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The Relationship Between Confidence and Performance Throughout a Competitive Season

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The Relationship Between Confidence and Performance

Throughout a Competitive Season

by

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Abstract

The importance of understanding how confidence varies across time has been encouraged by sport confidence researchers (Vealey & Chase, 2008). The purpose of this study was to examine the relationship between confidence and performance throughout an entire competitive season. Two levels of confidence consistent to team sports were analyzed. Team and coach confidence were collected through the Collective Efficacy Questionnaire for Sport (CEQS) and Coaching Efficacy Scale (CES) respectively. Two teams, women's soccer and volleyball (n=48) from a college in the western United States, completed their specific questionnaires five times throughout the season. The CEQS measured collective efficacy (team confidence) and the CES measured coaching efficacy (coach confidence) for each team. Simple linear regressions were used to determine the relationship team confidence and coaching confidence had on the success of each team. Pearson's correlation coefficients were taken to determine if team and coach confidence were connected throughout the season. Volleyball was statistically significant for both team and coach confidence at $p = 0.033$ and $p = 0.040$ respectively, with a .68 correlation coefficient. Conversely, the soccer team was not statistically significant for both team and coach confidence at $p = 0.53$ and $p = 0.93$ for each. There was, however, a strong correlation coefficient at .89 for the two levels. The findings suggest that team and coach confidence may be related and associated with the success of the team. The results also hint, through the correlation coefficients, that team and coach confidence may be connected.

Introduction

Confidence is a quality found in many aspects of society. Therefore, confidence isn't a stranger to sport, when it can be associated with qualities like mental toughness, poise, grit, belief, courage, and heart. These qualities are descriptive verbs that are constantly used when describing someone who is successful. Recent research has shown that success has affected the level of confidence and confidence can affect success (Covassin & Pero, 2004; Hays, Maynard, Thomas, & Bawden, 2007; Hays, Thomas, Maynard, & Bawden, 2009). Elite athletes have revealed that confidence affects their performance through their thoughts, behaviors, and feelings (Hays et al. 2009). Levy, Nicholls, and Polman (2010) found that subjective performance and confidence were statistically significant and positively correlated.

The world of sport recognizes the importance that confidence has on success (Vealey & Chase, 2008). Athletes are constantly evaluated on the level of confidence they have in their abilities to perform. Coaches, fans, and media constantly discuss confidence when talking about the ability to win. Confidence can affect performance when our efficacy expectation is strong and our abilities are clearly developed (Bandura, 1977). Self-confidence is a term known to more than sport, influencing Vealey (1986) to coin the term "sport-confidence."

Trait/State Distinction

Confidence has been described in two categories, trait and state. Trait-confidence can be defined as a dispositional feeling about being able to perform a task, whereas state-confidence refers to a more "in the moment" belief about being able to perform the task (Vealey, 1986). Understanding the two main concepts can play a crucial role in

understanding where a person's confidence level is at and how to help them achieve a higher level of confidence. Vealey (1986) took this idea and developed the trait-confidence (SC-trait) and state-confidence (SC-state) and developed inventories for conceptualizing sport-confidence, namely the Trait Sport Confidence Inventory and State Sport Confidence Inventory (TSCI & SSCI).

Researchers were critical of the inventories, citing that SC-trait only predicts SC-state and thereby renders it ineffective (LeUnes, p. 168). These criticisms lead Vealey to develop the Sport-Confidence Inventory (SCI) (Vealey & Knight, 2002; LeUnes, p. 168). Other inventories have been developed as well to help strengthen the research in sport-confidence, including the Carolina Sport-Confidence Inventory (CSCI) and the Competitive Orientation Inventory (COI) (Manzo, Silva III, & Mink, 2001; Vealey 1986).

Sources of Sport-Confidence

Confidence has been researched from these and other assessments to help identify how confidence plays a role in the success in sport. Understanding where confidence plays a role in sport starts with the recognition of how confidence is developed in sport. A variety of research shows that there are sources of confidence that help establish and strengthen the confidence level of a person (Bandura, 1977; Hays, Maynard, Thomas, & Bawden, 2007; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998; Wilson, Sullivan, Myers, & Feltz, 2004).

