and describe the actual golf-related mental preparation strategies used during golf performance itself, and this was done in a naturalistic setting during a golf tournament rather than retrospectively via self-report questionnaire or interview.
Perceptual Awareness

Perceptual awareness is a process of focusing on objects of the environment for their objective or instrumental qualities, often for the purpose of a task. The two categories we have discussed above (golf-related and preparation strategies) are characteristics of the content of experience. By contrast, perceptual awareness is characteristic of the form of inner experience. Perceptual awareness is a form of inner experience that is often visual, as the seeing of an object as part of conscious experience for its objective, instrumental qualities. Perceptual awareness was coded only when it was unambiguously one of the most prominent inner experiences present at the moment of the beep to distinguish it from instances in which a participant’s eyes may have been open at the moment of the beep and they later remembered what they saw.

Perceptual awareness was the second most frequent salient characteristic of inner experience during the golf tournament (golf-related content was the most frequent), and it was a salient characteristic of inner experience across our study participants. There were 25 instances of perceptual awareness out of 94 total samples during the tournament (27%).

Across all participants. Perceptual awareness was a salient nomothetic characteristic across our study participants. Across our study participants, 8 of 10 or 80% experienced perceptual awareness during golf (see Table 1), and 7 of these 8 or 88% had more than one instance of perceptual awareness during golf. It was also the most frequent form, as opposed to content, of inner experience for four participants during golf. Perceptual awareness was typically golf-related and was involved in 7 of 13 or 54% of the mental preparation strategies collected during the golf tournament.
Qualitatively, the experience of perceptual awareness among our study participants was idiosyncratic. This was particularly noticeable as our participants' amount of focus on visual stimuli in their conscious experience varied. Some perceptual awareness experiences were passive, idle looking experiences in the midst of doing a task. These experiences had less focus, but visual stimuli were still unambiguously experienced consciously. Other perceptual awarenesses were active and focused goal-directed looking experiences. These experiences had more focus on visual stimuli, and were also unambiguously experienced consciously. Still others were not unambiguously passive or active experiences. Because the definitional borders of these experiences are less solid than with other forms of inner experience, it is difficult to arrive at an exact number for how many times each of these two different types of perceptual awareness occurred. For the same reason, it is difficult to know if perceptual awareness has dichotomous activeness-passiveness poles, whether activeness-passiveness is more continuous, whether it manifests itself in other qualitative ways, or whether activeness-passiveness may generalize to other groups of participants.

Thus perceptual awareness was a salient inner experience that was typically golf-related and involved in most of the mental preparation strategies. It that was idiosyncratically experienced and varied in the activeness and passiveness of visual focus.

*Between golf and daily life.* Perceptual awareness was somewhat more frequent during golf than during daily life across our participants, present in 25 of 94 or 27% of tournament samples and on 19 of 110 or 17% of daily life samples. Perceptual awareness was more frequent in 6 of 10 or 60% of our participants during golf than during daily life.
Only one of our participants experienced a lower frequency of perceptual awareness during golf performance and three experienced a similar amount of perceptual awareness during golf and daily samples.

*Between low and moderate handicap groups.* The difference between perceptual awareness during golf and daily life was larger for the low handicap group, 33% compared to 6%, than the same difference for the moderate handicap group, 21% compared to 25%. Three moderate handicappers experienced more frequent perceptual awareness during golf than daily life, whereas all five low handicappers experienced this difference. Will’s anomalous lack of perceptual awareness during golf brought down the average moderate handicap frequency during golf and daily life. We think skill group difference in perceptual awareness during golf and daily life may be an interesting rudimentary quantitative observation and possibly a preliminary, tentative trend.

*Summary and Discussion.* During the golf tournament, our participants’ perceptual awareness experiences were typically clear external visual experiences during which visual stimuli were part of their conscious experience. Perceptual awareness was the second most frequent salient characteristic and the most frequent form of inner experience our participants experienced during the golf tournament. Perceptual awareness was experienced idiosyncratically by our study participants. Some perceptual awareness experiences were passive, idly looking experiences in the midst of doing a task. Others were active and focused goal-directed looking experiences. Still others were not unambiguously passive or active inner experiences. Most of our participants had a higher frequency of perceptual awareness during their golf than during their daily life samples, although individual differences were present. Most of their perceptual awareness was
related to golf in content. As discussed in the previous mental preparation subsection of this chapter, perceptual awareness was often involved in mental preparation strategies during our participants’ golf samples. The difference between perceptual awareness during golf and daily life was larger for the low handicap group.

**Perceptual Awareness versus No Inner Experience**

Perceptual awareness is a form of inner experience that, in the current study, we observed occurring visually. To better explain the borders of perceptual awareness, we will digress from salient nomothetic characteristics for a moment to consider no inner experience, a salient idiographic characteristic for Brad. Once examined, instances of no inner experience will be compared to the nomothetically-salient phenomenon of perceptual awareness.

Because our participants’ eyes were open, we presume, during most of their samples and they could remember objects in their visual field did not necessarily mean our participants were experiencing perceptual awareness. In fact, one of our participants had instances of no inner experience at the moment of the beep but remembered objects in the visual field being present. Brad had four instances of no inner experience present at the moment of the beep during golf. Instances of no inner experience will be described to better distinguish between perceptual awareness of visual objects in conscious experience versus objects being available in the visual field but unambiguously not in one’s awareness.

