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How Team Culture Affects NCAA Swimming and Diving Team Performance

A Thesis Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Michael Scott Hamann
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ABSTRACT

This study applied Robert Quinn's Competing Values Framework, one of the leading cultural assessment tools, to successful NCAA swimming and diving teams to identify cultural trends among some of the NCAA's highest performing teams. Through this framework, teams were assessed to determine if cultural differences arose between the three NCAA divisions, if perennially successful teams differed culturally from those who were not, and if any one cultural element correlated with NCAA Championship placement. Notably, there were significant differences between Division I and III programs, where Division I programs reported higher "collaboration" scores, while Division III reported higher "control" scores. Additionally, programs that averaged a Top 15 NCAA finish over a 5-year span placed significantly more emphasis on competition results than those that did not. Finally, an emphasis on competition correlated with a performance boost in Division I, while higher collaboration correlated with a performance decrease in Division III.

PREFACE

The basis for this research is based in my passion for competitive swimming and diving, specifically as a former NCAA Division I swimmer and now currently as a coach, in conjunction with my undergraduate business studies at the Wharton School at the University of Pennsylvania. Presently, swimming and diving coaches, and thus their programs, are evaluated primarily on tangible results in the pool and on the boards. As such, most people identify a “great coach” as someone who has a deep understanding of technique and training, is a relentless recruiter or maximizes the use of their resources. However, I believed that team dynamics and culture also played a role in team performance. This study is a result of that belief and is the first step into a larger world of how team culture can help impact and even predict team performance.

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CHAPTER ONE

INTRODUCTION AND GENERAL INFORMATION

Each year as the NCAA coaching carousel turns, top assistants from high-level programs are hired as head coaches. These “X’s and O’s” gurus have been successful in their assistant roles, and many administrators believe this success will translate into being a successful head coach. Despite this belief, however, many top assistants disappoint when given an opportunity as a head coach. In sports like football, assistants like Lane Kiffin and Randy Shannon succeeded in coordinator roles, yet disappointed after taking over as head coaches. Examples exist in non-revenue sports as well. In swimming and diving, Rick DeMont served as the top assistant at the University of Arizona, perennially training one of the top sprint groups in the country. Yet when he was promoted to head coach, Arizona spiraled downward from a national powerhouse to an almost non-factor at the NCAA meet (Hansen, 2017).

Given their success as assistant coaches, these coaches clearly hold a deep understanding of their respective sports. So why did they fail as head coaches? While there are undoubtedly a variety of factors that may contribute to their failure, one major shift comes in their job description. Head coaches take on far greater administrative roles than their assistant coach counterparts, including the establishment and curation of team culture. Inevitably, personal values and experiences play a critical role in how an organization’s leader develops the team’s culture, and thus their management style trickles down through the entire organization. To this end, the managerial culture the head coach fosters with his or her assistant coaches and athletes has an impact on overall

team performance, and exploring organizational behavior in the sports context can shed light on how culture and performance mesh.

Competing Values Framework

In his 1983 work, *A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Analysis*, Robert Quinn outlines four distinctive types of cultures that exist in organizations: clan, adhocracy, hierarchy and result-oriented (Appendix 3). All describe a different management style fostered by the organization's leader. Each culture possesses distinctive characteristics that separate it from the others. Clan culture is focused on people, cooperation and teamwork, while hierarchy is focused on structure and clear division of power. Similarly, while adhocracy culture fosters creativity, growth and innovation, result-oriented is focused on outcomes: competition, results, profit and, in sports, winning. Through this lens, scholars and managers were able to dissect organizational behavior in a new, ground-breaking, way.

Purpose

The purpose of this study is to use Quinn's framework to identify and analyze head coach leadership styles and organization culture trends among successful NCAA Swimming and Diving programs. This management framework is applicable to a variety of organizations, including college swimming teams. Does the type of leadership exhibited by head swimming coaches influence team performance? If so, then which of the leadership style is most effective for optimal team performance? Are there certain team cultures that coaches should seek to avoid? A variety of stakeholders seek the

answers to such questions, including athletic administrators looking to hire new head coaches, current head coaches striving to maximize the performance of their teams, and young assistant coaches who hope to mature into successful head coaches.

Significance

This study is a closer look into an underdeveloped body of research on how team culture relates to NCAA swimming and diving team performance. There is significant research regarding organizational culture and its importance, but less has been done to relating to athletic team performance and even less has been done with NCAA swimming and diving. Through the inclusion of all three NCAA divisions, smaller, yet still successful schools will receive insight through this research despite being an often overlooked population in collegiate athletics research. By better understanding Quinn's theories and how they manifest in NCAA Swimming and Diving coaching, practitioners in the field will be better able to develop their own leadership styles and make more informed hires. Before identifying these trends, I will review a brief history of leadership and organization behavior theory, leadership style, current literature in high performing organizations and applications of Quinn's framework, both outside and within the sporting world.

Key Terms

Organizational Culture – “a pattern of shared basic assumptions” (Schein, 2004)

Organizational Performance- “a judgement made by an individual or group upon the

organization...on its expected activities, products, results or effects” (Morin & Audebrand, 1995)

Leadership- “the creation and management of culture” (Schein, 2004)

Perennial Power- an annually successful program, specifically those that averaged a top 15 finish at the NCAA Championships

Research Questions

With a clear role of culture in swimming organizations, we will look to answer the following questions with our research:

1. What differences exist in organizational culture across NCAA Division I, II and III within the sample?
2. What differences exist in organizational culture between “perennial powers” (those that average a top 15 finish in a 5-year period) and those that are not?
3. What relationship exists between average NCAA finish and scores in each of Quinn’s four quadrants?

CHAPTER TWO

LITERATURE REVIEW

Organizational Behavior and Sport

When delving into the field of current organizational culture and leadership, it is critical to understand the development of leadership and organizational management theory. The progression of this theory, both generally and in sport-specific contexts, lays the foundation for the present research on swim team success and organizational leadership.

Defined as “the study and practice of how to manage individual and group behavior in business, government and nonprofit settings” (Nehavandi et al., 2014), the field of organizational behavior is a leading area of business and management research and find applications from a variety of fields. Combining the theories of many social sciences, including psychology, sociology, anthropology and political science, organizational behavior provides a holistic look at organizations and their function (Nehavandi et al., 2014).

Sports organizations, from entire athletic departments to individual teams, find their own niche in the organizational behavior field. Collegiate sport organizations, which operate in an environment with multi-faceted goals including academic achievement, financial gain and on-field performance, operate in a unique area of organizational behavior. Given this unique set of goals and challenges, sport organizations “require leadership grounded in a strong understanding of topics addressed by the field of

organizational behavior,” (Macintosh & Burton, 2019, p. 5). Furthering that assertion, Fletcher and Wagstaff (2009), state “policy and strategic developments alone will not guarantee...success; to attain and sustain successful outcomes such initiatives need to be inspirationally led, effectively managed and competently executed.” Using this lens, understanding organizational culture, leadership and its impact on performance are of paramount importance when evaluating a sports organization.

Organizational Culture

Current management and leadership theory, centering on human resource management, began to emerge in the middle of the 20th century. These new management theories centered on how people, specifically managers and employees, interacted in a work environment. Fred Fiedler (1970), developed one of the first leading theories in this realm, the Contingency Model of Leadership. Fiedler centered his theory around co-worker relations. Using a metric he called the “least-preferred co-worker,” Fiedler developed a system describing leader-member relations. His model centered around work enjoyment, fulfillment and power in differing situations. desires. Rosa Pires da Cruz, Nunes and Pinheiro (2011) expand upon Fiedler’s work, asserting that leadership ability is more dependent on environment than style or ability. They concluded that there are not inherently efficient or inefficient leaders and selecting environments and adapting to them is most important for leadership effectiveness.