Bandura (1977) established that there were four sources of efficacy (confidence): personal accomplishments, vicarious experience, verbal persuasion, and physiological

states. Vealey et al. (1998) added onto Bandura by establishing the Sources of Sport

Confidence Questionnaire (SSCQ) and found nine sources of confidence: mastery, social

support, physical/mental preparation, coach's leadership, demonstration of ability,

vicarious experience, environmental comfort, situational favorableness, and physical self-

presentation. Wilson et al. (2004) found that a confirmatory factor analysis failed to find

the same 9-factor structure found by the SSCQ, but rather an 8-factor minus the

situational favorableness as well as fewer items. More recent research has been

conducted and found that 9 sources of confidence were instrumental in confidence:

Preparation, performance accomplishments, coaching, innate factors, social support,

experience, competitive advantage, self-awareness, and trust (Hays et al. 2007).

To look at sources of sport-confidence the research by Kingston, Lane, and

Thomas (2010) examined how the sources of sport-confidence can affect elite athletes

performance. They found a significant effect in time-to-competition; citing that

demonstration of ability, physical/mental preparation, physical self-presentation, and

situational favorableness was viewed as factors relating to sport-confidence during the

pre-competition phase. Kingston et al. (2010) suggests that understanding where an

athlete's confidence derives from before competition is essential for development of the

athlete's confidence.

Resilient Confidence

Confidence for an athlete has been previously thought to be high and stable in

order for an athlete to have success. Research in the confidence-performance relationship

found that performance affects confidence and confidence affects performance. A

change in either will elicit a change in the other, for good or bad. This concept has been

termed "confidence-performance spirals" by Lindsley, Brass, and Thomas (1995) who suggest that upward spirals might not always be beneficial; citing that success will typically occur after an athlete has been faced with failure and learns from it. Bandura and Jourden (1991) found that consistent success leads to complacency and eventually overconfidence.

Many situations can cause an athlete, team or coaching staff to stumble in their confidence. Different obstacles, like choking in sport, may lower their self-confidence level, being one of four results as described by the athletes. This, unfortunately, can be a vicious cycle because the athletes revealed that because their confidence was lowered, they expected to fail more (Hill, Hanton, Matthews, & Fleming, 2009). Failure can actually help athletes and teams by keeping them focused on development and preparation, but if athletes lack the ability to overcome setbacks or failures, then their confidence and performance could drop. Galli and Vealey (2008) found five "general dimensions" that can be used as a model to help athletes and teams develop the *resilient* characteristic needed in order to use the failures as strengths. The general dimensions were breadth and duration, agitation, personal resources, sociocultural influences, and positive outcomes.

Vealey et al. (2008) discuss the idea that confidence might need to fluctuate in order for athletes to have consistent success. For an athlete to have continued success their focus should be on where they failed thus leaded to success in the future. When an athlete focuses on where they failed during a success, it can keep their confidence from moving to overconfidence through the upward spiral (Vealey et al. 2008).

However, Bandura (1997) found that developing a "resilient" confidence is needed to weather the obstacles and problems that can arise in sport. Elite athletes described this resilient confidence as an "unshakable self-belief" as necessary for success (Jones, Bray, Mace, MacRae, & Stockbridge 2002; Bull, Shamrock, James, & Brooks 2005, Vealey et al. 2008) Having a level of confidence high enough for athletes to rise over obstacles but low enough that they understand that work can be done to better themselves might be key to having consistent success.

Confidence still must be strong, leading researchers to determine from a qualitative analysis, with a small focus group and individual interviews of elite athletes, that in order to have a "robust" sport-confidence level, the athlete(s) need to have "A set of enduring, yet malleable positive beliefs that protect against the ongoing psychological and environmental challenges associated with competitive sport." Emphasis was placed on a "set" of positive beliefs and not just one factor (Thomas, Lane, & Kingston, 2011). Understanding the need for steady, strong, and modest confidence, Vealey et al. (2008) suggests that research is needed to investigate the resiliency of athletes' confidence across time and different obstacles.

Confidence Layers

Vealey (2009) discusses how athletes' level of self-confidence is "embedded within increasingly broader layers of confidence." Athletes, teams and coaches, respectively, are levels of wide-ranging peaces of sport-confidence that assist in the development of confidence for an athlete, team, coach and the whole organization (Vealey p. 43-44). Jong, Ruyter, and Wetzels (2006) researched a potential link between employee confidence and performance and found that there was a statistically significant

"reciprocal, causal relationship." Since sport can be associated as a business, it is essential to know how different pieces of confidence affects the overall success of a team throughout a season. Doing so could strengthen the impact of consideration taken by a team, coach or organization in enhancing these mental aspects at all levels.

The Present Study

The purpose of this study was to examine confidence across a competitive season and investigate how it was connected to the performance of the teams throughout the season and if the team and coach confidence aspects are correlated. Analysis of the coaches' confidence, and teams' confidence levels was examined throughout the season. Examining the team and coach aspects of confidence across a season could indicate whether each could be associated to the other aspect of confidence, as well as their overall success or failure as a team.

