

**AN EXAMINATION OF INTRA-TEAM RIVALRY EFFECTS ON
INDIVIDUAL/TEAM PERFORMANCE, AND TEAM MEMBER DEVIANCE**

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ABSTRACT

Most studies on rivalry analyze the phenomenon where participants are on opposing sides in business organizations or sports teams (i.e., inter-team rivalry). Currently, the rivalry literature is expanding to examine the effects of rivalry among team members if a manager or coach creates an environment marked by intra-team rivalry. Study 1 examined team member behaviors and individual and team performance within teams (i.e., intra-team rivalry) by having 311 collegiate students recall their experiences participating on a high school athletic team. Findings indicated that intra-team rivalry was positively related to individual performance and team performance. Social comparison mediated the positive relationship between intra-team rivalry and individual performance. In Study 2 adjustments to the research model allowed further exploration of team performance and intra-team rivalry. Study 2 surveyed 240 current collegiate student athletes twice examining the same hypotheses at the 1) individual level, and 2) team level via data aggregation. Findings consistent with both surveys indicated that social comparison was positively related to intra-team rivalry; intra-team rivalry was positively related to individual deviance; and both individual performance, and motivation were positively related to team performance. Unique to Survey 1, intra-team rivalry was positively related to motivation. Unique to Survey 2, negative relationship between individual deviance and team performance. Implications for team members, leaders, and organizations are compelling.

DEDICATION

This dissertation is dedicated to my family and friends, it takes a village. First to my parents, Dr. Kenneth J. Mawritz, Sr., and Natalie Mawritz, for their continuous love and support throughout my life. I would not be where I am today without their guidance. My father, nicknamed “Happy” by his grandchildren for his playful, energetic, and kind demeanor, passed away during the first draft of my final dissertation. I have always looked up to him and will continue to do so. He set a high bar in everything he did, and I am eternally grateful for my dad, “Happy.”

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I think it's all those years wondering, what he is doing? I wonder if he is practicing this hard? I bet he shot 500 shots today and I didn't get 500 in. I didn't check the papers anymore, it didn't matter. I still want to compete, but it wasn't the same, it really wasn't.

– Larry Bird [In response to question about his relationship to Magic Johnson]

CHAPTER 1: INTRODUCTION

There is anecdotal and scientific evidence that suggests rivalry affects motivation, performance, and behavior. For instance, Nike signed Michael Jordan and built an aggressive ad campaign around him to out dual rival Reebok in the apparel industry. Likewise, GM and Ford continually release new vehicles with upgraded features to win customers and market share in the automotive industry. This phenomenon, rivalries between groups increasing motivation and performance, is present in research (Kilduff, 2014; Kilduff, Elfenbein, & Staw, 2010; Pike, Kilduff, & Galinsky, 2018). Anecdotally, rivalries may result in poor behavior, as demonstrated by the on-going battle between Uber and Lyft with employees (e.g., drivers) for each firm scheduling and canceling rides on the opposite service in transportation. In the beverage industry, Coke and Pepsi target each other in national ad campaigns over television and social media. Or in aviation industry, Airbus accusing Boeing of exaggerating plane features. In research, rivalry generates poor behavior manifesting itself as aggression (e.g., Converse & Reinhard, 2016), unethical behavior (e.g., Kilduff & Galinsky, 2017; Kilduff, Galinsky, Gallo, Reade, 2016), and Machiavellianism (e.g., Kilduff & Galinsky, 2017). Studying rivalry between organizations or between different teams is how previous research studied rivalry.

This current research examines rivalry in a new setting--within a team (i.e., intra-team rivalry). Rivalry may develop on a team either naturally via repeated competition between teammates, or rivalry may result from an individual joining a team where at least one of the team members felt rivalry toward the new member. Anecdotal evidence suggests that intra-team rivalry increases motivation and performance. For instance, Larry Bird and Magic Johnson competed against each other collegiately and professionally in basketball. They joined forces twice as professional basketball players, first in business to sell shoes for Converse as brand representatives in a successful ad-campaign, and second during the 1992 Olympics as teammates helping the United States men's basketball team win the gold medal. In ice hockey, a group of rivals from the collegiate ranks formed the 1980 United States men's team. They came together to win the 1980 Olympic gold medal. In politics, a book by Doris Kearns Goodwin entitled "Team of Rivals: The Political Genius of Abraham Lincoln," covers the true story of Abraham Lincoln appointing three rivals to his presidential cabinet. This group of intra-team rivals were able to work together to win the Civil War.

Intra-team rivalry is also prevalent in business, manifesting itself through joint ventures where two separate businesses, often competitors or rivals, create a standalone business. For instance, in the defense industry, Lockheed Martin and Boeing, rivals for more than two decades, formed Hellfire Systems, LLC. Similarly, Lockheed Martin and Raytheon, also rivals for more than two decades, formed Javelin Joint Venture. According to an August 29, 2017 press release from the United States Army, both joint ventures (Hellfire Systems, LLC and Javelin Joint Venture) were named Tier I suppliers (highest rank) for the Superior Supplier Incentive Program (SSIP). Doing so is difficult

as contractors are evaluated on “cost, schedule, technical performance, management, regulatory compliance, and small business utilization” (United States Army Press Release, 2017). In both cases, Lockheed Martin and Boeing, and Lockheed Martin and Raytheon, were able to work together on the same team and successfully manage jointly created organizations, Hellfire Systems, LLC and Javelin Joint Venture respectively. Both teams, Lockheed Martin and Boeing, and Lockheed Martin and Raytheon were motivated to join forces in order to provide quality products for their clients, something that they could not do separately.

Acquisitions (e.g., a company buying another company where the target company is often a competitor or rival) provide additional anecdotal evidence of intra-team rivalry leading to increased performance and the emergence of deviance. In mass media entertainment, Disney acquired Pixar for their capabilities in computer animation. However, prior to the acquisition, Steve Jobs (Pixar) and Michael Eisner (Disney) repeatedly clashed. Both had reputations for being tough in negotiations (Isaacson, 2011). Steve Jobs recounts “over the course of dealing with him for a decade, I came to see a dark side to him” (Isaacson, 2011, p. 437). This exposure to Eisner’s deviant side contributed to unproductive negotiations and prompted Eisner to return to the scene after his removal as CEO in an unsuccessful attempt to kill the deal with Apple (Isaacson, 2011). Motivated to work with Jobs since negotiations had stalled and Disney was experiencing a 10-year slump at the box office, new CEO Bob Iger repaired the relationship and closed the deal to acquire Pixar (Isaacson, 2011). Since the acquisition, Disney enjoys renewed success (e.g., performance) at the box office, found a way to have former competitors and rivals work together, and is routinely referenced as the prime

example of how to run an acquisition like a partnership (Rothaermel, 2017). Employee deviance also surfaced during another acquisition. Indeed, an acquaintance who worked for a private security company that was acquired by a rival commented, “Culturally, it was a tough adjustment. Those who were unable to assimilate became frustrated, and in some cases, clashed with co-workers and managers, resulting in their termination.” Three years after this acquisition employee moral remains low and turnover is high.

Rivalries are everywhere and are crucial to understand. According to Kilduff et al. (2010), in academic settings, “A student may be particularly motivated to outperform certain peers; an academic may closely monitor the citation counts of certain other scholars” (p. 943). Rivalry scenarios are also prevalent in business. For instance, Kilduff et al. (2010) state, “Within firms, employees who find themselves repeatedly competing for bonuses or promotions may come to see one another as rivals in the race for career advancement” (p. 943). Indeed, across multiple settings rivalry exists warranting further investigation.

From an academic perspective, scholars’ understanding of rivalry is still emerging. Kilduff et al. (2010) argues “Research on interindividual and intergroup competition has generally overlooked relationships between competitors, thus effectively excluding the study of rivalry, despite evidence from related literatures that suggests its importance” (p. 945). Historically, rivalry received a significant amount of attention due to its synonymous pairing with competition. This usage contributed to a cursory understanding of rivalry among scholars (Kilduff et al., 2016).

The academic study of rivalry triangulates around the management, sports, and social psychology research streams. Each discipline studies rivalry in team settings, with

a particularly strong emphasis in sports and social psychology. Management researchers, however, also study teams because of their increasing prevalence and value in industry. According to Colquitt, Lepine, and Wesson (2017), “Almost all major U.S. companies are currently using teams or planning to implement them, and that up to 50 percent of all employees in the United States work in a team” (p. 340).

Researching rivalry within a team setting provides a significant contribution to the management literature by identifying its effect on individual and team performance, individual deviance, and motivation. This also helps to explore social comparison (i.e., comparing performances) and individual cohesion (i.e., an individual being engaged with a group) as antecedents of intra-team rivalry. Further, investigating individual performance, individual deviance, and motivation as mediators between intra-team rivalry and team performance could yield significant implications for organizational dynamics and managerial practice. Specifically, these implications would be most applicable to hyper competitive team environments such as sales teams (e.g., Pharmaceutical, Medical Device, Software, etc.), product development teams (e.g., research and development), and marketing teams (e.g., digital marketing). Investigating rivalry is an important endeavor beginning to emerge.

CHAPTER 2: LITERATURE REVIEW

The research questions pursued here are, 1) what is the effect of intra-team rivalry on individual and team performance, as well as, individual deviance? And 2) what are the antecedents and mediators of intra-team rivalry? In the literature review, journals from the disciplines of management (e.g., Academy of Management Journal, Management Science), sports (e.g., Journal of Contemporary Athletics, Psychology of Sport and Exercise, Sport Management Review, Journal of Sport & Exercise Psychology, Journal of Sports Sciences.), and psychology (e.g. Psychological Assessment, Journal of Personality and Social Psychology) report studies of rivalry in various ways. For this study, I begin by distinguishing rivalry from competition by first defining each construct. With the differences clearly established, I review literature on rivalry, including its measures, antecedents, consequences, research gaps, inconsistencies, and potential. Further, I provide a summation of rivalry research across disciplines, and definitions of rivalry's mediators and consequences. The following sections contain a conceptual model and hypotheses for this study, methodology for data collection and data analysis, discussion of results, and conclusions on potential research contributions.

Competition Defined

There are numerous definitions for competition. A concise, foundational definition is provided by Mead (1937), "The act of seeking or endeavoring to gain what another is endeavoring to gain at the same time" (p. 8). Mead (1937) extends her definition of competition by stating, "Competition is behavior oriented toward a goal in which the other competitors for the goal are secondary" (p. 17). Here she is relating competition to goal achievement with the competitors focusing most of their energies on

the goal itself while devoting minor attention to other competitors. While May and Doob (1937) provide a multiple component definition, (a) individuals want to realize the same goal; (b) goal achievement is a zero-sum game; and (c) “they have relatively few psychologically affiliative contacts with one another” (p. 17). Part C of this definition highlights a significant component of competition--lack of contact with each other. This prevents individuals becoming familiar with their competitors and developing a history of competition with them. These definitions illustrate that competition is not *personal*, and that individuals are strictly competing for a goal. Deutsch (1949) defined competition “In purely situational terms, as a setting in which the goal attainment of participants is negatively linked, so that the success of one participant inherently comes at the failure of another” (as cited in Kilduff et al., 2010, p. 944). For the participants involved, this is a zero-sum game. Many of the theoretical models within the disciplines of management and social psychology define competition from this structural perspective, where individuals are against each other contending for the same scarce assets (e.g., Brown, Cron, & Slocum, 1998; Deutsch, 1949; Kilduff et al., 2016; Kohn, 1992; Porter, 1980; Scherer & Ross, 1990).

Rivalry Defined

Scholars increasingly distinguish rivalry from competition, although rivalry as a distinct construct was introduced in early social psychology literature. Mead (1937) presents the earliest identified definition of rivalry and describes it “...a behavior oriented toward another human being, whose worsting is the primary goal, and the object or position for which they competed was secondary” (p. 17). Additionally, she provides the following “hunting” example to illustrate the distinctness of rivalry: “If two men are

rivals, and when a shark appears, each one goes after it because he wants to beat his rival and be the one who got the shark, this is primarily rivalry and only secondarily competition” (p. 17). Mead’s definition offers an important distinction from competition; that is, the individual focuses on being better than a specific individual who--serves as the primary reward when they engage in competition. Back and colleagues define rivalry as a person who “strives for supremacy (affective-motivational), devaluation of others (cognitive), and aggressiveness (behavioral)... Producing Motivation to reinstate and defend one’s own superior status, in particular, when compared to perceived social rivals” (Back, Kufner, Dufner, and Gerlach, 2013, p. 1016).

Rivals have a shared history that makes them think about each other in more detail when they act competitively, with implications from previous and for future competitions (Converse & Reinhard, 2016). Consequently, past and future competitions are on the mind of the individual with the goal of favorable performances. Scholars Leckelt, Wetzel, Gerlach, and Ackerman (2018) applied a behavioral lens to define rivalry as “antagonistic aspects driven by self-defense” (p. 2), that introduces the prospect of the dark side of rivalry, something Kilduff suggested as a future research direction. This dark side of rivalry could manifest itself via unethical behaviors or deviance.

In sports literature, definitions of rivalry draw from key articles that used sports teams to study intra-team rivalry. Newton, Duda, and Yin (2000) define rivalry as, “Unequal recognition of the players, and mistakes made by the players” (p. 277). Here the coach punished players for mistakes and created an environment of frequent intra-team competitions in practice which encouraged rivalries among the players (Newton et al., 2000). Reinboth and Duda (2006) had a similar definition of “Outdoing others and

recognizing only the most talented players” (p. 281). This practice creates an enhanced sense of inter-individual comparison over time, driving the development of rivalry (Reinboth & Duda, 2006). The common element in both definitions is the behavior of the coach who shapes the atmosphere for team athletes. Research by Boardley and Jackson (2012) identified rivalry as athletes competing with one or more teammates for the same reward such as more status on the team over a season awarded by the coach.

The management literature helps synthesize both disciplines. Kilduff et al. (2010) presents three components of rivalry, first, “in addition to being relationally driven, rivalry is subjective; that is, it exists in the minds of competitors” (p. 945), second, the competitors have a history of competition, and third, “rivalry magnifies competitors’ psychological stakes independent of objective stakes, and as a result, it may lead to departures from economically rational behavior” (p. 946). These three components are the foundation for Kilduff et al.’s (2010) rivalry definition defined as “a subjective competitive relationship that an actor has with another actor that entails increased psychological involvement and perceived stakes of competition for the focal actor, independent of the objective characteristics of the situation” (p. 945). Based on this review and largely Kilduff et al.’s (2010) definition, I define rivalry *as two actors having repeated competition with each other resulting in closely decided contests, enhanced psychological engagement and value of competitive outcomes for the actor.*

There are several reasons for this definition. First, a competitive relationship must exist between both actors manifesting itself through past competitions that were numerous and had close or meaningful results. According to Kilduff et al. (2016), the idea of closely decided past contests prompts “greater counterfactual thinking,

rumination, and emotional reactions, and by creating expectations of future evenly matched competition, which has been shown to heighten psychological stakes” (Kilduff et al., 2016, p. 1511). Second, the result of the competition with specific individuals is emphasized when compared to the general population of competitors. Third, rivalry captures the relational component of competition where one actor is influenced by the presence of another actor. This relational component is expanded in later work by Kilduff et al. (2016), “There exists a relationship and history that extends beyond just a current state of conflict over tangible resources” (p. 1509). Finally, the components of rivalry’s definition - competitive relationship, enhanced psychological and competitive stakes – are likely to manifest themselves on a team. Teammates are constantly around their team, compete for resources (e.g., in business for bonuses, promotions, prestige, and in collegiate athletics for scholarships, playing time, and prestige), and these constant competitive intra-team interactions are likely to generate rivalries.

Related Constructs and Definitions

Both social comparison and individual cohesion function as mediators between intra-team rivalry and its results of individual performance, team performance, and individual deviance as shown in Figure 1. Social comparison is defined as “respondents’ comparison of their own performance with that of each of the other team members” (Lam, Van der Vegt, Walter, & Xu, 2011, p. 592). For my investigation of rivalry in team settings, I will focus on comparisons made between teammate performances. Individual cohesion is defined as “the notion of individual attraction to the group; that is, the extent to which the individual wants to be accepted by group members and remains in the group” (Carless & De Paola, 2000, p. 73). In a similar manner, individual cohesion

examines how individuals feel about their group members while at work (i.e., colleagues) and away from work (i.e., acquaintance or friend).

Consequences of intra-team rivalry as mediated by social comparison and individual cohesion are individual performance, team performance, individual deviance, and motivation. Individual performance is defined as, “How well individuals perform activities specified in their job description” (Diefendorff, Hall, Lord, & Streat, 2000, p. 252). Individual deviance, focusing specifically at the individual level, I am using the following definition: “Voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both” (Robinson & Bennett, 1995, p. 556). Team performance is defined as the frequency with which a team achieves established objectives (Hoegl & Parboteeah, 2003; Shaw, Zhu, Duffy, Scott, Shih, & Susanto, 2011). These established objectives are captured by the individuals’ perceptions of the team producing quality work, efficiency, flexibility when dealing with unexpected changes, and overall performance. Finally, motivation is defined as individuals being inherently engrossed with completing tasks (Grant, 2008). Motivation is captured by the individual’s perceptions of learning new things, receiving rewards and notoriety, and having a sense of stability or security on the team.

Model And Hypotheses

Individual and Team Performance

The possible consequences of rivalry need further investigation to add clarity to the emerging literature in this area. For instance, a study on sports teams (e.g., intra-team), found that rivalry led to decreased effort and performance of team members (Newton et al., 2000), and decreased performance of publicly traded firms (Young,

Smith, & Grimm, 1996). In contrast, most of the literature supports the idea that rivalry increases performance. At the individual level, Kilduff (2014) found that long-distance runners achieved faster race times in competitions with their rival present, versus when their rival was not present. Also, at the individual level, Neave and Wolfson (2003) found that soccer players experienced a higher increase in testosterone levels before a match with a rival versus a match against a team they identified as less of a rival.

At the team level, Kilduff et al. (2010) examined Men's NCAA basketball team's defensive performances against rival and non-rival teams, finding that defensive statistics and rivalry were positively correlated at a higher level for the rival group compared to the non-rival group. Kilduff et al. (2016) found, "Rivalry leads people to adopt a stronger performance orientation" (p. 1526). This enhanced performance orientation, existing at the inter-team level, causes individuals to want to outperform their rivals (Kilduff et al., 2016; Kilduff, 2014; Ku, Malhotra, & Murnighan, 2005; Malhotra, 2010; Neave & Wolfson, 2003). By examining this enhanced performance orientation at the individual level on the same team (e.g., intra-team), I expect rivalry to increase an actors' individual performance. With the expected increase in individual performance, rivalry may then lead to an increase in the overall performance of the team. Therefore, the following hypotheses are proposed in Study 1 and shown in Figure 1 (e.g., H1a, H1b) except for hypotheses designated as Study 2 (e.g., H3, H6, H9) shown in Figure 2:

Hypothesis 1a (H1a in Study 1 and renamed Hypothesis 3 in Study 2): Intra-team rivalry is positively related to individual performance.

Hypothesis 1b (Study 1): Intra-team rivalry is positively related to team performance.

Hypothesis 6 (Study 2): Individual performance is positively related to team performance.

Hypothesis 9 (Study 2): Individual performance will mediate the positive relationship between intra-team rivalry and team performance.

Individual Deviance

Studying the behavioral consequences of rivalry is an important avenue for future research (Back et al., 2013). In the heat of competition, some individuals will extend themselves above and beyond moral boundaries to succeed (Kilduff et al., 2010; Locke, 2007; Mussweiler & Ruter, 2003; Tesser, 1988). Previous research by Kilduff et al. (2016) examined unethical behavior as a consequence of rivalry. Individuals engaged in greater deceptive behaviors (i.e., cheating) as a result of competition in a negotiation simulation with rivals compared to non-rivals (Kilduff et al., 2016). Research has also demonstrated aggression to be a consequence of rivalry (Back et al., 2013; Leckelt et al., 2018). And in their sports team's study, Newton et al., (2000) found that rivalry led to an increase of deviant feelings (e.g., pressure/tension) and decreases in both enjoyment/interest and team satisfaction. While a study of workplace deviance by Dunlop and Lee (2004), found that deviance curtails team performance. I am examining individual deviance (i.e., behavior that threatens the well-being of a team member) as a consequence of rivalry. If rivalry is present within a team (i.e., intra-team) how will the individuals' performance, team performance, and individual deviance be affected?

Therefore, the following hypothesis is proposed in Study 1 and shown in Figure 1 (e.g., H1c) except for hypotheses designated as Study 2 (e.g., H4, H7, H10) shown in Figure 2:

Hypothesis 1c (H1c in Study 1 and renamed Hypothesis H4 in Study 2): Intra-team rivalry is positively related to individual deviance.

Hypothesis 7 (Study 2): Individual deviance is negatively related to team performance.

Hypothesis 10 (Study 2): Individual deviance will mediate the positive relationship between intra-team rivalry and team performance.

Social Comparison

Festinger (1954) defined social comparison theory as “when people evaluate their ability or performance through comparison with other people” (as cited by Kim & Glomb, 2014, p. 628). Comparison can produce mixed results as previous research by Hogg (2000) found that “social comparison may build positive self-evaluation and professional identity when employees compare favorably with their coworkers, it may also destroy their self-evaluation and professional identity when they compare unfavorably with their coworkers” (as cited by Kim & Glomb, 2014, p. 628). When this unfavorable comparison occurs Smith and Kim (2007) found that “envy arises and leads to harming behaviors against envied targets” (as cited by Kim & Glomb, 2014, p. 628). These ideas make sense, a competitive relationship results in an individual making comparisons with their team or group to gauge performance output. Indeed, a clever study by Triplett (1898) found that bicyclists had quicker times while riding together, compared to riding alone.

