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# The Role of Situational and Dispositional Factors on Sub-Optimal Performance

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THE ROLE OF SITUATIONAL AND DISPOSITIONAL FACTORS ON  
SUB-OPTIMAL PERFORMANCE

A Thesis

Presented to

The Faculty of the Department of Psychology

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

by

Shannon K. Walker

July 2002

THE ROLE OF SITUATIONAL AND DISPOSITIONAL FACTORS ON SUB-OPTIMAL  
PERFORMANCE

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THE ROLE OF SITUATIONAL AND DISPOSITIONAL FACTORS ON SUB-OPTIMAL  
PERFORMANCE

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Pressure is known to decrease performance for well-practiced tasks. Research has found that pressure decreases performance for those with high self-consciousness when distracted, but the effects of pressure and distraction are not known for those with low self-consciousness. Therefore, the purpose of this study was to assess whether a distraction would improve the performance of those with low self-consciousness. A 2 (self-consciousness) x 2 (distraction) analysis of covariance (covariates emotional control, performance distance) factorial design was used to assess putting performance for 125 undergraduate participants. Results revealed that distraction negatively affected performance for both self-consciousness groups, but results indicated that there were no performance effects for pressure, level of self-consciousness, or emotional reactivity. Methodological issues are addressed.

## Chapter 1

### *Introduction*

Most people are familiar with the term choking, especially in sports. Oftentimes people taunt opponents by saying the phrase “don’t choke!” in situations in which they know that their opponent has a strong desire to perform favorably. One example of choking would be a player on the 18<sup>th</sup> hole of an important golf match. A putt is within the individual’s reach, but the person misses. In short, the individual, due to the dynamics of the situation, missed a putt, which he/she would have made under normal conditions. More specifically, choking can be defined as “the occurrence of suboptimal performance under pressure conditions” (Baumeister & Showers, 1986, p. 362). It is important, however, to distinguish between choking during a performance and simply not performing well. Choking does not include the chance occurrences in which a person performs below his ability level. Rather, it is reserved for those performances in which an individual has failed to exhibit a previously demonstrated level of ability during a single pressure situation. For example, if a baseball player successfully fields 95% of balls during practice and normal games, then a fielding error during a normal game would not be considered choking, simply a chance occurrence. However, the same player who commits a fielding error that determines the outcome of a championship game or in front of an important audience would be considered choking since the chances of that individual committing a fielding error are quite small. On the other hand, if another



player with only a 70% rate of successful fielding missed a ball during an important game, then the error may not be considered choking. As the definition of choking indicates, the player must perform suboptimally under pressure situations, not including the occurrence of a chance error. While the identification of actual choking can be difficult in single observations, multiple failures under pressure conditions can easily be identified as examples of choking.

The definition of choking states that choking occurs strictly under pressure conditions. Pressure can be defined as “the presence of situational incentives for optimal, maximal, or superior performance” (Baumeister & Showers, 1986, p. 362). Therefore, the individual must be motivated to perform to his highest ability. If not, then a poor performance is not considered choking. Pressure can be created by the presence of an audience, by expectancies about the outcome of performance generated from the audience, the performer or both, by competition, by incentives, and by task complexity. The role of each of these factors in the choking phenomenon will be examined in turn.

Before examining the research/literature related to these situational factors of choking, an important nonsituational factor must be recognized: the competence level of the performer. It has been shown that individuals who are skilled at a specific task choke under different conditions than do individuals who are unskilled at the task (Baumeister, 1984; Bell & Yee, 1989; Kimble & Rezabek, 1992). Therefore, in the literature review that follows, each of the situational factors that affect choking will be examined in light of the skill level of the performer. The focus, however, will be on the effects of these situational variables on skilled performers.

### *Mediators of Choking*

*Audience Effects.* One of the most studied mediators of choking is the effect an audience has on a performer. Oftentimes the results of these studies are mixed. Some report that audiences enhance performance, some that audiences hinder performance and still others indicate that the level of intervention is due to other factors either related to the situation in which the performance occurs or characteristics of the performers themselves. Therefore, the purpose of this section is to describe what has been found regarding the effects an audience has on one's performance.

Visibility of the audience seems to be an important factor in determining whether or not performers will be affected by the presence of an audience. Wankel (1975) found that if the audience is not visible to the performer, audience effects are much less effective. In this study, participants were instructed to balance on a stabilometer and to prevent the ends from touching the ground as much as possible. Participants were assigned to either an audience or no audience condition. The audience consisted of two individuals whose task was to sit behind the performer and count the number of times the ends touched the ground on the side on which they were sitting. In addition to the evaluators, the experimenter was present, sitting at a desk behind the performer. In the no audience condition, only the experimenter was present. Results indicated that there were no differences in performance for those who performed with an audience present and those who performed with only the experimenter present. This experiment implies that even though the participants knew that an audience was present and that they were evaluating their performances, an audience that is not visible is not sufficient to affect performance. On the other hand, it is possible that the audience condition did affect

performance, but the reason there were no differences between performances is that the participants may have viewed the experimenter, who was present during the audience condition, as an audience. If so, then there would be no expected differences in performance.

Martens and Landers (1972) also found that audience visibility is important in creating audience effects. This study indicated that direct and indirect evaluation of an audience, who were actively performing the same task alongside the participant, affects performance. Participants completed a roll-up task either alone or in groups of two, three, or four. The goal of the task was to manipulate two converging rods in order to roll a ball up an incline. The further up the incline the ball went without falling between the rods, the more points received. When the ball eventually dropped, it fell into one of seven holes indicating the number of points the participant received. Results revealed that when the participants competed in groups of three or more and were in direct view of the other performers they earned lower scores compared to those who performed alone. In fact, for all group sizes, there were no differences in performance for those who were not in direct view of the other performers and those who were alone when performing the task. These results indicate that in order for there to be audience effects, the audience must be visible to the performer and supports the interpretation of Wankel's (1975) findings that the audience seated behind the participant was not sufficient to create an audience effect.

Another study specifically examined whether or not there would be differences in performances between skilled and unskilled participants if observed by an audience (Kimble & Rezabek, 1992). To create audience pressure, arcade employees watched the participants play either Tetris or pinball. The results of this study indicated that pressure

generated by the audience impaired the performances on the more complex game of Tetris for both skilled and unskilled performers. However, it was also found that for the simpler game of pinball unskilled players performed better in front of the audience and skilled players performed worse. The results indicate that audiences do affect performances. However, the affect that the audience has on the individual seems be dependent upon the difficulty of the task. The issue of task complexity will be examined more fully in a later section.

The study just reviewed has several conceptual problems. It is possible that the participants did not experience a sense of evaluation from the audience. In this study, the experimenter discretely recorded the score of unsuspecting potential participants after they played either Tetris or pinball. Then the experimenter approached individuals and asked if they would be willing to participate in a study to assess how many minutes people could play per quarter. Although the researcher was actually interested in the number of points the individual earned in the game, emphasis was placed on time to motivate participants to play as long as they possibly could. After the participant finished the game, rather than noting the amount of time the participant played, the researcher recorded the participant's score. This form of audience pressure may not have been effective in creating a high level of audience evaluation. A more effective means of creating a sense of evaluation would have been to tell the participants that the arcade was holding a contest to see if anyone could beat the current high score. Using this strategy, the performer might feel more pressure to perform well while being observed by the audience.

A similar study was conducted to assess skilled players on video game performance (Baumeister, 1984, experiment 6). In this study the experimenter inconspicuously watched a potential participant play an arcade game. If the participant's score met a specific criterion, which represented a proficient level of skill, then the experimenter approached the individual and asked if he would play another game at no charge. After the participant agreed, the experimenter asked the participant to say his/her name and score into a tape recorder and instructed the individual to try to get the highest score possible. After the participant played the game in front of the experimenter, the researcher recorded the final score. Results revealed that the presence of the experimenter negatively affected performance, even though the participant was a proficient player.

Bell and Yee (1989) sought to find differences in performances of skilled and unskilled participants when in front of an evaluative versus a nonevaluative audience. In this study, the experimenter asked novice karate students, those of white belt rank or enrolled in a self-defense class, and skilled karate students, those ranking yellow belt and higher, to perform a kicking drill. The drill consisted of kicking a target as many times as possible without step-downs, that is, touching the kicking foot on the ground, either in front of an expert audience (predominantly black belt instructors) or with only the experimenter present. Results indicated that without the evaluative audience, skilled performers executed more kicks, had more accurate kicks, and had fewer misses compared to unskilled participants. These results established the fact that skilled performers did perform the kicking drill better than unskilled performers. However, when in front of an evaluative audience, skilled performers were not affected by the audience

while unskilled performers were. Compared to the nonevaluative audience condition, there was no difference in the number of accurate kicks performed by skilled performers when in front of an evaluative audience, but unskilled performers showed a decrease in the number of accurate kicks. Perhaps the reason skilled performers did not perform significantly better in front of an audience is due to a ceiling effect. It is possible that they performed to their highest ability without an audience and therefore had no room to show improvement before an evaluative audience. Finally, there is a potential confound in this study. During the audience evaluation the participants wore their karate uniforms; thus, the audience members were aware of the skill levels of the participants, possibly biasing the audience evaluation of the participants.

Studies conducted to assess changes in performances due to factors associated with an audience tend to focus on general audiences. However, it is interesting to examine the effect an audience has on a performance if the performer is familiar with the audience members or aware of the audience's level of support. In fact, these studies are ecologically appropriate because performers can oftentimes get a feel for the audience before or during the performance or find out if particular audience members are present. Both of these factors seem to have the ability to affect a performance.

People generally assume that a familiar audience will buffer anxiety and improve their performance. However, research indicates that this idea is not always the case (Butler & Baumeister, 1998). In this study, when participants believed that they were performing in front of a friend hidden behind a one-way mirror, their performances were actually impaired compared to those who thought that they were performing in front of a stranger. Although there were no differences in the number of mistakes made in front of

the familiar audience when compared to the unfamiliar audience, those who performed in front of a friend actually made fewer correct responses than did those who performed in front of an unfamiliar audience. In addition, the participants performed the task at a slower speed, indicating that they were more cautious. Taken together, these results suggest that those who performed in front of a familiar audience sacrificed speed, but did not gain accuracy. These results occurred despite the participants reporting that they felt more relaxed and less distracted in front of the friendly audience. Although supportive audiences may make people feel more at ease before and during a performance, those benefits do not extend to the actual execution of the performance.

Butler and Baumeister (1998) also showed that a supportive audience impaired performances even if the audience did not consist of a friend of the participant. In this experiment, participants practiced a video game alone for twenty minutes. After the practice session the experimenter returned to the room and instructed the performer to take note of his score on the next 10 trials and record them on the clipboard. After this procedure, the experimenter explained that he had been unknowingly competing against a criterion and to earn a reward he would have to surpass a specific criterion on a single final trial. During the final trial, another participant was brought in to observe the participant. The observer was instructed to offer as much verbal support and instruction to the participant as they felt necessary to help the participant perform his or her best. To induce a supportive audience, the experimenter told the performer and the observer that if the participant met the criterion then they would both receive three dollars, if not, neither benefited. In the neutral audience condition, the reward was mentioned only to the performer. Results revealed that not only did the participants earn lower scores when

they performed in front of a supportive audience, they also met criterion fewer times than those who performed in front of neutral audience. One hypothesis as to why those in front of the supportive audience performed more poorly was because they felt more pressure to perform well since their performance affected another person. However, the participants in front of a supportive audience indicated on a questionnaire that they experienced less stress than those who were in front of audiences who had nothing vested in their performance.