Additionally, Victor Vroom, a management theorist from Yale, developed Expectancy Theory in the 1971. Vroom expanded on the Contingency Model to include an evaluation of individual and firm performance in the workplace. Expectancy Theory

suggests that satisfied employees will put effort into their jobs with the expectation of reaping the rewards of those efforts. Thus, after putting in effort, positive results occur and reinforce the behavior with the employee, creating a positive feedback loop. Vroom theorized that as long as employees were motivated to believe they would succeed, they would be successful (Isaac, Zerbe & Pitt, 2001). Following the formation of both contingency theory and expectancy theory, it became clear that management style and culture significantly influence organizational performance. To further this research, Asree, Zain and Razalli sought to confirm these findings across a variety of industries. One such study found that leadership competency and organizational culture were found to be the two leading factors driving hotel revenue (Asree, Zain, Razalli, 2009). Through both of these studies, it is clear that organizational culture is vital to success in business.

Organizational Culture and Athletic Organizations

Estes and Polnick (2012) found that among university faculty members, post-tenure members published 42% less research than their pre-tenure counterparts over a three-year period. In addition to appearing in university settings, expectancy theory also manifests itself in sports contexts. Ridpath (2010) explored NCAA student-athlete academic services at Division I institutions and discovered that minority athletes and traditional revenue sport athletes (football, basketball) believed they needed academic support services to graduate more than their peers and thus utilized these services more frequently. Additionally, White and Sheldon (2013) examined player performance in the NBA and MLB, comparing production in a “contract year,” the last year on a player’s contract, versus the year prior and year after. When analyzing performances over a

several year period, White and Sheldon found that NBA players performed better in Player Efficiency Rating, points, field goal percentages, steals, blocks and rebounds in a contract year. They also found that MLB players hit for higher average, had higher slugging and on-base percentages and hit more home runs and RBIs in contract years.

Soebbing and Washington (2011) looked at NCAA Division I football win/loss over a period of almost 60 years, specifically searching for how program performance changed after a head coaching change. They discovered that in the long term, programs improved their winning percentage over a five-year span after a head coach change. Although there are certainly game strategy factors involved in such success, Soebbing and Washington argue that the integration of a new culture plays just as important of a role. This research demonstrates that team culture is strongly tied to group performance, but also can take time to develop.

In addition to the college football study by Soebbing and Washington, Fletcher and Arnold (2011), found that organizational management influenced national sporting federations in preparation for international competitions, such as the Olympics or World Cup. The head of the English National Rugby team, fresh off a Rugby World Cup victory, said: “Most importantly, we had a strong, dynamic organizational culture that fully supported our new approach. Without it, our systems would have been built on a foundation of sand and wouldn’t have weathered the mildest of storms,” (Fletcher & Arnold, 2011, p. 1). Through qualitative research and interviews, Fletcher and Arnold identified three integral components to sporting organization success: vision, operations

and people. Notably, two of the three facets relate to organizational structure and leadership, showcasing the vitality of these components in sporting environments.

In addition to studying international sport in general, Streeter and Fletcher (2016) specifically looked at swimming. In a case study centering on the advent of the high-performance center, a recently adopted strategy by several swimming federations, Streeter and Fletcher looked to identify key elements to successful national training centers. Conducted similarly to his previous study, Fletcher collected data from in-depth, semi-structured interviews to develop his model. He discovered four key factors that lead to the success of a high performance training center: leadership, people, organizational culture and performance enablers. Of the four main elements, only performance enablers, such as access to sports medicine, nutrition and technical review, did not deal with organizational culture or behavior. The authors went so far as to describe the identification and retention of athletic talent as the “holy grail” of elite sport performance, especially in swimming. Through implementation of the high-performance center model and its focus on organizational culture, Street and Fletcher suggested that national swimming federations would be able to maximize their potential on the international scene. In a similar vein, Keegan, Harwood, Spray and Lavalley (2013), specifically looked at the impact of coaching motivational climate through interviews with national-level athletes. The researchers found that coaching style matters greatly in performance in elite sport, where a controlling coach could lead to frustration, but empowering athletes can lead to success, drawing a parallel to both Transformational and Servant Leadership.

Furthering Streeter and Fletcher's work with swimming high performance centers, Cruickshank, Collins and Minten (2014) conducted interviews with several Performance Directors for British Olympic sports regarding shifting culture towards elite performance. The directors discussed how establishing such a culture requires upholding shared values, standards and practices, as well as such a culture change being a "holistic, integrated and multidirectional process (p. 117). Frontiera (2010) also explored the impacts of enacting cultural change, and through interviews MLB, NBA and NFL owners and general managers. These interviews revealed five major steps in enacting a positive culture change: identifying symptoms of a dysfunctional culture, establishing a new culture through using "my way" terminology, walking the talk, embedding a new culture deep in the organization and eventually turning the culture into "our way."

Culture of High Performing and Peak Performing Organizations

Building on the scholarship in the area of organizational behavior, it is important to discuss the importance of culture within high performing organizations. For example, Lunnenberg (2011) discussed that organizational culture greatly impacts firm performance, and that high performing organizations have a system of trust and shared control in management. Additionally, Lunnenberg found that elite organizations are action-oriented, close to the consumer and empower their employees to have autonomy and act in an entrepreneurial manner.

Furthering this, Waller (2019) delves deeper into how a high performing culture forms. Beginning with a leader or leadership team, a single belief and value system becomes integrated into the daily function of an organization. Then, the environment

“shapes the behavior for initial success,” allowing traditions, norms and relationships to be created. These factors soon become the defining factors of an organization and are eventually passed down to new employees and managers. Once this high performing culture is established, employees are involved and self-directed, while also creating an environment for organizational learning and a search for continuous improvement.

Similarly, Gilson et al. (2000) developed the “Peak Performance Organization Theory” to describe how an organization sustains optimal performance over time. Anchored in four main principles of purpose, practice, potency and performance, Gibson and his colleagues identify the importance of a key leader, one they deem an “inspirational player” (p. 296), in creating staying power for an organization. This leader is the catalyst the entire organization, setting the tone and directing each of the four main principles, leading to sustained success over time.

Additionally, Zheng, Yang and McLean (2009), sought to learn about successful cultures through HR surveys at large corporations. They discovered that a strong culture has a positive influence on knowledge management and thus organizational performance. Similarly, Tseng (2009) also discovered through surveys that organizational culture, specifically a hierarchical-based culture, improves performance in large Taiwanese firms. Additionally, cultures based on communication and trust played a key role in knowledge conversion between employees and thus, firm performance.

Leadership Theories

High Performance Theory

One main organizational leadership theory, High Performance Theory, is described as “a system of work practices that leads in some way to superior organizational performance” by Boxall and Macky (2009). The High Performance Work System (HPWS) involves three main tenants, including organizational and individual performance, work practices and systemic effects of the system. As one may expect, these factors can vary greatly within and between different industries (Boxall & Macky, 2009).

Wrapped in this theory is the ability to motivate and empower employees. Tsao, Chen, Lin and Hyde (2009) utilized questionnaires to demonstrate that HPWS served as a positive relationship moderator between firm ownership, management and low-level employees. Further, positive relationships between all organizational members led to improved performance, suggesting that the implementation of a HPWS leads to improved organizational performance. Additionally, Zhang, Phan and Zhu (2013) discovered that the HPWS not only improves relationships within the organization, but also leads higher employee satisfaction and a positive attitude towards human resource management. Finally, Patel and Conklin (2012) found through surveys that the implementation of a HPWS resulted in higher perceived employee productivity, as well as a reduction in corporate turnover.