Research is beginning to evaluate a possible relationship between rivalry and social comparison. A study by Menon, Thompson, & Choi (2006) conceptualized rivalry as behavior of actors comparing their group stature. Menon et al. (2006) took the view that an actor’s individual and group identities are under threat during rivalry from new knowledge infusion, “They are at risk of having others acquire both tangible resources that they need for their survival and more intangible resources, such as status and recognition” (p. 1133) from the group. Indeed, research suggests that a rival’s actions (i.e., good ideas and gossip) respectively, both result in social comparison (Tesser, 1988;

Wert & Salovey, 2013). Past research examining mediating variables such as embeddedness (defined as the link between past and future competitions), parity (operationalized as the level of competitiveness of contests), similarity (defined as status of the competitor), and exposure (defined as how often the competitors meet in competition) are shown to mediate between rivalry and legacy concerns (Converse and Reinhard, 2016). These, in turn, will manifest themselves on how actors compare themselves to the group. In addition to these previously mentioned concepts, social comparisons also can be used as a mediator between intra-team rivalry, individual and team performances, and individual deviance. Therefore, the following hypotheses are proposed in Study 1 and shown in Figure 1 (e.g., H2a, H2b, H2c):

Hypothesis 2a (Study 1): Social comparison will mediate the positive relationship between intra-team rivalry and individual performance.

Hypothesis 2b (Study 1): Social comparison will mediate the positive relationship between intra-team rivalry and team performance.

Hypothesis 2c (Study 1): Social comparison will mediate the positive relationship between intra-team rivalry and individual deviance.

Individual Cohesion

Research on cohesion focuses on both individual and team levels of analysis. Team cohesion is defined by Carron, Brawley, and Widmeyer (1998) as “A dynamic process that is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives” (p. 213). In contrast, individual cohesion is defined as, “The extent to which the individual wants to be accepted by group members and remain in the group” (Carless, & De Paola, 2000, p. 73). Put another way, an individuals’ feelings about their group members while at work (i.e., colleagues) and away

from work (i.e., acquaintance or friend). The latter dimension (i.e., individual cohesion) I will be exploring as a mediator.

According to research by Boardley and Jackson (2012) examining cohesion at the individual level they found that, “It is possible that in certain circumstances cohesion may result in detrimental outcomes such as decreased prosocial teammate behavior, greater moral disengagement, and more frequent antisocial behavior” (p. 520). A circumstance where cohesion may result in poor outcomes is when some individual exhibits enhanced cohesive behaviors in trying to gain or sustain their acceptance in the group. In a study of sports teams examining individual behaviors, Hardy, Eys, and Carron (2005) explored disadvantages of cohesion and found issues such as communication problems and a reduction in social relations (e.g., actors getting overly competitive leading to issues among teammates). These disadvantages can lead to poor team performance. For instance, Nibler and Harris (2003) found that cohesion led to higher levels of conflict within a group. These findings of high levels of individual cohesion, have a relationship with rivalry and they also demonstrate a general theme of poor behavioral outcomes exhibited by individuals on a team. I argue that these outcomes will manifest themselves via individual deviance. Therefore, the following hypotheses are proposed in Study 1 and shown in Figure 1 (e.g., H3a, H3b, H3c):

Hypothesis 3a (Study 1): Individual cohesion will mediate the positive relationship between intra-team rivalry and individual performance.

Hypothesis 3b (Study 1): Individual cohesion will mediate the positive relationship between intra-team rivalry and team performance.

Hypothesis 3c (Study 1): Individual cohesion will mediate the positive relationship between intra-team rivalry and individual deviance.

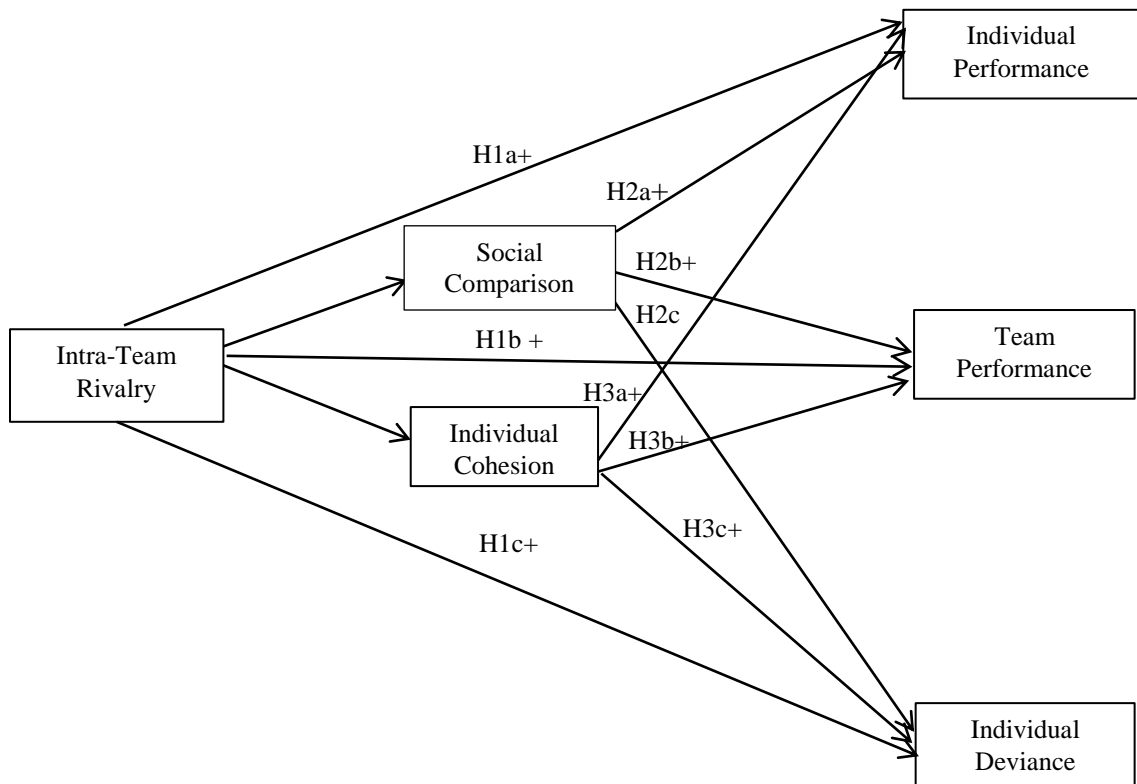


Figure 1. Study 1: Model of Intra-Team Rivalry

Rivalry Measures Compared

Both secondary data (e.g., archival sports data) used by Kilduff (2014) and Kilduff et al. (2016) to measure rivalry between teams and primary data collection methods have varied from non-electronic (e.g., in-person surveys and experiments) to electronic Amazon’s Mechanical Turk (mTurk), (e.g., Converse & Reinhard, 2016; Kilduff et al., 2016; Menon et al., 2006). Open-text questions also have been used, for example, “What is your team’s biggest rival, and who is that team’s best player” (Converse & Reinhard, 2016, p. 196). Additionally, primary data from simulations (Menon et al., 2006) and contests (Charness, Masclet, & Villeval, 2014) have also been used to measure rivalry.

Adopting a qualitative approach, Havard (2014) conducted 15 semi-structured interviews with collegiate sports fans of intercollegiate football and men's basketball. The following questions are samples from those semi-structured interviews, "Participants were asked how they felt when their favorite team won and lost contests; rival team won and lost contests, their reactions to direct competition between their favorite and rival teams" (Havard, 2014, p. 246). A quantitative approach by Havard (2016) used The Sport Rivalry Fan Perception Scale (SRFPS) to measure responses from 266 participants. The SRFPS is a 7-point 12 item Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. A SRFPS sample question, "I feel the academics where the (Rival Team) play is not very prestigious" (Havard, 2016, p. 24). The scale measured rivalry from a student-athlete and sport perspective, something that is difficult to measure or adapt to intra-team rivalry where the focus is on the individual team members.

Relatedly, Back et al.'s (2013) model of the narcissistic admiration and rivalry concept (NARC) illustrates how an individual is motivated by self-defense to behave against others who are their rivals (Back et al., 2013). Their related narcissistic admiration and rivalry questionnaire (NARQ) was used to measure these behaviors (Back et al., 2013). The NARQ is an 18-item questionnaire that utilizes a 6-point Likert-type scale with a range from 1 = not agree at all; to 6 = agree completely (Back et al., 2013). The NARQ has 6 items that measure rivalry on sports teams, one example from the rivalry scale is provided across three facets (devaluation, supremacy, and aggressiveness): (1) "Devaluation - Most people won't achieve anything; (2) Supremacy – I secretly take pleasure in the failure of my rivals; (3) Aggressiveness – I can barely stand it if another person is at the center of events" (Back et al., 2013, p. 1018). Given

the setting, (e.g., sports teams) and its measurement of intra-team relationships, the NARQ is an ideal measure for Study 1 along with additional planned studies.

Further, Kilduff (2014) developed a Likert-type scale that was also used in one of his recent studies; for instance, one item reads: “I feel rivalry towards this person” (Kilduff et al., 2016, p. 1520). This scale is also relevant because it was developed and validated by Kilduff (2014) the scholar who defined rivalry. Consequently, my measure for rivalry will be a combination of the NARQ scale (e.g., 6-items measuring rivalry) and Kilduff’s (2014) 4-item scale. The reason for the combination is to have a more comprehensive measure of rivalry by joining a sports themed scale that is adaptable to business (i.e., NARQ) with another scale adaptable for both sports and business settings (e.g., Kilduff, 2014).

CHAPTER 3: PILOT STUDY

A pilot study, Study 1, was an initial examination of my model, see Figure 1, consisting of intra-team rivalry's consequences (i.e., individual performance, team performance, and individual deviance) and mediators (i.e., social comparison, and individual cohesion). Study 1 asked respondents' questions in one survey about their experiences on a past athletic team. Sports teams were used as a proxy for business. Past research provides support for this approach (e.g., Liu, Srivastava, & Woo, 1998; Novelli, 1990; Peters, 1996; Roberts, 2011; Wolfe et al., 2005). Liu et al. (1998) found skill similarities transfer between sports and business and occur through a variety of mechanisms in business such as creating a culture of competition, communication and relationship building between management and employees, and working in groups or teams. Additional mechanisms identified in research comparing successful hockey teams to successful businesses include "accountability, discipline, solid recruiting, know the opponent, and create a championship culture" (Roberts, 2011, p. 40). Ancillary organizational units identified are marketing, health care, and strategy (Novelli, 1990), technology design (Peters, 1996), franchising business teams (Roberts, 2011), and training and development (Liu et al., 1999).

Study 1 asked respondents to recall their experience on a high school sports team. Recall was used in Study 1 because of its prior use in rivalry experiments (Converse & Reinhard, 2016; Kilduff & Galinsky, 2017; Kilduff, 2014). Also, three of the four experiments Kilduff and Galinsky (2017) conducted asked undergraduate students to recall a rival. Undergraduate business students were surveyed for two reasons. First, according to Hess (2017), business is the most popular major for collegiate undergraduate

students. Second, Ferguson (2016) found that business is a popular major selected by student-athletes. With previous literature establishing a relationship between sports and business, identified earlier, it is reasonable that undergraduate business students could have been current collegiate athletes (participation at the high school level was a certainty), intra-mural athletes (participation at the high school level is likely), or former high school athletes that did not participate in sports at the collegiate level. Indeed, sports and business intersect, providing support for surveying undergraduate business students for the initial examination of my model.

Study 1: Rivalry Recollections On High School Sports Teams

Methodology

I began by exploring the relationships between intra-team rivalry and performance at individual and team levels (Hypotheses 1a-1b), deviance between individuals (Hypothesis 1c), and the mediators of social comparison (Hypotheses 2a-2c) and individual cohesion (Hypotheses 3a-3c) between intra-team rivalry, performance, and deviance in a real-world context where respondents recalled a high school athletic team experience. Testing the hypotheses in this setting was done since, according to 2016 United States Census Data, 90% of the students enrolled in their senior year of high school were between the ages of 16-18. The mean age for respondents in Study 1 was 19.62 years old, thus, I could be confident they were operating within a reasonable timeframe for recall.

Sample

Study participants were students attending collegiate business schools accredited by the Association to Advance Collegiate Schools of Business (AACSB). Emails were

sent to colleagues at two eastern U.S. business schools. Colleagues included adjuncts, associate professors, clinical professors and the Director of General Business Studies. Access was requested to multiple sections of General Business and Organizational Behavior. The author then coordinated the date and time to administer the survey with each professor. A total of ten (six General Business, one Organizational Behavior, two Strategy, and one Operations Management) classes were surveyed between both universities. Both sections of Strategy were the authors. A total of 311 surveys were administered to college students, $M = \text{mean}$ (60% male, $M = 19.90$ years old, $M = 8.21$ total years playing their team sport; 40% female, $M = 19.34$ years old, $M = 6.22$ total years playing their team sport), and in some cases not all survey items were answered. Incomplete surveys were discarded bringing the total number of surveys down to 298. Surveys were filled out on campus during class time. This survey was only for students that participated in high school athletics. The author asked students to recall a high school athletic team experience as they filled out the paper survey. See Table 1 for the complete list of items used to measure each construct. Respondents answered 46 Likert-type questions followed by eight demographic questions.

Independent Variable: Intra-Team Rivalry Measure

The independent variable was measured by combining two scales. First, a rivalry scale adapted from Kilduff (2014), and second, a rivalry scale adapted from Back et al. (2013) was used. The phrase “With one or more people on my athletic team” was added to the beginning of each item in this combined scale. Participants read the items and responded using a 7-point scale 1 (not at all) to 7 (very much). The original scale from Back et al. (2013), used a 6-point format, 1 (not agree at all) to 6 (agree completely).

This was changed to the 7-point format to keep the survey consistent and avoid participant confusion. Example items included, with one or more people on my athletic team, “I share similar characteristics and attributes” (Kilduff, 2014, p. 946), and with one or more people on my athletic team, “I enjoy it when another person is inferior to me” (Back et al., 2013, p. 1018). Reported reliabilities for the 4-item scale by Kilduff (2014) was Cronbach’s $\alpha = .86$, and for the 6-item scale by Back et al. (2013) was Cronbach’s $\alpha = .80$.

Mediating Variable: Social Comparison Measure

This mediator variable was measured by adapting a social comparison scale developed by Gibbons and Buunk (1999) by adding “With people on my athletic team I” to the beginning of each item. In addition, general language was changed to athletic language, making the items more applicable to respondents (i.e., “life” changed to “team or game performance” etc.). Participants read the items and responded using a 7-point scale 1 (I strongly disagree) to 7 (I strongly agree). The original scale was 1 (I strongly disagree) to 5 (I strongly agree). However, the scale was changed to the 1 to 7 format to avoid participant confusion and to have consistency of results. An example item, “With people on my athletic team I always pay a lot of attention to how I do things compared with how others do things” (adapted from Gibbons & Buunk, 1999). Reported reliability for the 10-item scale by Gibbons and Buunk (1999) was Cronbach’s $\alpha = .83$.

Mediating Variable: Individual Cohesion Measure

This mediation variable was measured based on an 18-item scale developed by Widmeyer, Brawley, and Carron (1985). I used a 10-item adapted version from Carless and De Paola (2000) by adding “I feel that people on my athletic team” to the beginning

of each item. In addition, business language was changed to athletic language, making the items more applicable to respondents (i.e., “work hours” changed to “practice hours,” etc.). Athletes read the items and responded using a 7-point scale 1 (strongly disagree) to 7 (strongly agree). The original scale was 1 (strongly disagree) to 9 (strongly agree), the scale was changed to the 1 to 7 format to avoid participant confusion and to have consistency of results. An example item, “I feel that people on my athletic team would like to spend time together outside of practice hours” (adapted from Carless et al., 2000, p. 81). Reported reliability for the 10-item scale by Carless and De Paola (2000) was Cronbach’s $\alpha = .73$.

Dependent Variable: Individual Performance Measure

This dependent variable was measured by a performance scale adapted from Kohli, Shervani, and Challagalla (1998) by changing business titles and language to athletic titles and language (i.e., “sales people” changed to “Teammates” and “Supervisor” to “Coach,” etc.). Participants read the items and responded using a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). The original scale was 1 (strongly disagree) to 5 (strongly agree); however, the scale was changed to the 1 to 7 format to avoid participant confusion and to have consistent results. An example item, “I spend a lot of time thinking about how my performance compares with that of other teammates” (Kohli et al., 1998, p. 272). Reported reliability for the 5-item scale by Kohli et al., (1998) was Cronbach’s $\alpha = .72$.

Dependent Variable: Team Performance Measure

This dependent variable was measured by a 7-item scale originally developed by Sparrowe, Liden, Wayne, and Kraimer’s (2001). I used an adapted version from Shaw et

al., (2011) that was 4-items. I added “I believe that my athletic team” to the beginning of each item. In addition, business language was changed to athletic language, making the items more applicable to respondents (i.e., “work” changed to “practice time”).

Participants read the items and responded using a 7-point scale 1 (strongly disagree) to 7 (strongly agree). The original scale was 1 (very poor) to 7 (outstanding). The scale was changed to the 1 to 7 format to avoid participant confusion, to make the questions more readable to participant circumstances, and to have consistency of results so the studies could be more easily compared (i.e., athletic setting to business world settings). An example item from Sparrowe et al., (2001), “I believe that my team gets work done efficiently” (as cited in Shaw et al., 2011, p. 394). To be more applicable the aforementioned question was adapted, “I believe that my athletic team gets work done efficiently” (i.e., during practices and team meetings). Reported reliability for the 4-item scale by Shaw et al., (2011) was Cronbach’s $\alpha = .91$.

Dependent Variable: Individual Deviance Measure

This dependent variable was measured by adapting a deviance scale developed by Bennett and Robinson (2000) by adding either “I observed someone on my athletic team” or “I heard someone on my athletic team” to the beginning of each item. In addition, business language was changed to athletic language, so the items would be more applicable to respondents (i.e., “work” changed to “team events” etc.). Team events were defined as practices, meetings (i.e., film meetings, general team meetings, etc.), during scrimmages, travel and lodging activity both to and from competitions, and during games. Participants read the items and responded using a 7-point scale 1 (strongly disagree) to 7 (strongly agree). The original scale was 1 (never), 2 (once a year), 3 (twice

a year), 4 (several times a year), 5 (monthly), 6 (weekly), 7 (daily) 9 (strongly agree), and the scale was changed to the 1 to 7 format to avoid participant confusion and to have consistency of results so the studies could be more easily compared (i.e., athletic setting to business world setting). Additionally, the scale was changed to account for the offseason (i.e., timeframe when athletes practice and train away from the team usually 3-4 months). The original scale was meant for fulltime employees that see each other year-round. An example item, “I observed someone on my athletic team being made fun of during team events” (adapted from Bennett & Robinson, 2000, p. 360). Reported reliability for the 7-item scale by Bennett and Robinson (2000) was Cronbach’s $\alpha = .78$.

Control Variables: Demographic Information Measure

The following demographic information was collected at the end of the survey (see Table1). Tenure in high school (e.g., years) playing your sport and with the coach, total years playing your sport, list sport of recall, gender, class standing (e.g., first-year, sophomore, junior, or senior), age, and race. Generally, these variables allow for additional comparisons between study samples. Collecting the variable of tenure with sport team is consistent with prior research (e.g., Converse & Reinhard, 2016) and consistent with repeated competition, a pillar of rivalry, manifesting itself throughout time. Tenure with coach was collected as a control variable since coaches have control of the team and set the tone for the environment. Listing the sport allows for the comparison of rivalry levels by sport between studies. While gender, age, class standing, and race are standard demographic variables collected in a variety of past studies to access diversity. Specifically, age and gender were collected (e.g., Converse & Reinhard, 2016; Kilduff, 2014; Kilduff et al., 2016; Pierce, Kilduff, Galinsky, & Sivanathan, 2013),

and age and gender are keys to understanding the composition of teams (Wolfe et al., 2005).

Control Variables

I collected a variety of control variables that might explain some of the variance in my hypotheses. The control variables were in the demographic section. Respondents' gender, sport played, years with the team, years with the coach, and total years played were relevant non-intrusive data that helped form a comprehensive view of each teams' dynamics.

Table 1 Study 1: Measures for High School Athletic Team Experience

Construct	Measures
Intra-Team Rivalry	<p>Adapted from (Kilduff, 2014) Scale (1 = strongly disagree, 7 = strongly agree) With one or more people on my athletic team:</p> <ol style="list-style-type: none"> 1) I share similar characteristics and attributes. 2) competitions against this/these person(s), were more important to me because of the relationship that existed (i.e., trying to stand out in team activities from others). 3) the competitions against this/these person(s) have been closely decided (i.e., the margins of victory or defeat were small, talent level of each teammate is about even). 4) I feel rivalry towards this/these person(s). <p>Adapted from (Back et al., 2013) With one or more people on my athletic team:</p> <ol style="list-style-type: none"> 5) I secretly take pleasure in the failure of my rivals. 6) I want my rivals to fail. 7) I enjoy it when another person is inferior to me. 8) I react annoyed if another person steals the show from me. 9) I often get annoyed if I am criticized. 10) I can barely stand it if another person is at the center of events.
Social Comparison	<p>Adapted from (Gibbons, & Buunk, 1999) Scale (1 = strongly disagree, 7 = strongly agree) With people on my athletic team:</p> <ol style="list-style-type: none"> 11) I always pay a lot of attention to how I do things compared with how others do things. 12) If I want to find out how well I have done something, I compare what I have done with how others have done. 13) I often compare how I am doing socially (e.g., popularity on the team) with other people. 14) I am not the type of person who compares often with others (Reverse Scored) 15) I often compare myself with others with respect to what I have accomplished for the team (i.e., game performance). 16) I often try to find out what others think who face similar problems as I face. 17) I always like to know what others in a similar situation would do. 18) I am aware of their performances. 19) performances of my teammates are known. 20) I compare the performances of my teammates with my own.
Individual Cohesion	<p>Adapted from (Carless, & De Paola, 2000) Scale (1 = strongly disagree, 7 = strongly agree)</p> <ol style="list-style-type: none"> 21) I feel unhappy with some of the people on my athletic team's level of commitment to a task. (Reverse Scored) <p>I feel that people on my athletic team:</p> <ol style="list-style-type: none"> 22) are united in trying to reach our goals for performance. 23) have conflicting aspirations for the team's performance. (Reverse Scored) 24) don't give me enough opportunities to improve my personal performance. (Reverse Scored) 25) would like to spend time together outside of practice hours. 26) don't stick together outside of practice hours. (Reverse Scored) 27) rarely party together. (Reverse Scored) 28) would rather go out on their own than get together as a team. (Reverse Scored) 29) are one of the most important social groups to which I belong. 30) are some of my best friends.