The opposite effect has been found for those performing in front of an adversarial audience. It has been found that people actually perform better before an adversarial audience compared to those performing in front of a neutral, supportive, or a no-audience condition (Butler & Baumeister, 1998). In this study, a video game was used as the task and the participants were told that if they exceeded a specific point criterion, they would earn five dollars, but if they lost, the participant who was observing him would get the reward. Therefore, in the aversive audience condition, the observer was hoping that the other participant would perform poorly. Results indicated again, that overall, supportive audiences impaired performances. More interestingly, though, is the finding that those who performed in front of the adversarial audience had more success in exceeding the defined point criterion and had higher rates of both speed and accuracy than did those in front of all other audiences.

The effect audiences have on performance has also been examined in expert-level performers. Several studies have examined the home-field advantage during the World Series (Baumeister, 1995; Baumeister & Steinhilber, 1984; Heaton & Sigall, 1989; Schlenker, Phillips, Boniecki, & Schlenker, 1995). Baumeister and Steinhilber's (1984)



study revealed that the home team is actually at a disadvantage and tends to choke under pressure during championship games, such as the World Series. Previous to this study, people tended to believe that the home team had the advantage under these circumstances because they were more familiar with the field and had a supportive audience watching them. However, as previous research has demonstrated, supportive audiences often elicit poorer performances and aversive audiences tend to enhance the performances of those they watch (Butler & Baumeister, 1998). Baumeister and Steinhilber (1984) showed that performance actually did decline for the home team. During championship play, home players made significantly more errors that resulted in more losses compared to the visiting teams during the decisive game of the Series. The fact that the audience was supportive seemed to be the key disadvantage. One reason this might be a disadvantage is because the players playing before a supportive audience may have felt that they were in danger of losing the image of being champions in front of their fans. In fact, as mentioned, many times the errors that were made during these games enabled them to ultimately lose the championship and lose that status in the eyes of the audience.

However, a reanalysis of this phenomenon was conducted by Schlenker et al. (1995) and revealed that the home field is not a disadvantage as Baumeister and Steinhilber (1984) had indicated. The reanalysis included a different baseline that they deemed more appropriate. Instead of using the winning percentage of the first two games of the World Series as a baseline as did Baumeister and Steinhilber (1984), Schlenker et al. (1995) used the winning percentage of the third and fourth games of the World Series as a baseline. They chose this baseline because the team who is the home team during

those games is also the home team during the decisive fifth game enabling the comparison between nondecisive home games and the decisive home game. Comparatively, if the first two games of the Series are used, as did Baumeister and Steinhilber (1984), the home team in these games is not the home team in the decisive fifth game, thus making an invalid baseline for evaluation of the decisive performance. Schlenker et al. (1995) also excluded teams who played teams who shared the same home field because both teams would be equally acquainted with the field. In addition, instead of just examining the general pattern of fielding errors and concluding that more errors were made on the verge of victory, Schlenker et al. found that the home team made more fielding errors when they were behind than when they were ahead. Overall, Schlenker et al. found no evidence of a home team disadvantage in the final game of the World Series using the new baseline and case alterations. However, Baumeister (1995) rebutted the Schlenker et al. article and showed that after a chi-square goodness of fit analysis was performed using his previous findings as the expected value and Schlenker et al. values as the observed value, the results indicated that there was not a significant difference between the two suggesting that the home team is at a disadvantage. He also suggested that although Schlenker et al. (1995) included the subsequent 11 years and there was a drop in significance, there is no reason to suggest that the previous findings were invalid because the direction of the findings were similar. One reason given for the drop in significance is because new rules have been initiated since that time, such as the designated hitter, that has increased the advantage for the home team.

Heaton and Sigall (1991) performed another analysis using different methods to provide additional evidence for the home-team choke. In this study, the same database

that Baumeister and Steinhilber (1984) and Schlenker et al. (1995) used was employed, but they examined various circumstances in which the home team lost. They, too, examined fielding errors, but examined the errors as a function of whether the team was ahead, behind, or tied with the opposing team. They found that the supportive audience seemed to significantly hinder the players' performances when the home team was behind especially during the final game of the Series. This finding is in support of Schlenker et al. (1995) findings. Far more detrimental fielding errors occurred from the home team compared to the visiting team when they were behind in the final game. All of these studies reveal that supportive audiences are not always an advantage when a major victory is impending.

The phenomenon of audience pressure resulting in a home-team choke may partially be explained by outcome expectancy. Research has indicated that the expectancies of the audience will often affect an individual's performance (Baumeister & Showers, 1986). Furthermore, it has been established that if the audience expects success, but the performer expects failure, performance will likely be poor (Baumeister, Hamilton & Tice, 1985). In this study, participants were told that they would be involved in an experiment to assess whether personality integration is related to the ability to solve anagrams. Participants who were assigned to the private expectancy of success were given anagrams that were all solvable. Those in the private expectancy of failure were given anagrams in which only 6 of 14 were solvable. Both of these groups were further divided into another two groups- audience expectancy of success and neutral audience expectancy. Those in the audience success expectancy condition were told that their personality integration scores indicated that they would perform well on the final

anagram test. Those in the audience failure expectancy condition were told that their personality integration scores indicated that they would perform average on the final test. Overall, results revealed that performances were debilitated if the performers knew that they were expected to succeed. This result was especially true if the audience expected success but the performer expected failure. However it was found that the participants could overcome the audience's expectancies of success if they, too, believed they would succeed. These results indicated that an individual's expectancy of success is important and may determine the outcome of the performance.

In another study, outcome expectancy was combined with task difficulty to determine whether or not a supportive audience would impair performance (Butler & Baumeister, 1998). Each participant was given time to practice a video game that he/she would be playing throughout the remainder of the experiment. Next, the participants performed 10 games that served as a baseline followed by a single game trial. Each participant was assigned to either a supportive, neutral, aversive or no audience condition and was given either a difficult or easy criterion to pass. Those in the easy criterion condition had to get a score that surpassed the participant's 9<sup>th</sup> best performance of the baseline trials to gain a reward of \$5. In the difficult criterion they had to score higher than their 2<sup>nd</sup> best performance to earn the reward. In the supportive condition, the audience was told to encourage the participant because both the participant and observer would get the reward if the criterion was surpassed. In the aversive condition, if the participant did not meet criterion, then the observer got the reward but not the participant. In the neutral condition only the participant got the reward if he met criterion. There was also a control condition in which there was no audience and no

mention of a reward. Results indicated that the participants performed worse in front of the supportive audience and actually improved as the audience became less supportive, resulting in the best performances among those who performed before an adversarial audience. In addition, the pre-task questionnaire indicated that those in the difficult criterion condition had lower expectations of success compared to the participants given an easy criterion. Therefore, when the participants were given an easy criterion and expected to succeed the affects of different audience types were not pronounced. However, when the task criterion was difficult and the participants did not expect to succeed, then the type of audience did affect performance, resulting in the poorest performance among those before the supportive audience.

Another important factor of an audience that should be taken into account when assessing how the audience affects the performer is the level of expertise of the audience. Henchy and Glass (1968) specifically designed a study to assess the effects of this factor on participant performance. In this study, participants were told that they were going to be involved in an experiment in which the purpose was to evaluate the degree to which repetition was effective in learning strange words. Each participant was given 10 core nonsense words. Two of the words were repeated 16 times, another two were repeated 8 times, another 4 times, another 2 times, and then two of the words were presented only once. The words were presented on a screen; then the participants were told to repeat the words after the experimenter said them. At this point the researcher introduced the second part of the experiment. In this part, the participants were presented with 41 words, including the 10 core words, for a total of four trials. This time the words were presented at such a speed that they would be unable to knowingly perceive the word. They were

directed to try and say the word that came on the screen even if they had to guess. During this portion of the experiment four groups were made. One group consisted of having the participant perform the recognition task alone with the experimenter out of sight.

Another group had two people in the room observing the participant who were allegedly experts in the field of perceptual behavior and human learning. In a third group, two non-expert observers, who were described as students who wished to observe a psychological experiment, observed the participant. The final group completed the task alone, but were told that they would be video recorded and would later be evaluated by experts in the field of perceptual behavior and human learning. The hypothesis was that people would say the dominant response, that is, the words that were repeated either 8 or 16 times, when an expert audience was observing them. Results supported the hypothesis.

Participants who were observed by the expert audience and those who thought that their recorded answers would be later evaluated by an expert audience emitted dominant responses more often than those who were not in an evaluative group.

Overall, results of the research are somewhat counterintuitive. Despite performers reporting feeling less stressed and more relaxed while in front of a supportive audience, their performances tend to be impaired. On the other hand, those in front of an aversive audience report feeling less at ease, but generally outperform those in front of the supportive audience and, in some cases, those before a neutral audience. However, the degree to which the audience influences the performer is dependent on other factors such as the level of the performer's expertise of the performed task and outcome expectancy.

It should be kept in mind, however, that a seemingly supportive audience could transform into an evaluative audience depending on the perceptions of the performer.

The performers may agree that the audience is supportive, but in fact may feel that the audience is judging them on a higher level than if the audience had not had previous contact with them. One of the factors that may influence the way the individual views the level of evaluation of the audience is the status of the audience in the eyes of the performer. This idea is substantiated in the previously described study conducted by Bell and Yee (1989). In this study, the audience members were both experts and instructors of those participating. Therefore, although the participants had previously performed in front of the audience several times, it is possible that the evaluative effects were compounded by the desire of the participants to impress the audience. While this effect could potentially be a factor in any study conducted regarding performance, it may be more substantial when the participant is familiar with the status of the audience (Schlenker & Leary, 1982).

*Task Complexity.* Oftentimes, task complexity is studied in conjunction with the effects audiences have on an individual's performance. Because of this, it is difficult to separate the effects attributable to each factor. Therefore, the purpose of this section is to review the literature regarding task complexity in light of other factors such as audience effects, but focus on the results related to task complexity.

In a previously examined study, it was revealed that audiences affect performances differently depending on both the skill level of the individual and the level of task complexity (Kimble & Rezabek, 1992). The tasks in the study were two arcade games of different levels of difficulty, pinball and Tetris, pinball labeled as the simpler of the two. To create audience pressure, arcade employees watched the participants play these games. The results indicated that the complexity of the task mediated the effects of

audience pressure. Regardless of skill, participants performed worse on the more complex game of Tetris when performed in front of an audience. In addition, the results indicated that the unskilled players actually performed better than did the skilled participants when they played the simpler game of pinball. These results indicate that task complexity does mediate the effects of audience evaluation for skilled and unskilled individuals. The researchers discussed the results of this study as differences in performance ability on tasks with distinct levels of difficulty. However, they explained that the two tasks were more aptly called maximizing and optimizing tasks rather than simple and complex. Maximizing tasks require speed and effort while optimizing tasks require accuracy and precision. Therefore, the label of simple and complex tasks may not be accurate for these two tasks. If this is so, then the results of this study are not that participants perform at a particular level on simple and complex tasks, but that they perform at these levels when performing maximizing and optimizing tasks.