Perceptual awareness does not simply occur whenever objects are present in the visual field. Brad’s instances of no inner experience during golf despite objects being present in the visual field demonstrate this. In Tournament Sample T.2, for instance, Brad
was on the 5th stroke of the 5th hole, and he was standing on one side of the green with the beeper in his pocket. At the moment of the beep, he was looking across the green, his eyes aimed at fellow golfer John standing on the far side of the green; however, neither John nor the green itself were in his awareness; in fact, nothing seemed to be in his awareness at the moment of the beep. Brad does not think he ever would have been aware of what he was looking at if not for the beep. In this sample, Brad unambiguously had no inner experience present at the moment of the beep but remembered what his eyes were aimed at most likely because of the beep. In Tournament Sample T.5, Brad had no inner experience with a sense of even less awareness. Brad was sitting in the cart having just finished the 10th hole. At the moment of the beep, Brad’s eyes were aimed at the beeper and there was nothing in his awareness. This experience was similar to the other instances of no inner experience just described, but this time there seems to be even less awareness. He knows his eyes were open, but he somehow has even less awareness. Brad had another instance of no inner experience that was closest to the threshold of an experience in conscious awareness in Tournament Sample T.1. In this sample, Brad was on the third hole and had just pulled his cart up to the tee box. He was turning the volume dial of the beeper when the beeper went off. At the moment of the beep, Brad’s eyes are aimed at the dial, and he is turning the dial of the beeper with his finger. He has no visual awareness of looking at the dial and no tactile awareness of feeling the dial as he turns it. Brad thinks this experience is akin to driving with no awareness. Nothing is present in his inner experience at the moment of the beep, but of Brad’s instances of no inner experience, he thinks this experience is the closest to his visual awareness threshold.
To summarize, Brad’s instances of no inner experience varied on how close to his threshold of visual awareness, but they were unambiguous instances of no inner experience despite the presence of visual stimuli present that were remembered after the beep. Thus objects were available to our participants visually and through their other senses throughout their golf and daily life experiences. Our observations show that these objects were not always part of their inner experience at the moment of the beep. In the case of perceptual awareness, clear visual awareness was evident. At the other extreme, Brad’s instance of no inner experience show that it is possible to have no visual awareness, or any experience, at the moment of the beep.

Summary and Discussion. Perceptual awareness is a process of focusing on objects of the environment for their objective or instrumental qualities, often for the purpose of a task. As a category of inner experience, perceptual awareness does not simply occur when objects are present in the visual field; in fact Brad’s instances of no inner experience during golf despite objects being visually present demonstrates this as do instances of other forms of inner experience during golf without perceptual awareness. Brad’s instances of no inner experience also varied in how close they were to his threshold of having visual objects in his inner experience, illustrating Monson and Hurlburt’s (1993) conceptualization of the imprecise, vague, yet continuous borders of inner experience. Thus Brad and other participants were presented with visual stimuli during golf and daily life, yet the presence or absence of perceptual awareness was demarcated by the presence or absence of prominently-experienced visual stimuli at the moment of the beep, respectively.
Perceptual awareness was the most frequent form of inner experience during golf performance observed by the current study. Because perceptual awareness is a relatively novel phenomenon to the study of inner experience during golf performance, this phenomenon has not been precisely observed and described by the field of sport psychology. The notion that it is necessary to focus attention externally during performance, which is similar to perceptual awareness, has been described in theory by Nideffer (1986); in practice by Rotella (1995) who said “when great players are playing well, [they] simply [pick] out a target, envision the kind of shot..., and hit it” (p. 44); and in research such as that of Poolton, Maxwell, Masters, and Raab (2006). Poolton and colleagues recently found that attentional focus has an influence on learning to putt. Groups learned to putt under different conditions either 1) being instructed to focus on the movement of the putter (external focus) or 2) on their hands (internal focus). The external group’s performance remained robust, whereas the internal group’s performance dropped significantly. It is important to note that exactly how attention was to be focused on one’s hands was not specified in precise phenomenological terms, nor was any direct exploration of how inner experience occurred after instructions conducted, which is quite common in sport psychology studies. Was attention to be focused by using perceptual awareness, sensory awareness, inner speech, or some other means? Questions such as this may best be answered by momentary explorations of inner experience such as the current study.

Despite the notion that attentional focus is important in golf, precisely how attention is focused during golf has been relatively unknown until now. The current study demonstrates that perceptual awareness is one of the ways that attention is focused on
performance during golf. As the most frequent category of inner experience during golf performance, perceptual awareness appeared to play an important role in golf performance. It is important to note, however, that perceptual awareness is a much more specific form of inner experience than the attention construct that is described in the sport psychology literature. Attention is merely one of the components of perceptual awareness (and other forms of inner experience). DES demonstrates more precisely one of the ways that attention can be focused, in the case of perceptual awareness, as a process of focusing attention on objects of the environment for their objective or instrumental qualities, often for the purpose of a task.

*Inner Speech*

Inner speech is the experience of speaking words in one’s own voice without the external sound actually being produced. The experience is typically very similar to how one might speak aloud. There were 25 instances of inner speech out of 94 total samples during the tournament (27%). Inner speech was a salient characteristic across our participants during golf, and it was also a salient characteristic between golf and daily life settings.