Transformational Leadership

Another form of organizational leadership is called Transformational Leadership, defined as “charismatic, visionary and inspirational actions that influence followers to broaden their goals and perform beyond expectations” (Qu, Janssen & Shi, 2015). By implementing such a leadership style, followers are encouraged to think creatively and thus develop new and efficient processes to improve performance.

Transformational leadership has been shown to improve a variety of organizational processes. Garcia-Morales, Jimenez-Barerionuevo and Gutierrez-Gutierrez (2011) demonstrated through questionnaires sent to firm CEOs that Transformational Leadership has a positive impact on innovation, learning and firm performance, while also minimizing turnover cost. Iscan, Ersan and Naktiyok (2014) confirmed these findings by demonstrating a positive relationship between Transformational Leadership and both innovation and firm performance.

Servant Leadership

In addition to transformational Leadership, Servant Leadership is another form of leadership style present in organizations. Servant leaders “[go] beyond one’s self interest” and is “genuinely concerned with serving followers” (Van Dierendonck, 2011).

Similar to Transformational Leadership, Servant Leadership has shown to positively improve organizational performance (Peterson, Galvin & Lange, 2012). Furthermore, Choudary and Akhtar (2011) demonstrated that Servant Leadership was shown to have a positive impact on organizational learning and performance. Interestingly, however, Transformational Leadership was shown to have an even more

positive impact on learning than Servant Leadership. Additionally, Melchar and Bosco (2010) showed through interviews that Servant Leadership improved organizational stewardship and emotional healing of their employees.

Theoretical Framework

Robert Quinn's Competing Values

Although the literature supports that organizational culture matters in healthcare, business and especially sport, managers still needed a way to identify and create a culture conducive to success. While expectancy theory was one of the leading managerial frameworks in the field for over a decade, helping to guide leaders to success, managers were still missing a key component in creating culture: identifying how to create a successful culture. To remedy this issue, Quinn and Rohrbaugh (1983) developed the Competing Values Framework. Quinn and Rohrbaugh devised a study that sought to divide management and leadership styles into different categories, each defined by specific traits. In doing so, Quinn was able to fill in the void in Vroom's model: describing how to motivate employees to succeed.

Quinn divided leadership culture into four distinct quadrants: adhocracy, clan, result-oriented and hierarchy (see Figure 1). Adhocracy (innovation, growth and change focus) and result-oriented (results, data and deliverables focus) both center on measurables outside of the organization and thus fall on the "external" side of the conceptual map. Meanwhile, clan (relationships, people and cooperation focus) and hierarchy cultures (structure, order and procedure focus) are based upon intra-organizational factors and fall on the "internal" side of the scale. Quinn's organization of

the four main leadership styles pieces together the two main tenants of Contingency Theory and Expectancy Theory to identify how managers utilize their position as a leader in an organization to improve employee performance. By combining these frameworks, Quinn enabled managers to identify specific ways to create workplace culture (Quinn, Hildebrandt, Rogers, & Thompson, 1991). While revolutionary, a key piece was still missing: which of Quinn's four cultures was most effective in organizational leadership.

Applications of The Competing Values Framework

Following the introduction of his framework, researchers began testing the effectiveness of each of Quinn's four cultures in a variety of organizational settings. One such study sought to study the effectiveness of a result-oriented culture. Verbeeten and Spekle (2015) sought to evaluate public sector employee performance through the use of a results-oriented culture. They discovered that fostering a results-oriented culture can lead to improved results and performance, but that it comes at a cost. For example, other positive traits, such as employee accountability and incentive structures were not positively influenced by a results-oriented culture. This finding shows that there can be a dark side to fostering a culture focused solely on outcomes. Additionally, the authors reported that promoting attentiveness and a stricter adherence to rules and policies contributed to furthering a results-oriented culture, and thus firm performance.

In addition to looking at result-oriented culture, researchers also explored the implications of clan culture on the work environment. One such study focused on a specific type of clan culture called transformational leadership. In this style, the organization's leader works to create strong bonds with his or her subordinates, both on a

professional and personal level. This focus creates mutual feelings of respect between leaders and workers, presumably leading to improved relationships and results. In this study, which focused on an industrial plant, researchers found transformational leadership to have positive effects on both organizational learning and organizational innovation. The researchers found that these two factors were the largest drivers of firm success, as overall firm productivity increased while utilizing transformational leadership (Garcia-Morales, Jimenez-Barriaonuevo, Gutierrez-Gutierrez, 2011). Transformation leadership also is effective in sporting settings. Turnnidge and Cote (2018) found significant links between transformational leadership and group performance and development in youth sports. Specifically, coaches that employed transformation leadership saw enhanced commitment, engagement and satisfaction from their athletes, saw higher levels of self-efficacy and higher levels of trust with the coach. Additionally, Smith et al. (2012) showed positive effects of transformational leadership within British university frisbee teams. Team captains that utilized transformational leadership reported that conflict resolution was significantly more positive and utilized greater communication, while teams also exhibited more cohesive group goals.

Finally, one group of researchers looked to explore all four of Quinn's cultures at once and measure their success in a Japanese firm. Despanche, Farley and Webster Jr. (1993) found that external-oriented cultures (result-based and adhocracy) outperformed the internal-oriented cultures (clan and hierarchy). Due to this, the researchers proposed that firms focus their goals and culture more on outside forces than internal reflections, altering employee perception and enabling stronger performance. Additionally, the study

found that hierarchy culture, which focuses on structure, order and operations, was the least successful of the four.

Past research has opened many possibilities for the study of performance in the sporting world. From this research and their own experiences, many successful head coaches could likely write a book on leadership. However, viewing athletic teams and their head coaches through Quinn's Competing Values Framework has the potential to reveal the best way for head coaches to manage a team and their coaching staffs for optimal results, by discovering which style of motivation yields the best swimming results.

Through the literature review, it is clear that organizational culture matter significantly in organizational performance in a variety of capacities, including athletics and swimming. However, there is a clear gap in the literature when assessing how culture impacts NCAA Swimming and Diving team success. Using Quinn's framework, we have the ability to categorize organizational culture into one of four categories, and then asses for effectiveness.

CHAPTER THREE

MATERIALS AND METHODS

Approval to Conduct Study

This study has been approved through the University of Tennessee-Knoxville Institutional Review Board under expedited review number 18-04897-XP. The researcher's instrumentation will provide less than minimal risk to the participants (Appendix 1).

Sampling

This study utilized purposive sampling across NCAA Division I, II and III swimming and diving programs. Defined as “the deliberate choice of an informant due to the qualities the informant possesses... a nonrandom technique that does not need underlying theories or a set number of informants” (Tongco, 2007). I collected data from the men's and women's NCAA Division I, II and III swimming and diving national championships from a five-year period (2014-2018) and identified each unique team to finish Top 25 for a total of 158 teams. From these teams we used team websites to gather email contact information for a coach from each program. Though some exclusions were considered, namely those teams who had undergone a head coaching change since their most recent Top 25 finish, all teams meeting the initial criteria were included. Each member of the sample received an introductory email with the questionnaire link on January 29, 2019, as well as a reminder email on February 5, 12 and 15 before closing on February 19, 2019.

I divided the sample into multiple segments in order to best answer our research questions and for ease of data analysis post-data collection. The sample population was divided before emailing the questionnaire, categorizing each program as either Division I, II or III and whether or not they qualify as a “perennial power.”

Confidentiality

To ensure the confidentiality of all respondents, a password protected laptop computer was utilized. Only members of the research team had access to individual results. All results will be reported in aggregate or through the use of non-identifying descriptors.

Instrumentation

An adapted version of *The Competing Values Culture Assessment Tool* (Cameron & Quinn, 2011) was utilized to assess the culture values of each NCAA swimming and diving team in the sample. Developed by Robert Quinn to practically apply his Competing Values Framework, it has been recognized as one of the fifty most important models in the history of business (Cameron & Quinn, 2011).