In Butler and Baumeister's (1998) previously reviewed study, they examined the effects of the audience's level of support, the performer's and audience's outcome expectancy, and level of task difficulty have on performance. In general, they found that supportive audiences tended to impair performance and adversarial audiences improved performance. However, they also examined task difficulty in light of level of audience support. As previously described, those in the easy criterion condition had to achieve a score that surpassed the participant's 9<sup>th</sup> best performance of the baseline trials on video game performance to gain a reward. In the difficult criterion they had to score higher than their 2<sup>nd</sup> best performance to earn the reward. Results indicated that those who were given the easier criterion to pass, the type of audience did not influence performance.



However, if the criterion was difficult, then the type of audience did affect performance. More specifically, it can be said that the more supportive the audience, the worse the performance. Therefore, it can be concluded that the type of audience affects performance, but the level of impairment may depend upon the level of task difficulty.

*Incentives.* Another source of pressure is a reward or punishment that is contingent upon the outcome of a performance. Rewards and punishments come in many forms, from monetary gains or losses to verbalized praise or criticism. On the surface one might reason that if people were offered a reward for a good performance, then they would be more likely to perform at a desired level. However, research indicates that that hypothesis is not always correct. In fact, participants oftentimes perform worse if they know that they could earn a reward for a desired performance. Baumeister (1984) found that when participants were offered a monetary reward each time they performed at a level higher than their baseline performance, they performed significantly worse than did those who were not offered a reward for their performance. Interestingly, however, the participants who did not meet the requirements for obtaining the reward on the first trial performed better on the second trial. Baumeister hypothesized that if the participants did not initially meet criteria they may have simply quit trying to perform so well causing the pressure to diminish and, as a result, perform better on the second trial. This finding supports the idea that it is likely that the pressure of a situation is based on how the participant perceives the situation. Here, the participants may have felt less pressure the second time because they did not expect to meet criterion.

Another study by Lewis and Linder (1997) supported Baumeister's (1984) results that a reward contingent upon performing at a particular skill level impairs performance.

In this study, participants were required to putt from a particular distance until they met a specific criterion of 7 out of 10 putts that came to a stop within 10 cm of the target. After they met criterion, those in the high pressure condition were told that if their ball stopped within an average of 5 cm of the target over the next 10 putts, they would receive twice the usual credit for participation. Those in the no reward condition were not offered the additional credit and were not told when the practice ended and the actual trials began and continued to putt with the goal of getting within 10 cm of the target. The results indicated that those in the reward contingency condition performed significantly worse than those who were not told that they could receive a reward for performing well.

It has also been shown that rewards and punishments do not have to be tangible to be effective. However, it seems that tangible rewards are more effective than intangible ones. One study showed that those who received verbal praise while performing a task did not perform significantly different from those who were criticized for their performance or those who did not receive verbal feedback while performing (Wankel, 1975). However, the participants who received criticism of their performance may have not paid attention to it depending on how well they thought that they were performing. If they were satisfied with their performance and could get a sense that they were performing as well or better than the other participants, they may have simply ignored the criticism. Therefore, verbal reinforcement may be more suitable in situations in which the performer would be unable or less likely to realize the quality of their own performance.

*Competition.* Zajonc (1965) pointed out in a review article that not only are performances altered in front of spectators but performances are also enhanced when

other people perform a task simultaneously with another performer called a coactor. This idea dates back as early as 1898 when Triplett studied the effect bicyclists had on one another when cycling at the same time versus when they were cycling alone. He found that those who cycled with others had faster race times compared to the times of those who raced by themselves against a clock. Triplett found similar results when he compared children who turned a fishing reel either by themselves or with other coactors. Those who turned the reel alongside other children reeled at a faster pace than did those who reeled by themselves. Further studies of the phenomenon of coactors have been conducted with mixed results. Some studies have supported Zajonc (1965) and Triplett (1898), while others have not.

One study that did not support the studies conducted by Triplett (1898) and Zajonc (1965) compared participants who competed either alone or in groups of two, three, or four on a roll-up task (Martens & Landers, 1972). Results revealed that when people competed in groups of three or more and were in direct view of the other performers they earned lower scores compared to those who performed alone. There was no significant difference between those who performed alone and those who performed with only one other person. Since there was a significant difference between the triads and the tetrads, but no other combination of performers, this study indicates that there must be a particular number of members in a group before impairment is significant. However, it must be noted that those in Triplett's study were ostensibly competing against each other, while those in Martens and Landers's (1972) study supposedly were not. This difference is an important one. Competition between participants generally results in faster times, but less accurate performances (Baumeister & Showers, 1986).

Perhaps the difference in the results between the studies conducted by Triplett (1898) and Martens and Landers (1972) lies in the type of task employed. Cycling and reeling, while requiring skill, are not as complex as the roll-up task. Studies have indicated that coactors impair performances for complex tasks, but not simple tasks (Sanders, Baron, & Moore, 1978).

Several variables have been identified that mediate performances. The presence and/or characteristics of an audience seem to be the main contributors to decrements in performance. It was found that under specific conditions, an audience has the potential to influence an individual's performance independent of skill level. However, it seems that audiences have the greatest influence on those who are unskilled at a particular task (Bell & Yee, 1989; Kimble & Rezabek, 1992). There are many other variables besides the audience that affect performance. Task complexity is one of the main variables that influences the effect an audience has on performance. The literature indicates that audiences affect performances on a difficult task more so than on an easier task (Butler and Baumeister, 1998; Kimble & Rezabek, 1992;). Incentives also play a role in how well an individual performs. It seems that people who are offered a reward contingent upon performance outcome actually perform worse than if they were not offered a reward (Baumeister, 1984; Lewis & Linder, 1997). Competition was identified as another mediator of performance, but the results are mixed. It seems that the number of competitors is important. People tend to perform better with one other person (Triplett, 1898), but when more people are added, performance declines (Martens & Landers, 1972). However, this result is not consistent across all studies and not all studies have found coactor effects. Overall, there are several mediators, including task complexity,

incentives, and competition, that may influence whether an individual chokes during a performance and many of them interact.

### *Theories*

Several theories have been proposed in an attempt to explain why choking occurs. One of these theories is drive theory (Yerkes & Dodson, 1908 as cited in Baumeister & Showers, 1986; Hull, 1943, as cited in Singer, Murphey, & Tennant, 1993). This theory is actually a class of theories that attempts to explain the phenomenon of choking and has two variations.

One version of drive theory is based upon the Yerkes-Dodson effect (1908). They found that rats were better able to differentiate between safe and unsafe areas of a cage when given only an intermediate level of shock. Low and high levels of shock led to poorer learning than did an intermediate amount of shock.

One explanation for this result is based on the inverted-U hypothesis, based upon Easterbrook's (1959) cue-utilization hypothesis. Easterbrook explained that when arousal is at low levels, both task-relevant and task-irrelevant cues are attended to which can lead to a poor performance. As arousal increases to more moderate levels, the sum of cues that can be attended to is reduced and the less salient task-irrelevant cues are ignored but task-relevant cues are processed resulting in optimal performance. However, when arousal is further heightened, attention becomes further narrowed and the processing of task-relevant cues is reduced leading to poor performance. Therefore, performances, like those in Yerkes and Dodson's study, are optimal when arousal is at moderate levels. This theory has received substantial empirical support. This theory has also been more supported by researchers because it goes beyond drive theory and explains why

performance improves and declines as pressure increases. However, it does not explain all instances of performance, such as participating in a championship game. According to the inverted-U theory, the pressure to perform well would be at a high level and players would be expected to choke. However, not everyone chokes under these situations. Therefore, this theory does not account for all performance outcomes.

A second drive theory model, the dominant response model, was based upon the Hull-Spence drive theory. This theory states that performance is a function of drive and habit strength. Hull described drive as physiological arousal and habit strength as the occurrence of the dominant response. The idea behind this theory is that increased drive will increase the probability of the occurrence of the dominant response; that is, if an individual is skilled at a particular task, then the responses to that task will result in a successful performance and will incrementally improve with increased arousal. This model was popular and was supported by a number of researchers (see Singer, Murphey & Tennant, 1993).

However, drive theory has lost support over the years because researchers do not believe that it is an adequate model for explaining how arousal affects performance (Lewis & Linder, 1997; Martens, 1971). A number of studies have found evidence that as pressure builds within a situation performances tend to decline. An example of this would be offering participants a reward if they perform well. When offered a reward, participants performed significantly worse than those who were not offered a reward (Baumeister, 1984; Lewis & Linder, 1997). Other methods of creating pressure conditions have negatively affected individuals' performances. One is derived from the pressure created by an audience. Several studies have found that audiences tend to

debilitate performance (Baumeister, 1984; Baumeister & Steinhilber, 1984; Kimble & Rezabek, 1992). In these studies, pressure was greater in the condition in which the participants were either offered a reward or were observed by an audience. Drive theory would hypothesize that, as pressure mounted in these situations, performance would get increasingly better since increased drive should lead to increases in the dominant response. However, the results indicate that this is not the case. Therefore, there must be something that drive theory does not explain. Baumeister and Showers (1986) suggested that the main problem with drive theory is that it does not explain the processes that affect performance and it makes no attempt to indicate what type of pressure leads to poor performance.

Zajonc (1965) used drive theory in the development of the social facilitation theory in an attempt to describe the individual differences in people when they perform in front of an audience or with coactors. This theory was based on the observation that these conditions improve some people's performances but impaired others'. He found that similar audiences have opposing effects on task performance when the task is well learned compared to tasks that are poorly learned. More specifically, well-learned tasks are improved when performed in front of an audience, but poorly learned tasks are impaired. Using drive theory, he asserted that the presence of other people increases the performer's level of arousal and brings about the individual's dominant response. The dominant response is the response that is most likely to occur given an individual's level of expertise.

The literature indicates that an audience does not always increase the likelihood of a good performance on a complex, well-learned task like Zajonc (1965) hypothesized

(Baumeister, 1984; Baumeister & Steinhilber, 1984; Bell & Yee, 1989; Kimble & Rezabek, 1992). Therefore, drive and social facilitation theories do not explain the performance of well-learned tasks when performed under the pressure of an audience. For this reason, these theories do not explain the occurrence of choking. As stated, choking occurs when people do not perform optimally under pressure conditions. Therefore, there must be something that Zajonc (1965) failed to identify as a determinate of whether or not an individual is likely to choke under pressure.

The principle of choking and the theories that attempt to explain it deal with skills that are highly learned. The definition of choking states that choking occurs when one has performed suboptimally under pressure conditions (Baumeister & Showers, 1986). If a novice performs a task and his performance is poor then that performance cannot be considered choking because the dominant response at this skill level is an incorrect response. When the individual becomes more proficient at the task the dominant response becomes a correct response. For most classic instances of choking the behavior required is so overlearned that it is automatic. The nature of automatic (open loop) behaviors is examined next.