*Across all participants.* Inner speech was a salient nomothetic characteristic during golf performance across our study participants. Nine of our ten study participants experienced at least one instance of inner speech during the golf tournament. During golf the qualitative experience of inner speech across participants was typically self-directed and typically contained golf-related content (76%). Samuel experienced inner speech as self-directed, self-berating, inner spoken expletives twice (see Samples T.5 and T.8). John experienced inner speech during golf by telling himself to smoke a cigar to regulate
his emotions. Will experienced inner speech during golf by telling himself he had “too much adrenalin” (see Sample T.3). Inner speech was involved in 3 of 13 or 23% of the mental preparation strategies collected during the golf tournament (see Chris’ Samples T.10 and T.3 and Aaron’s Sample T.2). Thus inner speech was typically golf-related in content, and it involved mental preparation for golf, emotion regulation, reactions to golf performance including analysis of personal technique and performance as well as inner spoken expletives, statements about the golf course conditions, and statements about golf equipment.

Between golf and daily life. Inner speech was a salient characteristic that was more frequent during golf than during daily life. Inner speech occurred at three times the rate during the golf tournament (27%) as during daily life (9%).

There were noticeable individual differences in inner speech frequencies between golf and daily life. Five of our participants experienced a higher frequency of inner speech during golf performance than they did during daily life. In contrast, three of our participants experienced a similar frequency of inner speech during the golf tournament than during daily life. Tom experienced a lower frequency of inner speech during the golf tournament than during daily life.

Despite individual differences, inner speech was a salient nomothetic characteristic that was more frequent during golf than during daily life. Thus inner speech appears to play a role in golf performance.

Between low and moderate handicap groups. The difference between inner speech during golf and daily life was similar for the low handicap group, 29% compared to 10%, as the comparable difference for the moderate handicap group, 24% compared to 9%.
Two moderate handicappers experienced much more frequent inner speech during golf than daily life, whereas all two low handicappers experienced this same difference. Thus it appeared there was no skill group difference in inner speech during golf and daily life.

Summary and Discussion. Inner speech was a salient nomothetic characteristic across participants especially during golf and also during daily life. The settings in which it occurred most frequently were individually different, but nine of our participants experienced inner speech during golf. When it was experienced during golf, inner speech was typically self-directed, related to golf in content, and it also was involved in 3 of 13 or 23% of the mental preparation strategies collected during the golf tournament. It was also involved in emotion regulation, reactions to golf performance, and statements about the golf course conditions and golf equipment. Inner speech was more frequent during golf than daily life for five of our participants.

The phenomenon we call inner speech is referred to by the sport psychology literature as self-talk. In the previous review of the sport psychology literature, it was observed that this term has been defined broadly and narrowly, but from our perspective and that of others (e.g., Hardy et al., 1996), it has also been defined quite imprecisely. In fact, self-talk has been used to describe statements said aloud (Van Raalte, Brewer, Rivera, & Petipas, 1994), said internally (Williams et al., 1993), and even statements delivered by others such as coaches that athletes may somehow process internally (Gould, et al., 1989; Weinberg & Jackson, 1990).

The narrow definition of self-talk, as talking to oneself in one's own voice without external sound being produced, is similar to our definition of inner speech. A broader definition used in the sport psychology literature could include both inner speech and
what we have called speaking aloud, which will be discussed later in this chapter. The overall mean frequency of inner speech during the golf tournament was 27%, and as we will see, the overall mean frequency of speaking aloud during the golf tournament was 7%. Inner speech appeared to play a role in golf performance because it was involved in 3 of 13 or 23% of the mental preparation strategies observed in this study and more frequent during golf than daily life, so it is not surprising that it has been given a considerable amount of attention in the sport psychology literature, particularly with self-talk interventions.

Our results suggest, however, that the pervasiveness of self-talk during sport performance has been overstated by at least some researchers, perhaps by the influence of “the widely held prejudice that all thinking is in words” (Hurlburt, 1997, p. 947). This prejudice is exemplified by Williams and Leffingwell (2002) who said, “broadly defined, self-talk occurs whenever an individual thinks, whether that individual is making statements internally or externally” (p. 81; see also Williams & Leffingwell, 1996) as well as Bunker and Williams (1980), who stated, “anytime you think about something, you are in a sense talking to yourself” (p. 236; see also Bunker, Williams, & Zinsser, 1993). However, our results indicate that that is decidedly not true: in 77% of our golf tournament samples, self talk as inner speech was unambiguously not occurring.

This study therefore strongly supports Hardy and colleagues’ (1996) call for better specification of “precisely what constitutes self-talk” (p. 37) because “past researchers have been too ‘loose’ in their operationalization of self-talk” (p. 37-38). This suggests that the phenomena of inner speech and speaking aloud are not very well understood. We propose that the difference between what we call inner speech and speaking aloud might
prove to be useful as could any attempt to reduce the prejudice that all thinking occurs in words, which is unambiguously incorrect. Our results suggest that some inner experience occurs in inner speech, and as we will shortly see, possibly less occurs by speaking aloud. We believe that the imprecise observation and specification of inner experience during sport performance is not restricted to self-talk. Our results illustrate the need for better observation and specification of the actual phenomena of inner experience during sport performance in general as well.

**Unsymbolized Thinking**

Unsymbolized thinking is the experience of a mental event without the experience of words, inner seeings, or any other symbol of inner experience. There were 13 instances of unsymbolized thinking out of 94 total samples during the tournament (14%).

*Across all participants.* Unsymbolized thinking was a salient characteristic across our study participants. Unsymbolized thinking was present in 31 of 204 or 15% of the total combined golf and daily life samples collected. Unsymbolized thinking was also a salient characteristic for six of our participants including Caleb, John, Brad, Mike, Tom, and Chris.