The instrument utilizes six categories, asking participants to allocate 100 points between four options in each category. We will adapt the instrument to fit specific nuances of swimming and diving programs while maintaining the integrity of the instrument. The sample population will be tagged before distributing the questionnaire, categorizing each program as either Division I, II or III and whether or not they qualify as a “perennial power.”

The adapted instrument was created using the online questionnaire program QuestionPro. From this program, I then analyzed the data gathered in the response set. Specifically, I utilized a one-way MANOVA to analyze differences in research questions one and two, while I addressed research question three using a stepwise regression model.

Data Management

The introductory email and instrument link was sent to members of the sample on Tuesday, January 29, 2019 and remained open through Monday, February 18 2019. Reminder emails were sent to participants on February 5, 12 and 15 sent through QuestionPro.

CHAPTER FOUR

RESULTS AND DISCUSSION

Results

Sample and Descriptive Statistics

Forty-two programs fully completed the questionnaire, yielding a completed response rate of 26.5%. An additional 11 programs started but did not complete the questionnaire and thus were eliminated from the study. A total of 12 Division I program, 11 Division II programs and 19 Division III programs submitted complete surveys. Additionally, nine respondents fall into the “perennial power” sub-section of the sample, having averaged a top 15 finish at the NCAA Championship over the past five years. Thus, 33 programs fall in the “non-perennial power” sub-section. Within the sample, “collaborate” received the highest score (44.1), followed by “control” (24.4), “create” (20.0) and “compete” (17.8). Aggregated data and analysis are located in Appendix 2.

Research Question 1: What differences exist in organizational culture across NCAA Division I, II and III within the sample?

The first research question this study asked was “what differences exist in organizational culture across NCAA Division I, II and III within the sample?” Through an ANOVA test, a significant difference emerged between Division I and Division III programs on the “collaborate” score. Division I participants gave the collaborate an average of 21 points out of 100 ($M=21$, $SD=8.2$) while Division 3 schools gave collaborate an average of 29 points out of 100 ($M=29$, $SD=7.9$) [$F(2, 33)= 3.001$, $p<.05$].

Division I differed with Division III on the “control” score as well, though not significantly at a $p < .05$ level, with Division I programs exhibiting higher values. This pair being significant may not be surprising, as “collaborate” and “control” are directly competing values within Quinn’s framework. There were no significant differences found on the “create” and “compete” scores between Division I and Division III. Additionally, no significant differences were found on any of the four components between Division I and Division II, as well as between Division II and Division III. Further data analysis and on the ANOVA can be found in Table 1, Table 2 and Table 7 in the appendix.

Research Question 2: What differences exist in organizational culture between “perennial powers” (those that average a top 15 finish in a 5-year period) and those that are not?

A one-way MANOVA was conducted to determine if differences existed within Quinn’s constructs and group of top 15 team finishers and not. Within the sample, teams that averaged a Top 15 finish ($n=9$) significantly differed ($p < .05$) from programs that did not ($n=33$) on the “compete” score. Top 15 teams scored an average of 30.5 ($M=30.5, SD=3.58$) points on the compete construct while non-top 15 teams scored 20.4 ($M=20.4, SD=2.125$) demonstrating a higher emphasis placed on competition results. ($F(2,33)=5.6, p < .05$) Response scores in “control,” “create” and “collaborate” did not differ significantly between perennial powers and non-perennial powers. Further data comparing the “perennial power” differences can be found in Table 3 and Table 4 in the appendix.

Research Question 3: What relationship exists between average NCAA finish and scores in each of Quinn's four quadrants?

Data analysis revealed that throughout NCAA swimming and diving, regardless of division, score on the “collaborate” variable significantly predicted ($p < .05$) team finish at the NCAA Championships. A stepwise regression model was conducted to analyze the relationship between the four constructs and average finish placement. Using a Pearson Correlation statistic, collaboration was significantly correlated with finish ($r = .518$, $n = 42$, $p = .012$) and shown in Table 5, Table 6 and Table 8 in the appendix. Additionally, the “compete” value was negatively correlated with top 15 finish ($R = -.28$, $n = 42$, $p = .054$), also demonstrated in Table 5. However, the correlation was not strong enough to predict average placement score within the regression model across all divisions at the $p < .05$ level. Looking at each division individually, the “compete” score had a negatively correlated relationship with NCAA placement in Division I, though once again not at the $p < .05$ level, meaning championship placement improved with higher emphasis on results. The other three factors did not significantly predict championship outcome in Division I. In Division III, the “collaborate” score had a positively correlated relationship with championship placement, meaning that team finish worsened as the collaboration score improved. None of the other three variables significantly predicted NCAA finish in Division III. In Division II none of the four variables significantly predicted final placement.

Supplementary Statistical Testing

Through the data analysis, several other significant findings also arose despite not being primarily addressed in the initial research questions. For example, the data showed that there is a significant ($p < .01$) negative correlation between “control” and “collaborate,” meaning that as programs became more hierarchical in structure, focus on interpersonal relationships began to suffer, and vice versa. within NCAA Swimming and Diving programs. In addition, four national-championship winning programs, combining for eight national titles in the last five years between both genders and across multiple NCAA divisions, responded. Within this subset, “collaborate” (38.3) still constituted the largest portion of organizational culture, followed by “control” (23.7), “create” (22.1) and “compete” (15.6), suggesting that even among the highest performing NCAA programs a collaborative team culture is the most dominant. Looking deeper at this national champion subset, one program specifically stood out with a unique response set of “collaborate” (64.1), “control” (20.8), “create” (11.6) and “compete” (3.33), bucking the trend of higher “compete” scores placing higher at the NCAA Championships while also having one of the highest “collaborate” scores in the response sample.

Discussion

Research Question 1: What differences exist in organizational culture across NCAA Division I, II and III within the sample?

The first research question examined the differences in reported values between the three divisions. The data analysis found Division I and Division III programs significantly differed on the “control” and “collaborate” values within Quinn’s Competing Values Framework. Division I coaches reported significantly lower in

“collaborate” and the Division III coaches reported lower values in “control.” However, no significant differences were found between Division I and Division II, or Division II or Division III scores.

The existence of cultural differences between Division I and Division III may be expected, due to the large organizational and rule structures in place between the two NCAA divisions. Most notably, Division I programs are generally fueled by athletic scholarships and the highest performing athletes while Division III programs are unable to offer athletic scholarships to student-athletes and are better designed to cater to a more holistic student-athlete experience. With that in mind, it may be unsurprising that Division III scored higher in “collaborate,” while Division I scored higher in “control.” The control-oriented culture is categorized by hierarchical structure, rules and conformity, while a collaborative culture flows through relationships and support (Quinn and Rohrbaugh, 1983). This result could have been expected when evaluating the ethos of both Divisions I and III, as Division I on its surface appears structured and systematic with larger budgets and scholarships, while Division III athletics shift greater emphasis on development outside of practice and competition. Specifically, Division III places “highest priority on the overall quality of the educational experience” (NCAA) of all three divisions. Such an approach would lend itself to exhibiting lower levels of control over student-athletes while allowing them to pursue a myriad of other interests. When looking at Division I programs, it is likely that the athletic scholarship wields an element of control over the student-athlete, creating implicit control in addition to explicit control already emphasized by the coaching staff. Additionally, perhaps Division I student-

athletes are more pre-disposed to viewing swimming and diving in a more serious, performance-centered light, allowing for an environment where a controlling, regimented plan for swimming is welcomed. The opposite may be true in Division III, where a shorter competitive season and more holistic approach may create an environment that allows student-athletes to behave more freely. These differences are likely made by head coaches who understand the nuances of their environment, leading to differing approaches by Division. The possibility of differing coach-led cultures is supported by Gilson et. al (2000), who view the organization's leader as the key to maintaining culture and success over time. With this view, it is plausible, if not likely, that coaches in each division recognize what is needed to sustain success in their own context.