Table 1 Continued Study 1: Measures for High School Athletic Team Experience

Individual Performance	Adapted from (Kohli, Shervani, & Challagalla, 1998) Scale (1 = strongly disagree, 7 = strongly agree)
	<p>31) I spend a lot of time thinking about how my performance compares with that of other athletic teammates.</p> <p>32) I evaluate myself using my coach's criteria.</p> <p>33) I always try to communicate my achievements to my coach.</p> <p>34) I feel very good when I know I have outperformed other athletic teammates on my team.</p> <p>35) It is very important that my coach sees me as a good player.</p>
Team Performance	Adapted from (Sparrowe, Liden, Wayne, & Kraimer, 2001) Scale (1 = strongly disagree, 7 = strongly agree)
	<p>I believe that my athletic team:</p> <p>36) produces quality results (i.e., during practices and competitions).</p> <p>37) gets work done efficiently (i.e. during practices and team meetings).</p> <p>38) demonstrates flexibility in dealing with unexpected changes (i.e., bad calls during games, injuries, changes in coaching strategy, etc.).</p> <p>39) has high overall team performance.</p>
Individual Deviance	Adapted from (Bennett & Robinson, 2000) Scale (1 = strongly disagree, 7 = strongly agree)
	<p>I observed or heard someone on my athletic team:</p> <p>40) being made fun of during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>41) saying something hurtful to someone during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>42) make an ethnic, religious, or racial remark during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>43) cursing at someone during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>44) play a mean prank on someone during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>45) acting rudely toward someone during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p> <p>46) publicly embarrassing someone during team events (i.e., during practices, meetings, scrimmages, travel, lodging, or during games).</p>
Demographic Information	<p>47) Tenure (e.g., in years) with the high school team? _____</p> <p>48) Tenure (e.g., in years) with your high school coach? _____</p> <p>49) Total years spent playing your sport? _____</p> <p>50) Which sport did you recall for this survey? _____</p> <p>51) Please indicate your gender/gender identity? Man Woman</p> <p>52) Class standing (Choose one only): First-Year Sophomore Junior Senior</p> <p>53) Age in years?</p> <p>54) Race? _ American Indian or Alaskan Native _ Black or African American _ Native Hawaiian or Other Pacific Islander _ Middle Eastern _ Asian _ Latino/Hispanic _ White _ Two or more races</p>

Procedure

This study used cross-sectional field survey data. After approval from Temple University's Institutional Review Board (IRB), professors were contacted in person or via email from two East Coast Universities (i.e., one public and one private) to secure a date and time for the author to report to their class to administer the survey. Paper copies were administered since the classrooms were not equipped with computers. Participants were advised that their participation was voluntary, that the study was examining student athlete behavior and performance, that their honesty in completing the survey was expected, and that responses would only be used for research purposes and would remain confidential (Boardley & Jackson, 2012). Then, the author administered the surveys and was available to answer questions during completion. Occasionally there were questions about a survey item, but in most of the cases the students had to be reminded that they were only answering the questions based on their athletic team experiences from high school. They were reminded not to reflect on the teams they competed against, just the relationships within their team (e.g., intra-team). Student survey participants were asked to recall a high school athletic team experience:

Please think back to your favorite high school team sport. As you complete the survey answer each question while reflecting on your team sport. The survey uses a Likert-type scale of 1 = strongly disagree to 7 = strongly agree for each question. The only exceptions to this are after the survey where I ask you to share some demographic information. You must be 18 years old to participate and your honesty while answering each question is expected. The survey is anonymous and at any time you may stop. I will be in the room so if you have questions please raise your hand.

Data Analysis

To validate the distinctness of my six measures and their reliability, an exploratory factor analysis, and Cronbach's coefficient alpha were run using IBM's

statistical software SPSS. Although not the primary focus of this research, descriptive statistics will be used to compare the degree of intra-team rivalry across studies (Boardley & Jackson, 2012; Kilduff, 2014, Kilduff et al., 2010).

Table 2 Study 1: Results of Exploratory Factor Analysis

Scale Items	In Dev	Tm Perf	In Coh	Sc Com	Rivalry	In Perf
1. Someone saying something hurtful	.824	-.080	-.015	.078	.008	.065
2. Someone acting rudely	.792	-.098	-.018	.053	.136	.099
3. Someone publicly embarrassing	.754	-.106	-.099	-.073	.058	.054
4. Someone cursing at someone	.744	-.043	.101	.064	.061	.004
5. Someone plays a mean prank	.686	-.073	.000	-.054	.128	-.201
6. Someone being made fun of	.641	-.100	.111	.120	-.001	-.025
7. Someone makes an ethnic remark	.611	-.081	-.069	.111	-.072	-.016
8. Team gets work done efficiently	-.154	.879	.103	.052	.025	.104
9. Team produces quality results	-.055	.815	.097	.068	.053	.125
10. Team has high team performance	-.138	.802	.151	.066	.035	.054
11. Team demonstrates flexibility	-.168	.632	.096	.041	.077	.068
12. We don't stick together (R)	-.068	.088	.811	-.071	-.054	-.062
13. We would rather be on own (R)	-.026	.125	.769	.041	-.045	.042
14. We rarely party together (R)	.086	-.001	.686	-.114	-.011	.027
15. We spend time outside of practice	.016	.202	.576	-.070	.065	.068
16. I compare what I have done with	.094	.090	-.025	.727	.152	.080
17. I do things compared with how	.020	.116	-.020	.602	.090	-.002
18. I compare the performances of	.115	-.021	-.057	.593	.128	.191
19. I compare how I am doing socially	.028	-.001	-.086	.588	-.057	.215
20. I compare my accomplishments	.047	-.022	-.086	.453	.296	.269
21. I feel rivalry towards these persons	.080	.002	-.053	.112	.679	-.033
22. Competitions important relationships	.152	.027	-.027	.163	.659	.025
23. Competitions were closely decided	-.033	.123	.050	.063	.531	.119
24. I evaluate using my coach's criteria	-.018	.124	.068	.118	.058	.665
25. I communicate achievements coach	.036	.055	.025	.197	.020	.568
26. Important coach sees me as good	-.055	.182	-.011	.316	.079	.444
Eigenvalue (Varimax Rotation)	4.79	3.86	2.94	1.78	1.63	1.26
Percent variance explained	18.44%	14.85%	11.30%	6.84%	6.27%	4.85%
Cumulative percent variance explained	18.44%	33.28%	44.58%	51.42%	57.70%	62.55%

Note. Factors: In Dev = Individual Deviance, Tm Perf = Team Performance, In Coh = Individual Cohesion, Sc Com = Social Comparison, Rivalry = Intra-Team Rivalry, In Perf = Individual Performance

Results

Findings from Table 2 illustrate six distinct constructs which load on six factors. All bold and underlined values for the six factors are $\geq .400$, indicating a significant contribution to each factor (Field, 2018; Stevens, 2002). Table 2 validated the scales from the Study 1 questionnaire in Table 1. The eigenvalues, reported at the bottom of Table 2, by factor were individual deviance 4.79, team performance 3.86, individual cohesion 2.94, social comparison 1.78, intra-team rivalry 1.63, and individual performance 1.26, accounting for 62.55% of the variance in the items. Kaiser's criterion of preserving factors with eigenvalues ≥ 1 was used (Field, 2018), which confirms six distinct constructs for subsequent statistical analyses. Although not shown in Table 2, there were 20 additional eigenvalues ≤ 1 ranging from .88 to .16 which did not make the cutoff threshold of ≥ 1 .

The complete 7-item scale from Bennett and Robinson (2000) measuring individual deviance was retained along with the complete 4-item scale from Sparrowe et al. (2001) measuring team performance. While other scales were shortened. The original 10-item scale from Carless and De Paola (2000) measuring individual cohesion was reduced to 4-items in Table 2. Dropped items from Table 1 were 21 and 23 both reverse scored (did not load with the individual cohesion items but loaded together), item 22 (did not load with any individual cohesion items), item 24 reverse scored (loaded with individual cohesion items but had a low loading $< .45$), and items 29 and 30 (did not load with the individual cohesion items but loaded together on another factor). The original 10-item scale from Gibbons and Buunk (1999) measuring social comparison was reduced to 5-items in Table 2. Dropped items from Table 1 were 14 reverse scored (loaded with

social comparison items but had a low loading $< .45$), items 16 and 17 (did not load with the social comparison items but loaded together on another factor), items 18 and 19 (did not load with the social comparison items but loaded together on another factor).

Additionally, Table 2 revealed that the attempt to combine the scales to measure intra-team rivalry from Kilduff (2014) and Back et al. (2013) was unsuccessful. This scale combination was attempted in an exploratory manner since I was measuring rivalry within one team (e.g., intra-team) as Back et al. (2013) did in their study. The idea was to generate a more comprehensive measure. The original 10-item combined scale, 6-items from Back et al. (2013) and 4-items from Kilduff (2014) both measuring intra-team rivalry were reduced to 3-items in Table 2. Dropped items from Table 1 were item 1 (did not load with rivalry items), items 5-10 (loaded together but were not consistent with the definition of rivalry, hence they were measuring another factor). The result, all 6 items (e.g., items 5-10) from Back et al. (2013) were discarded by exploratory principal axis factoring. Only 3 items (e.g., items 2-4) out of the original 4-item scale from Kilduff (2014) remained as my final measure of intra-team rivalry in Table 2. Lastly, the original 5-item scale from Kohli et al. (1998) measuring individual performance was reduced to 3-items in Table 2. Dropped items from Table 1 were items 31 (did not load with any individual performance items) and item 34 (loaded with individual performance items but had a low loading $< .45$).

I ran an exploratory factor analysis in SPSS and the program was rerun multiple times to eliminate variables that loaded on two or more factors, and variables that had low loadings of $\leq .45$ (Field, 2018). Table 2 reports the results from a rotated factor matrix using principal axis factoring as the extraction method. Principal axis factoring, a

popular estimation method, was selected because of its versatility in use with sample sizes up to 5000 (de Winter & Dodou, 2012). Principal axis factoring also can recover weak factors and is strong in over-extraction (de Winter & Dodou, 2012). I selected an orthogonal rotation method (e.g., Varimax) with Kaiser Normalization (e.g., SPSS default setting) since this method “tries to load a smaller number of variables highly onto each factor, resulting in more interpretable clusters of factors” (Field, 2018, p. 581). Rotation converged in 6 iterations.

Table 3 Study 1: Descriptive Statistics, Reliabilities, Intercorrelations

Var.	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
In Dev	3.52	1.64	(.89)									
Tm Perf	5.32	1.25	-.23***	(.88)								
In Coh	5.17	1.38	-.01	.22***	(.81)							
Sc Com	4.77	1.17	.13*	.11 ⁺	-.12*	(.76)						
Rivalry	4.32	1.39	.13*	.10 ⁺	-.03	.27***	(.67)					
In Perf	4.63	1.34	-.01	.24***	.05	.40***	.13*	(.63)				
Gender	---	---	-.33**	.08	-.12*	.04	-.20***	.12*	---			
Sport	---	---	-.02	.06	.09 ⁺	.08 ⁺	-.04	-.01	.10*	---		
Y-Team	3.20	1.12	.11*	.08 ⁺	.20**	-.07	.09 ⁺	-.03	-.03	.10*	---	
Y-Coach	3.10	1.49	.05	.06	.14**	-.06	.04	-.01	.02	.11*	.69***	---
T-Y-Spt	7.52	4.37	.21***	-.05	.13*	-.00	.07	-.06	-.21***	-.02	.42***	.31***

Note. *n* = 298. In Dev = Individual Deviance; Tm Perf = Team Performance; In Coh = Individual Cohesion; Sc Com = Social Comparison; Rivalry = Intra-Team Rivalry; In Perf = Individual Performance; Sport = Sport played; Y-Team = Years played on team; Y-Coach = Years with coach; T-Y-Spt = Total years including high school of playing the sport. Numbers on the diagonal are Cronbach’s alphas. Dashes = Data not applicable. (Listwise deletion).

⁺*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Table 3 reports the descriptive statistics (i.e., samples, means, standard deviations), reliability estimates, and study variable intercorrelations. Sample size for all model constructs and control variables was 298. Study 1 originally consisted of 311 respondents, but the sample size decreased due to respondent error (e.g., skipping

questions or illegible printing) resulting in surveys that fit into one of those categories to be discarded.

The means (M) and standard deviations (SD) in Table 3 are as follows: individual deviance ($M = 3.52$; $SD = 1.64$), team performance ($M = 5.32$; $SD = 1.25$), individual cohesion ($M = 5.17$; $SD = 1.38$), social comparison ($M = 4.77$; $SD = 1.17$), intra-team rivalry ($M = 4.32$; $SD = 1.39$), and individual performance ($M = 4.63$; $SD = 1.34$). For control variables: years played on team ($M = 3.20$; $SD = 1.12$), years with the coach ($M = 3.10$; $SD = 1.49$), and total years including high school of playing the sport ($M = 7.52$; $SD = 4.37$). Means and standard deviations were not estimated for control variables: gender, and sport played. Each control variable was coded with more than two possibilities, making the variable nominal in nature, hence, the means and standard deviations are not meaningful.

Examining the means, one variable, individual deviance was below neutral (e.g., 4). While, team performance, individual cohesion, social comparison, intra-team rivalry, and individual performance were all slightly above neutral (e.g., 4). There was even less difference among the six variable's standard deviations, each one close to its mean. This illustrates that the sample of respondents were not too sensitive to the survey (e.g., mean) and results clustered close to each mean (e.g., standard deviation).

The results from a scale reliability analysis (e.g., Cronbach's coefficient alpha) are presented in Table 3 using the scale items from the exploratory factor analysis in Table 2. The control variables were not from scales, so they do not have reliabilities, denoted by dashes in Table 3. The scales for individual deviance, team performance, and individual cohesion, all had high reliabilities, Cronbach's $\alpha > .80$ (.89, .88, and .81

respectively). The scale for social comparison, while not as high, had an acceptable reliability, Cronbach's $\alpha > .70$ (.76 respectively). While the scales for intra-team rivalry and individual performance had relatively low reliability, Cronbach's $\alpha < .70$ (.67 and .63 respectively). These Cronbach's $\alpha < .70$, while lower than the other constructs, have some usage justification in the literature. For instance, values below .70 are reasonable according to Kline (1999). Some scholars have even argued that values as low as .50 may be acceptable (Nunnally, 1978). I ran the analyses to test my hypotheses since the Cronbach's $\alpha \geq .63$ was moderately accurate and reasonably close to Cronbach's $\alpha \geq .70$. The first run of the scale reliability analysis revealed the maximum Cronbach's coefficient alpha. Dropping scale items resulted in lower reliabilities for individual cohesion, individual deviance, social comparison, rivalry, and individual performance. Another result of dropping scale items was a minimal increase (e.g., $\leq .02$) for team performance.

Construct Scale Coding

Scales measuring the model constructs of individual deviance, team performance, individual cohesion, social comparison, intra-team rivalry, individual performance, and motivation, were coded with the participants' responses on a scale from 1 = disagree strongly; 2 = disagree; 3 = disagree somewhat; 4 = neither agree or disagree; 5 = agree somewhat; 6 = agree; 7 = agree strongly.

Control Variables Open Response

For years on team, years with the coach, and total years including high school of playing the sport, respondents wrote the applicable number of years.

Control Variables Coding

Gender: 1 = Man; 2 = Non-Binary; 3 = Transgender; 4 = Woman; 5 = A gender identity not listed above. Sport played: 1 = Basketball; 2 = Martial Arts; 3 = Soccer; 4 = Ice Hockey; 5 = Track; 6 = Lacrosse; 7 = Tennis; 8 = Sailing; 9 = Table Tennis; 10 = Wrestling; 11 = Bowling; 12 = Football; 13 = Volleyball; 14 = Swimming; 15 = Cricket, 16 = Rugby; 17 = Crew; 18 = Field Hockey; 19 = Softball; 20 = Dance Team; 21 = Cheerleader; 22 = Baseball; 23 = Boxing; 24 = Golf; 25 = Gymnastics; 26 = Cross Country; 27 = Squash.

Finally, Table 3 reports the correlations between study variables. Correlations for model constructs are reported first. The variables significantly correlated with individual deviance were team performance ($r = -.23, p \leq .001$), social comparison ($r = .13, p \leq .05$), intra-team rivalry ($r = .13, p \leq .05$), gender ($r = -.33, p \leq .01$), years played on team ($r = .11, p \leq .05$), and total years including high school of playing the sport ($r = .21, p \leq .001$). The variables significantly correlated with team performance were individual cohesion ($r = .22, p \leq .001$), social comparison ($r = .11, p \leq .10$), intra-team rivalry ($r = .10, p \leq .10$), individual performance ($r = .24, p \leq .001$), and years played on team ($r = .08, p \leq .10$). The variables significantly correlated with individual cohesion were social comparison ($r = -.12, p \leq .05$), gender ($r = -.12, p \leq .05$), sport played ($r = .09, p \leq .10$), years played on team ($r = .20, p \leq .01$), years with coach ($r = .14, p \leq .01$), and total years including high school of playing the sport ($r = .13, p \leq .05$). The variables significantly correlated with social comparison were intra-team rivalry ($r = .27, p \leq .001$), individual performance ($r = .40, p \leq .001$), and sport played ($r = .08, p \leq .10$). The variables that significantly correlated with intra-team rivalry were individual performance ($r = .13, p \leq .05$), gender

($r = -.20, p \leq .001$), and years played on team ($r = .09, p \leq .10$). One variable significantly correlated with individual performance, gender ($r = .12, p \leq .05$).

Correlations for control variables are reported here. The variables that significantly correlated with gender were sport played ($r = .10, p \leq .05$), and total years including high school of playing the sport ($r = -.21, p \leq .001$). The variables that significantly correlated with sport played were years played on team ($r = .10, p \leq .05$), and years with coach ($r = .11, p \leq .05$). The variables that significantly correlated with years played on team were years with coach ($r = .69, p \leq .001$), and total years including high school of playing the sport ($r = .42, p \leq .001$). Finally, only one variable significantly correlated with years with coach, total years including high school of playing the sport ($r = .31, p \leq .001$). I had interval data, so Pearson's r was used to evaluate correlation (Field, 2018). Since the effect size of my data ranged from $-.233$ to $.403$, the constructs have a medium to small effect on each other.

Table 4 Study 1: Regression Analyses for Hypotheses H1A - H1C

Variable	Hypothesis 1A			Hypothesis 1B			Hypothesis 1C		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Model 1									
Y-Team	-.01	.10	-.01	.12	.10	.11	.09	.12	.06
Y-Coach	.01	.07	.01	.00	.07	.01	-.03	.08	-.03
T-Y-Spt	-.01	.02	-.03	-.03	.02	-.09	.05	.02	.13*
Sport	-.01	.01	-.03	.01	.01	.04	.00	.01	.01
Gender	.10	.05	.11 ⁺	.05	.05	.06	-.33	.06	-.30***
Model 2									
Y-Team	-.04	.10	-.03	.11	.10	.01	.08	.12	.05
Y-Coach	.01	.07	.02	.01	.07	.01	-.03	.08	-.02
T-Y-Spt	-.01	.02	-.03	-.02	.02	-.08	.05	.02	.13*
Sport	-.00	.01	-.02	.01	.01	.05	.00	.01	.01
Gender	.13	.06	.15*	.07	.05	.09	-.32	.06	-.29***
Rivalry	.16	.06	.17**	.10	.05	.11*	.08	.07	.06
Model 1 Summary	$R^2 = .016$ p -value = .448			$R^2 = .022$ p -value = .265			$R^2 = .131$ p -value < .001		
Model 2 Summary (ΔR^2)	$\Delta R^2 = .026$ p -value < .01			$\Delta R^2 = .012$ p -value \leq .05			$\Delta R^2 = .004$ p -value = .259		
Model 2 Summary (Overall Effect)	$R^2 = .042$ p -value < .05			$R^2 = .034$ p -value = .13			$R^2 = .135$ p -value < .001		

Note. *B* = unstandardized coefficient beta; *SE B* = beta standard error; β = standardized coefficient beta. Model 1 reports control variables. Model 2 reports control variables and ITR. Y-Team = Years played on team; Y-Coach = Years with coach; T-Y-Spt = Total years including high school of playing the sport; Sport = Sport played; Rivalry = Intra-Team Rivalry. Hypothesis 1A = Intra-team rivalry to Individual Performance; Hypothesis 1B = Intra-team Rivalry to Team Performance; Hypothesis 1C = Intra-Team Rivalry to Individual Deviance.
⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4 reports the regression results for Hypotheses H1a – H1c. Consistent with other studies, a linear regression in IBM’s statistical software SPSS (Back et al., 2013; Field 2018; Kilduff et al., 2010) was used to analyze the relationships between the independent variable of intra-team rivalry and the dependent variables of individual

performance, team performance, and individual deviance. I controlled for gender, sport played, years played on team, years with coach, and total years including high school of playing the sport in all Study 1 Hypotheses.