*Golf and Daily Life.* Unsymbolized thinking was a salient characteristic across our study participants in both golf and daily life. Across both our participant groups combined, unsymbolized thinking was present similarly in both golf (14%) and daily life (16%) samples. The frequency of unsymbolized thinking did not differ by golf and daily life sampling settings in a consistent manner. Golf and daily life frequencies were highly individually different. Five of our participants had similar amounts of unsymbolized
thinking during golf and daily life, four had less during golf than daily life, and one had more during golf than daily life.

*B之间低和中等球手分组*。在低和中等球手分组中，未符号化思维的频率相似。在高尔夫比赛中，低球手体验未符号化思维在46中的6或13%的样本中，而中等球手的7中的48或15%。在日常生活中，低球手体验未符号化思维在47中的6或13%的样本中，而中等球手的12中的63或19%。

**Summary and Discussion**。未符号化思维是我们研究参与者在高尔夫和日常生活中的一种显著特征。未符号化思维的频率在两种设置中相似，由两个参与者群体，以量化和定性相似的方式。

在现有的运动心理学文献中，关于未符号化思维的存在或其可能功能的讨论或类似事物并未发现。我们观察到未符号化思维在高尔夫比赛中出现。高尔夫比赛中出现的现象，如感知意识和未符号化思维，可能表明内体验在高尔夫比赛期间，以及可能在其他运动中，可能包括比运动心理学文献所描述的更广泛范围的内体验。

**Inner Seeing (aka Images)**

内看见是看见一些内部的，且在一定情况下可能不对应的外在存在的东西。在比赛中有13次内看见出现在94次总样本中（14%）。
Across all participants. Seven of our ten participants experienced inner seeing at some point during the study. Inner seeing was a characteristic across our study participants in both golf and daily life. Five of our ten participants experienced inner seeing during golf, and six experienced inner seeing during daily life. Of the five that experienced it during golf, inner seeing was a salient idiographic characteristic for all of these participants except one. Inner seeing was involved in 4 of 13 or 31% of the mental preparation strategies experienced during our participants’ golf samples.

Between golf and daily life. Inner seeing was a characteristic across our study participants in both golf and daily life. Across both our participant groups combined, inner seeing was present similarly in both golf (14%) and daily life (18%) samples. The frequency of inner seeing did not differ by golf and daily life sampling settings in a consistent manner. Golf and daily life frequencies were highly individually variable. Six of our participants had similar amounts of inner seeing during golf and daily life, and four had less during golf than daily life.

Between low and moderate handicap groups. In the low handicap group, a similar mean frequency of inner seeing was observed in the low handicap group during golf performance (13%) and during daily life (21%). In the moderate handicap group, a similar mean frequency of inner seeing was observed during golf performance (13%) and daily life (16%). Among the low handicap participants, three experienced inner seeing during golf. Among the moderate handicap participants, two experienced inner seeing during golf. Thus a similar frequency was observed between the groups, and a similar number of participants from each group experienced inner seeing during golf.

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Summary and Discussion. Inner seeing was a salient characteristic across our study participants. It was similar in frequency in both golf and daily life. Inner seeing was similar in frequency in both groups during golf and daily life. Inner seeing played a role in mental preparation strategies. It was involved in 4 of 13 or 31% of the mental preparation strategies experienced during golf.

The phenomenon we call inner seeing is referred to by the sport psychology literature as imagery. In the previous review of the sport psychology literature, it was noted that imagery is one of the most studied internal processes in sport psychology and the most frequently used mental rehearsal strategy (Meyers et al., 1996). Much like inner speech, it has been both broadly and narrowly defined. It has been broadly defined as using all of the human senses to re-create or create an experience in the mind (Vealey & Greenleaf, 2001) and has been perhaps more narrowly defined as “symbolic sensory experiences that may occur in any sensory mode” (Hardy et al., 1996, p. 28). Our definition of inner seeing as seeing something internally that is known not to necessarily be externally present is closer to the narrow definition. Imagery use by athletes has been reported to be as high as 99% retrospectively (Orlick & Partington, 1988). In this, the first study to directly observe inner seeing directly during performance, the observed frequency of inner speech was noticeable but much more modest than this. Inner seeing was not occurring in 86% of our collected golf samples. Like inner speech, inner seeing was definitely noticeable during golf performance, but its importance in relation to golf performance, or at least its prevalence, may be somewhat overstated by the sport psychology literature. It was involved in about one third of the mental preparation strategies observed, however, so it may have a role in mental preparation.
Feeling

A feeling is an emotional experience that includes such experiences as anger, guilt, sadness, and so on. There were 13 instances of feeling experiences out of 94 total samples during the tournament (14%).

Across all participants. Across our participants during golf, feelings were typically golf-related and typically negative. Eight of 11 feelings or 73% were negative-golf-related during golf. There did not, however, seem to be a meaningful relationship between overall golf performance and negative-golf-related feelings. Tom had feelings in 2 of 6 or 33% of his golf samples including a confident feeling that he was winning and but also a feeling of disappointment at losing to the other team. Thus Tom had mixed feelings and played well. Chris had only positive feelings during golf and played poorly. Ryan had only negative feelings and played poorly, and both Mike and Aaron had no feelings during golf and played well.

Between golf and daily life. Feelings were salient during both golf and daily life. Feelings were equally frequent during golf and daily life for the low handicap group. Feelings were less frequent during golf than during daily life for the moderate handicap group. In the low handicap group, a similar mean frequency of feeling was observed in the low handicap group during golf performance (15%) than during daily life (15%). In the moderate handicap group, a lower frequency of feeling was observed during golf performance (13%) and daily life (24%).