On the "collaborate" factor, Division I programs are clearly placing a higher emphasis on Quinn's other values, notably "control" and "compete," thus allowing the team-centered culture to be overlooked by coaching staffs. As mentioned earlier, the existence of athletic scholarships creates an environment of overt control and can quickly complicate team dynamics, especially when low-scholarship athletes over-perform, or high-scholarship athletes underperform. Such a situation is oftentimes frustrating for coaches who look to adjudicate scholarships as efficiently as possible, as well as for student-athletes, who look to be treated and compensated fairly for their contributions to the team. Such a situation could easily lead to a less collaborative environment, with student-athletes resenting others and coaches demonstrating open frustration with under-performing athletes. Additionally, many Division I student-athletes may be very results-focused by nature and not as concerned with developing close team bonds away from the

athletic arena, thus resulting in a stronger focus on performance than team cohesion. The opposite may be true in Division III, where programs and coaches foster a strong sense of community within their team due to a more holistic view of the Division III student-athlete. This belief allows Division III programs to uphold a collaborative team environment with a diminished emphasis on other components when compared to Division I. However, this environment may have its drawbacks, as seen in Research Question III.

Recognizing the differences between division and cultures can be of utmost importance to head coaches, especially a new head coach looking to develop a team culture. If, for example, a Division III program hires a successful Division I assistant to head its program, that coach must understand the nuances of his or her new environment, including the differences in successful organizational cultures. If this new coach attempted to implement the same philosophy and culture that was successful at the Division I level, the program may not see as much success as the new coach expected. Additionally, this information could prove to be useful to current head coaches as well seeking to improve their existing team culture. If a Division I coach employs a very controlling style, he or she may benefit from fostering more collaboration within the team, whereas a Division III coach may seek to establish more control over the team in order to better balance team culture.

Finally, one key finding is that no major differences existed between Division I and Division II, nor Division II and Division III. At a first, the lack of differences may be surprising, but there are many possible reasons for this finding. When viewed on a

continuum, NCAA Division I and III athletics as a whole are more different than similar, and Division II seems to bridge the gap between both. Division II can be viewed as a compromise between Divisions I and III, since Division II maintains athletic scholarships, like Division I, though the total number of scholarships offered is reduced. In contrast, Division II swimming and diving also has a shorter and altered competition schedule, similar to Division III. Additionally, although there are less mandated offseason restrictions than Division III, the offseason training expectations are lower than in Division I. While appearing to play a sort of compromise role between Division I and Division III swimming and diving, it is unsurprising that Division II does not differ significantly with either Division I or Division III.

Research Question 2: What differences exist in organizational culture between “perennial powers” (those that average a top 15 finish in a 5-year period) and those that are not?

The second research question focused on the nuances of teams that have had multiple successful seasons during the years for which data was collected. The data analysis demonstrated that teams that had averaged a top 15 finish over a five-year period scored highest in the “compete” value, suggesting that they place a significantly higher value on competition results than those programs not placing highly over the years. Response scores in the “control,” “collaborate” and “create” metrics did not differ. This response is consistent across all three NCAA Divisions, as all three Divisions were represented in the “Perennial Power” subset, demonstrating that an emphasis on competition results is effective at all levels of NCAA swimming and diving.

On the surface, this finding make sense in that teams that care the most about success at championship meets tend to find that success. This result also corroborates Verbeeten and Spekle's (2015) findings that fostering a results-oriented culture increased performance over time, furthering that this finding seems logical. However, the motivations behind placing a value on a competitive cultural dynamic are worth discussing further. One possibility for this result is that developing a performance-oriented culture improves performance during competitions, allowing for the highly successful programs to capitalize in the heat of the moment during competition. This may manifest itself through more intense racing during a close race or a more intense pool deck atmosphere during a championship meet, allowing for greater performances than other programs.

Another possible explanation for this finding is that a results-driven culture fosters higher intensity throughout the year, with the entire program rallying around an end-of-year performance goal as motivation. This mentality would seem to have its benefits, as a sport like swimming and diving can become especially grueling when athletes peak only once or twice per season. Additionally, coaches may seek to foster competition daily during training in an effort to teach athletes how to compete. By practicing in competition-oriented environments, athletes may become more comfortable in an intense competitive situation at the end of the season. Such a mentality would allow for better performance during difficult training, allowing for superior competition results at the end of the season.

A third possibility from this finding is that “success breeds success,” in that teams that are historically and perennially successful attract swimmers who are more results-oriented and are naturally looking to compete for team titles, and the team culture simply follows suit. This explanation seems possible, as it is rare that top recruits choose to attend schools who are not perennially competing for conference or national championships, though it is difficult to prove.

In all, this finding is likely a result of a combination of these three factors. No matter the cause, however, it is interesting and important to note that those programs who place a higher emphasis on competition results oftentimes see those results. In a practical sense, it is clear that coaches who seek to join the nation’s elite should place an emphasis on results, an approach supported by Verbeeten and Spekle (2015). Fostering this type of mentality clearly allows teams to push harder towards a common goal, both in daily training and during championship season. By allowing the team to focus its efforts in the pursuit of a championship-level performance, the athletes may come together and work for the team and accomplishing its performance goal, especially through the use of competition-based training. Using this sort of approach over time seems to create an environment where success becomes an expectation as opposed to a goal, allowing the culture to perpetuate itself over time. While there are certainly several positives to this, coaches should also be wary of potential drawbacks as well. One such warning should be to ensure that the athletes do not misconstrue personal success with team performance. In a sport like swimming and diving, where individual performances combine to result in a team score, it may be easy for athletes to lose sight of a common team mission by

focusing too much on their own performance in individual races as opposed to more team-oriented events, such as relays. Additionally, by putting an emphasis on end of year results, there is a much larger risk for disappointment if the season doesn't end as well as planned, leaving room for end-of-season cultural issues. If a results-focused team ends the season in disappointment for several years in a row, it is easy to imagine a scenario where the athletes no longer believe in each other, the coaching staff or the culture set forth by the coaches, setting up the possibility of a team breakdown and potential failure in the long-term.

Research Question 3: What relationship exists between average NCAA finish and scores in each of Quinn's four quadrants?

There were several findings regarding how each individual factor impacted the ability of teams to finish well at the NCAA Championships. In all three divisions, the "collaborate" metric positively correlated with team placement, meaning that team performance suffered as collaboration scores increased. Team placement in swimming and diving is similar to other Olympic team sports (e.g., track and field, cross country) in that a placing lower is better (i.e., 1st place, 2nd place, etc.). At the division level, Division I demonstrated that the "compete" metric correlated with success, while Division III's "collaborate" metric exhibited a significant correlation with team placement, meaning that as collaboration improved, team placement suffered. There were no significant findings for programs competing at the Division II level.

The first finding, that regardless of division, "collaboration" significantly correlates with placement, is, on its surface, perhaps unexpected. Previous findings in this

study indicated that a focus on competition results is a key component of perennially successful teams, suggesting that perhaps the “compete” metric would be an indication for predicting team success. However, when referring to Quinn’s model, “compete” and “collaborate” are opposite values in direct contradiction to one another. This directly oppositional relationship is exemplified best through the descriptive statistics, where collaboration (44.1) received the highest average response score and compete (17.1) received the lowest response score. Through this back and forth between the “compete” and “collaborate” values, it is clear that creating a balance is still key when developing a team culture. While focusing on competition results is correlated with better performance, it is also easy to imagine how an overbearing competitive culture could potentially develop into a pressure-filled environment, which in turn may inhibit success. Similarly, while collaboration is far and away the most well-represented of the four competing values, and thus plays an integral role in all teams, one could also foresee an overly-collaborative environment hindering performance by dulling the competitive edge needed to be successful. This finding is clearly multi-faceted and complicated, but coaches and teams need to realize that developing balance in a team culture is of paramount importance and overemphasizing one of the four factors could be detrimental.