Hypothesis 1a, intra-team rivalry is positively related to individual performance. Regression analysis with control variables (see Table 4, Model 1 for control variable data), revealed a statistically significant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .17, p < .001$) explained an additional 3% of the variance in individual performance ($\Delta R^2 = .026, p < .010, d = .23$), with a small effect size. As predicted, these results support my hypothesis that intra-team rivalry is positively related to individual performance.

Hypothesis 1b, intra-team rivalry is positively related to team performance. Regression analysis with control variables (see Table 4, Model 1 for control variable data), revealed a statistically significant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .11, p \leq .05$) explained an additional 1% of the variance in team performance ($\Delta R^2 = .012, p \leq .05, d = .76$), with a large effect size. As predicted, these results support my hypothesis that intra-team rivalry is positively related to team performance.

Hypothesis 1c, intra-team rivalry is positively related to individual deviance. Regression analysis with control variables (see Table 4, Model 1 for control variable data), revealed a statistically insignificant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .06, p = .330$) explained $< 1\%$ of the variance in individual deviance ($\Delta R^2 = .004, p = .259, d = .53$). These results do not support my hypothesis that intra-team rivalry is positively related to individual deviance.

Table 5 Study 1: Mediation Model Coefficients for Hypothesis 2A

		Consequent						
		<i>M</i> (Social Comparison)			<i>Y</i> (Individual Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
<i>X</i> (Rivalry)	<i>a</i>	0.26	0.05	.30***	<i>c'</i>	0.16	0.06	.17***
<i>M</i> (SocComp)	—	—	—	—	<i>b</i>	0.44	0.06	.40***
Constant	<i>i_M</i>	3.67***	0.32	—	<i>i_y</i>	2.21***	0.42	—

		Models					
		Non-Mediated Model			Mediated Model		
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Individual Performance		0.16	0.06	.17*	0.05	0.06	.05

		Models			
		Non-Mediated Model		Mediated Model	
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect		0.04	(6, 291) = 2.15**	0.18	(7, 290) = 8.85***

Note. *a* = the effect of intra-team rivalry on social comparison; *b* = the effect of social comparison on individual performance; *c'* = direct effect of intra-team rivalry on individual performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; SocComp = social comparison. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

p* < .01. *p* < .05. ****p* < .001.

I tested for mediation via social comparison and individual cohesion (Hypotheses: H2a – H2c; H3a – H3c respectively), and control variables remained the same from my regression hypotheses. Mediation tests were conducted via simple mediation using ordinary least squares path analysis. Five steps were used to test for mediation. The first four steps were used by Tseng, Lee, and Chu (2015). The fifth step was from the PROCESS macro in SPSS that generated a bootstrapped confidence interval (Hayes &

Little, 2018). A benefit of PROCESS is that it organizes data output from the simple mediation model for the five steps.

The five steps to test for mediation are detailed here, and all five steps must be met to support mediation. First, there must be a significant relationship between the independent variable and the dependent variables. Second, there must be a significant relationship between the mediator and the dependent variable. Third, the relationship between the predictor and outcome variable must be less significant once the mediator has been added. Fourth, the power for the model summary containing the mediator must be stronger when compared with the model that does not include the mediator. Finally, a bootstrap confidence interval that must not contain zero if mediation has occurred, was reported for each simple mediation model. I will refer to these five steps as I report mediation results throughout Study 1 and Study 2.

Table 5 illustrates the results for Hypothesis 2a. The control variable of gender ($\beta = .11, p < .100$) was moderately significant. Step 1, the standardized beta coefficients between intra-team rivalry and the dependent variables of social comparison ($\beta = .30, p < .001$) and individual performance ($\beta = .17, p < .001$) were both significant, Step 1 supports mediation.

Step 2, the standardized beta coefficient between the mediator of social comparison and the dependent variable of individual performance ($\beta = .40, p < .001$) was significant, Step 2 supports mediation.

Step 3, the standardized beta coefficients between intra-team rivalry and individual performance, for the non-mediated model ($\beta = .17, p < .001$) and for the

mediated model ($\beta = .05, p = .39$). Since the mediated model was weaker, and in this case became insignificant, Step 3 supports mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .18, p < .001$), compared with the non-mediated model ($R^2 = .04, p < .05$). The mediated model had a greater explanatory power compared with the non-mediated model, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.113$) based on 5,000 bootstrap samples did not include zero (0.060 to 0.176). Thus, the indirect effect was statistically significant, Step 5 supports mediation. All five steps support mediation, resulting in support for Hypothesis 2a, social comparison mediates the positive relationship between intra-team rivalry and individual performance.

Table 6 Study 1: Mediation Model Coefficients for Hypothesis 2B

Antecedent	Consequent							
	M (Social Comparison)			Y (Team Performance)				
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β		
X (Rivalry)	<i>a</i>	0.26	0.05	.30*	<i>c'</i>	0.10	0.05	.11 ⁺
M (SocComp)	—	—	—	<i>b</i>	0.09	0.07	.11	
Constant	<i>i_M</i>	3.67*	0.32	—	<i>i_y</i>	4.14*	0.43	—

Predictor and Outcome	Models					
	Non-Mediated Model			Mediated Model		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Team Performance	0.10	0.05	.11 ⁺	0.08	0.06	.09

Model Summary	Models			
	Non-Mediated Model		Mediated Model	
	<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect	0.03	(6, 291) = 1.68	0.04	(7, 290) = 1.72

Note. *a* = the effect of intra-team rivalry on social comparison; *b* = the effect of social comparison on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; SocComp = social comparison. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

⁺*p* < .10. **p* < .001.

Table 6 illustrates the results for Hypothesis 2b. Control variables did not significantly contribute to this hypothesis. Step 1, the standardized beta coefficients between intra-team rivalry and the dependent variables of social comparison ($\beta = .30, p < .001$) and team performance ($\beta = .11, p < .10$) were both significant, although the significance level between intra-team rivalry and team performance was moderately significant, Step 1 supports mediation.

Step 2, the standardized beta coefficient between the mediator of social comparison and the dependent variable of team performance ($\beta = .11, p = .170$) was not significant, mediation not supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = .11, p < .10$) and for the mediated model ($\beta = .09, p = .17$). Since the mediated model was weaker and, in this case, became insignificant, Step 3 supports mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .04, p = .105$), compared with the non-mediated model ($R^2 = .03, p = .125$). The mediated model had a marginally greater explanatory power compared with the non-mediated model, however, both were insignificant, Step 4 does not support mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.023$) based on 5,000 bootstrap samples did include zero (-0.009 to 0.057). Thus, the indirect effect was not statistically significant, Step 5 does not support mediation. All five steps need to support mediation, this hypothesis did not meet that criteria. No support for Hypothesis 2b, social comparison does not mediate the positive relationship between intra-team rivalry and team performance.

Table 7 Study 1: Mediation Model Coefficients for Hypothesis 2C

		Consequent						
		M (Social Comparison)			Y (Individual Deviance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
X (Rivalry)	<i>a</i>	0.26	0.05	.30**	<i>c'</i>	0.08	0.07	.06
M (SocComp)	—	—	—	—	<i>b</i>	0.21	0.08	.15*
Constant	<i>i_M</i>	3.67**	0.32	—	<i>i_y</i>	2.60**	0.52	—

		Models					
		Non-Mediated Model			Mediated Model		
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Individual Deviance		0.08	0.07	.06	0.02	0.07	.02

		Models			
		Non-Mediated Model		Mediated Model	
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect		0.14	(6, 291) = 7.58**	0.15	(7, 290) = 7.50**

Note. *a* = the effect of intra-team rivalry on social comparison; *b* = the effect of social comparison on individual deviance; *c'* = direct effect of intra-team rivalry on individual deviance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; SocComp = social comparison. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

p* < .01. *p* < .001.

Table 7 illustrates the results for Hypothesis 2c. Significant control variable loadings, total years the respondent played the sport ($\beta = .02, p < .05$), and gender ($\beta = -.30, p < .001$). Step 1, the standardized beta coefficients between intra-team rivalry and the dependent variable of social comparison ($\beta = .30, p < .001$) was significant, while the relationship between intra-team rivalry and individual deviance ($\beta = .06, p = .26$) was not significant, Step 1, no support for mediation.

Step 2, the standardized beta coefficient between the mediator of social comparison and the dependent variable of individual deviance ($\beta = .21, p < .01$) was significant, mediation supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and individual deviance, for the non-mediated model ($\beta = .06, p = .26$) and for the mediated model ($\beta = .02, p = .73$). Since neither model was significant, even though the mediated model was weaker, Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .15, p < .001$), compared with the non-mediated model ($R^2 = .13, p < .001$). The mediated model had a marginally greater explanatory power compared with the non-mediated model, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.05$) based on 5,000 bootstrap samples did not include zero (0.008 to 0.100). Thus, the indirect effect was statistically significant, Step 5 supports mediation. All five steps need to support mediation, Hypothesis 2c did not meet the criteria. Social comparison does not mediate the positive relationship between intra-team rivalry and individual deviance.

Table 8 Study 1: Mediation Model Coefficients for Hypothesis 3A

		Consequent						
		M (Individual Cohesion)			Y (Individual Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
X (Rivalry)	<i>a</i>	-0.07	0.06	-.07	<i>c'</i>	0.16	0.06	.17*
M (IndCoh)	—	—	—	—	<i>b</i>	0.07	0.06	.07
Constant	<i>i_M</i>	4.80***	0.38	—	<i>i_y</i>	3.42***	0.47	—

		Models						
		Non-Mediated Model			Mediated Model			
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	
Rivalry and Individual Performance		0.16	0.06	.17*	0.17	0.06	.17*	

		Models						
		Non-Mediated Model			Mediated Model			
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)		<i>R</i> ²	<i>F</i> (df1, df2)		
Total Effect		0.04	(6, 291) = 2.15**		0.05	(7, 290) = 2.16**		

Note. *a* = the effect of intra-team rivalry on individual cohesion; *b* = the effect of individual cohesion on individual performance; *c'* = direct effect of intra-team rivalry on individual performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; IndCoh = individual cohesion. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated. **p* < .01. ***p* < .05. ****p* < .001.

Table 8 illustrates the results for Hypothesis 3a. The control variable loading for gender ($\beta = .16, p \leq .01$) was significant. Step 1, the standardized beta coefficients between intra-team rivalry and the dependent variable of individual cohesion ($\beta = -.07, p = .24$) not significant, while the relationship between intra-team rivalry and individual performance ($\beta = .17, p < .01$) was significant, Step 1, no support for mediation.

Step 2, the standardized beta coefficient between the mediator of individual cohesion and the dependent variable of individual performance ($\beta = .07, p = .21$) not significant, mediation not supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and individual performance, for the non-mediated model ($\beta = .17, p < .01$) and for the mediated model ($\beta = .17, p < .01$). Both models significant and have statistically identical standardized beta coefficients. Since beta is unchanged, Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .05, p < .05$), compared with the non-mediated model ($R^2 = .04, p < .05$). The mediated model had a marginally greater explanatory power compared with the non-mediated model, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = -0.006$) based on 5,000 bootstrap samples did not include zero (-0.024 to 0.005). Thus, the indirect effect was not statistically significant, mediation not supported in Step 5. All five steps need to support mediation, Hypothesis 3a did not meet the criteria. Individual cohesion does not mediate the positive relationship between intra-team rivalry and individual performance.

Table 9 Study 1: Mediation Model Coefficients for Hypothesis 3B

		Consequent						
		M (Individual Cohesion)			Y (Team Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
X (Rivalry)	<i>a</i>	-0.07	0.06	-.07	<i>c'</i>	0.10	0.05	.11 ⁺
M (In Coh)	—	—	—	—	<i>b</i>	0.21	0.05	.23 ^{**}
Constant	<i>i_M</i>	4.80 ^{**}	0.38	—	<i>i_y</i>	3.43 ^{**}	0.43	—

		Models					
		Non-Mediated Model			Mediated Model		
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Team Performance		0.10	0.05	.11 ⁺	0.12	0.05	.13 [*]

		Models			
		Non-Mediated Model		Mediated Model	
Model		<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Summary					
Total Effect		0.03	(6, 291) = 1.68	0.09	(7, 290) = 3.92 ^{**}

Note. *a* = the effect of intra-team rivalry on individual cohesion; *b* = the effect of individual cohesion on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; In Coh = individual cohesion. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

⁺*p* < .10. ^{*}*p* < .05. ^{**}*p* < .001.

Table 9 illustrates the results for Hypothesis 3b. The control variable of gender ($\beta = .12, p < .10$) was moderately significant. Step 1, the standardized beta coefficients between intra-team rivalry and the dependent variable of individual cohesion ($\beta = -.07, p = .24$) not significant, while the relationship between intra-team rivalry and team performance ($\beta = .11, p < .01$) was significant, Step 1, no support for mediation.

Step 2, the standardized beta coefficient between the mediator of individual cohesion and the dependent variable of team performance ($\beta = .23, p < .001$) significant, mediation supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = .11, p < .10$) and for the mediated model ($\beta = .13, p < .05$). Since the mediated model has greater power, Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .09, p < .001$), compared with the non-mediated model ($R^2 = .03, p = .125$). The mediated model has higher power, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = -0.015$) based on 5,000 bootstrap samples did not include zero (-0.047 to 0.008). Thus, the indirect effect was not statistically significant, mediation not supported in Step 5. All five steps need to support mediation, Hypothesis 3b did not meet the criteria. Individual cohesion does not mediate the positive relationship between intra-team rivalry and team performance.

Table 10 Study 1: Mediation Model Coefficients for Hypothesis 3C

		Consequent						
		M (Individual Cohesion)			Y (Individual Deviance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
X (Rivalry)	<i>a</i>	-0.07	0.06	-.07	<i>c'</i>	0.08	0.07	.07
M (In Coh)	—	—	—	—	<i>b</i>	-0.21	0.07	-.08
Constant	<i>i_M</i>	4.80*	0.38	—	<i>i_y</i>	3.73*	0.54	—

		Models						
		Non-Mediated Model			Mediated Model			
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	
Rivalry and Individual Deviance		0.08	0.07	.07	0.07	0.07	.06	

		Models						
		Non-Mediated Model			Mediated Model			
Model		<i>R</i> ²	<i>F</i> (df1, df2)		<i>R</i> ²	<i>F</i> (df1, df2)		
Summary								
Total Effect		0.14	(6, 291) = 7.58*		0.14	(7, 290) = 6.73*		

Note. *a* = the effect of intra-team rivalry on individual cohesion; *b* = the effect of individual cohesion on individual deviance; *c'* = direct effect of intra-team rivalry on individual deviance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; In Coh = individual cohesion. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

**p* < .001.

Table 10 illustrates the results for Hypothesis 3c. Significant control variable loadings, total years that respondents played their sport ($\beta = .14, p < .05$), and gender ($\beta = -.30, p < .001$). Step 1, the standardized beta coefficients between intra-team rivalry and dependent variable individual cohesion ($\beta = -.07, p = .24$), and dependent variable

individual deviance ($\beta = .07, p = .259$) were not significant, Step 1, no support for mediation.

Step 2, the standardized beta coefficient between the mediator of individual cohesion and the dependent variable of individual deviance ($\beta = -.08, p = .184$) not significant, mediation not supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and individual deviance, for the non-mediated model ($\beta = .07, p = .259$) and for the mediated model ($\beta = .06, p = .299$). Neither model significant, Step 3, no support for mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .14, p < .001$), compared with the non-mediated model ($R^2 = .14, p < .001$). No statistical difference between models, Step 4, no support for mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.006$) based on 5,000 bootstrap samples did not include zero (-0.006 to 0.028). Thus, the indirect effect was not statistically significant, mediation not supported in Step 5. All five steps need to support mediation, Hypothesis 3c did not meet the criteria. Individual cohesion does not mediate the positive relationship between intra-team rivalry and individual deviance.

The Hayes and Little (2018) add-in (e.g., PROCESS macro in SPSS) tests for mediation and is used for a variety of mediation models (e.g., examining 1 mediator in simple mediation, to examining more than 1 mediator in advanced models). I followed the recommendations for simple mediation settings in the PROCESS macro of SPSS by Field (2018): model number 4, set bootstrap samples to 5000, 95% confidence interval,

and in the options tab select: (1) show total effect and (2) effect size (mediation-only models). These settings allowed me to test and interpret my mediation hypotheses.

General Discussion

Rivalry has been receiving more attention in the literature, however scholars are only beginning to understand the construct at the intra-team level. Study 1 examined rivalry in an intra-team setting to study the antecedents of performance (e.g., individual and team), deviance (e.g., individual), and the mediators of social comparison and individual cohesion. I controlled for years played on team, years with the coach, total years including high school of playing the sport, sport played, and gender. Study 1 surveyed undergraduate collegiate students with a minimum age of 18 recalling a high school athletic team experience.

Theoretical Contributions

Study 1 contributes to the literature on rivalry in several ways. First, I examined the relationships between intra-team rivalry and the consequences of individual performance, team performance, and individual deviance. I found a positive relationship between intra-team rivalry and individual performance. This finding is consistent with theoretical and empirical work that has suggested that inter-team rivalry increases performance (Kilduff, 2014; Malhotra, 2010; Neave & Wolfson, 2003). In addition, these findings extend the literature on rivalry by suggesting intra-team rivalry also increases individual performance. Furthermore, I examined the relationship between intra-team rivalry and team performance. Similar to my findings for individual performance, my results indicated that intra-team rivalry is positively related to team performance. This finding is consistent with theoretical and empirical work that has

suggested that inter-team rivalry increases team performance (Kilduff et al., 2010; Ku et al., 2005). Therefore, I also extend the literature on rivalry by demonstrating that intra-team rivalry also increases team performance.

Second, I examined the positive relationship between intra-team rivalry and individual deviance. My findings demonstrated a non-significant relationship between intra-team rivalry and deviance. This result departs from prior literature that found a positive relationship between inter-team rivalry and deviance (Kilduff et al., 2016; Locke, 2007; Tesser, 1998). Thus, my findings seem to indicate that rivalry within a team does not increase deviance. Even if a team member is experiencing intra-team rivalry, they may refrain from harming their rivals, because those individuals are also part of their team and integral to the team's goal accomplishment.

Third, I examined two mediators of the positive relationships between intra-team rivalry and my outcome variables, namely social comparison and individual cohesion. My results indicated that social comparison mediated the positive relationship between intra-team rivalry and individual performance. This finding aligns with the central tenets of social comparison theory that suggests that when individuals experience intra-team rivalry, they will engage in a social comparison process that will eventuate in increases in individual performance. I also examined the mediating effect of social comparison on the positive relationship between intra-team rivalry and team performance. My results indicated that there was no significant mediating effect. This finding suggests that the relationship between intra-team rivalry and team performance is not explained by social comparison. Although a person experiencing intra-team rivalry may compare themselves to their team members, that social comparison process does not influence team

performance. Finally, I examined the mediating effect of social comparison on the positive relationship between intra-team rivalry and individual deviance. My results indicated that there was no significant mediating effect. Thus, social comparison does not explain the relationship between intra-team rivalry and individual deviance.

For the mediating effect of individual cohesion, my results demonstrated that individual cohesion did not significantly mediate the positive relationships between intra-team rivalry and all three outcomes I examined. These findings indicate that individual cohesion does not explain the positive effect of intra-team rivalry on individual performance, team performance, and individual deviance.

Practical Implications

Although the setting for Study 1 was collegiate students reflecting on high school team experiences, these findings are transferable to the business world via the framework from Crown (2000). Since athletic teams are responsible for focal output of an organization (e.g., wins), and business teams are responsible for focal output (e.g., accounts, sales, customer satisfaction ratings, etc.), my findings suggest significant practical implications.

In organizations an employee's high performance is paramount to their success and the success of the organization. In addition, managers are evaluated on how well their subordinates perform individually and as a team. Therefore, my research is important to the extent that it suggests that intra-team rivalry can increase performance at the individual and team levels. If a manager can instigate intra-team rivalry, perhaps through compensation systems, rewards, or recognition, they can create intra-team rivalry that will then motivate social comparisons and eventuate in higher employee

performance. Essentially, my findings suggest creating rivalries within the team. This can be accomplished by generating daily or weekly competitions that are meaningful to those on the team. Frequent competitions can create rivalries, which can drive individuals to compare their performance with peers and enhance individual performance.

Future Directions

Study 1 provided numerous avenues for future research. First, explore social comparison and individual cohesion as antecedents of intra-team rivalry. Both were examined as Mediators in Study 1, like testing each as consequences. Analyses revealed that only one of the three hypotheses were supported for social comparison, and the three individual cohesion hypotheses were not supported. Because of each construct's definition, social comparison defined as teammates comparing performances with other teammates (Lam et al., 2011) and individual cohesion defined as an individual's desire to be embraced by the team and wanting to remain with the team (Carless & De Paola, 2000), it is intuitive that both would lead to intra-team rivalry. Both are defined in competitive team settings where there is constant interaction of team members, an ideal setting for intra-team rivalry to develop. Hence, examining each as an antecedent of intra-team rivalry is more consistent with literature.

Second, explore the construct of motivation as a consequence of intra-team rivalry. Social comparison theory, when an individual determines their own self-worth based on how they stack-up with others (Festinger, 1954), would be an ideal framework for this investigation. Reasons why individuals compare themselves with others my range from self-motivation to general competitiveness. Prior research found a

relationship between competition and motivation (Tauer & Harackiewicz, 1999, 2004). Recent research by Pike et al. (2018) found that rivalry increases motivation at the inter-team level ultimately having a positive effect on team performance. Extending this investigation to the intra-team level would determine how rivalry effects motivation, and how motivation effects team performance.

Third, Study 1 investigated individual performance and individual deviance as consequences of intra-team rivalry. While I invite other scholars to replicate my findings, it would be beneficial to explore individual performance and individual deviance as mediators between intra-team rivalry and team performance. Findings would aid organizational leaders in their pursuit to increase their team's performance.