Five participants, four of whom were in the moderate handicap group, had less frequent feelings during golf than daily life. One of these participants, Will, experienced less frequent but more negative feelings during golf than daily life, but his feelings were
salient during both golf and daily life. For example during daily life, Will experienced feelings of happiness and amusement, bodily energized satisfaction, intense mental satisfaction, overall bodily contentment, and mental excited confident optimism. During golf, Will experienced mental frustration felt in his head and the feeling of the too much adrenalin and energy throughout his whole body and head. Will finished ninth in the golf tournament.

Like Will, Chris experienced less frequent feelings during golf than daily life; however, unlike Will, Chris had two positive feelings during golf that included a bodily feeling of well being and confidence and an overall feeling of relief and relaxation. Like Will again, however, Chris finished poorly at eighth place in the golf tournament. Similar in performance to both Will and Chris, our last place finisher, Ryan, had two negative feelings during golf performance. These included a fuming feeling at what he thought was his bad shot (which turned out not to be) and a pissed feeling at himself about his poor performance. Our first and second place finishers, Mike and Aaron, had no feelings during golf. Thus feelings did not appear to be related to performance, and individual differences in the frequency and experience of feelings were evident.

Between low and moderate handicap groups. In the low handicap group, the mean frequency of feeling during golf performance was 15%. In the moderate handicap group, the mean frequency of feeling during golf performance was 24%. Among the low handicap participants, two experienced feelings during golf. Among the moderate handicap participants, all five experienced feelings during golf. Thus less frequent feeling was observed in the low handicap group than the moderate handicap group during golf,
and fewer participants in the low handicap group experienced feelings than the moderate handicap group during golf.

*Summary and Discussion.* Across our participants during golf, feelings were typically golf-related and typically negative. Feelings were salient during both golf and daily life. Feelings were equally frequent during golf and daily life for the low handicap group but less frequent during golf than during daily life for the moderate handicap group. Feelings did not appear to be related to performance, and individual differences in the frequency and experience of feelings were evident.

As previously noted in the sport psychology literature review, the majority of sport psychology research on emotion has been directed at the relationship among anxiety, arousal and performance, although stress and coping research has grown considerably in the last decade (Giacobbi et al., 2004). Will appeared to be over-aroused when he experienced a feeling of too much adrenalin and energy throughout his whole body and head, but other than that, the feelings we found were heterogeneous and individually different (e.g., frustration, satisfaction, confidence, fuming). Much less attention has been devoted in the sport psychology literature to the feelings we found in the current study, which were most frequently negative during golf and somewhat less prevalent during golf than daily life. One exception to this was Ruiz and Hanin’s (2004) indirect evidence that idiosyncratic and context-specific feelings such as happiness, pride, relief, anger, anxiety, fright, sadness, and shame may be involved in sport performance.

*Sensory Awareness*

Sensory awareness is a bodily (e.g., hotness, coldness, itchiness) or external (e.g., brightness, shininess, blueness) sensory experience that is, in and of itself, a major theme
of an inner experience. There were 10 instances of sensory awareness out of 94 total samples during the tournament (14%).

Across all participants. Sensory awareness was a salient characteristic across our study participants in daily life. Sensory awareness occurred at least once in nine of our ten participants’ daily samples. Across our participants, sensory awareness was a salient characteristic for five of our participants during daily life, a similar number of participants from the moderate (N = 2) and low (N = 3) handicap groups. There were 18 instances of sensory awareness out of 110 total samples during daily life (16%).

Between golf and daily life: Between low and moderate handicap groups. Within our low handicap group, sensory awareness occurred about equally in golf (11%) and daily life (16%). Within our moderate handicap group, sensory awareness occurred at a low frequency during golf (6%) but much higher during daily life (21%). Sensory awareness during golf was often not related to golf in content and did not seem to play an important role in golf performance.

Sensory awareness was salient for two of the low handicap group participants during golf performance, Chris and Ryan, and one of the moderate handicap participants, Caleb. These and all other participants’ sensory awarenesses were characterized by a lack of golf-related content in during golf. In 7 of 9 or 78% of the tournament samples, our participants experienced sensory awareness that was not related to golf in content. Instead, the content of these experiences consisted of internal and external not golf-related sensory awareness. Instances of internal sensory awarenesses included Caleb’s sensation of weakness from the heat, Chris’ sensation of a painful twinge in his wrist and later a throbbing sensation in his wrist, and Mike’s sensing the hotness of the weather.
Two of the three instances of external sensory awareness were experienced by Ryan as distracted experiences. One of these was Tournament Sample T.4, when he was looking at the waterfall with admiration and noticing how colorful the waterfall stones are and how neat the shape of the flowing water looks as it is coming down after playing terribly. The other occurred during Tournament Sample T.6 when Ryan was absorbed in the blueness of Mike’s shirt as Mike was playing. Sensory awareness also occurred during none of our participants mental preparation strategies during the golf tournament. Because sensory awareness was typically not related to golf in content and was not involved in mental preparation strategies during the golf tournament, sensory awareness did not seem to play an important role in golf performance for our participants. For Ryan, our last place finisher, external sensory awareness seemed to take his attention away from golf performance.

Summary and Discussion. The phenomenon we call sensory awareness has not been described specifically or extensively in the sport psychology literature, but like perceptual awareness and unsymbolized thinking, the current study observed and described it as a salient nomothetic characteristic during golf performance. It could be argued that arousal and anxiety, if experienced as momentary bodily inner experience would be sensory awareness; however, the specific phenomenon we have observed and described in this and other past DES studies (Hurlburt & Heavey, 2002) as sensory awareness has been largely neglected by the field of sport psychology.