### *Open Loop*

Most of the examples of choking in sports involve well-learned, automatic skills such as pitching, batting, free throw shooting, and putting. All of these movements can be described as open-loop processes. In this type of processing, the instructions for the movements are structured in advance and once initiated cannot be modified by feedback from the environment (Schmidt, 1988). This concept was illustrated in a study conducted by Wadman, Denier van der Gon, Geuze, and Mol (1979). In this study, the



participants were instructed to move their hand to a target as quickly as they could. They were put into a harness to ensure that only the shoulder and elbow joints were involved in the movement. The apparatus had equipment that measured the force and acceleration of the arm. The goal of the participants was to reach a target with their hand. They were given twenty trials to master the task and adapt to the harness. During the test trials there were two conditions. One condition was identical to the task they practiced. The other included the addition of a blockade between the starting point and the goal. The results indicated that for the first 100 ms the movements of the blocked trial were identical to that of the unblocked trial. The suggestion is that for at least the first 100 ms of a rapid movement the muscle sequences are preprogrammed; that is, the movement is completed without modifications from feedback in the environment. After this time period, however, there were differences between the movements in the blocked and unblocked trials. Another study indicated that when the same task was performed with a slower movement time the full movement was not complete; therefore there must have been time for higher centers to interrupt the movement (Angel, 1977, as cited in Schmidt, 1988). The implication of the combination of these two studies is that rapid movements “run off” automatically and higher centers are not involved in the movement, however, for slower movements, higher centers may be involved, which can interrupt the sequencing of events (Schmidt, 1988). Therefore, in relation to the current study, quick, ballistic movements, when well learned, are performed automatically once initiated. However, if the performer tries to slow down the movement in an effort to control the movements, the individual relinquishes the automatic, open-loop nature of the task and must rely on the directions of the higher centers to guide the movement, which is

oftentimes detrimental to the performance.

### *Automatization*

Automatization occurs when the processes involved in a task have been overlearned and occurs without the individual thinking about the movements involved. In other words, an individual becomes so skilled at a task that it no longer requires conscious attention (Kimble & Perlmutter, 1970). In fact, it has been shown that although people at this level of skill can give detailed information regarding the steps of the task in general, they cannot recall specific details about the last movement they just performed in a series (Beilock & Carr, 2001). The indication that once a movement becomes automatic the individual does not consciously process and initiate the movements needed for that specific movement. Furthermore, studies have suggested that if skilled individuals actively think about the process of their performance, such as the positions of their limbs in space, they will not perform the task as well as they would have if they had simply let the movement run off without interruption (Baumeister, 1984; Kimble & Perlmutter, 1970).

This idea was supported in a study that involved participants who were instructed to either pay attention to their hands while performing a roll-up task or to pay attention to the ball (Baumeister, 1984). Results revealed that those who were instructed to pay attention to the movements of their hands performed significantly worse than those who were instructed to attend to the ball. This finding confirmed that performances are impaired when direct attention is paid the movements required in a task.

Kimble and Perlmutter (1970) suggest that there are two processes involved in automatization. The first process is motivation. When an individual is performing an

automatic task, motivational forces do not drive him. In this case, he is unaware of his movements, until perhaps after the action has taken place. In terms of sport, this principle could be applied to sudden movements in response to decisions that must be made. An example of this is when an athlete must make a swift movement to overcome an opponent. The individual does not have time to weigh options, so an automatic response must be made. This process does not seem to apply to slower paced games, such as golf, because occasions do not arrive in which split-second decisions must be made.

The second process and the process that has been involved thus far is attention. This is based on the idea that unless something elicits attention during the completion of a task, attention is not directed at the movement; that is, as previously stated, the movement occurs without conscious control.

The idea that paying attention to the movements of an overlearned task results in performance decrement suggests that providing a distraction for an individual when performing the task may actually improve performance. An overlearned task is one that is performed automatically. If one pays attention to the details of the movement, then it interrupts the automaticity of the task and results in a poor performance. On the other hand, if the individual is distracted while performing the task, then the discrete elements of the movement cannot be attended to, thus resulting in a good performance. Recall that this is exactly what the results of several studies have suggested (Kimble & Rezaiek, 1992; Sanders & Baron, 1975; Sanders, Baron, & Moore, 1978).

The distraction theory is another theory that describes and explains why choking may occur. The theory of distraction dictates that the reason a person chokes is because an individual failed to pay attention to cues necessary for a performance, much like

Easterbrook's cue-utilization hypothesis. If an individual shifts his attention to task-irrelevant information it may momentarily prevent him from concentrating on the task and result in a poor performance (Baumeister & Showers, 1986). These task irrelevant cues can either be internally based, such as worry, or externally based, such as a movement or verbalization of someone in the audience (Sanders, Baron, & Moore, 1978). Originally, the distraction theory proposed that distractions are detrimental to performance. While research has supported this claim under some circumstances, much of the research indicates that a distraction may actually improve performance under some circumstances (Kimble & Rezapak, 1992; Sanders & Baron, 1975; Sanders, Baron, & Moore, 1978). In an extensive literature review, Sanders, Baron, and Moore (1978) claimed that distraction actually improved performance of simple tasks, but it impaired performance of complex tasks.

In a previously examined study by Kimble and Rezapak (1992), it was revealed that both skilled and unskilled performers, while observed by an audience, performed worse while performing a complex task. Another study revealed similar results, but added a distraction (Sanders & Baron, 1975). In this study, participants completed both a complex and a simple task while distracted. They hypothesized that the distraction may facilitate performance under some circumstances. They predicted this because they thought that a distraction would increase individuals' drive level. This idea was derived from a combination of experiments. One indicated that distractions were a form of conflict, which has been shown to increase drive levels (Kimble, 1961, as cited in Sanders & Baron, 1975). The other indicated that distractions induce overcompensation, which lead to increased motivation and an increase in performance (Allport, 1924, as

cited in Sanders & Baron, 1975). Taken together, if an individual is distracted then they will perform well. Instead of using an audience as a distraction, as has been done in previous studies, the participant was told to look up from the task and look at a card with an "X" printed on it when the experimenter tapped on the participant's desk. The distraction occurred 0, 2, 4, 6, or 8 times within a trial, and there was no way to predict when the experimenter would tap upon his desk. There were two studies in this experiment and the most important difference between the two studies was the task that the participant performed. In the first study, the simple task was a letter-copying task in which the participant had to simply copy letters into a box that appeared below the sample letter. The complex task required the participant to look at a number in a box and then find a coded alternative to put in the box beneath the number. The results of this study indicated that the distraction aided those who performed the simple task, but impaired those who performed the complex task. In the second study, the simple task consisted of a task in which the participant had to copy a number into a box that appeared below the printed number. For the complex task, the participant had to print a series of given letters upside down and backwards. The distractions were the same in the second study as in the first. Results indicated, again, that the distraction significantly impaired those who performed the complex task, but the distraction did not facilitate those who performed the simple task as it did previously. Since all of the participants experienced both conditions, the researchers compared the performances of the task when the participants were distracted and not distracted. The findings were similar. The participants did significantly worse on the complex task when distracted compared to when they were not distracted. For those who completed the simple task the results

indicated that facilitation did not occur. Although, on the surface, this study does not seem to provide support for the distraction theory, these findings are not detrimental to the argument that skilled performers perform better when confronted with a distraction. The participants in this study did not practice to task mastery; therefore it was unlikely that those who performed the complex task would perform well with a distraction. This study does, however, indicate that drive theory is incorrect. The participants were distracted from the task, which should have, based on previous research, increased conflict and motivated them to perform well. The results did not support this prediction.

These findings were partially supported in another study (Sanders, Baron, & Moore, 1978). In this study, participants completed a simple or complex copying task in one of three conditions. In the alone condition the participants completed either the simple or complex task by themselves. In the together different condition, participants perform independently in pairs, but one participant did the simple task while the other participant completed the complex task. There was also a together-same condition. In this condition participants again performed independently in pairs, but performed the same task. In all cases, participants were told that the results of their performances would be compared with the other present participant and national norms. The simple task in this study was a task in which a number was presented above an empty box and the participant had to copy the number into the box. The complex task required the participant to put a particular number in a series of boxes that were dependent upon the directions. For example, an "8" was to be entered if the number given was a "3". The researchers hypothesized that task facilitation of the simple task would occur for those who performed together, but would impair the performance of the complex task. In

addition, they hypothesized that when comparison is possible, the together-same condition, distraction will be heightened in comparison to those in the together-different or the alone conditions. Results indicated that when the participants were working on the same task; that is, when social comparison was relevant, improvement was made on the simple task and impairment was made on the complex task. Therefore, the distraction of social comparison seems to improve an individual's performance on a simple task, but attenuates it on a complex task. There seems to be a difference between task-related distraction and socially-based distraction from a task. While both of these distractions are attentionally based, individuals seem to react differently to different types of distraction. It would have been interesting had the participants been split into skilled and unskilled performers and their performances compared to those in the various groups. The researchers could have then explored conditions in which skilled performers performed optimally.

Internally-based distractions, that have recently received more attention in the literature, are also an important form of distraction. Studies on test anxiety have revealed that those who have a predisposition to worry tend to do worse on tests due to concentrating on task-irrelevant thoughts, such as fear of failure. One explanation for the performance impairment is that worrying tends to block the cognitive processes required to process information during a test thereby impeding performance (Doctor & Altman, 1969; Wine, 1971). Baumeister and Showers (1986) pointed out that the research on test anxiety is highly relevant to choking in sports because during both a testing situation and sports competition, the individual is in a pressure situation and has a strong desire to perform well. Studies have been conducted that have compared the differences between

task-relevant versus task-irrelevant cue distractions for those who scored high on a test-anxiety measure and those who scored low (Wine, 1971; Zaffy & Bruning, 1966, as cited in Wine, 1971). One study tested the difference between high and low test-anxious children on an arithmetic task when irrelevant or relevant task cues were introduced (West, Lee, & Anderson, 1969). The task relevant cues consisted of giving information that was required to solve the problem, while the task-irrelevant cues consisted of giving instructions that were not relevant to solving the problem in addition to the relevant instructions. They found that although both high and low test-anxious participants performed better on the task containing only task-relevant cues, the children who were test-anxious actually performed better on the task that included the irrelevant cues than those who were not test-anxious. These results support the idea that a distraction impairs performance, but it does not support the theory suggested by Doctor and Altman (1969) and Wine (1971). In these studies it was found that high test-anxious participants, who tend to focus their attention inward, pay less attention to task-relevant cues, which causes them to perform worse than low test-anxious participants. This was reasoned because those who were test-anxious fared better on the irrelevant cue task than did those who were not test anxious. Therefore, it seems that high test-anxious participants are more adept at ignoring task-irrelevant cues than are those who have less test anxiety.

In relationship to the performance literature, it could be interpreted that the presence of an audience provides a distraction from the task for the performer. Research has indicated that audiences do influence performances, and the direction of the outcome oftentimes depends upon other circumstances related to both the performer and the audience-- such as task difficulty, skill level of the performer, and the status of the



audience. One factor that seems to be relatively consistent across studies is that the trait of self-consciousness affects how distraction influences a performance.

The self-focus model is based on the premise that pressure situations cause people to become more self-focused; that is, individuals become more aware of various internal states. By becoming more self-focused, the individual then focuses his attention on the process of performance, such as hand movements in a manual task (Baumeister, 1984). This focus on performance, then, inhibits the automatic movements that the individual has acquired through practice of the task, resulting in an impaired performance. Research has supported the idea that if people focus on the process of a well-learned task, then performance will be impaired (Baumeister, 1984; Lewis & Linder, 1997).

It has been suggested that people who are dispositionally self-conscious, that is, someone who continuously concentrates on internal states and bodily processes, may be more susceptible to performance impairment than those who are not dispositionally self-conscious because they are more likely to focus on the process of the performance (Kimble & Perlmutter, 1970). However, an opposing theory states that those who are dispositionally self-conscious may actually be less susceptible to performance impairment than those who are not dispositionally self-conscious (Baumeister, 1984). The reasoning behind this is that those who are self-conscious are said to be accustomed to performing with internal scrutiny and are, therefore, less affected when demands are made to shift attention internally. In fact, studies have found that, when put under pressure, those who are high in self-consciousness actually have less impairment in performance than do those low in self-consciousness (Baumeister, 1984; Baumeister & Showers, 1986).