Methods

Participants

The participants were a sample of 41 collegiate athletes from a university in the western part of the United States and 7 coaches from two teams. The participants included a sample of ($N = 3$) men and ($N = 45$) women. The three men sampled are coaches from the two teams. The other 4 coaches and 41 athletes are women. Of the athletes sampled, ($n = 27$) were from the women's soccer team, their age was between 18 and 21 years (19.1 +/- 1.0 years) and their average time on the team was 2.1 years (SD +/- 1.1 years). The other athletes, ($n = 14$) were from the women's volleyball team with their age between 18 and 21 years (19.6 +/- 1.2 years) and their average time on the team

was 2.5 years (SD +/- 1.0 years). Of the coaches sampled, ($n = 4$) from the soccer team, their age was between 22 and 40 years (30.8 +/- 8.6 years) and their average time on the team was 3.8 years (SD +/- 4.3 years). The other coaches, ($n = 3$) were from the volleyball team with their age between 30 and 45 years (36.3 +/- 7.8 years) and their average time on the team was 4.8 years (SD +/- 2.9 years). The ethnicity of the two teams was fairly similar. Overall, 44 where Caucasian, 2 were Pacific Islanders, 1 was Asian-American and 1 was African-American. Two athletes, one from each team, started the study and participated in the "pre" data collection, but were no longer with the team before the ¼ data collection. There answers were excluded from the analysis.

Instrumentation

General Questionnaire. The general questionnaire was designed for this study. This questionnaire was a 4-item self-report measure intending to receive the demographic information needed to complete the study. The four items inquired about demographic information (i.e. age, gender, ethnicity, year in school [year coaching at school]). It was administered only the first time during the preseason assessment for descriptive purposes.

Collective Efficacy Questionnaire for Sports. Short, Sullivan, and Feltz (2005), as a multidimensional measurement scale, introduced the Collective Efficacy Questionnaire for Sport (CEQS) (a =0.97) to determine a group or team collective efficacy. This inventory is a 20-item self-report measure using an 10-point Likert scale, 0 "*Not at All Confident*" and 9 "*Extremely Confident*." To make up the 20 items, the CEQS has 5 factors in which it measures collective efficacy; Ability (a = 0.92), Effort (a = 0.88), Persistence (a = 0.85), Preparation (a = 0.89) and Unity (a = 0.85). Adjustments were made to the instructions of the questionnaire, in this study, by explaining that the

"the upcoming game/competition" portion of the instructions were to be taken generally as all upcoming games or competitions to compensate for only collecting at the quarter points in the season. Each athlete can score from 0 to 180, which is the sum of all subscales. To get a quantitative number as to the team's collective efficacy, the mean of the sum of all subscales for each athlete represented their collective efficacy.

Coaching Efficacy Scale. To understand the level of efficacy that a coach has, Feltz, Chase, Moritz, and Sullivan (1999) developed the model known as the Coaching Efficacy Scale (a = 0.95). A 24-item scale derived from 4 factors suggested for a coach to have efficacy; Game strategy (a = 0.88), Motivation (a = 0.91), Technique (a = 0.89), Character Building (a = 0.88). An overall coaching efficacy score was obtained by calculating the mean of the sum of all subscales for all coaches.

Team/Coach Success Variable. To assess the teams' and coaches' success, obtaining the win/loss percentage of each team will be required for the evaluation. Each time data is collected; the teams' "current overall" win/loss percentage will be acquired. The final win/loss percentage will be obtained at the end with the last evaluation as well. To determine if the team is successful, the wins divided by the games played will be done to achieve a percentage score of the teams' success or failure. Anything above 50% (.500) will be considered a success, at or below 50% (.500) will be a failure.

Procedures

After the Institutional Review Board (IRB) approval, all participants signed voluntary informed written consent forms. To start the data collection, before the first game/competition of the season, the athletes were administered the Collective Efficacy Questionnaire for Sports (CEQS). The coaches were administered the Coaching Efficacy

Scale (CES) as well. The respective questionnaires were given throughout the season. The administration of the questionnaires was determined by the time between games or competitions. Each sport has different schedules and so the administering of the questionnaires was consistent between all sports. To accomplish this task, the questionnaires were given 5 times, throughout the season, for all sports (preseason, ¼ through season, ½ through season, ¾ through season, and at season's end). The questionnaires were not administered closer than 1 or 2 full days before competition to protect the team and the athletes from being uneasy before the upcoming game or competitions either physically or mentally.