Speaking Aloud

Speaking aloud is the act of producing external speech. There were 7 instances of speaking aloud out of 94 total samples during the tournament (7%).
Across all participants. Speaking aloud was not a salient characteristic across all participants because it was only experienced by the low handicap group participants.

Between golf and daily life. Speaking aloud was a salient characteristic for the low handicap group during golf but not during daily life. Four of the five low handicappers experienced speaking aloud during golf, but only two experienced speaking aloud during daily life. For the low handicap group, speaking aloud was more frequent during golf (15%) than daily life (6%) samples.

Most of this golf and daily life frequency difference was accounted for by Mike, Ryan, and Aaron. Just before the tournament, it came to our attention that these three participants all happened to know one another. They were, at various points throughout the tournament, talking to each other about golf. In fact all of the seven instances of speaking aloud during golf were golf-related in content, whereas none of the three instances of speaking aloud during daily were golf-related in content. More discussion of this will follow.

Between low and moderate handicap groups. Speaking aloud was a salient characteristic that was different between the two study groups during golf. None of the moderate handicap group participants experienced speaking aloud during golf or daily life.

Mike, Aaron, Chris, and Ryan were the low handicap group participants that experienced speaking aloud during golf performance. All instances of speaking aloud were golf-related in content. Mike, Aaron, and Ryan were all participants that knew one another and competed in the same group of four participants, and all experienced more instances of speaking aloud during golf than daily life. Speaking aloud was particularly
salient for Mike and Aaron. Mike experienced speaking aloud as part of his mental preparation during Tournament Sample T.4 when he was saying “Nine and slow tempo” out loud. He also experienced speaking aloud in Tournament Sample T.9 when he was saying “Damn, I hit it in the left trap” to one of the other golfers. Aaron experienced speaking aloud in half of his tournament samples. In all three of these instances, he was speaking aloud to other golfers rather than himself as Mike was once. Aaron specifically commented on how much talking to one another occurred during the golf tournament. Aaron pointed to the friendly yet competitive camaraderie among these three participants. Because 4 of 7 or 57% of the speaking aloud instances across these participants were speaking aloud to other golfers among this group of three, we speculate that these speaking aloud instances could be explained by the friendly-competitive camaraderie among these three participants. The remaining 3 of 7 or 43% instances of speaking aloud were phrases said to the participant themselves.

Summary and Discussion. As noted in the previous discussion of inner speech in this chapter, the phenomenon we call speaking aloud falls under the broad definition of self-talk in the eyes of many sport psychology researchers as statements said aloud (Van Raalte, Brewer, Rivera, & Petipas, 1994). Although we advocate a narrower and more specific definition distinguishing inner speech from speaking aloud and other forms and contents of inner experience that emerge from direct observations of momentary inner experience, speaking aloud has been observed and described, albeit retrospectively, by other researchers under the broad definition of self-talk.
Individual Differences

To this point, this chapter has shown several nomothetic similarities and differences in inner experience during golf performance and daily life across participants and between participant groups. Another important aspect of inner experience that has also been briefly described throughout this chapter, particularly in the feeling subsection, but deserves independent attention is the idiosyncratic nature of inner experience. As Table 1 illustrates, of the 16 categories of inner experience during golf and daily life, only 1 category was experienced by all 10 of our study participants – golf-related content. Golf-related content is an extremely broad category; in fact, considering mental preparation strategies, a more specific content category, we notice that 7 participants experienced this category whereas 3 did not. In fact further attention to the categories of inner experience during golf and daily life demonstrates that for 15 of the 16 categories or 94%, at least one and typically more participant(s) did not experience any of each of the 15 categories either during golf or daily life and sometimes both (see zeros). This illustrates that, although patterns were found among the inner experience of our study participants, the range of inner experiences observed in this study were actually quite individually different. Thus the idiosyncratic nature of inner experience is also evident.

Nomothetic Results Summary

The current study sought to explore inner experience during golf performance to address the very basic question, what is inner experience during golf performance? Our results suggest that inner experience during golf performance may consist of golf-related content and mental preparation strategies as well as perceptual awareness and inner speech most prominently. Second to this, unsymbolized thinking, sensory awareness,
feeling, and speaking aloud may also be involved. In addition, it was apparent that, although these categories of inner experience were observed to be nomothetically salient, inner experience during golf performance as well as daily life was found to be quite individually different.

The current study allowed us to explore the differences between golf and daily life inner experiences. Across our study participants, perceptual awareness and inner speech were more salient during golf than daily life. Feelings were slightly less salient during golf than daily life. Between our participant groups, inner seeing was less salient during golf than daily life for the low handicap group but equally salient for the moderate handicap group in golf and daily life. Sensory awareness was less salient during golf than daily life for the moderate handicap group but equally salient for the low handicap group in golf and daily life. These differences show that inner experience may vary during different activities such as golf and daily life. In addition, inner experience may vary between different golf skill groups during different activities.

The current study also allowed us to address another very basic question, that is, what is the relationship between inner experience and the quality of golf performance? Our results suggest that the salient characteristics that showed greatest possible signs of between-group differences during golf performance were golf-related content and mental preparation strategies. This raises the question for future study about whether golf-related content, particularly mental preparation strategies, are positively-related to quality of golf performance. Future studies may further examine the role of perceptual awareness and inner speech in golf performance.
Discussion

Somehow or another I knew you guys were going to ask me 'Exactly what were you thinking about?' And that's kind of a strange thing because, unless I would have had that beep, I probably couldn't tell you.... I would have never ever ever been able to tell you what I was thinking about.