When zeroing in on Division I, the “compete” metric correlates significantly with team success, meaning that team placement improves as higher values are placed on competition results. Similar to the perennial power findings, this result may not be unexpected on its surface. Division I, at its core, tends to attract athletes who place

importance on winning, competition and improvement, however these results demonstrate that relying on the innate competitiveness of the athletes may not be enough.

Fostering a culture to further fuel that competitive fire may be key to improving success at the Division I level. Interestingly, while fostering a competitive spirit may lead to success, collaboration is still the dominant culture trait among successful NCAA teams. As mentioned earlier the key to finding elite success may lie in finding the balance of prioritizing competition results while also still leaving sufficient room for the other three culture values. One reason for this may be the length and difficulty of a swim season, a sport that at the highest level requires intense, nearly year-round training. While a competitive focus may allow for teams to reach greater heights, the constant focus on the next competition and the pressure of performing well may become grueling over time. Creating a team-centered environment would allow for a more stable base for a program, and coaches could also foster a “win for the team” type of mentality, creating a hybrid of two of Quinn’s cultures.

At the Division III level, the “collaborate” score positively correlated with NCAA Championship placement ($r = .561$), meaning that as collaboration increased, team finish at the NCAA meet worsened. As mentioned earlier, Division III rules and policies tend to promote a more holistic view of the student-athlete, which in turn may naturally foster a more people-centered, collaborative culture. From a coaching perspective, furthering this culture may have diminishing, or even negative, returns, as their student-athletes may already be prone to focusing on other life factors than competition performance. As addressed in the first research question, NCAA Division III scored the highest in the

“collaborate” construct. This analysis reveals that this approach may be suboptimal for Division III programs seeking to maximize performance at the NCAA championships. By addressing this cultural difference and striking better balance between Quinn’s four values, Division III coaches may be able to mold a team culture that yields better athletic results at the NCAA championships. Once again, as mentioned earlier, the key to success likely lies in finding the balance between the four values as opposed to prioritizing one of two.

Supplementary Statistical Testing

One additional finding is that a significant negative correlation exists between “control” and “collaborate” scores. This is unsurprising, as they are opposing values in Quinn’s four-quadrant Competing Values Framework (Quinn & Rohrbaugh, 1983) when looking at how team members interact with one another. The study results support Quinn’s visual, especially when looking at Division III programs. In Division III, a more collaborative team culture correlates with worsening team performance at the NCAA Championships, so coaches instinctively have developed a more control heavy culture, as discovered when answering research question one.

Additionally, a sub-population was created following the data collection due to the responses of four-national championship winning programs. These programs, which have combined to win eight national championships across all three divisions in the last five years, followed the trend for the entire sample where “collaborate” received the highest score. These programs, however, exhibited a higher value placed on “create” and a lower emphasis on “compete” than the sample average as a secondary value, meaning

that the highest-performing programs in the sample may place a secondary emphasis on being on the cutting edge of training, recruiting and teaching techniques as a way of gaining an advantage over their competition. The lower emphasis on a “compete” is also interesting, especially when noting that teams who averaged a top-15 finish placed a significantly higher value on competition results than the rest of the sample. This finding could be a result of competition success being an unspoken norm, in which winning a national championship becomes an implicit expectation to uphold tradition, rather than an explicit goal handed down from the coaching staff. With the athletes understanding the unspoken need to continue a tradition of success, this may allow coaches to instead focus their culture development efforts on other aspects, resulting in the higher “create” value. Without the need to explicitly emphasize team performance, these programs can allocate their resources to developing other potential opportunities for success outside of competition, giving them a competitive advantage over other programs.

Within this national champion subset, one respondent had a particularly unique response set, with the “collaborate” score being among the highest of any respondent in the survey and tying for the lowest “compete” value in the entire response set. As the results have demonstrated, it is not surprising that the “collaborate” and “compete” scores have an inverse relationship, though the magnitude of the difference between the two is noteworthy. The program has a long, successful tradition of winning several national championships, and as mentioned before, the expectation of high-performance may be more of an expectation sowed in history than demanded by the coaching staff. This is also consistent with the literature on collaboration culture and specifically

transformational leadership, which centers around creating an enabling environment for elite level performance. Additionally, building a team culture anchored in support and comradery may be necessary to maintain a cohesive group of successful individuals, many of whom are highly touted recruits out of high school, each striving for individual success at both the NCAA and international level. With an environment of so many intense, results-oriented athletes, perhaps the best approach is to promote that the athletes invest in each other, as opposed to their own goals and aspirations, which may be their innate tendency. This result may also be swimming-specific, as team point-scoring in swimming and diving is a result of combined individual performances, as opposed to team sports where cooperation and communication are essential elements of the game. By creating a greater sense of team and community in a sport that is individual in its nature, this specific program may have found a key to eliciting greater overall team performance.

This example from one national championship program, however, is a notable outlier, both within the national champion subset and the population as a whole. Perhaps this program has a rare combination of circumstances in terms of academics, scholarship offerings, history and other factors that allow it to be a truly unique program within the collegiate swimming and diving landscape, since the other national champion respondents fell much more in line with the trends exhibited in the rest of the study. Therefore, practical implications for coaches may be limited when looking at this specific case in trying to apply it to their own program. It may be possible that this culture is the result of maintenance of decades of national-level success, and may be the ideal way to

manage a team with a storied history. Many coaches, however, are not fortunate enough to be coaching at such an institution, as they are limited in number. With that in mind, it is difficult to discern whether this culture is a result of program prestige, or if the program success is a result of its culture.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

General Information

This study applied Robert Quinn's Competing Values Framework, one of the leading cultural assessment tools, to successful NCAA swimming and diving teams to identify cultural trends among some of the NCAA's highest performing teams. Through this framework, significant cultural trends and differences emerged between teams and divisions.

Implications

There are a variety of significant implications for NCAA swimming and diving team head coaches from this study. One such takeaway is that regardless of division, successful teams are built on a foundation of collaboration, teamwork and trust, no matter how strong the nature of individualism exists in swimming and diving. Additionally, there are multiple key performance takeaways as well, such as that perennially successful programs place a higher emphasis on competition results, while over-emphasizing collaboration in Division III may actually inhibit performance. Finally, it is also clear that no successful team is built upon only one or two of Quinn's traits, but is rather a result of finding the optimal balance between Quinn's four values.

The findings for this study hold significant value for NCAA swimming and diving coaches and administrators because they highlight major trends in organizational culture among the elite programs in the sport. Through this research, coaches are better able to

understand how successful programs organize team dynamics to promote success and in turn may be able to better organize their own programs. Recognizing the role team culture plays in performance is a major step in broadening swimming beyond technical and training skills. By utilizing this new knowledge, coaches now have another opportunity from which to gain a competitive advantage.

Additionally, through applying Quinn's framework to NCAA swimming and diving, there is now a greater understanding of how organization dynamics impact performance across a variety of industries. These findings, such as that perennially successful teams place a higher emphasis on competition results, can help to expand the understanding of Quinn's framework in a sports setting and how athletic teams can utilize team culture to promote success. Despite some clear trends as to how Quinn's four cultures are dispersed in successful swimming and diving programs, it is important to note that all four cultures play a role in the development of a team dynamic, further reinforcing Quinn's idea of needing competing values to create a culture.