This result was supported in a sub-experiment of an experiment previously mentioned (Baumeister, 1984). In this experiment, instead of performing the roll-up task alone they performed the task alongside another participant. The participant, however, was a confederate of the researcher. The addition of the confederate was designed to create pressure for the participant. The participants were put into one of three conditions: a high pressure, low pressure and control condition. In the high pressure condition, the researcher announced that the confederate's score was 11 and 13 points higher than the participant's scores during the final minute of practice. In the low-pressure condition, the confederate's score was 7 and 9 points below the participant's final minute of practice. In the control condition, the confederate was not included and there was no other pressure condition. After the participant and the confederate were given 5 minutes to practice the task, the researcher told the participant what his score would have been if the last minute of practice had been his final performance. The confederate performed the roll-up task first while the participant sat a distance from the confederate so that he could hear the researcher announce the score, but could not watch the confederate perform. When the participant performed, the participant performed alone on the first one-minute trial, but on the second trial the confederate was granted permission to watch the participant's performance. Results revealed that under the control condition, that is, under no pressure, those who were low in self-consciousness performed better than those who were high in the trait. However, when the participants were put in a high pressure situation, that is, the participant was told that the confederate scored much higher than he did, those low in self-consciousness performed much worse than they did when they were in the control condition, while those high in self-consciousness did not have a significant change in

score between the two conditions. These results indicate that those low in self-consciousness choked under pressure. In other words, they were not able to perform up to a previously achieved level in a pressure situation. In fact, when the performance of those low and high in self-consciousness were compared the results indicated that those high in self-consciousness performed marginally better than those low in self-consciousness.

Baumeister suggested that perhaps the reason those high in self-consciousness performed better under low pressure, the condition in which the confederate scored well below that of the participant, is that the individual is succeeding in a task, then he/she does not have as great a need to pay close attention to the process of the performance. In other words, the participant is free to allow the movements to run off automatically, causing him/her to perform at a higher level. This hypothesis was supported in a comparison that was made between the trial when the participant performed alone and the trial when the confederate observed the participant. Results revealed that those who are high in public self-consciousness performed better on the second trial when watched than on the first trial when they performed alone. This finding was probably not due to a practice effect since all participants had a 5-minute practice session before the actual trials began and is consistent with the result that those who are high in self-consciousness are less disrupted by situational disturbances than those who are low.

Similar results were found in another study conducted for the purpose of examining effects of distraction on experimentally induced self-consciousness (Lewis & Linder, 1997). The authors of this study raised an interesting question- since distractions can be internal, how can one distinguish whether the problem of disturbing the automaticity of a movement lies in an internal distraction, such as negative self-talk, or a

situationally-based heightened level of self-consciousness? They sought to answer this question by introducing an external distraction during a high-pressure situation. If the distraction model holds, then the addition of an external distraction will impair performance. On the other hand, if the self-consciousness model holds, then the external distraction will prevent the individual from self-focusing and actually improve performance. The task in this study was a putting task. Each participant was given 20 practice trials in which they would putt 80 cm from the target. Then the participants were told that they would complete the test trials in sets of 10 putts and that the distance of each putt would be measured. The idea of the task was to get the participants to putt from a specific distance to meet the criterion of making 7 out of 10 putts within 10 cm of the target. If, after 50 putts, they were unable to achieve this criterion from 80 cm, then they were moved forward 30 cm and repeated the task until criterion was met. On the other hand, if the task was too easy, that is, they got 8 putts within 5 cm, they were moved back 30 cm until criterion was met. At this point, the baseline was measured. The participants were told to putt 10 times from their specified distance. If the criterion of 7 out of 10 putts was not met after two 10-putt trials, then the process was repeated until mastery was achieved. Finally, a performance measure was obtained that consisted of a single trial of 10 putts. The participants were randomly assigned to a condition in all 3 groups- a pressure group, a distraction group, and a self-awareness-adaptation group. Those who were assigned to the high pressure condition were made aware of the transition from the baseline to the test performance and were told that if they could average a distance of less than 5 cm from the target, they would receive double the extra credit in a course than they were initially promised. Those in the low-pressure condition were not told that the

test performance began and the experimenter continued to measure the distances of the putt. In this condition there was no mention of an incentive to perform well. Those in the distraction group were required to count backwards by two's from 100 aloud while putting. Those in the self-awareness adapted group performed the practice and baseline trials while being videotaped and were told that a panel of golf experts would later analyze how their movements improved by practicing putting. When the actual test trials began the experimenter removed the video camera. Results revealed that when the participants were under high pressure and self-aware adapted, they performed better than those who were not self-aware adapted. Under low pressure, there were no differences between the two groups in their performances. The authors did not compare results for those who were distracted and self-aware adapted in a high-pressure situation. These results are supported by the findings of Baumeister's (1984) previously reviewed article that those high in dispositional self-awareness did not perform worse under high pressure as did those who were not dispositionally self-aware.

This study could have been improved had they not manipulated self-awareness and actually used the results of the self-consciousness scale as an indication of self-consciousness. They interpreted the results as if the individuals who were self-aware adapted were actually dispositionally self-conscious and compared their results to other studies that obtained their results from dispositionally self-conscious individuals. Another improvement could have been made in the self-awareness adaptation condition. The video camera that was used during the practice trials was removed before the actual test trial began, which may have reduced the effect of self-awareness during the test trial. They should have kept the conditions constant throughout the practice and test trials.

There is also a possible confound in this study. It is possible that the video camera may have served as a distracter for those who were videotaped despite the fact the camera was not in view of the participants. If that were true, then it would be impossible to detect whether or not the responses were due to a state of heightened self-awareness or greater distraction. Again, if the researchers had relied on the results of the self-awareness adaptation and not manipulated it, the results would have been clearer.

Beilock and Carr (2001) designed a study that pitted the distraction theory against the self-consciousness theory. They explained that, in essence, the self-consciousness theory and the distraction theory are opposites. On the one hand, pressure induces self-focus which causes the individual to turn his attention inward to specific processes of performance. On the other hand, the distraction theory states that under pressure attention is directed outward and therefore less attention is paid to the process of performance. They hypothesized that if the distraction theory were valid then training an individual on a task while distracting them would reduce the impact of performing under pressure, which would inoculate them against choking. But if the self-consciousness theory is valid then training participants in an environment that induced self-awareness would make them accustomed to performing while self-aware thereby reducing the impact pressure might have on influencing an individual to focus on the step-by-step process of performance, thereby inoculating them against choking.

To test these two theories they trained the participants on a putting task or an alphabet arithmetic task. The putting task consisted of having the participants, who were novice golfers, putt at three distances. The alphabet arithmetic task consisted of having participants figure out whether the alphabet arithmetic equations printed on a computer

screen were true or false. An example of an alphabet arithmetic equation is  $A + 2 = C$ . The distraction, self-awareness, and control group tasks were very similar for both groups. The control group consisted of having the participants putt under normal conditions. They did 270 putts at various distances, as directed by the experimenter. The participants then putted an additional 18 putts in a low-pressure condition. This condition was the same as the training procedures. Then they putted another 18 putts under high pressure. To induce pressure, they told the participants that if they could improve their putting accuracy by 20% then they and another participant would receive \$5, but if they didn't then neither person would get the money. Those in the distraction group differed from those in the control group while in the training phase (270 putts) they had to listen to a tape that listed words and each time the word "cognition" was said, they had to say that word aloud. Once the training task was over, the procedures for the high and low-pressure tasks followed just as they did in the control group. Those in the self-aware group did their training putts while under the surveillance of a video camera and were told that golf instructors at the university would evaluate their performances. After the training, the video cameras were turned off and away from the participants and the rest of the procedures were identical to the control group. The alphabet arithmetic group followed the same procedures for each group in the putting groups except in the distraction group instead of saying the word "cognition" aloud when they heard it they had to press a foot pedal to indicate recognition. The results indicated that under the control conditions those in the putting task choked, but those in the alphabet arithmetic task did not. Those who trained while distracted did not choke, but did reduce performance somewhat. However the self-awareness training did not impair performance

in either task group and actually seemed to inoculate putters against choking. More specifically, those in the self-awareness group actually improved their performance from the low- to high-pressure conditions, while those in the control and distraction groups declined in accuracy. These results suggest that training under conditions that induce self-awareness reduce the likelihood of focusing on the processes of performance while under pressure.

Since choking was not indicated for those in the alphabet arithmetic task, they replicated and extended the previous experiment. In this experiment they sought to find out if performances are altered during different stages of learning if the performers train under conditions of distraction or self-consciousness and what the effect will be on final performances once the task is well learned. They reasoned that participants who are trained under conditions in which self-awareness is induced would improve in early practice because focusing on the process of performance is necessary for skill acquisition, but later, when the task is well learned, they will continue to focus on the mechanics of the task which will cause choking. However those who are distracted while learning the task will be susceptible to performance decrements because attention to the task will be directed away from learning the mechanics of the task, but once the task is well learned then the distraction will facilitate performance because they will not focus on the process of performance and will be accustomed to performing under pressure.

The procedures were altered in this experiment from the previous experiment to compare the differences between the putting abilities of when the participant was a novice to when the participant had learned the skill to a high level. Those in the control condition did 27 putts and then did another 18 putts under low pressure and then under



high pressure as described in the previous experiment. Then each participant was trained with 225 putts and then did another 18 putts under low pressure and then high pressure as before. Those in the distraction group followed the same procedure except during the training condition they were distracted by having to say the word “cognition” when they heard it on the tape recorder as they did in the previous experiment. Those in the self-awareness group were also under the same procedure as the control group except during the training condition their performances were videotaped and were told golf instructors would evaluate them. The results indicated that when the participants were put under pressure to perform during early practice, when they were novices, both the distraction and self-awareness groups improved. However, once the training was complete and both groups had achieved a high level of skill for putting, only those in the self-awareness group improved when put under a high level of pressure to perform while those in the distraction group declined. These findings support Baumeister’s (1984) idea that those who are accustomed to performing while self-aware may not choke when put under pressure when the likelihood focusing on the processes of the performance is high.

In conclusion, the findings of these two experiments provide insight into the distinction between distraction and self-awareness and consequences of training individuals under those conditions. These findings, along with other research, indicates that pressure increases the likelihood of focusing on the process of performance and those who are accustomed to performing under that pressure have a lower probability of choking (Baumeister, 1984; Lewis & Linder, 1997). However, it would have been interesting if they had examined dispositional self-consciousness and compared those results to those of the induced self-consciousness. These studies, by Beilock and Carr

(2001), also suggest that the occurrence of choking seems to be reserved for motor tasks as opposed to cognitive tasks, since choking was not found for the alphabet arithmetic task.

### *Emotional Control*

Another final component that may be related to the likelihood of someone choking is an individual's level of emotional intelligence; that is, how well individuals are able to control their emotions when under pressure. Research has been conducted in the area of business and law enforcement (Bachman et al., 2000), but to the researcher's knowledge there have been no studies conducted to assess the effect of emotional control during sport performance. One study conducted on emotional intelligence and debt collection indicated that the most successful collectors in their sample had overall higher levels of emotional intelligence than those who were less successful (Bachman, Stein, Campbell, & Sitarenios, 2000). The researchers explained that the collectors who are most emotionally intelligent are able to work with the individual with which they are dealing in a more effective and controlled manner. Another article, in which the purpose was to inform professionals of the benefits of developing emotional intelligence, stated similar findings, such as increased productivity, in addition to leadership ability (Watkin, 2000).