-Mike

Sport performance is widely believed to depend on inner phenomena that occur during performance. Empirical investigations in sport performance have generally avoided the direct and immediate assessment of inner phenomena in favor of casual and indirect retrospective report measures. The reliance on retrospective self-reports obtained long after performance may be problematic because to compete and simultaneously to recall internal processes is a demanding combination. In this regard, much of the knowledge of inner experience during sport has been generated on the nineteenth hole, so to speak.

By contrast, this study directly and promptly assessed the inner phenomena of 10 experienced golfers during golf performance using DES. As the previous eleven chapters have shown, collaborating with an athlete and prompting him or her to directly assess inner experience in a timely fashion during golf performance generates rich, detailed, and faithful accounts of inner experience. As Mike’s unsolicited statement above attests, directly sampling inner experience between the first and eighteenth holes captures phenomena that would likely be highly degraded if not completely lost forever.
The main findings of the current study suggest inner experience during golf performance consists of golf-related content, mental preparation strategies, perceptual awareness, and inner speech as well as un symbolized thinking, sensory awareness, feeling, and speaking aloud; and it was apparent that inner experience during golf performance as well as daily life was quite individually different. The current study assets, limitations, and potential future directions will now be discussed.

Study Assets

As our tournament-winner Mike’s statement at the beginning of this chapter attests, teaching athletes directly to observe and describe inner experience and subsequently prompting them to do so during performance generates rich, detailed, faithful, useful, and probably more accurate accounts of inner experience that are less susceptible to the memory problems associated with retrospective self-report. We cannot help but wonder what it is that Mike would be doing if he were asked to recall his inner experience during golf performance retrospectively. Even with carefully-worded, non-leading questions, what would he say? How would he recall? Most importantly, how accurate would his accounting be? Now consider what he would likely say if we asked questions that presumed the prejudice that all thinking occurs in words such as “what were you saying to yourself during golf?” or questions that presumed that imagery is all-important in golf such as “what were you imagining during golf?” Would he not be lead to tell us what he was saying and seeing whether or not he was saying or seeing anything at all? The leading nature of these questions would be difficult for him to resist. Perhaps he would, but how often and for how long? And even if he would, would other research participants?
DES provides high fidelity descriptions of the phenomena of inner experience. It is a method of directly assessing inner experience that encourages active collaboration with its participants to obtain faithful accounts of untainted inner experience in naturalistic settings. When the goal is obtaining reports that are faithful to the actual phenomena of inner experience in sport, this study suggests that DES can be used during sport performance to generate descriptions that illuminate the actual phenomena of inner experience.

The strengths of the method and the current study are its portability, its ability to capture inner experience in naturalistic settings, and the ability to observe and describe inner experiential phenomena accurately and faithfully. It also provides high fidelity descriptions that richly illustrate the processes of inner experience both idiosyncratically and nomothetically. As discussed by Hurlburt and Akter (2006), DES collects randomly-selected, time-specific, manifest, ongoing, contemporaneous, personal inner experiences. Randomly-selected moments ensure that inner experiences are most representative of the person’s actual inner experiences, and it also helps DES researchers better bracket presuppositions. Time specificity allows the participant-researcher collaborative team to examine actual specific slices of time grounded in the actual inner experiences present at the moment of the beep as opposed to generalities that may be speculated about with respect to the participant. Thus time specificity leads to inner experiential specificity, and after enough samples and enough participants, better specificity about inner experiences, in this case better accounts of inner experience during golf performance. DES also examines manifest, directly-observable phenomena rather than unconscious processes, making the method able to capture obviously-apparent momentary inner experience more
clearly. By capturing ongoing inner experiences, DES seeks to reduce the reactivity of the method by focusing away from the participants reaction to the beep that may occur after the beep in favor of the momentary inner experience present in the sliver of time was define as “the moment of the beep.” This of course further enhances time and personal inner experiential specificity. The strength of collecting contemporaneous reports enables DES to overcome many of the pitfalls of retrospective self-report such as memory problems. Finally, the personal nature of samples obtained by DES in this and other DES studies allow us to capture phenomena as they are actually experienced by our participants rather than abstracting about personal inner phenomena. Thus the samples we obtained best illustrate the actual experienced momentary phenomena of our 10 participants during naturalistic golf and daily life settings. (See Hurlburt & Akter, 2006.)

Study Limitations

Because of the intensive, iterative nature of successively zeroing in on the details of inner experience in the expositional interviews, it is essential that a priori presuppositions are bracketed (Hurlburt, 1990; Hurlburt, 1993; Hurlburt & Heavey, 2006; Hurlburt, Hurlburt & Akhter, 2006) to prevent leading the participants to provide skewed descriptions of their inner experience. One of the practical consequences of this is having few, and in some cases, no hypotheses regarding the results of a DES study. DES follows a bottom-up approach to generating knowledge about inner experience. It begins with moment-by-moment, person-by-person idiographic descriptions of inner experience. With increasing numbers of participants, descriptions of inner experience may lead to nomothetic trends, which may in turn generate general knowledge about the inner experiential tendencies of groups of individuals. Using the DES method, making
predictions is appropriate when predictions are induced by the observations of exploratory DES studies such as the current one. Thus predictions are more appropriate in secondary DES studies or replications, and in these studies, these predictions are bracketed as much as possible.