Limitations

There are several potential limitations to consider when interpreting the results of this study. One such limitation is the fairly small population, and thus response sample, size. In looking at all three NCAA divisions over a five-year period less than 150 programs fell into the sample population, creating a difficult balance between recent relevance and a large enough sample. In order to help boost the response rate, several reminder emails were sent out, as well as a willingness to share final results with survey respondents. Additionally, swimming and diving team scores are simply an aggregate of

individual points scored, so some team success, especially those finishing in the high teens or low twenties, may have been included as a “successful program” based on the accomplishments of one exceptional athlete, as opposed to a team-wide success. The “perennial power” research question helps to address this limitation, by creating a subset that demonstrated sustained success in a time span longer (5 years) than an athlete’s NCAA eligibility (4 years). Additionally, several programs in the sample underwent a head coaching change within the last five years and may have undergone a culture change with the hiring of a new staff, which was not controlled for in this study. Finally, a major limitation of this study is that the findings of this study are descriptive in nature, not predictive, and thus potentially have lessened practical implications for NCAA swimming and diving coaches and team leaders. Additionally, it is difficult to assume that all coaches would find benefit by shifting their team culture to mirror the trends found in this study. Each coach likely creates a culture that mirrors their own personality and may not effectively cultivate a culture that may seem unnatural to them.

Recommendations for Future Research

While this study has highlighted several key trends in NCAA Swimming and Diving organizational culture, there are now several areas of continued research. One such possibility would be to assess NCAA swimming and diving on the whole to determine if there are differences between the successful teams included in this study, and those who have been unable to crack the “Top 25.” A similar, competing values-driven approach could be used in such a study to identify what major differences may arise. This could be tiered into a “highly successful,” “successful” and “unsuccessful”

groups, allowing for perennially winning teams in smaller conferences to be included, despite not displaying nationally-relevant success, as was the focus in this study.

Furthering this, another interesting angle to explore is which team members play crucial roles in culture development and maintenance. It is easy to assume that the head coach plays the largest role in this culture, though there are undoubtedly others that play a key role in culture implementation. Assistant coaches and team captains are also likely players in the development to team culture, however there are likely other influencers as well. Identifying these players and how significant of a role each plays in team cultural development would help to identify how both positive and negative team cultures develop and which influencers hold the most sway over team dynamics. One such study could identify centers of leadership and cultural development, both within the athletes and on the coaching staff. Such a study would illuminate how to create and maintain culture within a team.

Additionally, one could qualitatively dive more deeply into a certain subset of the population, such as the national champion respondents, to better understand how they developed their championship culture. This study could utilize in-depth interviews with successful programs found through purposive sampling and could focus on how team culture has grown and changed over time. Such interviews could unearth how these coaches went about cultivating their team culture, how responsive the team was to culture change and how team culture helped to overcome adversity. Such a study would further our findings by demonstrating how successful teams create and maintain their culture over time.

Furthermore, it may be interesting to compare how team culture changes over time in a longitudinal study of successful programs or studying how a coaching change and culture shift helps or hinders performance over time. This type of study would help to identify how changes in team members, team captains, assistant coaches and even administration can impact team culture over time. Such a study could utilize team observation and interviews over a several-year period to determine how and why team culture evolved over time. One could also track team performance over this period of time as well.

Additional areas of research might include looking at how coaches and players perceive team culture and if differences arise within teams. Furthering this, research could be conducted to see how congruence in perceived culture between athletes and coaches impacts team performance. Overall, answering these types of questions would give coaches and administrators more concrete, actionable results than were displayed in the descriptive results of this study. Through further research, coaches would be better able to cultivate a successful team culture to create success in the future.

Conclusion

This study offers a unique insight into organizational culture within elite NCAA swimming and diving programs. Through Robert Quinn's Competing Values Framework, several key cultural trends emerged across the NCAA, while substantial differences also appeared across the NCAA's three divisions that have clear relationships to team performance. Recognizing the existence of these trends and differences is the first step in understanding the importance of the role that team culture plays in NCAA Swimming

and Diving. With these findings, it is clear that team culture and dynamics are important to performance. Further, the cultural trends of successful programs differ by context, further demonstrating that team culture plays a role in team performance. Through knowledge gained with this study, and those to come in the future, the landscape of NCAA swimming and diving can begin to incorporate the cultivation of team culture as a competitive tool, as they already have with technique and training.

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APPENDIX

Appendix One



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

January 14, 2019

Michael Scott Hamann,
UTK - Athletics - Athletics-Men-Swimming

Re: UTK IRB-18-04897-XP
Study Title: How Head Coach Culture Affects NCAA Swimming Team Performance

Dear Michael Scott Hamann:

The UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. It determined that your application is eligible for expedited review under 45 CFR 46.110(b)(1), Category 7. The IRB has reviewed these materials and determined that they do comply with proper consideration for the rights and welfare of human subjects and the regulatory requirements for the protection of human subjects.

Therefore, this letter constitutes full approval by the IRB of your application (version 1.3) as submitted, including:
Waiver of documentation of consent – will see consent cover statement at beginning of online survey

Informed Consent (2) - Version 1.0

Email Invitation - Version 1.0

Questionnaire Sample - Version 1.0

The above listed documents have been dated and stamped IRB approved. Approval of this study will be valid from 01/14/2019 to 01/13/2020.

In the event that subjects are to be recruited using solicitation materials, such as brochures, posters, web-based advertisements, etc., these materials must receive prior approval of the IRB. Any revisions in the approved application must also be submitted to and approved by the IRB prior to implementation. In addition, you are responsible for reporting any unanticipated serious adverse events or other problems involving risks to subjects or others in the manner required by the local IRB policy.

Finally, re-approval of your project is required by the IRB in accord with the conditions specified above. You may not continue the research study beyond the time or other limits specified unless you obtain prior written approval of the IRB.

Sincerely,

Appendix Two

Table 1

One Way Analysis of Variance

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
COLLABORATE	Between Groups	1329.296	2	664.648	3.492	.040
	Within Groups	7422.619	39	190.324		
	Total	8751.915	41			
COMPETE	Between Groups	11.113	2	5.557	.103	.902
	Within Groups	2103.157	39	53.927		
	Total	2114.270	41			
CONTROL	Between Groups	365.880	2	182.940	1.629	.210
	Within Groups	4268.755	38	112.336		
	Total	4634.636	40			
CREATE	Between Groups	1.004	2	.502	.015	.986
	Within Groups	1344.155	39	34.466		
	Total	1345.158	41			

Table 2

Multiple Comparisons

LSD							
Dependent Variable	(I) Custom 19	(J) Custom 19	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
COLLABORATE	1	2	-9.27778	5.75868	.115	-20.9258	2.3703
		3	-13.39708*	5.08698	.012	-23.6865	-3.1077
	2	1	9.27778	5.75868	.115	-2.3703	20.9258
		3	-4.11930	5.22677	.435	-14.6914	6.4529
	3	1	13.39708*	5.08698	.012	3.1077	23.6865
		2	4.11930	5.22677	.435	-6.4529	14.6914
COMPETE	1	2	.90985	3.06535	.768	-5.2904	7.1101
		3	1.21711	2.70780	.656	-4.2599	6.6942
	2	1	-.90985	3.06535	.768	-7.1101	5.2904
		3	.30726	2.78222	.913	-5.3203	5.9348
	3	1	-1.21711	2.70780	.656	-6.6942	4.2599
		2	-.30726	2.78222	.913	-5.9348	5.3203
CONTROL	1	2	6.26364	4.42421	.165	-2.6927	15.2200
		3	6.72870	3.94996	.097	-1.2676	14.7250
	2	1	-6.26364	4.42421	.165	-15.2200	2.6927
		3	.46507	4.05625	.909	-7.7464	8.6765
	3	1	-6.72870	3.94996	.097	-14.7250	1.2676
		2	-.46507	4.05625	.909	-8.6765	7.7464
CREATE	1	2	-.41818	2.45058	.865	-5.3750	4.5386
		3	-.20000	2.16474	.927	-4.5786	4.1786
	2	1	.41818	2.45058	.865	-4.5386	5.3750
		3	.21818	2.22423	.922	-4.2807	4.7171
	3	1	.20000	2.16474	.927	-4.1786	4.5786
		2	-.21818	2.22423	.922	-4.7171	4.2807

*. The mean difference is significant at the 0.05 level.