Studies have also been conducted with law enforcement agents on the role of emotion and performance. Vrij, Van Der Steen, and Koppelaar (1995) examined the effect noise had on emotion and the ability to function under highly stressful situations. The results indicated that, overall, street noise magnified the officers' emotional reactions to situations, which narrowed their attention, thus impairing performance on a

shooting task. The most relevant finding for the current study is that those who scored high in field independency, an ability to perform well in complex situations, actually experienced less narrowing of attention and subsequently performed better than those who scored lower on field independency. Perhaps the reason why those high in field independence performed better than those who were low on that trait was because they were better able to manage arousal. Recall Easterbrook's cue-utilization theory which stated that too much arousal narrows attention, but moderate arousal does not. This may be the reason why emotionality was not significantly different between the two types of people. It is also possible that in this case it is not level of emotional reactivity that leads to the ability to cope under stress but arousal regulation. Regulation is defined as the modification of arousal with the goal of maintaining emotional control while reactivity refers to the individual differences in adequately responding to intense emotional experiences (Walden & Smith, 1997). It is possible that Vrij et al. (1995) measure of emotion was not appropriate for what they wanted to measure. Perhaps arousal regulation was more the authors' desired trait rather than emotional reactivity. Clearly, more research needs to be conducted regarding the role of emotion during a performance.

Sport psychologists have developed mental strategies in order to train athletes to control emotional arousal during performance (Gould & Udry, 1994; Smith, 1980, as cited in Weinberg and Gould, 1995). Since there has been no research conducted in this area, it would be beneficial to conduct research to assess whether or not emotional reactivity causes people to choke under performance pressure.

Previous studies have established the idea that the performance of a task can be affected by several different circumstances including the presence of an audience,

rewards and punishments, competition, and task complexity. More poignant is the finding that a distraction from a task might actually facilitate performance. As mentioned earlier, a distraction prevents an individual from focusing on the process of the movement. In fact, those who might benefit the most are those who are dispositionally self-conscious. The reason for this is that those who are self-conscious are accustomed to performing under conditions of high pressure, that is, they are continually looking inward and focusing on their thoughts and processes of performance. However, there have been no studies that have examined the effect of distraction on dispositional self-consciousness in high-pressure situations. Therefore, the purpose of the current study is to assess whether or not a distraction improves the performance of an individual who is not dispositionally self-conscious under high pressure. Since the individual who is low in dispositional self-consciousness is not accustomed to living daily life under constant self-scrutiny, it would be interesting to see if a distraction would keep the individual from going into a state of heightened self-consciousness during an important performance. In addition, the current study will explore the relationship between emotional control and the propensity to choke under pressure. In an effort to further assess the relationship of dispositional self-consciousness and distraction on performance, the design of the current study is modeled after that of Lewis and Linder (1997).

## Chapter 2

### *Method*

#### *Participants*

Participants were 125 undergraduate students who volunteered to participate in the study. Of these 125 participants, 34 were male and 91 were female. Participants were given extra course credit in addition to being entered into a lottery in which they could earn chances to win \$100. The Western Kentucky University Human Subjects Review Board approved the procedures for this study (see Appendix)

#### *Materials*

The participants putted on a putting carpeted surface (171 cm x 125 cm). They were supplied with a putter that could be used for both left- and right-handed players and standard golf balls. They also completed the private self-consciousness portion of the measure of dispositional self-consciousness ( $\alpha = .79$ ) (Fenigstein, Scheier, & Buss 1975) and the Emotional Reactivity Scale ( $\alpha = .88$ ) to assess emotional reactivity (Melamed, 1987). These scales in addition to the informed consent can be found in the Appendix.

#### *Procedure*

In this study, participants first gave their informed consent and were then told that the purpose of the study was to see how long it takes individuals to become consistent in their putting in a laboratory setting. The putting was performed on a carpeted surface (171 cm x 125 cm). Two concentric circles were drawn on the carpet indicating where

the putter should aim. One of the circles had a diameter of 20 cm and the other had a diameter of 10 cm. Nine arcs were drawn beginning at 20 cm and at subsequent 10 cm intervals from the center of the circle. Marks were placed at equal intervals in the arc to indicate starting positions for putts from that distance. The lines that indicated 100 cm through 40 cm contained 15 dots.

All participants began the experiment by putting 15 practice putts to get accustomed to the task at 80 cm. Next, each participant's performance distance was determined. Each participant attempted to putt 30 balls from a distance of 80 cm. The performance distance was defined as that distance at which the participant could putt 21-27 of the 30 putts into the 20 cm circle. The procedure for finding the performance distance was as follows. If they achieved a 70-90% putting success rate at the initial performance distance they stayed at that distance. If they did not attain that number of successful putts then they were moved forward 10 cm and attempted 30 putts. This process was repeated until the criterion was achieved. Alternatively, those who made between 28 and 30 successful putts at a particular distance were moved back 10 cm and the procedure continued until they achieved a 70-90% success rate. Once the participants achieved the criterion, they putted another 10 balls at the same distance to demonstrate that they could maintain the 70-90% success rate. If they did not, then they started from the distance at which they had just putted and went through the criterion phases until they demonstrated a 70-90% success rate. Once the criterion distance was determined, the participants entered the performance phase. Since low pressure does not tend to affect performance, all participants were put into a high-pressure situation. Before they began the performance measure they were told that, in addition to the extra credit points they

would receive for participation, each time that their putt landed in the smaller, 10 cm diameter circle their name would be entered into a lottery. Therefore, the more times they putted successfully the greater their chance of winning the \$100 prize. There were four lotteries- one for each of the four conditions (high pressure/distraction; high pressure/no distraction; high pressure/ high self-aware; high pressure/low self-aware). This procedure was followed to ensure that each participant in each group had an equal chance of winning. However, all participants were led to believe that there was only one lottery. The lottery technique was intended to create more pressure for the participants in comparison to earning additional extra credit or the chance of winning a small sum of money. Those who did not get a ball to land in the 10 cm target circle were told at the end of the experiment that their name was be entered into the lottery one time for participation. This step was done at the end of the putting procedure to decrease the likelihood of someone being satisfied with one chance of winning the prize and subsequently not fully engaging themselves in the task. The combination of having pressure to win the money and having a more difficult task was designed to create an opportunity for performance choking.

During this phase, participants were randomly assigned to either a distracted or non-distracted group. The participants became aware of their assignment to a group during the performance phase. Those who were assigned to the distracted group were required to putt 30 balls into the 10 cm target circle while they performed addition and subtraction problems. The addition and subtraction problems were simple problems such as  $2+3$  and  $5-4$ . The answers to the subtraction problems were comprised of both positive and negative numbers. All problems were taped onto a tape recorder allowing all to

participants to receive the same problems at the same pace. The participants were told that not only did they have to get the problem correct and putt the ball into the circle but they also had to hit the ball on the second number of the problem. If they met all three criteria, the participant earned a chance into the drawing. Therefore, the more times they met the criteria the more chances they gained in the drawing. Those in the non-distracted group did not perform the arithmetic problems; they just had to putt the ball into the 10 cm circle to earn chances to win the \$100.

In an effort to reduce the likelihood of inducing the participants to become more self-aware throughout the experiment by filling out a questionnaire that asked about how internally-based their thoughts are, the participants completed the private self-consciousness scale (Fenigstein, Scheier, & Buss, 1975) and the Emotional Reactivity Scale (Melamed, 1987) following the putting portion of the study. In addition, they answered questions about how often they played putt-putt or golf, if they played competitively, how distracted they felt during the task, and how much pressure they felt while they were trying to win the \$100.

After filling out the questionnaires, 36 participants, who did not receive the distraction manipulation, were told to putt 10 more balls into the 10 cm circle. During this post-performance phase there was no pressure to perform, that is, there was no prize offered for performing well. After all participants completed the experiment they were debriefed.



## Chapter 3

### *Results*

Participants were divided into four groups. Half of the participants were distracted while they putted, that is, they had to perform addition and subtraction problems. The other half of the participants were not distracted while they putted. The participants in each group were further divided into two groups based upon their scores on the self-consciousness questionnaire (Fenigstein, Scheier, & Buss, 1975). The median score of the current sample was 27. To maximize group differences in self-consciousness, individuals who scored between 25 and 29 on the private self-consciousness scale were excluded from the analysis. Participants who scored 30 or higher on this measure were labeled as having a high level of self-consciousness, and those who scored 24 or lower were labeled as having a low level of self-consciousness. This process resulted in a loss of 43 of the original 125 participants. The resultant number of participants for the four groups is shown in table 1.

Table 1

#### *Number of Participants Per Condition*

	High Self-Consciousness		Low Self-Consciousness	
	Distracted	Not Distracted	Distracted	Not Distracted
Number of Participants	20	16	21	26

*Note.* Results are reported with the median +/-2 excluded.

Although participants had varying skill levels at the outset of the experiment, their skill levels were ipsitized during the criterion phase to ensure that everyone was putting from the same level of difficulty. During this phase all participants began putting at 80 cm and were moved forward and/or backward in increments of 10 cm on the putting surface until they could consistently putt the ball into a circle with a diameter of 20 cm with an accuracy rate of 70-90%. This putting distance is referred to as performance distance. These performance distances were analyzed using a 2 (self-consciousness group) x 2 (distraction) analysis of variance. Results indicated that the ipsitizing procedure was not successful. The level of self-consciousness of each participant affected the performance distance at which the participants putted for the money (see table 2).

Table 2

*Means and Standard Deviations of Performance Distance*

	High Self-Consciousness		Low Self-Consciousness	
	Distracted	Not Distracted	Distracted	Not Distracted
Mean	46.50	43.75	35.24	40.77
Standard Deviation	2.82	3.15	2.75	2.47

*Note.* Mean performance distances are reported in cm.

More specifically, those who had a high level of self-consciousness putted from farther away than those with a low level of self-consciousness,  $F(1, 79) = 6.44, p < .05, \eta^2 = .07$ . The interaction between distraction and self-consciousness was not significant,  $F(1, 79) = 2.18, p > .05$ . Distraction was also not significant indicating that there was no

difference in putting distance between those who would be distracted during the performance phase and those who would not be distracted during the performance phase,  $F(1, 79) = .24, p > .05$ . An examination of the means in Table 2 shows that the mean of the to-be-distracted in the low self-consciousness group is lower than the other three groups. Since the two low self-conscious groups have yet to experience the distraction manipulation, there is no logical reason for this result other than a failure of random assignment. Therefore, performance distance was used as a covariate in the analysis of the performance data. An additional measure of putting experience was obtained by having participants indicate how often they played in a year where a “0” indicated that they have never played and a “6” indicated that they play more than once a week. Results indicated that self-reported putting experience was unrelated to performance distance ( $r = .01, p > .05$ ).

After the criterion phase, all participants were placed under situational pressure by informing them that they were putting for chances to win \$100. They were told that each time their ball landed in the target circle, which was reduced to 10 cm in diameter, they would earn a chance in a drawing for \$100. In other words, they were not only putting for chances to win money but they were also confronted with a more difficult task. The literature has shown that both of these conditions lead to increased pressure (Baumeister, 1984; Kimble & Rezabek, 1992). In half of the cases, as previously described, the participants were also distracted while putting during this phase. It was predicted that those who had a high level of self-consciousness would do better under pressure, overall, but when distracted they would perform much worse. Conversely, those with a low level of self-consciousness would perform poor under pressure, but when

distracted would perform much better. Two covariates were used in this analysis, emotional reactivity and the performance distance, as previously described. Emotional reactivity has been described as a tendency to react emotionally to exciting events and an inability to return to a non-aroused state shortly after the event (Melamed, 1987). It was predicted that emotional reactivity would be related to choking under pressure; therefore this variable was controlled in the analysis.