Data Analysis

The two factors (team & coach confidence) were analyzed to quantify the teams' collective efficacy (confidence) from the CEQS, and the coaches' confidence from the CES. The third factor (success or failure) was compared to the first two factors through a simple linear regression analysis of team and coach confidence to each team respectively. To identify if there was a relationship between the two independent variables (team and coach confidence), the data was analyzed through a Pearson's correlation coefficient to determine the relationship of the team and coach confidence throughout the season. Cronbach alphas were calculated to determine the internal consistency of each data set.

Results

Previous to analyzing the data, Cronbach alphas were calculated to determine the internal consistency of the answers of all questionnaires from both the CEQS and CES for each data collection. An average of $a = 0.97$ (Volleyball) and $a = 0.93$ (Soccer) for the teams and an average of $a = 0.98$ (Volleyball) and $a = 0.96$ (Soccer) for the coach was

found from all five total Cronbach's alphas computed (See Table 1).

Results of the simple linear regression were done in a dual-method approach. First, in processing the data for the dependent variable win/loss, the "pre" data point was taken from the end of the previous season. Analysis found that the volleyball team was significant at $p = 0.033$ for the team and $p = 0.040$ for the coach with a moderate Pearson's correlation coefficient of $r = 0.680$. However, the soccer team was not significant with $p = 0.530$ for the team and $p = 0.935$ for the coach, but did have a convincingly strong and significant ($p < 0.05$) correlation coefficient of $r = 0.893$. Second, in processing the data for the dependent variable, the "pre" data was taken as a zero, since that is how all season's win/loss columns start. This second step was only analyzed to assess both viewpoints, however, the first method was the primary approach. Analysis found that the volleyball team was not significant at $p = 0.066$ for the team, but was significant for the coach at $p = 0.010$. The soccer team was not significant for both with $p = 0.087$ for the team and $p = 0.059$ for the coach.

Discussion

We examined the relationship that confidence has with performance throughout a season and collected team confidence (collective efficacy) and coach confidence five times throughout the season to determine if there was a significant relationship between the confidence levels and success of the teams. Previous research has demonstrated that confidence and performance has been related, however very little research has been done to systematically study the significance of the relationship between the two in a longitudinal format. Vealey and Chase (2008) suggest research in confidence across time should be considered to understand how stable confidence is throughout a period of time.

Our hypothesis was that there would be a significant relationship between confidence and performance as well as a strong correlation between the two variables, team and coach confidence. Our examination of the data found that there is some evidence that a significant relationship between confidence and performance throughout a season or a period of time. In addition, a strong link was found between team confidence and coach confidence, strengthening the hypothesis that team and coach confidence are connected.

Support was found for a connection between confidence and performance across time (See Figure 1) with a graph showing similar movement of team confidence growing with success and falling with failure (all figures have both factors changed to percentage in order to compare to performance score). The figure also shows the slopes, which represent the average rate of change from the "pre" to "final" time points. The slope serves as a vector estimating what the analysis found when it indicated that volleyball (team and coach) was statistically significant. The raw data, however, shows all three factors spike from pre to quarter points, but after that each individually drop, rise or stay constant. The only other real match is the three-quarter to final data point where they all stay fairly consistent from the three-quarter to final collections. The slopes of each line show a more consistent similar movement, which might indicate why the factors were statistically significant. These vectors are evidence that could begin to help understand how team and coach confidence is connected with performance.

In Figure 2, we see that even though there wasn't a significant linear relationship, the raw data shows some noteworthy associations. A linear relationship seems evident from the "pre" to "quarter" phase both are rising and then a sudden drop in confidence as

their success plunges. After the drop, the soccer team goes on a winning streak through the rest of the regular season and we see a constant rise in success and therefore a rise in confidence. However, the confidence in the coaching staff conflicts with the team. They have a sharp rise from pre to quarter, but no drop during their tough mid-season fall, and continue to climb in confidence, although at a lesser angle.

There is also indication (See Figure 2) of a significant linear relationship between team and coach confidence. Figure 2 shows that team confidence has a fairly similar linear line to coach confidence, explaining why they were found to be significant and have a high Pearson's correlation coefficient. The slope on each factor in figure 2 illuminates the reality of this link. Although the raw data does look different between the team and coach confidence measurements, the slope vectors show a clear relationship between team confidence and coach confidence. Figure 1 shows team and coach confidence as a moderate but not significant relationship. The slopes shown indicate the linear relationships are not quite even as team confidence grows at a sharper angle more than coach confidence. Both are still climbing which shows why they look similar enough to have a moderate correlation, but Figure 2's factors have a strong indication of a connection between team and coach confidence.