Table 3

Group Statistics

	PLACEMENT GROUPS	N	Mean	Std. Deviation	Std. Error Mean
COLLABORATE	1.00 TOP 15	9	37.4444	15.22493	5.07498
	2.00 LESS THAN 15	33	45.8465	14.14029	2.46151
COMPETE	1.00 TOP 15	9	22.1444	6.30842	2.10281
	2.00	33	16.6611	7.03404	1.22447
CONTROL	1.00 TOP 15	9	25.7185	8.77642	2.92547
	2.00	32	24.0703	11.35831	2.00788
CREATE	1.00 TOP 15	9	19.9444	6.88799	2.29600
	2.00	33	20.0576	5.49293	.95620

Table 4

Independent Samples Test

		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
COLLABORATE	Equal variances assumed	.032	.860	-1.555	40	.128	-8.40202	5.40151	-19.31887	2.51483
	Equal variances not assumed			-1.490	12.040	.162	-8.40202	5.64043	-20.68691	3.88287
COMPETE	Equal variances assumed	.443	.510	2.115	40	.041	5.48333	2.59288	.24293	10.72374
	Equal variances not assumed			2.253	13.944	.041	5.48333	2.43333	.26239	10.70428
CONTROL	Equal variances assumed	.898	.349	.402	39	.690	1.64821	4.10464	-6.65422	9.95063
	Equal variances not assumed			.465	16.375	.648	1.64821	3.54824	-5.85976	9.15617
CREATE	Equal variances assumed	.652	.424	-.052	40	.959	-.11313	2.18066	-4.52042	4.29415
	Equal variances not assumed			-.045	10.933	.965	-.11313	2.48715	-5.59138	5.36512

Table 5

Correlations

DIVISION			COLLABORATE	COMPETE	CONTROL	CREATE	MEAN PLACEMENT
DIVISION 1	COLLABORATE	Pearson	1	-.036	-.607*	.001	-.074
		Correlation					
		Sig. (2-tailed)		.911	.036	.999	.819
		N	12	12	12	12	12
	COMPETE	Pearson	-.036	1	-.351	-.245	-.549
		Correlation					
		Sig. (2-tailed)	.911		.264	.442	.064
		N	12	12	12	12	12
	CONTROL	Pearson	-.607*	-.351	1	-.309	.208
		Correlation					
		Sig. (2-tailed)	.036	.264		.328	.516
		N	12	12	12	12	12
CREATE	Pearson	.001	-.245	-.309	1	-.207	
	Correlation						
	Sig. (2-tailed)	.999	.442	.328		.518	
	N	12	12	12	12	12	
MEAN PLACEMENT	Pearson	-.074	-.549	.208	-.207	1	
	Correlation						
	Sig. (2-tailed)	.819	.064	.516	.518		
	N	12	12	12	12	12	
Division 2	COLLABORATE	Pearson	1	-.171	-.577	.081	-.135
		Correlation					

DIVISION		COLLABORATE	COMPETE	CONTROL	CREATE	MEAN PLACEMENT
	Sig. (2-tailed)		.615	.063	.814	.693
	N	11	11	11	11	11
COMPETE	Pearson Correlation	-.171	1	-.606*	.242	-.424
	Sig. (2-tailed)	.615		.048	.474	.194
	N	11	11	11	11	11
CONTROL	Pearson Correlation	-.577	-.606*	1	-.376	.277
	Sig. (2-tailed)	.063	.048		.255	.410
	N	11	11	11	11	11
CREATE	Pearson Correlation	.081	.242	-.376	1	.311
	Sig. (2-tailed)	.814	.474	.255		.352
	N	11	11	11	11	11
MEAN PLACEMENT	Pearson Correlation	-.135	-.424	.277	.311	1
	Sig. (2-tailed)	.693	.194	.410	.352	
	N	11	11	11	11	11
DIVISION 3 COLLABORATE	Pearson Correlation	1	-.127	-.726**	.001	.561*
	Sig. (2-tailed)		.604	.001	.997	.012
	N	19	19	18	19	19

DIVISION		COLLABORATE	COMPETE	CONTROL	CREATE	MEANPLACEMENT
COMPETE	Pearson	-.127	1	-.099	-.094	-.054
	Correlation					
	Sig. (2-tailed)	.604		.696	.703	.826
	N	19	19	18	19	19
CONTROL	Pearson	-.726**	-.099	1	-.113	-.392
	Correlation					
	Sig. (2-tailed)	.001	.696		.654	.108
	N	18	18	18	18	18
CREATE	Pearson	.001	-.094	-.113	1	.234
	Correlation					
	Sig. (2-tailed)	.997	.703	.654		.335
	N	19	19	18	19	19
MEAN PLACEMENT	Pearson	.561*	-.054	-.392	.234	1
	Correlation					
	Sig. (2-tailed)	.012	.826	.108	.335	
	N	19	19	18	19	19

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6

Model Summary

Custom 19	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	1	.518 ^a	.268	.222	13.05588

a. Predictors: (Constant), COLLABORATE

Table 7

ne-Way Analysis of Variance

ANOVA ^a							
Custom 19	Model		Sum of Squares	df	Mean Square	F	Sig.
3	1	Regression	999.476	1	999.476	5.864	.028 ^b
		Residual	2727.294	16	170.456		
		Total	3726.770	17			

a. Dependent Variable: MEANPLACEMENT

b. Predictors: (Constant), COLLABORATE

Table 8

Coefficients^a

Custom 19	Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
			B	Std. Error	Beta	t	
3	1	(Constant)	2.636	12.166		.217	.831
		COLLABORATE	.598	.247	.518	2.421	.028

a. Dependent Variable: MEANPLACEMENT

Appendix Three

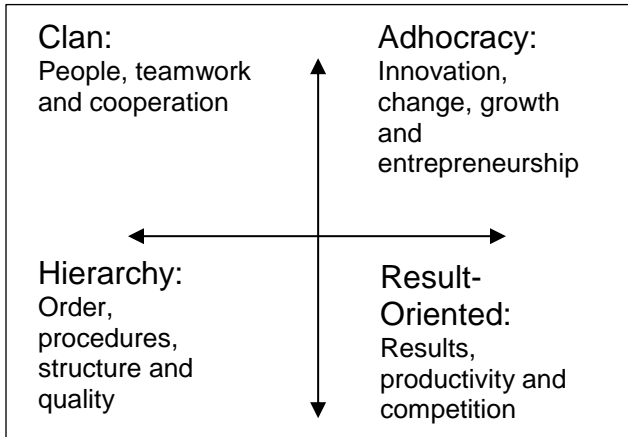


Figure 1. Towards a Model of Spatial Effectiveness. Adapted from “A Spatial Model of Effectiveness Criteria: Towards a competing Values Approach to Organizational Analysis,” by R. Quinn and J. Rohrbaugh, 1983, *Management Science*, 29(3), 363-377.

VITA

Michael Hamann was born in 1995 in suburban Chicago. After graduating high school, he completed an economics degree at The Wharton School at the University of Pennsylvania. During his time as a student he also competed and coached for the Penn NCAA Division I swimming and diving team. Following graduation, he moved to Knoxville, TN for his graduate studies in Recreation and Sport Management while also working as a graduate assistant for the Tennessee Volunteers swimming and diving program.