The adjusted means for a 2 (self-consciousness) x 2 (distraction) analysis of covariance (covariates emotional control, performance distance) are presented in table 3. The results did not support the prediction that those with a high level of self-consciousness would perform better under pressure, but when distracted would perform worse, nor that those with a low level of self-consciousness would perform poor under pressure, but would perform better when given a distraction. There was no interaction between distraction and level of self-consciousness,  $F(1, 77) = .04, p > .05$ . There was also no main effect for self-consciousness,  $F(1, 77) = .62, p > .05$ . In other words, there was no difference in performance among those who had a high level of self-consciousness versus those who had a low level of self-consciousness. However, there was an effect for distraction,  $F(1, 77) = 57.76, p < .05, \eta^2 = .43$ . The indication is that the distraction manipulation was effective; that is, each group of participants was negatively affected by the distraction.

Table 3

*Adjusted Means and Standard Deviations of Performance Hits in Relationship to Self-Consciousness*

	High Self-Consciousness		Low Self-Consciousness	
	Distracted	Not Distracted	Distracted	Not Distracted
Mean	6.34	11.20	6.84	12.82
Standard Deviation	3.32	3.22	3.23	3.29

*Note.* Results are reported with the median +/-2 excluded.

Those who had a low level of self-consciousness were predicted to perform better under pressure while they were distracted. This prediction did not hold to be true. Those who had a low level of self-consciousness had fewer target hits ( $M = 6.84$ ) with a distraction than without ( $M = 12.28$ ). It was also predicted that emotional reactivity would be related to how well participants would perform under pressure. More specifically, those who were able to perform well under pressure were hypothesized to have a lower level of emotional reactivity than those who performed more poorly. The analysis indicated that the covariate, emotional reactivity, was not significant indicating that there was not a relationship between emotional reactivity and performance hits,  $F(1, 77) = .74, p > .05$ . Therefore, this prediction was not supported by the data. Finally, the covariance analysis indicated performance distance was a significant covariate confirming the earlier analysis that the ipsitizing procedure was ineffective  $F(1, 77) =$

4.48,  $p < .05$ ,  $\eta^2 = .05$ ; that is, the level of self-consciousness affected the distance at which the participants putted.

Perhaps the failure to detect the predicted effect was because Fenigstein, Scheier and Buss's (1975) full self-consciousness was not appropriately conceptualized. Studies have suggested that the private self-consciousness scale could be improved by eliminating two questions and dividing it into two separate sections, self-reflectiveness (SR) and internal state awareness (ISA) (Chang, 1998). However, there has been no consensus regarding the appropriateness of the division. Anderson, Bohon and Barrington (1998) indicated that although the two other factors, SR and ISA, did have high loadings they did not feel that it was appropriate to abandon the private self-consciousness scale. However, the data of the current study were examined in light of the two factors, SR and ISA (see table 4 and 5), using emotional reactivity and performance distance as covariates for exploratory purposes.

Table 4

*Means and Standard Deviations of Performance Hits in Relationship to Self-Reflectiveness*

	High Self-Reflectiveness		Low Self-Reflectiveness	
	Distracted	Not Distracted	Distracted	Not Distracted
Mean	5.57	11.68	7.22	12.58
Standard Deviation	3.43	3.50	3.31	3.70

*Note.* Results are reported with the median +/-1 excluded.

Table 5

*Means and Standard Deviations of Performance Hits in Relationship to Internal Self-Awareness*

	High Internal Self-Awareness		Low Internal Self-Awareness	
	Distracted	Not Distracted	Distracted	Not Distracted
Mean	7.99	9.81	6.01	11.60
Standard Deviation	3.17	3.11	3.18	3.24

*Note.* Results are reported with the median +/-1 excluded.

The median of the internal self-awareness scale was 12, and the median of the self-reflectiveness scale was 9. To maximize group differences within these groups, those who scored between 11 and 13 on the internal self-awareness scale were excluded from the analysis along with those who scored between 8 and 10 on the self-reflectiveness scale. This process resulted in 63 participants in the internal self-awareness group and 74 in the self-reflectiveness group. The analysis of the subscales indicated similar trends for the subscales as for the full private self-consciousness scale. Although the analysis of the internal self-awareness subscale indicated that there was a significant interaction between this factor and distraction  $F(1, 57) = 5.19, p < .05, \eta^2 = .08$ , the detrimental effect of distraction followed the same pattern for all groupings of participants (e.g., high and low self-reflectiveness and high and low self-awareness). The effect for distraction was somewhat less severe for the internally self-aware group. There was no significant interaction between distraction and self-reflectiveness,  $F(1, 68) = 2.51, p > .05$ . There

were no main effects for self-reflectiveness,  $F(1, 68) = 1.87, p > .05$ , or internal self-awareness,  $F(1, 57) = .01, p > .05$ . Again, however, for both groups there was an effect for distraction (ISA,  $F(1, 57) = 18.63, p < .05, \eta^2 = .25$ ; SR,  $F(1, 68) = 56.15, p < .05, \eta^2 = .45$ ). There were also no effects for the covariate of emotional control (ISA,  $F(1, 57) = .02, p > .05$ ; SR,  $F(1, 68) = 1.87, p > .05$ ). The results, however, revealed that the covariate of performance distance was not significant indicating that when these new measures were used, the ipsitizing procedure was effective (ISA,  $F(1, 57) = .11, p > .05$ ; SR,  $F(1, 68) = 1.41, p > .05$ ). However, both the internal self-awareness and self-reflectiveness subscales had low reliabilities (ISA,  $\alpha = .42$ ; SR,  $\alpha = .65$ ). Overall, since the results indicated that the reliability of these subscales was low and the pattern the same as for the full-scale, there is no statistical advantage to using the self-reflectiveness and internal self-awareness subscales over the full private self-consciousness scale.

A reliability analysis was performed on the full private self-consciousness and emotional reactivity scales. The results indicated that the reliability of the self-consciousness scale was poor,  $\alpha = .65$ . The low internal consistency of this scale for these data may have been one of the main problems with this study. The reliability analysis of the emotional reactivity scale, however, was strong,  $\alpha = .83$ . However, as reported, this variable did not have a strong effect on putting performance.

In this study, pressure was manipulated during the performance phase by telling the participants that each time out of 30 putts that their ball landed in a target circle with a diameter of 10 cm they would earn one chance for a drawing of \$100. Therefore, each time they performed a putt accurately, they would earn more chances to win the money. In addition, the target that was used in the phases leading up to the performance phase



was 20 cm in diameter, so the performance phase was more difficult in addition to the pressure induced by the monetary reward. In order to assess whether or not the desired situational pressure was achieved, 36 of the participants were asked to putt at the same target without pressure, that is, without chances to win money. The effects of pressure were estimated by comparing the participants' performance phase scores, when they were under pressure, with a post-performance measure in which participants putted from the same distance and into the same surface area as the performance measure, but without pressure. First, the analysis was performed with the self-consciousness groups combined. The results indicated that there was no difference between the performances when the participants were under pressure and when they were not,  $t(35) = .44, p > .05$ . The analysis was then performed with the self-consciousness groups divided into high and low levels of self-consciousness. The results indicated that the pressure manipulation was not effective for the high,  $t(10) = .84, p > .05$ , or the low self-consciousness group,  $t(11) = .57, p > .05$  (see table 6).

Table 6

*Means and Standard Deviations of Performance Hits and Post-Performance Hits in Relationship to Self-Consciousness*

	High Self-Consciousness		Low Self-Consciousness	
	Performance Hits	Post-Performance Hits	Performance Hits	Post-Performance Hits
Mean	4.00	3.54	3.97	4.33
Standard Deviation	1.14	2.16	1.21	1.67

Participants also indicated on a scale of 1-5 how much pressure they felt while putting the final 30 putts for the \$100 where a “1” indicated that they felt no pressure at all and a “5” indicated that they felt very pressured. The mean score for level of pressure was 2.90 with a standard deviation of 1.08. There was not a significant relationship between how high the participants rated themselves as feeling pressured to win the money and how many successful target hits they made while under pressure ( $r = -.06, p > .05$ ). Since these analyses indicate that the pressure manipulation was not effective, it is difficult to determine the participants’ ability to perform well under pressure.

## Chapter 4

### *Discussion*

There were two main hypotheses for this study. The first hypothesis was that those who had a high level of self-consciousness would perform well when they were under pressure, but if they were presented with a distraction while under pressure their performance would become worse. This hypothesis was made because while is under pressure, one's attention is drawn to internal thoughts and processes. Kimble and Perlmutter (1970) suggest that when one concentrates on these internal cues while performing a task the result is often a loss of automatization of the task. However, when one is accustomed to attending to internal cues, as is the case with those with a high level of self-consciousness, they do not tend to lose the automaticity of the task because they learned the task while attending to those cues and the task is not interrupted. However, if they are distracted while under pressure, then their attention is drawn to external cues, which can cause them to lose the automaticity of the task and therefore choke. The second hypothesis was that those who had a low level of self-consciousness would perform poorly under pressure, but if they were distracted while performing under pressure, they would perform better. Those who have a low level of self-consciousness are not accustomed to attending to internal cues, which occurs while under pressure, resulting in a loss of task automatization. However, if they are distracted while under

pressure, it redirects their attention to external cues allowing them to disengage from the internal cues brought on by pressure resulting in a better performance.

The results did not support the main hypotheses. Those who had a high level of self-consciousness did not perform significantly better while under pressure without a distraction than with a distraction. The results also indicated that there was no significant effect for distraction for those with a low level of self-consciousness.

One of the reasons why the hypotheses were not supported is that the pressure manipulation was not effective. Pressure was manipulated by telling the participants during the performance phase that they would now putt for chances to win \$100 from the same distance they met criterion at, but would now putt into a smaller circle with a diameter of 10 cm. The intention was to create opportunity for performance choking. However, results indicated that this manipulation was not successful. When the number of target hits from the post-performance phase, when there was no pressure present, were compared to the number of target hits from the performance phase the results indicated that there were no differences between the two groups in terms of performance hits. Analyses were also performed in light of both high and low self-consciousness groups. Again, the difference in target hits while under pressure versus while not under pressure was not significant for either group indicating that the pressure manipulation was not effective. This ineffectiveness is the main problem of the study. Lewis and Linder (1997) have already demonstrated that low pressure does not affect performance; therefore it is not meaningful to create a condition of low pressure. One goal of the study was to evaluate the role self-consciousness plays in an individual's susceptibility to choke under pressure. Without the presence of pressure on the participants it is impossible to

determine how the participants would perform under pressure. An analysis was also conducted to find out if there was a relationship between the participants' level of self-reported pressure to win the \$100 and their performance. The results suggested that there was no relationship between these two variables. Many other studies have found that rewards do impair performance (Baumeister, 1984; Lewis & Linder, 1997). However, the nature of the reward was different from the one used in the current study. The rewards used in Baumeister's study were more tangible and contingent upon their actual behaviors compared to the current study. Baumeister offered a reward each time the participants performed better than a previously established level of performance. Comparatively, those in the current study were not guaranteed a reward based on their performance, they were simply told they could earn chances for gaining a reward. Perhaps the participants perceived this reward to be less tangible and, therefore, less likely to occur to them. This perception, in turn, would create a much lower level of pressure than if they believed a reward was likely if they performed well. In fact, many participants verbally expressed that they were not playing for the money. This attitude, however, could have been a cover-up by the participants to make themselves and the experimenter believe that winning the money was not important to them although it may have been. One way in which the pressure manipulation could have been improved is if instead of rewarding participants for performing the task correctly they were led to believe that they would be punished for performing poorly. Since the participants seemed to be interested in the extra credit they would automatically receive for participation, they could have been told that each time they missed an undisclosed number of putts they would lose one point of extra credit. Therefore, the participants would not know exactly

when they were losing extra credit. This procedure might induce a steady level of pressure throughout the experiment. The participants would then be debriefed disclosing to them the nature of the pressure manipulation and that they actually did not lose any extra credit.