Because this is the first DES study to examine inner experience during golf performance, we had no predictions regarding what we would find. One of the limitations of the current study is that we could not appropriately conduct quantitative analyses to compare inner experiences between the two study groups without having made a priori predictions. Hurlburt and Akhter (2007) suggest that “those who describe phenomena [be] firewalled away from those who theorize about the significance of those phenomena.” Although the current study observed and described idiographically and nomothetically salient phenomena during golf performance, the practical significance of these phenomena have still to be determined. Thus the current study is limited as basic research; however, future studies may better determine the practical significance of these and/or other new phenomena still undiscovered.

In a study such as this that observes inner experience and behavior, it would be tempting to view the mere co-occurrences of various inner experience and behaviors and infer causation. This was not the purpose of this study. A myriad of other variables could account for the co-occurrences that were found in this study. We did not randomly select participants, did not randomly assign them to experimental condition, and had less control over study conditions than a controlled experiment would. Thus one of the other limitations of this study is that we cannot infer causation. Instead our tasks were to demonstrate that DES can be used to explore and describe inner experience during golf
performance, to identify potentially interesting phenomena, and to point out noticeable patterns among phenomena, if any.

Despite not being able to infer causation, this study demonstrates that DES can be used to explore and describe inner experience during golf performance. Nomothetic results indicate that inner experience during golf performance may consist of golf-related content and mental preparation strategies as well as perceptual awareness and inner speech most prominently. Second to this, unsymbolized thinking, sensory awareness, feeling, and speaking aloud may also be involved. In addition, it was apparent that, although these categories of inner experience were observed with some degree of observed consistency, inner experience during golf performance as well as daily life was found to be quite individually different.

There were 16 categories of inner experience identified among the current study participant samples during golf. There are undoubtedly more ways of having inner experience during performance as well. Predictions would also have been inappropriate because, without an empirical basis, that is, one based on previous DES observations, we would have no appropriate way of knowing which of 16 or more categories of inner experience would be important in formulating predictions. With the limited number of participants in our study, the ability to test our predictions would have also been limited. Also, with 16 or more categories of inner experience, our Type I error would have also been high. More importantly, predictions may have led us away from new or different manifestations of inner experience, such as perceptual awareness, golf-related content, or mental preparation strategies. Thus sensible reasons exist for having had no predictions in this, the first study to examine inner experience during sport performance. The
unfortunate byproduct of this is that we cannot with much definitiveness make statements about what it takes to be successful in golf.

Another limitation of the current study is its uncontrolled nature. This study explored inner experience during golf and daily life, but participants collected their samples in a variety of heterogeneous settings during daily life and during a variety of settings on the golf course including in the golf cart, standing on the fairway, getting ready to drive the ball, getting ready to putt the ball, talking to other golfers, watching other golfers, and so on. Although inner experience was related to behavior in the case of golf-related content being higher during golf than daily life, consistent with Hurlburt and colleagues (2002), the uncontrolled nature of these settings may have limited our knowledge about the precise nature of golf-related behavior and inner experiences during golf performance.

Another limitation of the current study is the limited generalizability of its findings. This is the first DES study of inner experience during sport performance. As such, whether our findings generalize to other golfers in other situations has yet to be examined. For instance, even though all DES studies since 1990 have found unsymbolized thinking in their participants' samples Hurlburt states that "it must be acknowledged that all DES studies have been performed by Hurlburt and his colleagues, so as yet there may be some limitations on the generalizability of their conclusions" (Hurlburt & Akhter, 2007).

As basic research the current study is limited in its scope and by its inability to make predictions that could be analyzed appropriately by quantitative statistics. As an exploratory study it also limited by its uncontrolled nature, its generalizability, and its inability to better determine the practical significance of the phenomena it uncovered.
during golf performance. What it does suggest at least tentatively is that golf-related content, mental preparation strategies, perceptual awareness, and inner speech as well as unsymoblized thinking, inner seeing, sensory awareness, feeling, and speaking aloud were involved in inner experience during golf performance.

Future Directions

As a result of the findings of this study, future DES studies have more solid grounding to test predictions about inner experiential phenomena. One set of predictions that may be examined by future DES studies could be whether inner experiential phenomena are related to the quality of golf performance. We feel that golf-related content, mental preparation strategies, perceptual awareness, and inner speech are worth examining because these were the most salient characteristics during golf performance, although others should certainly be tested as well. Of these phenomena, mental preparation strategies seemed to show some signs of possibly being positively related to quality of performance; however, before moving forward too quickly we must consider that this was only one study with a limited number of participants. Thus it would be most appropriate to replicate this study using DES while both bracketing presuppositions in general and bracketing presuppositions specific to any predictions that are made. Future DES studies may examine inner experience during golf performance under more controlled conditions, controlling for factors such as the type of task a golfer is conducting, and using more participants as well. After this, future DES studies may also study different performance tasks, extending research to other sports.

It is our position that DES studies, and perhaps those of other similar methods with similar techniques and goals, will best enhance the depth, breadth, and quality of
knowledge about inner experience during sport performance. We believe sport performance knowledge will most likely be advanced from the bottom-up, that is first idiographically, moment-by-moment, participant-by-participant, and second nomothetically, at the level of study-by-study. If more convenient correlates of inner experience are eventually found, more convenient research could be conducted on the same phenomena of inner experience examined in this study with larger groups of participants, exponentially increasing knowledge about the relationship between inner experience and sport performance, the subject matter of sport psychology. In this endeavor, DES may play an essential role.
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