Fourth, a study that would allow multiple data collection points may provide strong insights for changes in individual and team performances and behaviors (e.g., individual deviance, social comparison, and motivation) of team members. In an athletic context, data could be collected during the preseason, mid-season, and end of season. While in a business context, data could be collected at the beginning and end of each quarter. Comparisons would then be made between each data collection time. Any differences observed would allow for potential conclusions to be drawn based on a variety of factors (e.g., new incentives that the firm offers as rewards that were not previously offered, an external rival joins the team, etc.).

Fifth, design a study that surveys a sample of individuals that are reflecting on current team situations. This current reflection will reduce recall bias. Generally, data collected from current reflections is more reliable and allows scholars to draw better conclusions. Finally, aside from self-report data future study designs should include

secondary or archival data. With the inclusion of this additional data, that is generally accepted to be more efficient to collect compared to self-report data, the reliability of the study is likely increased since there are multiple data sources measuring study hypotheses.

Limitations

Like all research studies, Study 1 had several delimitations and limitations.

Delimitations. First, cross-sectional field survey data was used, which measures what is naturally happening without manipulation at a single point in time (Field, 2018). Studies that use multiple data collection times are considered more rigorous compared to cross-sectional field survey data.

Second, recall bias was present. Participants were asked to recall a high school athletic experience. Recall bias is measurement error by respondents where they either willingly or unwillingly provide inaccurate information (Infante-Rivard, & Jacques, 2000). This skewed construct reliabilities and effect sizes. To reduce recall bias, study design should use survey items that ask for current information from participants.

Third, Study 1 utilized athletic data for hypothesis testing. There is support in the literature to generalize athletic data to business according to the framework from Crown (2000). However, it would be easier to generalize study findings to the business world if they were tested in a business setting. There would also be a higher likelihood that business scholars would accept study findings from business before they would do so from athletics.

Fourth, I investigated social comparison as a mediator for my focal independent variable of intra-team rivalry and my outcomes variables of individual performance, team performance, and individual deviance in Study 1. From the definitional perspective, there is overlap between social comparison and intra-team rivalry. The overlap is in the comparison of competitions between actors. Furthermore, the distinctions of rivalry are that the competitions must be close, and the actor views beating the rival as the primary outcome. Next, measurement of intra-team rivalry and social comparison used diverse items see “Table 2 Study 1: Results of Exploratory Factor Analysis” for the items measuring intra-team rivalry and social comparison. An example item for intra-team rivalry, “I feel rivalry towards these persons.” An example item for social comparison, “I compare what I have done with others.” Based on the correlations between social comparison and intra-team rivalry, weak in Study 1 ($r = .27, p < .001$), both intra-team rivalry and social comparison were distinct enough to warrant investigation.

Limitations. First, all Study 1 variables were measured with self-report data. Since respondents were recalling a past high school athletic team experience, accessing secondary data was not possible. A possible adjustment to address this limitation would be to collect data from respondents reflecting on a current team membership, where the likelihood of accessing secondary team data would increase. For example, if surveying current collegiate athletes, the coach and the university could be approached for access to secondary data.

Second, the scales used to measure individual performance and intra-team rivalry had low Cronbach alpha scores, .67 and .63 respectively. This contributed to the small effect sizes in Study 1’s supported hypotheses of H1a, H1c, and H2a, and an explanation

why hypotheses H2b, c, and H3a, b, and c, were not supported. Scale modifications caused confusion for survey participants. A question stem, “with one or more people on my athletic team” was added to each question. Although the author explained the purpose of the question stem before survey distribution, participants still asked questions. Specific to intra-team rivalry’s low reliability score was the unsuccessful attempt of combining scales from Kilduff (2014) and Back et al. (2013). This combination resulted in, a longer survey, participant confusion, and smaller effect sizes. After principal axis factoring, the scale from Back et al. (2013) was dropped along with 1-item from Kilduff (2014). Since the three items from Kilduff’s (2014) scale were the only remaining items measuring intra-team rivalry, and I used his definition of intra-team rivalry, future scale combinations are not advisable.

Third, due to access the sample for Study 1 was 60% males. Ideally, a closer ratio of males to females would be ideal to achieve a more representative sample. Fourth, the sample size for Study 1 was reduced from 311 to 298. The decrease in sample size was due to respondent errors such as leaving questions blank or marking their answers in a manner that made data entry not possible.

Conclusion

My initial investigation of intra-team rivalry revealed that teammates who see each other as rivals will have increased levels of individual performance and team performance. In addition, mediation analysis revealed that intra-team rivalry influences a social comparison process that then increase individual performance. According to Study 1 findings, if organizational leaders increase the level of intra-team rivalry on their teams (e.g., introducing more competition), then according to my findings the organizational

leaders will observe performance increases at the individual and team levels for their subordinates.

CHAPTER 4: STUDY 2 CURRENT COLLEGIATE STUDENT-ATHLETES

Study 1 provided initial evidence for rivalry's consequences of enhanced performance (i.e., individual and team), and enhanced levels of individual deviance. However, these effects may be unique to the setting (i.e., high school athletic teams) and adversely effected by respondents recalling high school athletic experiences. Recall bias, increases the likelihood of collecting inaccurate information (Infante-Rivard, & Jacques, 2000). To address both limitations, I surveyed current collegiate student athletes in Study 2. Two surveys were used (i.e., Survey 1 and Survey 2). In Survey 1, respondents answered how they personally felt about each question. This allowed me to measure the respondent's perception of model constructs at the individual level. Then in Survey 2, respondents answered how they thought their teammates felt about each question. This allowed me to measure model constructs at the team level.

Collecting data at the individual and team levels is considered valuable and previously used in multiple studies (Domke-Damonte, & Keels, 2015; Gurtner, Tschan, Semmer, & Nägele, 2007; Wills, & Clerkin, 2009). Emphasizing my focal dependent variable of team performance, Domke-Damonte and Keels (2015) found that team performance was higher when measured at the team level compared with the individual level. Due to similarities in study design with Domke-Damonte and Keels (2015), (i.e., undergraduate collegiate students, self-report surveys, and indexing team performance from multiple items), I expect findings for my focal dependent variable of team performance to be consistent with this prior research.

Current collegiate student athletes were selected since past research used collegiate sports teams to study rivalry (Kilduff et al., 2010; Kilduff et al., 2016; Pike et

al., 2018). I applied a framework from Crown (2000) to generalize sport teams (in this research, collegiate sports teams) to teams in a business context. Crown's (2000) framework outlined sports teams as performance teams. The definition of a performance team is a team generating the focal output for the firm, and that focal output is performance (Crown, 2000). In sports, games won are the focal performance result. However, most organizational business teams are responsible for generating results (e.g., products or services), which vary across settings and industries (Cohen & Bailey, 1997). Examples of internally competitive settings are sales teams (e.g., Pharmaceutical, Medical Device, Software, etc.), product development teams (e.g., research and development teams across multiple industries), and marketing teams (e.g., digital marketing).

The same constructs were tested in Study 2, but adjustments were made to my model (see Figure 2) to investigate potentially more effective construct relationships with the focal dependent variable of team performance. Intra-team rivalry remained the focal independent variable. Two antecedents (e.g., individual cohesion and social comparison) were explored in relation to intra-team rivalry. While individual performance, individual deviance, and motivation were explored as mediators between intra-team rivalry and team performance. The addition of motivation to my model reflects a current finding of the rivalry literature, occurring after I completed Study 1, from Pike et al. (2018) that rivalry between competing teams is positively related to motivation. Indeed, Study 2 built on Study 1 in three ways: (1) model update, see Figure 2, (2) Study 2 asked respondents' questions about their experiences on a current collegiate athletic team, hence an alteration of the setting, and (3) Study 2 consists of two surveys, Survey 1 =

individual level and Survey 2 = team level. Study 2 explored the following new Hypotheses 1, 2, 5, 8, and 11 which are discussed in the Literature Review section of Study 2. While hypotheses 3, 4, 6, 7, 9, and 10 were discussed in the Literature Review section of Study 1 and tested in both Study 1 and Study 2. Study 2 examined four research questions. 1) How do social comparison and individual cohesion effect intra-team rivalry? 2) What is the effect of intra-team rivalry on individual performance, individual deviance, and motivation? 3) How do individual performance, individual deviance, and motivation effect team performance? 4) How is the proposed relationship between intra-team rivalry and team performance mediated by individual performance, individual deviance, and motivation?

Antecedents: Social Comparison and Individual Cohesion

In Study 1, social comparison and individual cohesion were investigated as mediators with intra-team rivalry being the focal independent variable in both cases. Indeed, Study 1 examined social comparison and individual cohesion occurring as a result of intra-team rivalry. In Study 2, I am investigating each construct as an antecedent of intra-team rivalry. The definitions of each construct provide initial motivation for this investigation. Social comparison is defined as teammates comparing their performances with others on the team (Lam et al., 2011). During competition, individuals compare their performances which allows them to evaluate how well they are doing relative to others on the team. This definition promotes the idea of frequent competition, a key ingredient that generates rivalry (Kilduff et al., 2010). While individual cohesion is defined as “the extent to which the individual wants to be accepted by group members and remains in the group” (Carless & De Paola, 2000, p. 73). This

definition also promotes prior interaction, additionally suggesting that in a competitive environment, a team member will do more (via performance) to gain group acceptance.

There is theoretical support for social comparison and individual cohesion as antecedents of intra-team rivalry. Garcia, Tor, and Schiff (2013) introduced individual factors and situational factors as a framework for increasing social comparison that then increased competitive behavior. Earlier studies also provide support for social comparison as an antecedent of competitive behavior, regardless of comparison direction (up or down). For instance, in upward social comparison, an actor compares their performance against a focal actor who is better (Hoffman, Festinger, & Lawrence, 1954; Seta, 1982; Tesser, 1988), resulting in increased competitive behavior. Or downward social comparison, an actor compares their performance against a focal actor who is not as good (Festinger, 1954; Garcia, Tor, & Gonzalez; 2006), again resulting in increased competitive behavior.

Prior literature has investigated the positive relationship between team cohesion and team performance via a series of meta-analyses (e.g., Beal, Cohen, Burke, & McLendon, 2003; Castaño, Watts, & Tekleab, 2013; Mullen & Copper, 1994). Specifically, these meta-analyses revealed that work teams with higher cohesion levels performed better compared to work teams with lower cohesion levels. Related studies also produced similar results in athletics such as football (Westre & Weiss, 1991) and volleyball (Bird, 1977; Eisler & Spink, 1998); both sports I surveyed in Study 2. Indeed, for work and athletic teams to perform, competitive individuals are needed to generate the performances, which make the teams successful. Here, in this study, an important question arises, within these competitive environments, how does cohesion affect the

competitive relationships between team members at the intra-team level as they work together? This question has been posed by a few researchers, for instance, Boardley and Jackson (2012) suggested that “Greater cohesion may enhance athletes’ awareness of others’ performance and therefore lead to greater rivalry” (p. 512). Based on the construct definitions and theoretical support for social comparison and individual cohesion being antecedents of intra-team rivalry, the following two hypotheses are proposed in Study 2 and shown in Figure 2:

Hypothesis 1: Social comparison is positively related to intra-team rivalry.

Hypothesis 2: Individual cohesion is positively related to intra-team rivalry.

The Construct of Motivation

The rivalry literature has established that at both individual and team levels, actors exhibit greater exertion against rivals compared to nonrivals (Kilduff, 2014; Kilduff et al., 2010). Prior studies have also associated competition with heightened motivation (e.g., Erev, Bornstein, & Galili, 1993; Scott & Cherrington, 1974; Tauer & Harackiewicz, 1999, 2004). Specifically, when rivals compete, their motivation is enhanced by the psychological significance of the contest (Kilduff et al., 2016; To, Kilduff, Ordonez, & Schweitzer, 2017) a component of rivalry discussed subsequently. Additionally, relatedness (e.g., sense of belonging to a group or team) is postulated as a critical requirement to enhance motivation (Deci & Ryan, 1985), like individual cohesion that is an individual’s desire to be in and remain part of a group or team.

Recent scholarship finds that past performance motivates future performance. According to research from Pike et al. (2018) regarding athletic competition in the Big Four U.S. professional sports leagues playoffs (e.g., Basketball, Football, Baseball, Ice

Hockey), and the NCAA Division I Men’s Basketball Tournament, “a rival team’s performance in the prior postseason predicted a focal team’s performance in the following postseason” (p. 812). The idea is that the focal team has an entire year to become more motivated for their chance to catch and surpass the rival team. This comparison of performance by the focal team with their rival generates the consequences of rivalry (Kilduff & Galinsky, 2017). Also, performances and motivation of the focal team were more pronounced if their rival team won the previous year’s championship (Pike et al., 2018). As these studies indicate, motivation traditionally has been studied between teams or organizations. Exploring rivals’ motivation on the same team (e.g., intra-team) provides a new setting to test that relationship. Therefore, the following three hypotheses are proposed in Study 2 and shown in Figure 2:

Hypothesis 5: Intra-team rivalry is positively related to motivation.

Hypothesis 8: Motivation is positively related to team performance.

Hypothesis 11: Motivation will mediate the positive relationship between intra-team rivalry and team performance.

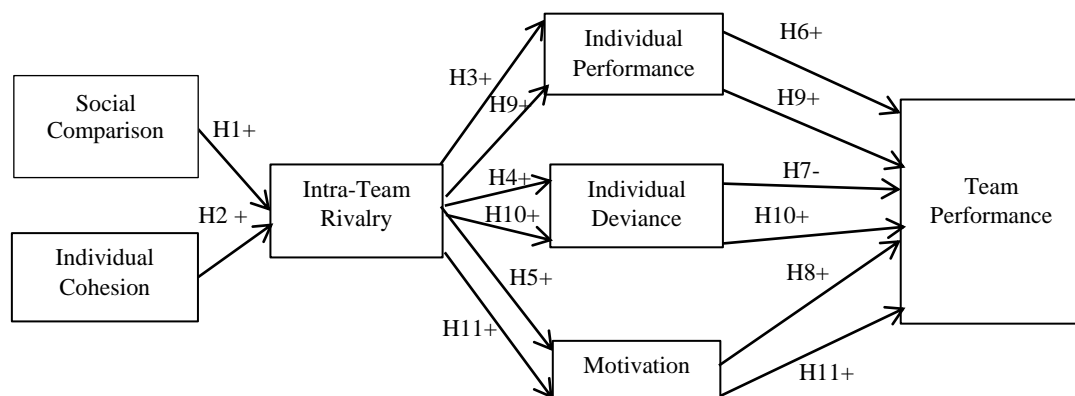


Figure 2. Study 2: Model of Intra-Team Rivalry

Methodology

I explored the direct relationships between social comparison and individual cohesion with my focal independent variable of intra-team rivalry (Hypotheses 1-2 respectively), the direct effects of intra-team rivalry on individual performance, individual deviance, and motivation (Hypotheses 3-5 respectively), and the direct effects of individual performance, individual deviance, and motivation on team performance (Hypotheses 6-8 respectively). Additionally, I examined the mediators of individual performance, individual deviance, and motivation between intra-team rivalry and team performance (Hypotheses 9-11) in the context where respondents self-reported their experiences on a current collegiate athletic team. Testing the hypotheses in this setting was performed to get self-reports from respondents of their current experiences compared to Study 1 in which respondents recalled experiences from several years previous.

Study Participants

Study participants were students attending universities or colleges that have athletic sports teams funded by the university or college that compete in the National Collegiate Athletic Association (NCAA). The NCAA has Division I, II, and III levels of competition. Typically, the most talented athletes compete in Division I with the talent level diminishing at Divisions II and III. Athletic scholarships are frequently awarded to Division I athletes, and available for Division II athletes but not as frequent as Division I. Division III athletes do not receive athletic scholarships.

Recruiting Respondents

This study used cross-sectional field survey data. After approval from Temple University's Institutional Review Board (IRB) was granted, the head coach from each

collegiate university sport was contacted via email or phone. Universities asked to participate were: West Chester University, Widener University, Drexel University, Eastern University, La Salle University, Haverford College, and Lebanon Valley College. Upon contacting the coaches, I described my study and sought their approval to administer the survey in person either before, during, or after practice. Two universities agreed to participate, and, in both cases, the electronic survey completion option was declined in favor of the paper completion option. Participants read each question and circled the number that best reflected their answer.

Participants were advised their participation was voluntary, the study examined student-athlete behavior and performance, their honesty in completing the survey was expected, and responses would only be used for research purposes and will remain confidential (Boardley & Jackson, 2012). They were reminded not to reflect on the teams they competed against, just the relationships on their team (e.g., intra-team). The recruited student-athletes completed two surveys (e.g., Survey 1 and Survey 2), the questions were conceptually the same, but the settings were different:

Study 2 - Survey 1: answer how you personally feel about each question.

Study 2 - Survey 2: answer how you think your teammates feel about each question.

Study 2 - Surveys 1 and 2 will use a Likert-type scale of 1 = not at all to 7 = very much, for each question. Circle the number that best matches your feelings for each question. The only exception to this will be after completing Survey 2 where I will ask you demographic information. You must be 18 years old to participate and your honesty while answering each question is expected. The survey is anonymous and at any time you may stop.

Table 11 Study 2: Respondents by Sport

Division II Athletes – West Chester University (WCU)				
Sport	Potential Respondents	Respondents	Mean Age	Mean Total Years Playing Their Team Sport
Women’s Softball	24	22	19.23	1.59
Women’s Volleyball	18	18	19.50	2.28
Women’s Track	17	17	19.53	2.32
Women’s Cross Country	12	12	19.92	2.33
Women’s Tennis*	1	1	18.00	1.00
Women’s Field Hockey*	1	1	21.00	2.00
Women’s Rugby*	1	1	18.00	1.00
Women’s Golf*	1	1	18.00	1.00
Men’s Soccer	26	24	19.58	2.17
Men’s Track	13	13	19.08	1.77
Men’s Cross Country	8	8	19.13	1.75
Men’s Football*	11	11	20.00	2.00
Men’s Basketball*	2	2	18.50	2.00
Men’s Baseball*	2	2	21.00	3.50
Men’s Swimming*	3	3	18.67	1.00
Division III Athletes – Widener University (WU)				
Sport	Potential Respondents	Respondents	Mean Age	Mean Total Years Playing Their Team Sport
Men’s Football	104	104	19.36	1.66
Division II (WCU) and Division III (WU) Combined				
Participants	Potential Respondents	Respondents	Mean Age	Mean Total Years Playing Their Team Sport
Female Athletes	75	73	19.40	1.50
Male Athletes	169	167	19.45	1.98

Note. All teams from Division II were from WCU, while the only team from Division III was from WU.

*Division II respondents by team from WCU were a collection of student athletes from a sport management class consisting of various teams. The author did not have access to the complete team, just the sports management class of 22 student athletes, all of which participated.

Table 11 summarizes the participating Division II and Division III sports teams, by the number of athletes who completed Survey 1 and Survey 2 on each team, their age,

and the total number of years playing their team sport at the collegiate level. The number of student athletes listed next to each sport in the column “potential respondents” represented the number of athletes physically present when the author met with the group. The number of athletes listed in the “respondents” section agreed to complete the survey. In addition to surveying university sports teams during practice, the Division II university, approved the author to survey a sports management class. This class was comprised of student athletes $n = 22$, participating in various collegiate sports, see Table 11 for the list of teams from the sports management class designated with an asterisk. At the Division III level, the author was given access to the football team (American football) $n = 104$.

Upon gaining access to the teams and sports management class, the author then coordinated the date, time, and location for survey administration with the head coach of each athletic team and the professor of the sports management class.

Study 2 Respondents

Fifteen sports teams were surveyed between the two universities (one team from Widener University, and fourteen teams from West Chester University) totaling 240 surveys completed by the student athletes. The participation rate was 98% and the $M =$ means by gender for age, and total years playing their team sport were as follows, (70% male, $M = 19.45$ years old, $M = 1.98$ total years playing their team sport; 30% female, $M = 19.40$ years old, $M = 1.50$ total years playing their team sport). Surveys were completed on campus during practices for each team and during the leadership class. Student-athletes filled out two surveys (both paper surveys) based on their experiences for their respective current collegiate athletic team. See Table 12 (e.g., Survey 1 –

respondent's view of personal rival on team) and Table 13 (e.g., Survey 2 – respondent's view of rivalries between teammates) for the complete list of items that were used to measure each construct. Respondents answered ninety Likert-type questions followed by nine demographic questions.

Independent Variable: Intra-Team Rivalry Measure

In Study 1, a combination of two rivalry scales was used in the exploratory factor analysis, one from Kilduff (2014) and the other from Back et al. (2013). The phrase “With one or more people on my athletic team” that was added to the beginning of each item in Study 1, was excluded from the rivalry scale items in Study 2. Reasons for this were that the addition and scale combination made the items too long and confusing, which resulted in longer survey completion times and questions asked by respondents to clarify items during Study 1. This had an adverse effect on the reliability of the rivalry scale for Study 1, Cronbach's $\alpha = .67$. In Study 2, this independent variable was measured by the rivalry scale adapted from Kilduff (2014). There are three reasons for the change: (1) in Study 1, principal axis factoring dropped all the items from the Back et al. (2013) scale, (2) in Study 1, principal axis factoring dropped only one item from the Kilduff (2014) scale, which left three items from Kilduff (2014) as the scale for rivalry, and (3) previous reliability for Kilduff (2014) 4-item rivalry scale was reported as Cronbach's $\alpha \geq .70$. Using Kilduff (2014) in Study 2, participants read the items and responded using a 7-point scale 1 (not at all) to 7 (very much). Example items from Tables 12-13 respectively will include, “I feel rivalry toward my teammates,” and “Some of my teammates have rivalries with other teammates” adapted from Kilduff (2014). Reliabilities for Study 2, Survey 1 Cronbach's $\alpha = .78$ and Survey 2 Cronbach's $\alpha = .89$.