Finally, there was one significant effect in the performance data- distraction. Distraction significantly affected the number of performance hits during the performance phase for both low and high self-conscious groups. This result supports the distraction theory and suggests that distraction impairs performance by directing attention to task-irrelevant cues. However, the effect distraction had on performance was not congruent with the hypotheses of the study. There was no significant interaction between level of self-consciousness and distraction. Although the direction of the results were not as predicted, the results did indicate that regardless of self-consciousness group, participants did perform significantly worse when distracted. This finding has implications for athletes of all ability levels. When an athlete is performing a task, he/she should have a narrow, external focus; that is, the athlete should concentrate on only one or two external cues, such as a single dimple on the golf ball. By having a narrow focus the athlete will be less likely to be distracted by task irrelevant cues during the task. Further, by having an external focus the athlete will not think about the internal processes of performance, resulting in a reduced likelihood of choking during the performance.

The results also did not support the secondary hypothesis that those with a low level of emotional reactivity would perform better under pressure than those with a high level of emotional reactivity. In the analysis of the performance data, the covariate of emotional reactivity was not significant, indicating that there was not a relationship

between this factor and the participants' performances. Once again, the failure of the pressure manipulation may be the underlying reason. If participants failed to experience pressure, then any differences among participants in degree of emotional reactivity would not appear.

A second problem with the study may lie in the identification of level of self-awareness. The reliability analysis of the full private self-consciousness scale for this study indicated that the internal consistency of this scale was also weak. Since there was such low reliability, the estimate of the desired variable, self-consciousness, is no longer useful because of the inclusion of other undesirable factors present when measuring this variable. This may have been one of the reasons why the results did not support the hypotheses. If a more reliable measure of self-consciousness had been used, it would have further discriminated between those scoring low and high on this trait and would have been much more indicative of the effect that different levels of self-consciousness had in the participants' ability to perform under pressure. One possible reason for the low reliability of the self-consciousness scale may lie in the reading level of the items. A number of participants indicated that they did not know the meaning of some of the words (e.g., scrutinize) in some of the items. Perhaps the participants should have been encouraged to ask for clarification.

Studies have suggested that Fenigstein, Scheier and Buss's (1975) private self-consciousness scale could be divided into two separate scales- self-reflectiveness and internal state awareness (Chang, 1998). Other studies, however, suggest that this division is inappropriate (Anderson, Bohon & Berrington, 1996). Since the primary interest of this study was to examine how situational and dispositional variables contribute to

individuals' tendency to choke under pressure, the main interest was look at how the internal state awareness subscale was related to performance. The results indicate that by isolating this variable, the findings were essentially the same. In other words, regardless of the method used to dichotomize participants (full private self-consciousness, internal self-awareness or self-reflectiveness) distraction always impaired performance contrary to the prediction that those low in self-consciousness, however defined, would benefit from distraction. In addition, both the internal self-awareness and self-reflectiveness subscales had low reliabilities indicating no overall statistical advantage to using either the internal self-awareness or self-reflectiveness subscale over the full self-consciousness scale.

A third problem lies in the ineffective ipsitizing procedure. Participants first entered the criterion phase where an attempt was made to ipsitize participant skill levels. To do this, participants putted from various distances until a distance was identified where the participant could meet a criterion of hitting between 70-90% of a set of 30 putts into a circle with a diameter of 20 cm. The goal of this procedure was to reduce the effect that ability level may have had on performance. The results indicate that this manipulation was ineffective. There was a significant difference in performance based on the distance from which people putted. An analysis was performed to find out if there was a relationship between putting performance and level of experience, as indicated by how often they play golf or putt-putt. The results indicated that there was no relationship between those who were more experienced in either of those activities than those with less experience, thus suggesting that it is not necessarily that those who had more putting experience performed better in the putting task than did those who had less experience.



The probability is that there were few people who reported that they play putt-putt or golf more than once a month. In fact, the vast majority of the participants (76.8%) play only 1-5 times per year. This finding indicates that those at different distances performed differently, but it cannot be determined that the level of putting experience was a factor. It is possible that there is a difference in ability level at golf or putt-putt that could not be assessed using only the ipsitizing procedure. It is also possible that there was a practice effect present. Those who putted from further away may have just barely made the requirement of the 70% success rate while those closer to the target may have been at the upper end of the 70-90% range because they had more practice at judging various distances.

In summary, the results did not support the hypotheses of the study. However this outcome is not an indication that the study should not be repeated. There were too many variables in this study that were poorly controlled. The results may have been very different if the manipulations had been more effective and a better measure of self-consciousness used. The low reliability of the self-consciousness scale meant that that there was not a clear distinction between the groups. It is possible, then, that the comparison was not between high and low levels of self-consciousness, but between differing levels of moderate self-consciousness thereby providing a poor test of the hypotheses. The results also indicated that the pressure manipulation was not effective. One cannot examine the influence that pressure has on performance without an adequate manipulation of pressure. Therefore, future research should develop a more effective pressure manipulation and find a more reliable way to index self-awareness.

Future research should also examine more carefully the effects of emotional control on performance even though the present results did not suggest that emotional control affected performance. It is possible that with an effective pressure manipulation, emotional control might become a significant predictor of ability to perform under pressure.

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## Appendices



**Directions: When answering, think about how you generally feel throughout the day, not just today or this week. Circle the most descriptive answer.**

Please respond to each item using the following response set:

- 0 extremely uncharacteristic  
 1 uncharacteristic  
 2 neither uncharacteristic nor characteristic  
 3 characteristic  
 4 extremely characteristic

---

1. I'm always trying to figure myself out	0	1	2	3	4
2. Generally, I not very aware of myself.	0	1	2	3	4
3. I reflect about myself a lot.	0	1	2	3	4
4. I'm often the subject of my own fantasies.	0	1	2	3	4
5. I never scrutinize myself.	0	1	2	3	4
6. I'm generally attentive to my inner feelings.	0	1	2	3	4
7. I'm constantly examining my motives.	0	1	2	3	4
8. I sometimes have the feeling that I am off somewhere watching myself.	0	1	2	3	4
9. I'm alert to changes in my mood.	0	1	2	3	4
10. I'm aware of the way my mind works when I work through a problem.	0	1	2	3	4

**Directions: Listed below are statements that describe people's behavior in reaction to various emotional events. Please circle the number that best describes or characterizes you based on the scale below.**

Please respond to each item using the following response set:

- 1 Very untypical of me  
 2 Untypical of me  
 3 Somewhat untypical of me  
 4 Somewhat typical of me  
 5 Typical of me  
 6 Very typical of me

---

1. It takes me a long time to calm down after an exciting event.	1	2	3	4	5	6
2. When something unpleasant occurs before I go out in the evening, I continue thinking about it all evening.	1	2	3	4	5	6
3. I tend to get emotional easily.	1	2	3	4	5	6
4. Whenever I get emotionally excited, I feel that the changes in my body (like blushing, quickened heart beats, etc) continue for quite a long time.	1	2	3	4	5	6
5. When something unpleasant is waiting for me the next day, it often disturbs my sleep the night before.	1	2	3	4	5	6
6. I often think how I would like to get less emotionally excited over all kinds of things.	1	2	3	4	5	6
7. When something angers me, it's hard for me to forget it and become involved in something else.	1	2	3	4	5	6
8. When I think about a forthcoming joyous occasion, I already get excited in anticipation of the occasion.	1	2	3	4	5	6
9. Even though I try, I it is really hard for me to get thoughts of pain and trouble out of my head.	1	2	3	4	5	6

**Golf Experience:**Putt-Putt/Golf Experience:

**Not counting today, how often do you play putt-putt or golf? Circle your level of experience:**

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Never Played	Played 1-5 times/yr	Play 6-11 times/yr	Play monthly	Play bimonthly	Play weekly	Play more than once a week

**Circle your level of expertise:**

I answered 0 (Never Played) above

When I play, I just play with friends or by myself for fun

I play with my friends/other people competitively, but not in tournaments

I play in tournaments

I play professionally

**How much pressure did you feel when putting the final 30 putts for the \$100.00?**

Not at all		Somewhat		Very Much So
1	2	3	4	5

**How distracted did you feel when you were putting the final 30 putts for the \$100.00?**

Not at all		Somewhat		Very Much So
1	2	3	4	5

## INFORMED CONSENT

Project Title: The Effects of Distraction and Self-Awareness on “Choking”

Investigator: Shannon K. Walker

Psychology

745-6313

**You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.**

I will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask me any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with me any questions you may have.

If you then decide to participate in the project, please sign below. You will be given a copy of this form to keep.

This study is designed to assess how long it takes for individuals to become consistent in their putting in a laboratory setting. You will perform a number of putts in an attempt to find out, in general, how many putts it takes for people to become consistent under laboratory conditions. Toward the end of the study you will fill out a few questionnaires.

There are no known risks associated with this task, but if you have any questions or concerns feel free to express them. You will earn the amount of extra credit that your professor may assign to this task and will have the possibility of earning \$100 depending on your performance on the task.

All results will remain confidential. You will be assigned an identification number and I will keep a list of names unassociated with code names for the purpose of identifying you to your professor for assigning credit you may receive. Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT  
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY  
THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD  
Dr. Phillip E. Myers, Human Protections Administrator  
TELEPHONE: (270) 745-4652

WESTERN KENTUCKY UNIVERSITY  
*Human Subjects Review Board*  
Office of Sponsored Programs  
104 Foundation Building  
270-745-4652; Fax 270-745-4211  
E-mail: [Phillip.Myers@Wku.Edu](mailto:Phillip.Myers@Wku.Edu)

In future correspondence please refer to HS02-061R, February 7, 2002

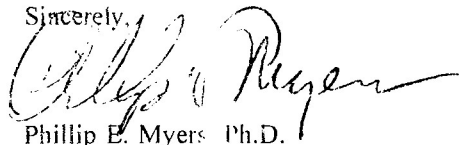
Shannon K. Walker  
1780 Normal Street  
Bowling Green, KY 42101

Dear Shannon:

Your research project, "The Effects of Distraction and Self-Awareness on 'Choking'," was reviewed by the HSRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

1. In addition, the IRB found that: (1) written informed consent will be completed by all subjects. (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.
2. Your research therefore meets the criteria of **Expedited Review and is approved.**
3. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. A Continuing Review protocol will be sent to you in the future to determine the status of the project.

Sincerely,



Phillip E. Myers, Ph.D.  
Director, OSP and  
Human Protection Administrator

- c. Human Subjects File02-061R  
Dr. Dan Roenker

HSAApprovalWalkerHS02-061R