In breaking down the team and coach confidence scores (See Figures 3-6) to their individual subscales, we were able to identify how each specific subscale was answered and what, if any, outliers were present. Figures 3 and 4 each show a strong group of consistent responses that are quite uniform with the others; however, figure 3 also demonstrates that they match the win percentage strongly. Overall, between the two

teams, this might point toward each team being honest and aware of their confidence levels as a team throughout the season. Figures 5 and 6 illustrate, however, a more inconsistent set of answers between the subscales. Both are spread at the "pre" point in the season, but all do climb higher and closer by the "final" data collection. This could indicate inconsistent levels of confidence at the beginning of the season, but by the end of the season a stronger set of confidence between the coaching staff had developed.

There were a few limitations to this study that need to be identified. In preparation to complete this study, the football team was originally sought to participate. They could never be reached and had to be removed from the plans. This was a critical change to the study since the initial plan was to evaluate how gender might play a roll in confidence. Another limitation was the limited time and ability to work with the teams. Only being able to measure there confidence levels at quarter points in the season left gaps in the season, making the data take a more general role then the specific one desired. Finally, the study was done purely as a quantitative approach, looking at the relationships and correlations of the different factors.

Some suggestions for future research would be to gather teams that will allow for both genders to be part of the study. A study could also be done by having the teams complete the questionnaires before every game, within reason, thereby giving a stronger indication of exactly where the team and coach confidence levels are for each game as well as produces more data points for the quantitative analysis. Implementation of a mixed methods approach might also gain valuable insights as to what factors might be

affecting confidence, which could lead to a better understanding of what causes

confidence to fluctuate, rather than purely looking at relationships.

Conclusion

In summary, the present study aimed to understand how confidence was related to

performance throughout the course of an entire season. Evidence was established that

there might be a connection between confidence and performance as measured by the

CEQS, CES and winning percentage. Additionally, support was found for the hypothesis

that there is a correlation between team and coach confidence. These findings support

the notion that it is important for teams to understand how confidence is connected to

performance and for researchers to continue to study confidence across time in sports.

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Appendix A

Table 1 Cronbach's Alphas for all Five Data Collections							
Volleyball							
Range 1.00-9.00	Pre	Quarter	Half	3 Quarter	Final		
	Alpha	Alpha	Alpha	Alpha	Alpha	Mean	SD
Ability	0.93	0.91	0.96	0.97	0.94	0.94	0.02
Effort	0.87	0.84	0.9	0.63	0.76	0.80	0.11
Unity	0.84	0.82	0.93	0.9	0.83	0.86	0.05
Persistance	0.92	0.81	0.79	0.84	0.85	0.84	0.05
Preperation	0.91	0.88	0.92	0.89	0.89	0.90	0.02
Total CEQS	0.97	0.97	0.98	0.97	0.96	0.97	0.01
Motivation	0.87	0.95	0.62	0.95	0.99	0.88	0.13
Strategy	0.98	0.97	0.96	0.97	1	0.98	0.01
Technique	0.94	0.98	0.91	0.98	0.99	0.96	0.03
Character Building	0.92	0.38	0.95	0.92	0.97	0.83	0.22
Total CES	0.98	0.98	0.96	0.99	0.99	0.98	0.01
Soccer							
Range 1.00-9.00	Pre	Quarter	Half	3 Quarter	Final		
	Alpha	Alpha	Alpha	Alpha	Alpha	Mean	SD
Ability	0.87	0.87	0.94	0.7	0.88	0.85	0.09
Effort	0.76	0.61	0.92	0.52	0.73	0.71	0.15
Unity	0.74	0.68	0.87	0.6	0.76	0.73	0.10
Persistance	0.66	0.76	0.83	0.56	0.86	0.73	0.12
Preperation	0.79	0.72	0.9	0.8	0.8	0.80	0.06
Total CEQS	0.94	0.91	0.97	0.87	0.95	0.93	0.04
Motivation	0.96	0.97	0.96	0.99	0.99	0.97	0.02
Strategy	0.91	0.97	0.94	0.96	0.97	0.95	0.03
Technique	0.81	0.67	0.21	0.87	0.9	0.69	0.28
Character Building	0.69	0.74	0.61	0.91	0.93	0.78	0.14
Total CES	0.89	0.97	0.95	0.98	0.99	0.96	0.04

Figure 1

Volleyball

Figure 2

Soccer

Figure 3

Soccer Team Subscales

Figure 4

Volleyball Team Subscales

Figure 5

Figure 6