Mediating Variable: Social Comparison Measure

This mediation variable was measured by the same scale used in Study 1 from Gibbons and Buunk (1999). Reliability in Study 1 was Cronbach's $\alpha = .76$. Example items from Tables 12-13 respectively include, "I compare the performances of my teammates with my own," and "My teammates compare their performance with other teammates." Reliabilities for Study 2, Survey 1 Cronbach's $\alpha = .83$ and Survey 2 Cronbach's $\alpha = .91$.

Mediating Variable: Individual Cohesion Measure

This mediation variable was measured by the same scale used in Study 1 from Carless and De Paola (2000). Reliability in Study 1 was Cronbach's $\alpha = .81$. Example items from Tables 12-13 respectively include, "I would like to spend time with my teammates outside of practice hours," and "My teammates party together." Reliabilities for Study 2, Survey 1 Cronbach's $\alpha = .90$ and Survey 2 Cronbach's $\alpha = .92$.

Dependent Variable: Individual Performance Measure

In Study 1, this dependent variable was measured by a performance scale adapted from Kohli, Shervani, and Challagalla (1998) by changing business titles and language to athletic titles and language (i.e., "sales people" changed to "Teammates" and "Supervisor" to "Coach," etc.). Due to a Cronbach's $\alpha = .63$ in Study 1, this scale was replaced in Study 2 with an adapted 3-item scale from Schaubroeck, Lam, and Cha (2007) with a reported Cronbach's $\alpha = .90$. This scale was 1 (strongly disagree) to 5 (strongly agree); however, the scale was changed to the 1 to 7 format to avoid participant confusion and to have consistent results. Example items from Tables 12-13 respectively include, "I have performed my job well," and "My teammates perform their jobs well"

adapted from Schaubroeck et al. (2007). Reliabilities for Study 2, Survey 1 Cronbach's $\alpha = .76$ and Survey 2 Cronbach's $\alpha = .84$.

Dependent Variable: Team Performance Measure

This dependent variable was measured by the same scale used in Study 1 from Sparrowe, Liden, Wayne, and Kraimer's (2001). Example items from Tables 12-13 respectively include, "My team produces quality results," and "My teammates get their work done very effectively." Reliability in Study 1 was Cronbach's $\alpha = .83$. In addition to the scale from Sparrowe et al. (2001), another item, a ratio of team wins to total games played in a season (e.g., wins/total games played), was used to measure team performance (Dirks, 2000). Respondents were asked in Survey 2 "What is your team's most recent win and loss record." This item was then indexed with the team performance scale from Sparrowe et al. (2001) which served as a more rigorous measure compared to Study 1, which relied solely on the scale from Sparrowe et al. (2001). In a meta-analysis measuring team performance by De Dreu and Weingart (2003), most studies obtained performance feedback from team members and used that feedback in combination (i.e., indexed) with more specific measures (e.g., product quality, team effectiveness, production quantity, etc.). Reliabilities for Study 2, Survey 1 Cronbach's $\alpha = .83$ and Survey 2 Cronbach's $\alpha = .84$.

Dependent Variable: Individual Deviance Measure

This dependent variable was measured by the same scale used in Study 1 from Bennett and Robinson (2000). Example items from Tables 12-13 respectively include, "I make fun of my teammates during team events," and "My teammates act rudely toward

other teammates during team events.” Reliability in Study 1 was Cronbach’s $\alpha = .89$.

Reliabilities for Study 2, Survey 1 Cronbach’s $\alpha = .88$ and Survey 2 Cronbach’s $\alpha = .94$.

Dependent Variable: Motivation Measure

This dependent variable was measured by the work motivation scale developed by Tremblay, Blanchard, Villeneuve, Taylor, & Pelletier, 2009; adapted by Rockman and Ballinger, 2017. Participants read the items and responded using a 7-point scale 1 (not at all) 7 (very much). Example items from Tables 12-13 respectively include “I am involved with the team for the financial assistance or notoriety, it provides me,” and “My teammates are involved with the team for the satisfaction they experience when they are successful at doing different tasks” adapted from Rockman & Ballinger (2017), who reported the scale’s reliability, Cronbach’s $\alpha = .90$. Reliabilities for Study 2, Survey 1 was Cronbach’s $\alpha = .82$, and for Survey 2 it was Cronbach’s $\alpha = .89$.

Scale Response Values

Scales measuring the model constructs of individual deviance, team performance, individual cohesion, social comparison, intra-team rivalry, individual performance, and motivation, were coded with the participants’ responses on a scale from 1 = disagree strongly; 2 = disagree; 3= disagree somewhat; 4 = neither agree or disagree; 5 = agree somewhat; 6 = agree; 7= agree strongly. Same for Survey 2 in Study 2.

Control Variables: Demographic Information

Demographic information was collected at the end of Survey 2 in Study 2.

Generally, demographic information measured the same variables as in Study 1.

Additions were due to the setting of Study 2 being current collegiate student athletes,

which required the following changes, see Table 13: (91) “Circle the NCAA level (e.g.,

Divisions I, II, III) that your team competes;” (92) “What collegiate sport do you play;” (93) “What is your team’s most recent win and loss record;” (95) “How long have you played on your collegiate team;” (96) “How long have you played with your collegiate coach;” and (97) “Total years (including before college), how long have you played your collegiate sport.” Demographic information was used as control variables (e.g., sport of respondent, division of sport, gender, and tenure with team and coach).

Table 12 Study 2: Survey 1 Current Collegiate Student-Athlete's Own View

Construct	Measures
Intra-Team Rivalry	<p>Adapted from (Kilduff, 2014) Scale (1 = strongly disagree, 7 = strongly agree)</p> <ol style="list-style-type: none"> 1) I consider some of my teammates to be personal rivals. 2) My competition with some of my teammates is more important to me because of my relationships with them. 3) I have a history with some of my teammates that makes my competitions with them more significant than my competition with other teammates. 4) I feel rivalry toward my teammates.
Social Comparison	<p>Adapted from (Gibbons, & Buunk, 1999) Scale (1 = strongly disagree, 7 = strongly agree)</p> <ol style="list-style-type: none"> 5) I always pay a lot of attention to how I do things compared to my teammates. 6) If I want to find out how well I have done something, I compare what I have done with my teammates. 7) I often compare how I am doing socially with my teammates. 8) I am the type of person who often compares myself with my teammates. 9) I often compare myself with my teammates with respect to what I have accomplished for the team. 10) I often try to find out what my teammates who face similar problems to me think. 11) I always like to know what my teammates in a similar situation would do. 12) I am aware of my teammates' performance. 13) I know the performance of my teammates. 14) I compare the performance of my teammates with my own.
Individual Cohesion	<p>Adapted from (Carless, & De Paola, 2000) Scale (1 = strongly disagree, 7 = strongly agree)</p> <ol style="list-style-type: none"> 15) I am happy with some of my teammates' level of commitment to a task. 16) My teammates are united in trying to reach our performance goals. 17) My teammates have similar aspirations for the team's performance. 18) My teammates give me enough opportunities to improve my personal performance. 19) I would like to spend time with my teammates outside of practice hours. 20) I stick together with my teammates outside of practice hours. 21) I party with my teammates. 22) I would rather get together with my teammates than go out on my own. 23) My team is one of the most important social groups I belong to. 24) My teammates are some of my best friends.

Table 12 Continued Study 2: Survey 1 Current Collegiate Student-Athlete's Own View

Individual Performance	Adapted from (Schaubroeck, Lam, & Cha, 2007) Scale (1 = strongly disagree, 7 = strongly agree)
	25) I am very competent. 26) I get my work done very effectively. 27) I have performed my job well.
Team Performance	Adapted from (Sparrowe, Liden, Wayne, & Kraimer, 2001) Scale (1 = strongly disagree, 7 = strongly agree)
	28) My team produces quality results. 29) My team gets work done efficiently. 30) My team demonstrates flexibility in dealing with unexpected changes. 31) My team has high overall team performance.
Individual Deviance	Adapted from (Bennett & Robinson, 2000) Scale (1 = strongly disagree, 7 = strongly agree)
	32) I make fun of my teammates during team events. 33) I say hurtful things to my teammates during team events. 34) I make ethnic, religious, or racial remarks to my teammates during team events. 35) I curse at my teammates during team events. 36) I play mean pranks on my teammates during team events. 37) I act rudely toward my teammates during team events. 38) I publicly embarrass my teammates during team events.
Motivation	Adapted from (Rockman & Ballinger, 2017) Scale (1 = strongly disagree, 7 = strongly agree)
	39) I am involved with the team because I derive much pleasure from learning new things. 40) I am involved with the team for the satisfaction I experience when I am successful at doing different tasks. 41) I am involved with the team for the satisfaction I experience from taking on interesting challenges. 42) I am involved with the team for the pleasure it gives me to know more about my sport. 43) I am involved with the team for the financial assistance or notoriety, it provides me. 44) I am involved with the team because it allows me to earn financial assistance or notoriety. 45) I am involved with the team because this type of team provides me with stability.

Table 13 Study 2: Survey 2 Current Collegiate Student Athlete's Team View

Construct	Measures
Intra-Team Rivalry	Adapted from (Kilduff, 2014) Scale (1 = strongly disagree, 7 = strongly agree) 46) Some of my teammates have rivalries with other teammates. 47) Competitions between some teammates are more important to them because of their relationship with each other. 48) The competitive history between some teammates makes competitions between them more significant than competitions against other teammates with less competitive history. 49) My teammates feel rivalry toward their teammates.
Social Comparison	Adapted from (Gibbons, & Buunk, 1999) Scale (1 = strongly disagree, 7 = strongly agree) 50) My teammates always pay a lot of attention to how they do things compared to their teammates. 51) When my teammates want to discover how they are doing, they compare what they have done with their teammates. 52) My teammates often compare how they are doing socially with their teammates. 53) My teammates often compare themselves with their teammates. 54) My teammates often compare themselves with their teammates with respect to what they have accomplished for the team. 55) My teammates often try to find out what their teammates think when they face similar problems. 56) My teammates always like to know what their teammates would do in a similar situation. 57) My teammates are aware of their teammates' performance. 58) My teammates know the performance of their teammates. 59) My teammates compare their performance with other teammates.
Individual Cohesion	Adapted from (Carless, & De Paola, 2000) Scale (1 = strongly disagree, 7 = strongly agree) 60) My teammates feel happy with their teammates' levels of commitment to a task. 61) My teammates feel that their teammates are united in trying to reach performance goals. 62) My teammates feel that their teammates have similar aspirations for the team's performance. 63) My teammates feel that their teammates give them enough opportunities to improve their personal performance. 64) My teammates would like to spend time together outside of practice hours. 65) My teammates stick together outside of practice hours. 66) My teammates party together. 67) My teammates would rather get together as a team than go out on their own. 68) My teammates feel that their team is one of the most important social groups to which they belong. 69) My teammates feel that other teammates are some of their best friends.
Individual Performance	Adapted from (Schaubroeck, Lam, & Cha, 2007) Scale (1 = strongly disagree, 7 = strongly agree) 70) My teammates are very competent. 71) My teammates get their work done very effectively. 72) My teammates perform their jobs well.
Team Performance	Adapted from (Sparrowe, Liden, Wayne, & Kraimer, 2001) Scale (1 = strongly disagree, 7 = strongly agree) 73) My teammates feel that the team produces quality results. 74) My teammates feel that the team gets work done efficiently. 75) My teammates feel that the team demonstrates flexibility in dealing with unexpected changes. 76) My teammates feel that the team has high overall team performance.

Survey 1

Table 14 Study 2: Survey 1 Confirmatory Factor Analysis

Scale Items	In Dev	In Coh	Sc Com	Tm Perf	Motivate	In Perf	Rivalry
1. I act rudely toward teammates	.885	-.033	.101	-.086	-.039	-.025	.029
2. I play mean pranks on teammates	.833	.001	.106	-.066	.005	-.046	0.46
3. I say hurtful things to teammates	.783	.049	.106	.019	-.070	-.006	.040
4. I publicly embarrass teammates	.763	-.068	.091	-.061	.025	-.075	.044
5. I make ethnic or religious remarks	.751	-.023	.016	-.037	-.067	-.032	.090
6. I curse at my teammates	.673	.124	.098	.028	.033	.011	.009
7. I make fun of teammates	.469	.174	.132	.033	.032	-.013	.081
8. My teammates are my best friends	.063	.854	.037	.079	.173	.116	.025
9. I would rather get together with	.048	.798	-.003	.083	.078	.123	-.087
10. I stick together with teammates	-.053	.797	.053	.269	.145	.001	.084
11. My team is one of the most	.032	.796	.061	.130	.141	.041	-.054
12. I would like to spend time	-.215	.697	.050	.325	.162	.048	.018
13. I party with my teammates	.263	.558	.049	.150	-.008	.170	-.109
14. If I want to find out how well I	.109	.063	.750	.007	.105	.063	-.030
15. I often compare myself to	.098	.015	.739	.097	.062	.041	.197
16. I compare the performance of	-.015	.042	.648	.051	-.002	-.001	.173
17. I pay a lot of attention to how I do	.071	-.114	.644	-.086	.030	.097	.088
18. I compare myself to teammates	.118	.163	.632	.115	.122	.066	.080
19. I always like to know what my	.095	.064	.508	.112	.252	-.119	-.070
20. I often try to find out what my	.009	-.148	.459	.077	.291	-.162	.059
21. I often compare how I am doing	.141	.059	.442	.067	.076	.038	.153
22. My team gets work done	-.112	.167	.116	.790	.119	.218	-.046
23. My team produces quality	-.030	.223	.056	.782	.212	.231	-.069
24. My team has high team	-.045	.244	.058	.747	.098	.032	.018
25. My team demonstrates	.014	.170	.131	.685	.111	.056	.011
26. For the satisfaction from	-.061	.137	.144	.085	.813	.130	.051
27. For the satisfaction I experience	-.067	.164	.177	.059	.738	.130	.040
28. For the pleasure it gives me to	-.066	.113	.107	.104	.728	-.007	.043
29. I derive much pleasure from	.048	.092	.102	.136	.598	.141	-.017
30. This type of team provides stability	.027	.280	.098	.205	.429	-.051	.120
31. I get my work done very effectively	-.184	.141	.107	.276	.151	.728	.030
32. I have performed my job well	-.085	.279	.008	.391	.175	.598	.028
33. I am very competent	.053	.432	-.040	.110	.149	.449	.037
34. I consider teammates to be rivals	.116	-.028	.299	.006	.099	.003	.694
35. I feel rivalry toward my teammates	.153	-.087	.336	-.098	.059	.074	.681

Table 14 Continued Study 2: Survey 1 Confirmatory Factor Analysis

Scale Items	In Dev	In Coh	Sc Com	Tm Perf	Motivate	In Perf	Rivalry
36. My competition with my teammates	.214	.026	.266	.159	.137	-.086	<u>.324</u>
37. I have a history with my teammates	.182	.083	.265	-.045	-.002	.265	<u>.500</u>
Eigenvalue (Varimax Rotation)	7.67	5.78	3.60	2.02	1.93	1.57	1.28
Percent variance explained	20.71%	15.63%	9.73%	5.46%	5.21%	4.23%	3.45%
Cumulative percent variance explained	20.71%	36.34%	46.07%	51.53%	56.74%	60.97%	64.42%

Note. Factors: In Dev = Individual Deviance, In Coh = Individual Cohesion, Sc Com = Social Comparison, Tm Perf = Team Performance, Motivate = Motivation, In Perf = Individual Performance, Rivalry = Intra-Team Rivalry.

Results

Findings from Table 14 illustrate seven distinct constructs for Survey 1 of Study 2. A majority of the bold and underlined variable loadings of the seven factors are $\geq .400$ indicating a significant contribution to each factor (Field, 2018; Stevens, 2002). Table 14 validates the scales used in Survey 1, complete scale items found in Table 11 (e.g., Survey 1). The eigenvalues, reported at the bottom of Table 14, by factor were individual deviance 7.661, individual cohesion 5.782, social comparison 3.598, team performance 2.022, motivation 1.928, individual performance 1.565, and intra-team rivalry 1.275 accounting for 64.41% of the variance in the items. Kaiser’s criterion of preserving factors with eigenvalues ≥ 1 was used (Field, 2018), which confirms seven distinct constructs for subsequent statistical analyses. Although not shown in Table 14, there were 30 additional eigenvalues ranging from 1.040 to .110 that all except for one did not make the cutoff threshold of ≥ 1 .

Based on the confirmatory factor analysis in Table 14 for Survey 1, the original 10-item scale from Gibbons and Buunk (1999) measuring social comparison was reduced to 8-items. Dropped from Table 12 were items 12 and 13. They loaded together on another factor and despite cross loading with social comparison items, they had low

loadings of $< .25$. The original 7-item scale adapted from Rockman and Ballinger (2017) measuring motivation was reduced to 5-items. The dropped items from Table 12 were 43 and 44. They loaded together on another factor and had low cross loadings $< .01$ with the rest of the motivation items. Finally, the original 10-item scale from Carless and De Paola (2000) measuring individual cohesion was reduced to 6-items. The dropped items from Table 12 were items 15-18. They all loaded together on another factor and had low cross loadings $< .33$ with the rest of the individual cohesion items.

A confirmatory factor analysis in SPSS was run in Study 2 since I had previously run an exploratory factor analysis in Study 1. The exploratory factor analysis revealed how the variables loaded on each factor. Additional support for running the confirmatory factor analysis was that the rivalry scale used in Study 1 was adapted by combining two scales, one from Kilduff (2014) and the other from Back et al. (2013). This scale combination produced a longer survey and led to items being dropped. All the scale items from Back et al. (2013) were dropped as well as one from Kilduff (2014), resulting in Cronbach's $\alpha \leq .70$. The adjustment for Study 2 was to use the rivalry scale developed by Kilduff (2014) in its original form with minimal adaptation, hence no scale combination. Prior reliability for the rivalry scale from Kilduff (2014) was $\geq .70$. Also, the scale for individual performance used in Study 1 had low reliability, Cronbach's $\alpha = .63$. In Study 2, a different scale from Schaubroeck et al. (2007), was selected to measure individual performance due to its high reliability, Cronbach's $\alpha = .90$.

Table 14 reports the results from a rotated factor matrix using principal axis factoring as the extraction method. Like Study 1, principal axis factoring was used. The rotation method used was orthogonal (e.g., Varimax) with Kaiser Normalization (e.g.,

SPSS default setting) since this method “tries to load a smaller number of variables highly onto each factor, resulting in more interpretable clusters of factors” (Field, 2018, p. 581). Seven factors were specified for the items loaded into SPSS. Rotation converged in 7 iterations.

Table 15 Study 2: Survey 1 Descriptive Statistics, Reliabilities, Correlations

Var.	1	2	3	4	5	6	7	8	9	10	11	12
In Dev	(.88)											
Tm Perf	-.04	(.83)										
In Coh	.10 ⁺	.44 ^{***}	(.90)									
Sc Com	.23 ^{***}	.19 ^{***}	.11 [*]	(.83)								
Rivalry	.35 ^{***}	.05	.06	.50 ^{***}	(.78)							
In Perf	-.08	.49 ^{***}	.48 ^{***}	.09 ⁺	.06	(.76)						
Motivate	.01	.35 ^{***}	.35 ^{***}	.32 ^{***}	.24 ^{***}	.35 ^{***}	(.82)					
Gender	.45 ^{***}	-.16 ^{**}	.02	.01	.24 ^{***}	-.07	-.12 [*]	---				
Sport	-.36 ^{***}	-.12 [*]	.03	-.26 ^{***}	-.18 ^{**}	.03	.00	-.11 [*]	---			
Y-Team	.09 ⁺	-.16 ^{**}	.18 ^{**}	-.10 ⁺	.00	.16 ^{**}	.15 [*]	-.10 ⁺	.05	---		
Y-Coach	.10 ⁺	-.15 ^{**}	.20 ^{***}	-.08 ⁺	.02	.16 ^{**}	.15 ^{**}	-.10 ⁺	.04	.98 ^{***}	---	
T-Y-Spt	.02	-.03	.09 ⁺	-.09 ⁺	-.10 ⁺	.01	-.08	.13 [*]	.01	.20 ^{***}	.21 ^{***}	---
Div-Spt	.56 ^{***}	-.05	-.04	.19 ^{***}	.29 ^{***}	-.12 [*]	-.10 ⁺	.58 ^{***}	-.67 ^{***}	-.13 [*]	-.12 [*]	.07

Table 15 reports the descriptive statistics (i.e., samples, means, standard deviations), reliability estimates, and correlations between the variables. Model constructs intra-team rivalry, individual deviance, individual cohesion, social comparison, team performance, motivation, and individual performance for all 240 participants. All surveys were usable in Study 2. There are two explanations for this. First, the survey was improved from Study 1 to Study 2 by having respondents circle

their number choice for each question in Study 2. This eliminated legibility concerns. Second, in all cases, the head coach, assistant coach, or professor in the case of the leadership class, were present during survey completion. Their presence enhanced respondent intensity during survey completion as evidenced by the fact that I did not have to discard a completed survey.

The means (M) and standard deviations (SD) in Table 15 are as follows for model constructs: individual deviance ($M = 2.19$; $SD = 1.27$), team performance ($M = 4.69$; $SD = 0.78$), individual cohesion ($M = 5.91$; $SD = 1.21$), social comparison ($M = 4.26$; $SD = 1.17$), intra-team rivalry ($M = 3.53$; $SD = 1.47$), individual performance ($M = 5.73$; $SD = 0.96$), motivation ($M = 5.21$; $SD = 1.04$). For control variables: years on team ($M = 1.85$; $SD = 1.22$), years with coach ($M = 1.81$; $SD = 1.18$), and total years playing sport ($M = 9.70$; $SD = 4.38$). Means and standard deviations were not estimated for control variables: gender, sport played, and NCAA Division of sport. Each control variable was coded with more than two possibilities, making the variable nominal, hence, the means and standard deviations are not meaningful. The only exception was gender that had two options, nonetheless, mean and standard deviation for gender not meaningful.

Examining the means for model constructs, two variables, intra-team rivalry and individual deviance were below neutral (e.g., 4). While, individual cohesion, social comparison, team performance, motivation, and individual performance were all above neutral (e.g., 4). All seven variables had standard deviations close to their means that minimized the presence of outliers.

The results from a scale reliability analysis (e.g., Cronbach's coefficient alpha) are also presented in Table 15 using the scale items from the confirmatory factor analysis

in Table 14. The scales for individual cohesion, individual deviance, social comparison, team performance and motivation all had high reliabilities, Cronbach's $\alpha > .80$ (.90, .88, .83, .83, and .82 respectively). The scales for intra-team rivalry and individual performance, while not as high, had acceptable reliabilities, Cronbach's $\alpha > .75$ (.78 and .76 respectively). Control variables were open response items and were not measured with scales, hence no reliabilities to report, marked with dashes in Table 15.

Control Variables Open Response

For years on team, years with the coach, and total years playing the sport respondents wrote the applicable number of years for each item. Same for Survey 2 in Study 2.

Control Variables Coding

Gender was coded, 1 = Female; and 2 = Male. NCAA division of sport was coded by sport consisting of 15 total, 1 = Division I; 2 = Division II; and 3 = Division III. Sport played: 1 = Football; 2 = Volleyball; 3 = Softball; 4 = Women's Cross Country; 5 = Men's Cross Country; 6 = Women's Track; 7 = Men's Track; 8 = Baseball; 9 = Soccer; 10 = Tennis; 11 = Field Hockey; 12 = Rugby; 13 = Golf; 14 = Basketball; and 15 = Swimming. Same for Survey 2 in Study 2.

Finally, Table 15 reports the correlations between variables. Correlations at the $p \leq .01$; and $p \leq .001$ levels for each variable are highlighted here and explored first for model constructs. The variables that correlated significantly with individual deviance were social comparison ($r = .23$; $p < .001$), intra-team rivalry ($r = .35$; $p < .001$), gender ($r = .45$; $p < .001$), sport played ($r = -.36$; $p < .001$), and NCAA division of sport played ($r = .56$; $p < .001$).

The variables that correlated significantly with team performance were individual cohesion ($r = .44; p < .001$), social comparison ($r = .19; p < .001$), individual performance ($r = .49; p < .001$), motivation ($r = .35; p < .001$), gender ($r = -.16; p < .01$), years on team ($r = -.16; p < .01$), and years with coach ($r = -.15; p < .01$).

The variables that correlated significantly with individual cohesion were individual performance ($r = .48; p < .001$), motivation ($r = .35; p < .001$), years on team ($r = .18; p < .01$), and years with coach ($r = .20; p < .001$).

The variables that correlated significantly with social comparison were intra-team rivalry ($r = .50; p < .001$), motivation ($r = .32; p < .001$), sport played ($r = -.26; p < .001$), and NCAA division of sport played ($r = .19; p < .001$).

The variables that correlated significantly with intra-team rivalry were motivation ($r = .24; p < .001$), gender ($r = .24; p < .001$), sport played ($r = -.18; p < .01$), and NCAA division of sport played ($r = .29; p < .001$).

The variables that correlated significantly with individual performance were motivation ($r = .35; p < .001$), years on team ($r = .16; p < .01$), and years with coach ($r = .16; p < .01$). Only one variable correlated significantly with motivation, years with coach ($r = .15; p < .01$).

Correlations at the $p \leq .01$; and $p \leq .001$ levels for each control variable are highlighted here. The one variable that correlated significantly with gender, was NCAA division of sport played ($r = .58; p < .001$). Only NCAA division of sport played ($r = -.67; p < .001$) correlated significantly with sport played. The variables that correlated significantly with years on team were years with coach ($r = .98; p < .001$), and total years playing the sport ($r = .20; p < .001$).

Only one variable correlated significantly with years playing with a coach, was total years playing the sport ($r = .21$; $p < .001$). Because I had interval data, Pearson's r was used to evaluate correlation as it was used in Study 1.

Table 16 Study 2: Survey 1 Regression Analyses for Hypotheses H1-H4

Variable	Hypothesis 1			Hypothesis 2			Hypothesis 3			Hypothesis 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Model 1												
Y-Team	-.59	.41	-.49	-.59	.41	-.49	.16	.28	.20	-.25	.30	-.24
Y-Coach	.71	.42	.57 ⁺	.71	.42	.57 ⁺	-.04	.30	-.05	.45	.31	.42
T-Y-Spt	-.05	.02	-.15 [*]	-.05	.02	-.15 [*]	-.00	.02	-.02	-.02	.02	-.07
Sport	-.02	.04	-.05	-.02	.04	-.05	-.03	.03	-.11	-.03	.03	-.08
Gender	.53	.27	.17 ⁺	.53	.27	.17 ⁺	.13	.19	.06	.67	.20	.24 ^{***}
Div-Spt	.51	.34	.18	.51	.34	.18	-.41	.23	-.21 ⁺	.97	.25	.39 ^{***}
Model 2												
Y-Team	-.34	.36	-.28	-.56	.41	-.46	.20	.28	.25	-.16	.30	-.16
Y-Coach	.50	.37	.40	.67	.43	.54	-.09	.30	-.11	.35	.31	.32
T-Y-Spt	-.04	.02	-.12 [*]	-.05	.02	-.16 [*]	.00	.02	-.00	-.01	.02	-.05
Sport	.03	.04	.06	-.02	.04	-.04	-.03	.03	-.11	-.03	.03	-.07
Gender	.60	.24	.19 [*]	.51	.28	.16 ⁺	.09	.19	.05	.59	.20	.21 ^{**}
Div-Spt	.42	.29	.14	.53	.34	.18	-.44	.23	-.23 ⁺	.89	.24	.36 ^{***}
Indep. Variable	.61	.07	.48 ^{***}	.07	.08	.05	.06	.05	.10	.15	.05	.17 ^{**}
Model 1 Summary	$R^2 = .126$ p -value < .001			$R^2 = .126$ p -value < .001			$R^2 = .043$ p -value = .114			$R^2 = .372$ p -value < .001		
Model 2 Summary (ΔR^2)	$\Delta R^2 = .213$ p -value < .001			$\Delta R^2 = .003$ p -value = .398			$\Delta R^2 = .008$ p -value = .168			$\Delta R^2 = .026$ p -value < .01		
Model 2 Summary (Overall Effect)	$R^2 = .340$ p -value < .001			$R^2 = .129$ p -value < .001			$R^2 = .051$ p -value < .10			$R^2 = .398$ p -value < .001		

Note. *B* = unstandardized coefficient beta; *SE B* = beta standard error; β = standardized coefficient beta. Model 1 reports control variables. Model 2 reports control variables and Intra-Team Rivalry. Y-Team = Years on team; Y-Coach = Years with coach; T-Y-Spt = Total years playing the sport; Sport = Sport played; Div-Spt = Division of NCAA Competition. Indep. Variable = Independent Variable (listed first in Hypotheses). Hypothesis 1 = Social Comparison to Intra-Team Rivalry; Hypothesis 2 = Individual Cohesion to Intra-Team Rivalry; Hypothesis 3 = Intra-Team Rivalry to Individual Performance; Hypothesis 4 = Intra-Team Rivalry to Individual Deviance.
⁺ $p < .10$. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p \leq .001$.

Table 16 reports the regression results for Hypotheses H1 – H4. The same procedure from Study 1 was used to evaluate each regression analysis. Hypothesis 1, social comparison is positively related to intra-team rivalry. Regression analysis with control variables (see Table 16, Model 1 for control variable data), revealed a statistically significant contribution of social comparison. In Model 2, social comparison ($\beta = .48, p < .001$) explained an additional 21% of the variance in intra-team rivalry ($\Delta R^2 = .213, p < .001, d = .55$), with a medium effect size. As predicted, these results support my hypothesis that social comparison is positively related to intra-team rivalry.

Hypothesis 2, individual cohesion is positively related to intra-team rivalry. Regression analysis with control variables (see Table 16, Model 1 for control variable data), revealed a statistically insignificant contribution of individual cohesion. In Model 2, individual cohesion ($\beta = .05, p = .398$) explained < 1% of the variance in intra-team rivalry ($\Delta R^2 = .003, p = .398, d = 1.77$). These results do not support my hypothesis that individual cohesion is positively related to intra-team rivalry.

Hypothesis 3, intra-team rivalry is positively related to individual performance. Regression analysis with control variables (see Table 16, Model 1 for control variable data), revealed a statistically insignificant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .10, p = .168$) explained < 1% of the variance in individual performance ($\Delta R^2 = .008, p = .168, d = 1.77$). These results do not support my hypothesis that intra-team rivalry is positively related to individual performance.

Hypothesis 4, intra-team rivalry is positively related to individual deviance. Regression analysis with control variables (see Table 16, Model 1 for control variable data), revealed a statistically significant contribution of intra-team rivalry. In Model 2,

intra-team rivalry ($\beta = .17, p < .001$) explained an additional 3% of the variance in individual deviance ($\Delta R^2 = .026, p < .010, d = .98$), with a large effect size. As predicted, these results support my hypothesis that intra-team rivalry is positively related to individual deviance.

Table 17 Study 2: Survey 1 Regression Analyses for Hypotheses H5-H8

Variable	Hypothesis 5			Hypothesis 6			Hypothesis 7			Hypothesis 8		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Model 1												
Y-Team	-.11	.30	-.12	-.26	.22	-.41	-.26	.22	-.41	-.26	.22	-.41
Y-Coach	.25	.31	.28	.15	.23	.22	.15	.23	.22	.15	.23	.22
T-Y-Spt	-.02	.02	-.10	.01	.01	.04	.01	.01	.04	.01	.01	.04
Sport	-.03	.03	-.08	-.05	.02	-.23*	-.05	.02	-.23*	-.05	.02	-.23*
Gender	-.09	.20	-.04	-.20	.15	-.12	-.20	.15	-.12	-.20	.15	-.12
Div-Spt	-.23	.25	-.11	-.27	.18	-.17	-.27	.18	-.17	-.27	.18	-.17
Model 2												
Y-Team	.01	.30	.02	-.33	.19	-.51 ⁺	-.26	.22	-.40	-.23	.21	-.36
Y-Coach	.10	.30	.12	.17	.20	.25	.14	.23	.21	.08	.22	.12
T-Y-Spt	-.01	.02	-.06	.01	.01	.05	.01	.01	.04	.01	.01	.08
Sport	-.02	.03	-.07	-.04	.02	-.17*	-.05	.02	-.23*	-.05	.02	-.20*
Gender	-.19	.20	-.09	-.26	.13	-.15*	-.22	.15	-.13	-.18	.14	-.11
Div-Spt	-.34	.24	-.16	-.10	.16	-.06	-.29	.19	-.19	-.20	.17	-.13
Indep. Variable	.20	.05	.29***	.42	.04	.52***	.03	.05	.04	.28	.05	.37***
Model 1 Summary	$R^2 = .049$ p -value < .10			$R^2 = .086$ p -value < .01			$R^2 = .086$ p -value < .01			$R^2 = .086$ p -value < .01		
Model 2 Summary (ΔR^2)	$\Delta R^2 = .072$ p -value < .001			$\Delta R^2 = .259$ p -value < .001			$\Delta R^2 = .001$ p -value = .577			$\Delta R^2 = .127$ p -value < .001		
Model 2 Summary (Overall Effect)	$R^2 = .121$ p -value < .001			$R^2 = .344$ p -value < .001			$R^2 = .087$ p -value < .01			$R^2 = .213$ p -value < .001		

Note. *B* = unstandardized coefficient beta; *SE B* = beta standard error; β = standardized coefficient beta. Model 1 reports control variables. Model 2 reports control variables and Intra-Team Rivalry. Y-Team = Years on team; Y-Coach = Years with coach; T-Y-Spt = Total years playing the sport; Sport = Sport played; Div-Spt = Division of NCAA Competition. Indep. Variable = Independent Variable (listed first in Hypotheses). Hypothesis 5 = Intra-Team Rivalry to Motivation; Hypothesis 6 = Individual Performance to Team Performance; Hypothesis 7 = Individual Deviance to Team Performance; Hypothesis 8 = Motivation to Team Performance.
⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p \leq .001$.

Table 17 reports the regression results for Hypotheses H5 – H8. Hypothesis 5, intra-team rivalry is positively related to motivation. Regression analysis with control variables (see Table 17, Model 1 for control variable data), revealed a statistically significant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .29, p < .001$) explained an additional 7% of the variance in motivation ($\Delta R^2 = .072, p < .001, d = 1.32$), with a large effect size. As predicted, these results support my hypothesis that intra-team rivalry is positively related to motivation.

Hypothesis 6, individual performance is positively related to team performance. Regression analysis with control variables (see Table 17, Model 1 for control variable data), revealed a statistically significant contribution of individual performance. In Model 2, individual performance ($\beta = .52, p < .001$) explained an additional 26% of the variance in team performance ($\Delta R^2 = .259, p < .001, d = 1.19$), with a large effect size. As predicted, these results support my hypothesis that individual performance is positively related to team performance.

Hypothesis 7, individual deviance is negatively related to team performance. Regression analysis with control variables (see Table 17, Model 1 for control variable data), revealed a statistically insignificant contribution of individual deviance. In Model 2, individual deviance ($\beta = .04, p = .580$) explained < 1% of the variance in team performance ($\Delta R^2 = .001, p = .577, d = 2.37$). These results do not support my hypothesis that individual deviance is negatively related to team performance.

Hypothesis 8, motivation is positively related to team performance. Regression analysis with control variables (see Table 17, Model 1 for control variable data), revealed a statistically significant contribution of motivation. In Model 2, motivation ($\beta = .37, p <$

.001) explained an additional 13% of the variance in team performance ($\Delta R^2 = .127, p < .001, d = .57$), with a large effect size. As predicted, these results support my hypothesis that motivation is positively related to team performance.

Table 18 Study 2: Survey 1 Mediation Model Coefficients for Hypothesis 9

Consequent								
		<i>M</i> (Individual Performance)			<i>Y</i> (Team Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
<i>X</i> (Rivalry)	<i>a</i>	0.07	0.05	.10	<i>c'</i>	0.05	0.04	.09
<i>M</i> (In Perf)	—	—	—	—	<i>b</i>	0.42	0.04	.52**
Constant	<i>i_M</i>	6.33**	0.52	—	<i>i_y</i>	3.28**	0.45	—

Models							
		Non-Mediated Model			Mediated Model		
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Team Performance		0.05	0.04	.09	0.02	0.03	.04

Models					
		Non-Mediated Model		Mediated Model	
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect		0.30	(7, 232) = 3.38*	0.35	(8, 231) = 15.26**

Note. *a* = the effect of intra-team rivalry on individual performance; *b* = the effect of individual performance on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; In Perf = individual performance. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

p* < .01. *p* < .001.

I tested for mediation through the paths of individual performance, individual deviance, and motivation (Hypotheses 9-11 respectively). The five-step procedure to test for mediation in Study 1 is described below. All five steps need to be met for mediation

to be supported. First, there must be a significant relationship between the independent variable and the dependent variables. Second, there must be a significant relationship between the mediator and the dependent variable. Third, the relationship between the predictor and outcome variable must be less significant once the mediator has been added. Fourth, the power for the model summary containing the mediator must be stronger when compared with the model that does not include the mediator. Finally, the bootstrap confidence interval must not contain zero.

Table 18 illustrates the results for Hypothesis 9. Control variable loadings were significant as follows: years on team ($\beta = -.49, p < .10$), sport played ($\beta = -.17, p < .05$), and gender ($\beta = -.16, p < .05$). Step 1, the standardized beta coefficients between intra-team rivalry and individual performance ($\beta = .10, p = .168$), and intra-team rivalry and team performance ($\beta = .09, p = .193$) were both not significant, Step 1, no mediation support.

Step 2, the standardized beta coefficient between the mediator of individual performance and the dependent variable of team performance ($\beta = .52, p < .001$) was significant, mediation supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = .09, p = .193$) and for the mediated model ($\beta = .04, p = .501$). Since neither model was significant, even though the mediated model was weaker, Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .35, p < .001$), compared with the non-mediated model ($R^2 = .30, p < .01$). The mediated model

had a marginally greater explanatory power compared with the non-mediated model, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.03$) based on 5,000 bootstrap samples did include zero (-0.009 to 0.077). Thus, the indirect effect was not statistically significant, Step 5, no mediation support. All five steps need to support mediation, Hypothesis 9 did not meet the criteria. Individual performance does not mediate the positive relationship between intra-team rivalry and team performance.

Table 19 Study 2: Survey 1 Mediation Model Coefficients for Hypothesis 10

Consequent								
M (Individual Deviance)					Y (Team Performance)			
Antecedent	<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β	
X (Rivalry)	<i>a</i>	0.15	0.05	.17*	<i>c'</i>	0.05	0.04	.09
<i>M</i> (Individual Deviance)	—	—	—		<i>b</i>	0.03	0.05	.04
Constant	<i>i_M</i>	-1.62*	0.54	—	<i>i_y</i>	5.96**	0.42	—

Models							
Non-Mediated Model				Mediated Model			
Predictor and Outcome	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	
Rivalry and Team Performance	0.05	0.04	.09	0.04	0.04	.09	

Models				
Non-Mediated Model			Mediated Model	
Model Summary	<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect	0.09	(7, 232) = 3.38*	0.09	(8, 231) = 2.96*

Note. *a* = the effect of intra-team rivalry on individual deviance; *b* = the effect of individual deviance on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

p* < .01. *p* < .001.

Table 19 illustrates the results for Hypothesis 10. Only one control variable was significant, sport played ($\beta = -.23, p < .05$). Step 1, the standardized beta coefficients between intra-team rivalry and individual deviance ($\beta = .17, p < .01$) was significant, and intra-team rivalry and team performance ($\beta = .09, p = .193$) was not significant, Step 1, no mediation support.

Step 2, the standardized beta coefficient between the mediator of individual deviance and the dependent variable of team performance ($\beta = .04, p = .577$) was not significant, Step 2, no mediation support.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = .09, p = .193$) and for the mediated model ($\beta = .09, p = .225$). Since neither model was significant, despite the mediated model being weaker, Step 3 provided no mediation support.

Step 4, the power of the model summary containing the mediator was ($R^2 = .09, p < .001$), compared with the non-mediated model ($R^2 = .09, p < .01$). The mediated model and the non-mediated model, statistically, had the same explanatory power. Step 4, no support for mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.02$) based on 5,000 bootstrap samples did include zero (-0.017 to 0.024). Thus, the indirect effect was not statistically significant, Step 5, no mediation support. All five steps need to support mediation, Hypothesis 10 did not meet the criteria. Individual deviance does not mediate the positive relationship between intra-team rivalry and team performance.

Table 20 Study 2: Survey 1 Mediation Model Coefficients for Hypothesis 11

Consequent								
		<i>M</i> (Motivation)			<i>Y</i> (Team Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
<i>X</i> (Rivalry)	<i>a</i>	0.20	0.05	.29**	<i>c'</i>	0.05	0.04	.09
<i>M</i> (Motivation)	—	—	—	—	<i>b</i>	0.28	0.05	.37**
Constant	<i>i_M</i>	5.64**	0.54	—	<i>i_y</i>	4.37**	0.47	—

Models							
		Non-Mediated Model			Mediated Model		
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Team Performance		0.05	0.04	.09	-0.01	0.04	-.02

Models				
		Non-Mediated Model		Mediated Model
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)	<i>F</i> (df1, df2)
Total Effect		0.09	(7, 232) = 3.38*	0.21 (8, 231) = 7.85**

Note. *a* = the effect of intra-team rivalry on motivation; *b* = the effect of motivation on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated. * $p < .01$. ** $p < .001$.

Table 20 illustrates the results for Hypothesis 11. The control variable of sport played ($\beta = -.20, p < .05$) contributed significantly. Step 1, the standardized beta coefficients between intra-team rivalry and motivation ($\beta = .29, p < .001$) was significant, and intra-team rivalry and team performance ($\beta = .09, p = .193$) was not significant, Step 1, no mediation support.

Step 2, the standardized beta coefficient between the mediator of motivation and the dependent variable of team performance ($\beta = .28, p < .001$) was significant, Step 2, supports mediation.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = .09, p = .193$) and for the mediated model ($\beta = -.02, p = .767$). Since neither model was significant, even though the mediated model was weaker, Step 3, no mediation support.

Step 4, the power of the model summary containing the mediator was ($R^2 = .21, p < .001$), compared with the non-mediated model ($R^2 = .09, p < .01$). The mediated model had greater explanatory power, Step 4, supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.06$) based on 5,000 bootstrap samples did not include zero (0.025 to 0.095). Thus, the indirect effect was statistically significant, Step 5, supports mediation. All five steps need to support mediation, Hypothesis 11 did not meet the criteria. Motivation does not mediate the positive relationship between intra-team rivalry and team performance.

Survey 2

Survey 2 followed the same procedures used in Survey 1, with three modifications. These modifications between Survey 2 and Survey 1 are discussed next. First, unit of analysis and data analysis adjustments. Survey 2 data was from respondents being asked to report their view of each item as it related to behaviors they observed from their teammates. While Survey 1 data was at the individual level where respondents reported on whether they exhibited certain behaviors. In order to transform data from the

individual level to the team level it must be aggregated. Similar studies to this research have used aggregation (Aubé, & Rousseau, 2005; Faraj & Sproull, 2000; Lee, 2007).

The aggregate function in SPSS was used to transform my constructs of social comparison, individual cohesion, intra-team rivalry, individual performance, individual deviance, motivation, and team performance to the team level.

Second, formation of teams during data analysis. Since the unit of analysis changed from the individual level in Survey 1 (n = 240) to the team level in Survey 2, my initial team sample size for Survey 2 was n = 10. This small sample size presented a challenge, testing my hypotheses would not be possible using the previous methods in Study 1, and Survey 1 of Study 2. To test and compare results of Survey 2 of Study 2 with my previous studies, the teams I collected data with were grouped by the demographic variable of class standing which formed teams within teams, see “Team Level Data and Study Design.”

Third, control variable adjustments. The control variable of gender was dropped because it was already represented in the name of the team (e.g., women’s tennis) which made further investigation of gender redundant. To address size variance among teams, the control variable of team size was added to each of my analyses for Survey 2 of Study 2. This control variable was added since team size disparities may skew study results (Cural, Forrester, Dawson, & West, 2001).

Team Level Data and Study Design

The literature on team’s research is abundant with examples of scholars breaking their team data down based on study design. The separation of team data is generally handled one of two ways in the literature. First, by combining teams into broader

categories forming a larger team. Or second, by dividing the team into smaller teams. The latter approach was outlined by Fletcher and Sottolare (2013), “There are, of course, teams within teams – most teams are components of a larger enterprise” (p. 239). Provided this team within a team is producing a focal output, it becomes a distinct team (Fletcher & Sottolare, 2013). Examples of each approach are discussed next.

Approach one, combining teams into broader categories forming a larger team. Based on study design, scholars Yukhymenko–Lescroart, Brown, and Paskus (2015) grouped teams into different categories based on their profile of popularity across all three NCAA divisions of competition. Each category of popularity was comprised of a group of teams that formed a new team via the degree of popularity. An earlier study of NCAA volleyball teams by Spink (1990) followed the same approach as Yukhymenko–Lescroart et al. (2015), which grouped the teams into elite and recreational categories, forming new teams based on these assigned categories. Also, in a study by Wang, Cheng, and Wang (2018) examining organizational leadership and turnover, teams were grouped into two categories, the in-group and the out-group.

Approach two, forming teams within teams. In their longitudinal study of NCAA football teams Myers, Feltz, and Short, (2004) separated the athletes on each football team according to position, forming teams within teams. The athletes grouped by position were producing output specific to their positions. An earlier study by Feltz and Lirgg (1998) on NCAA ice-hockey teams used a similar design as outlined in Myers et al. (2004). Aside from athletic team data, in an educational study by Prais (1998), students in a learning team were separated into smaller learning teams based on the ability of each

student. Also, a person’s level of experience was used to form smaller teams in a study of software project teams by André, Baldoquín, and Acuña (2011).

Based on my study design and my team level data, I am utilizing approach two, forming teams within teams for Survey 2 of Study 2. Since I did not collect the position of each athlete surveyed, I broke each team down by the demographic variable of “class standing.” This variable was selected because it was the closest representation of ability (Prais, 1998), and experience (André et al., 2011), in my dataset. An athlete’s class standing, with some exceptions, explains their ability level (e.g., skill) and experience level (e.g., playing time) which are both likely to increase with each competitive season. As this progress continues, athletes build a work history and a work future with teammates known as temporal stability, a key component of teams (Hollenbeck, Beersma, & Schouten, 2012). Class standing manifests ability, experience, and temporal stability, all of which identify teams.

Table 21 Study 2: Survey 2 Descriptive Statistics Per Team – Mean Values

West Chester University – NCAA Division II – Women’s Teams				
Team Name	Team Size	Age	Years on Team	Total Years Playing Team Sport
First-Year Softball	10	18.10	1	11
Sophomore Softball	4	19.25	1.25	9.75
Junior Softball	4	20	2	12.75
Senior Softball	4	21.25	3	14
First-Year Volleyball	7	18	1	6.14
Sophomore Volleyball	3	19	1.67	9.67
Senior Volleyball	6	21.33	3.83	10.33
First-Year Cross Country	3	18.33	1	6.33
Junior Cross Country	3	19.67	2	6.33
Senior Cross Country	5	21.20	3.60	11.40
First-Year Track	5	18	1	4.40

Table 21 Continued Study 2: Survey 2 Descriptive Statistics Per Team – Mean Values

West Chester University – NCAA Division II – Women’s Teams				
Team Name	Team Size	Age	Years on Team	Total Years Playing Team Sport
Sophomore Track	3	19	1.59	5.33
Junior Track	3	19.67	2.33	6.33
Senior Track	6	21	3.83	8.50
West Chester University – NCAA Division II – Men’s Teams				
Team Name	Team Size	Age	Years on Team	Total Years Playing Their Team Sport
Sophomore Football	5	19	1.60	11.20
Junior Football	3	19.67	2.33	11
Senior Football	3	22	2.33	9.67
First-Year Cross Country	5	18.40	1	6.80
Senior Cross Country	3	20.33	3	6.33
First-Year Soccer	7	18.29	1	11.29
Sophomore Soccer	6	19	1.67	13.33
Junior Soccer	5	20.20	2.20	13.80
Senior Soccer	6	21.17	4	15.67
First-Year Swimming	3	18.67	1	9.67
First-Year Track	6	18.17	1	3.83
Sophomore Track	3	18.67	1.33	5.67
Junior Track	3	20.67	3	6.33
Widener University – NCAA Division III – Men’s Teams				
Team Name	Team Size	Age	Years on Team	Total Years Playing Their Team Sport
First-Year Football	34	18.09	.44	9.32
Sophomore Football	35	19.09	1.53	10.20
Junior Football	19	20.47	2.32	10.05
Senior Football	16	21.31	3.75	10.75

Table 21 reports the teams that participated in Survey 2 of Study 2. Only teams with a minimum number of three respondents were utilized and counted as a single team (Koo & Li, 2016). Dropped teams with fewer than three respondents were (Women’s

Tennis n = 1; Women’s Field Hockey n = 1; Women’s Rugby n = 1; Women’s Golf n = 1; Men’s Basketball n = 2; Men’s Baseball n = 2; Men’s Senior Soccer = 1; Women’s Sophomore Cross Country = 1; Women’s Junior Volleyball = 2). The result, twelve respondents that formed ten teams were dropped from the analysis. Total respondents at the individual level n = 228, formed the 31 teams in Table 21. The number of teams in my sample exceeded the minimum of 30 recommended for team level data analysis (Kreft, & De Leeuw, 1998; Maas, & Hox, 2004; Maas, & Hox, 2005). Descriptive statistics for Table 21 are as follows: team size ($M = 7.29$; $SD = 8.12$); age ($M = 19.40$; $SD = 0.40$); years on team ($M = 2.03$; $SD = 1.05$); and total years playing their team sport ($M = 9.26$; $SD = 3.04$).

Table 22 Study 2: Survey 2 Results of Confirmatory Factor Analysis

Scale Items	Sc Com	In Dev	In Coh	In Perf/ Tm Perf	Motivate	Rivalry
1. Teammates often compare themselves	.809	.073	.016	.008	.167	.253
2. When teammates want to discover how they	.759	.122	.142	.041	.013	.326
3. Teammates often try to find out what their	.717	.053	.069	.104	.155	.078
4. Teammates often compare themselves with	.700	.033	.049	.074	.168	.260
5. Teammates compare their performance with	.693	-.002	.242	.036	.160	.206
6. Teammates often compare how they are going	.692	.142	-.036	.052	.177	.252
7. Teammates always like to know what their	.634	.033	.058	.263	.150	-.035
8. Teammates always pay a lot of attention to	.609	.090	.048	.028	.019	.443
9. My teammates know the performance of their	.535	-.085	.421	.204	.022	.020
10. My teammates are aware of their teammates’	.514	-.132	.341	.246	.059	.013
11. My teammates play mean pranks on each	-.005	.885	-.105	-.056	.016	.074
12. My teammates say hurtful things to other	-.014	.879	-.006	-.114	.034	.100
13. My teammates publicly embarrass teammates	.057	.876	-.118	-.095	.031	.047
14. My teammates act rudely toward other	.097	.854	-.050	-.151	.031	.073
15. My teammates make ethnic, religious	.033	.813	-.169	-.123	.028	.047
16. Teammates curse at teammates during team	.091	.788	.066	-.035	.057	.202
17. Teammates make fun of other teammates	.070	.649	.151	-.003	.106	.194
18. Teammates would rather get together as	.028	.040	.800	.211	.171	.042
19. Teammates stick together outside of practice	.140	-.109	.745	.334	.076	.014

Table 22 Continued Study 2: Survey 2 Results of Confirmatory Factor Analysis

Scale Items	Sc Com	In Dev	In Coh	In Perf/ Tm Perf	Motivate	Rivalry
20. Teammates feel that their team is one of the	.110	-.070	<u>.744</u>	.360	.122	.041
21. Teammates would like to spend time together	.143	-.145	<u>.735</u>	.333	.130	-.052
22. Teammates feel that other teammates are	.129	-.054	<u>.722</u>	.377	.181	.079
23. Teammates party together	.130	.104	<u>.687</u>	.147	.073	.118
24. (IP) My teammates are very competent	.038	-.051	.508	<u>.501</u>	.181	.036
25. (TP) My teammates feel that the team gets	.108	-.142	.258	<u>.837</u>	.081	-.003
26. (TP) My teammates feel that the team	.092	-.098	.300	<u>.801</u>	.139	-.020
27. (IP) My teammates perform their jobs	.163	-.173	.280	<u>.729</u>	.143	-.032
28. (TP) My teammates feel that the team is	.103	-.065	.263	<u>.701</u>	.098	.013
29. (IP) My teammates get their work done	.162	-.125	.306	<u>.676</u>	.203	-.075
30. (TP) My teammates feel that the team has	.077	-.047	.305	<u>.623</u>	.205	.062
31. Teammates are with the team for satisfaction	.232	.040	.202	.131	<u>.825</u>	.108
32. Teammates are with the team for challenges	.252	.115	.210	.191	<u>.815</u>	.062
33. Teammates are with the team for pleasure	.183	.045	.142	.259	<u>.745</u>	.032
34. Teammates are to learn new things	.161	.107	.115	.186	<u>.642</u>	.092
35. Competitions between some teammates are	.274	.146	.060	.030	.093	<u>.761</u>
36. Teammates feel rivalry toward teammates	.359	.263	.013	-.102	.066	<u>.707</u>
37. Competitive history of teammates makes	.363	.141	.008	.007	.126	<u>.697</u>
38. Some of my teammates have rivalries	.305	.236	.121	.001	.023	<u>.676</u>
Eigenvalue (Varimax Rotation)	10.56	7.31	3.65	2.09	1.59	1.41
Percent variance explained	28.54%	19.77%	9.86%	5.64%	4.29%	3.81%
Cumulative percent variance explained	28.54%	48.31%	58.17%	63.81%	68.10%	71.91%

Note. Factors: Sc Com = Social Comparison, In Dev = Individual Deviance, In Coh = Individual Cohesion, In Perf/Tm Perf = Individual Performance and Team Performance, Motivate = Motivation, Rivalry = Intra-Team Rivalry. In scale items (IP) = Individual Performance; (TP) = Team Performance.

Results

Findings from Table 22 illustrate six distinct constructs that load on six factors for Survey 2 of Study 2. All bold and underlined variable loadings of the six factors are \geq .500, indicating a significant contribution to each factor (Field, 2018; Stevens, 2002). Table 22 validates the scales used in Survey 2, complete scale items found in Table 13 (e.g., Survey 2). The eigenvalues, reported at the bottom of Table 22, by factor were social comparison 10.559, individual deviance 7.313, individual cohesion 3.648,

individual performance and team performance 2.085, motivation 1.586, and intra-team rivalry 1.407 accounting for 71.91% of the variance in the items. Kaiser's criterion of preserving factors with eigenvalues ≥ 1 was used (Field, 2018), which confirms six distinct constructs for subsequent statistical analyses. Although not shown in Table 22, there were 31 additional eigenvalues ranging from .775 to .088 which did not make the cutoff threshold of ≥ 1 .

Based on the confirmatory factor analysis in Table 22 for Survey 2, the original 10-item scale measuring social comparison adapted from Gibbons and Buunk (1999) was reduced to 9-items. The dropped item from Table 13 was item number 57.

The original 10-item scale from Carless and De Paola (2000) measuring individual cohesion was reduced to 6-items. Dropped items from Table 13 were items 60-63. They all loaded together on another factor and had low cross loadings $< .285$ with the other individual cohesion items.

The original 7-item scale measuring motivation adapted from Rockman and Ballinger (2017) was reduced to 4-items. Dropped items from Table 13 were 88-90. They loaded together on another factor and had low cross loadings $< .342$ with the rest of the motivation items.

The scales measuring intra-team rivalry from Kilduff (2014) and measuring individual deviance from Bennett and Robinson (2000) retained all original factors, lowest loadings for each scale were .668 and .649 respectively.

The scales measuring individual performance and team performance loaded together on the same factor, which was unexpected. The 4-item scale measuring team performance from Sparrowe et al. (2001) consistently across Study 1 and Survey 1 of

Study 2 retained all items after factor analysis and had strong reliabilities, Cronbach's $\alpha = .88$ in Study 1; and Cronbach's $\alpha = .83$ in Survey 1 of Study 2. As previously discussed in the Measures section of Study 2, to measure team performance I indexed the scale from Sparrowe et al. (2001), with another item, the ratio of team wins to total games played in a season (Dirks, 2000). Team performance was measured in a similar manner in a meta-analysis by De Dreu and Weingart (2003).

For individual performance, after a low reliability in Study 1, the new 3-item scale from Schaubroeck et al. (2007) was used and retained all 3-items from Survey 1 in Study 2 and had a reliability Cronbach's $\alpha = .76$. An explanation for both performance scales cross loading on the same factor was that all scales were adapted to reflect team level observations in Survey 2 of Study 2. This was likely the cause of respondent confusion. The result, individual and team performance scales merged during factor analysis.

To illustrate the point, here are examples of the same question from individual performance (IP) and team performance (TP) from Survey 1 and Survey 2. Survey 1 (IP) "I am very competent" and Survey 2 (IP) "My teammates are very competent." Survey 1 (TP) "My team produces quality results" and Survey 2 (TP) "My teammates feel that the team produces quality results." All questions were changed to have the respondent report on what they were observing from their teammates. In sum, since I had good reliabilities in both studies and the only difficulty with both measures resulted from me altering the questions to fit the setting of Survey 2 in Study 2, I separated the items for individual performance and team performance and use them in my subsequent analyses. The items for individual performance and team performance loaded together and did not cross load

significantly with other items $\leq .306$ giving more support to the notion that this was generated from adaption of scale items.

A confirmatory factor analysis in SPSS was run in Study 2 since I had a better understanding of which variables would load on specific factors resulting from the exploratory factor analysis in Study 1 and the confirmatory factor analysis in Survey 1 of Study 2. Table 22 reports the results from a rotated factor matrix using principal axis factoring as the extraction method. Like Study 1 and Survey 1 of Study 2, principal axis factoring was used. The rotation method used was orthogonal (e.g., Varimax) with Kaiser Normalization (e.g., SPSS default setting) since this method “tries to load a smaller number of variables highly onto each factor, resulting in more interpretable clusters of factors” (Field, 2018, p. 581). Seven factors were specified for the items loaded into SPSS. Rotation converged in 8 iterations.

Table 23 Study 2: Survey 2 Descriptive Statistics, Reliabilities, Intercorrelations

Var.	1	2	3	4	5	6	7	8	9	10	11	12
In Dev	(.94)											
Tm Perf	-.29	(.84)										
In Coh	.06	.34	(.92)									
Sc Com	.24	-.08	.49**	(.91)								
Rivalry	.47**	-.30	.27	.51**	(.89)							
In Perf	-.33	.80**	.43*	.19	-.21	(.84)						
Motivate	-.07	.08	.21	.62**	.30	.32	(.89)					
Sport	-.36*	-.17	.06	-.04	-.02	-.16	.14	---				
Y-Team	.06	-.38*	.06	.04	-.01	-.37*	.03	-.08	---			
Y-Coach	.10	-.32	.04	-.02	-.08	-.35	-.02	-.09	.98**	---		
T-Y-Spt	.21	.14	.28	-.03	-.03	-.16	-.35	-.02	.36*	.41*	---	
Div-Spt	.76**	-.20	-.13	.10	.36*	-.21	.08	-.42*	-.01	.02	-.12	---
Tm Size	.63**	-.06	-.04	.07	.28	-.15	.05	-.37*	-.16	-.14	.14	.90**

Note. $n = 31$. $ICC = .58$. In Dev = Individual Deviance; Tm Perf = Team Performance; In Coh = Individual Cohesion; Sc Com = Social Comparison; Rivalry = Intra-Team Rivalry; In Perf = Individual Performance; Motivate = Motivation; Sport = Sport played; Y-Team = Years on team; Y-Coach = Years with coach; T-Y-Spt = Total years playing the sport; Div-Spt = NCAA Division of sport; Tm Size = Team Size. Numbers on the diagonal are Cronbach's alphas. Dashes = Effects not estimated. (Listwise deletion).
* $p \leq .05$. ** $p \leq .01$.

Table 23 reports the descriptive statistics (i.e., samples, means, standard deviations), reliability estimates, and study variable intercorrelations. All model constructs and control variables had a sample size of $n = 31$. All surveys were usable in Survey 2 of Study 2. The explanations previously discussed for this in Survey 1 of Study 2 apply here since both surveys were given to respondents in the same document during data collection.

Since data in Survey 2 of Study 2 was team level data, I needed to perform an additional reliability check to determine if data aggregation was appropriate. This analysis was conducted in SPSS and the following commands were selected because they

were consistent with my data and study design. In the “analyze” menu I selected “scale” then “reliability analysis.” I then loaded my model constructs into the “items” menu. The “statistics” option was selected along with “intraclass correlation coefficient” (ICC). For model, I used the setting “two-way mixed” since “the results only represent the reliability of the specific raters involved in the reliability assessment” (Koo & Li, 2016, p. 157). For type, I selected “consistency” since it “concerns the degree to which one rater’s score can be equated with another rater’s score” (Koo & Li, 2016, p. 158). The ICC computation produced an agreement of .58 (see Note section of Table 23) which is a moderate level of reliability and justifies data aggregation, according to Portney and Watkins (2000).

The means (M) and standard deviations (SD) in Table 23 are as follows for model constructs: individual deviance ($M = 1.92$; $SD = 0.90$), team performance ($M = 4.75$; $SD = 0.43$), individual cohesion ($M = 6.00$; $SD = 0.55$), social comparison ($M = 4.84$; $SD = 0.54$), intra-team rivalry ($M = 4.28$; $SD = 0.85$), individual performance ($M = 5.75$; $SD = 0.47$), motivation ($M = 4.95$; $SD = 0.63$). For control variables: years on team ($M = 2.03$; $SD = 1.05$), years with coach ($M = 1.96$; $SD = 0.97$), total years playing sport ($M = 9.26$; $SD = 3.04$), and team size ($M = 7.29$; $SD = 8.12$) all changed since data for Survey 2 was aggregated to the team level. Consistent with Survey 1 of Study 2, means and standard deviations were not estimated for control variables: sport played, and NCAA Division of sport. Previous justifications apply here as they did in Survey 1 of Study 2. Team size was added as a control variable in Survey 2 to account for the variation ($SD = 8.12$) of team members per team.

Examining the means for model constructs, one variable, individual deviance was below neutral (e.g., 4). While team performance, individual cohesion, social comparison, intra-team rivalry, individual performance, and motivation were all above neutral (e.g., 4). All seven variables had standard deviations close to their means which minimized the presence of outliers.

The results from a scale reliability analysis (e.g., Cronbach's coefficient alpha) are presented in Table 23 using the scale items from the confirmatory factor analysis in Table 22. The scales for individual deviance, individual cohesion, and social comparison all had high reliabilities, Cronbach's $\alpha > .90$ (.94, .92, and .91 respectively).

The scales for intra-team rivalry, motivation, individual performance, and team performance also had high reliabilities, Cronbach's $\alpha \geq .84$ (.89, .89, .84, and .84 respectively). All construct variables and control variables were coded the same as they were in Survey 1 of Study 2. Also, the ICC computation of .58 is reliable and supports data aggregation (Portney & Watkins, 2000).

Finally, Table 23 also reports the correlations between study variables. Correlations at the $p \leq .05$; and $p \leq .01$ levels for each variable are highlighted here and explored first for model constructs.

The variables that correlated significantly with individual deviance were intra-team rivalry ($r = .47$; $p \leq .01$), and the control variables of sport played ($r = -.36$; $p \leq .05$), NCAA division of sport ($r = .76$; $p \leq .01$), and team size ($r = .63$; $p \leq .01$). While the variables that correlated significantly with team performance were individual performance ($r = .80$; $p \leq .01$) and the control variable of years on team ($r = -.38$; $p \leq .05$).

Significant correlations with individual cohesion were social comparison ($r = .49$; $p \leq .01$) and individual performance ($r = .43$; $p \leq .05$). While social comparison correlated significantly with individual intra-team rivalry ($r = .51$; $p \leq .01$) and motivation ($r = .62$; $p \leq .01$).

Intra-team rivalry correlated significantly with the control variable of NCAA division of sport ($r = .36$; $p \leq .05$). While individual performance correlated significantly with the control variable of years on team ($r = -.37$; $p \leq .05$).

The control variable of sport played correlated significantly with NCAA division of sport ($r = -.42$; $p \leq .05$) and team size ($r = -.37$; $p \leq .05$). Also, the control variable of years on team correlated significantly with years with coach ($r = .98$; $p \leq .01$), and total years playing the sport ($r = .36$; $p \leq .05$). Finally, there were significant correlations between the control variables of years with coach and total years playing the sport ($r = .41$; $p \leq .05$); and NCAA division of sport and team size ($r = .90$; $p \leq .01$). Since I had interval data, Pearson's r was used to evaluate correlation as it was used in Study 1 and Survey 1 of Study 2.

Table 24 Study 2: Survey 2 Regression Analyses for Hypotheses H1-H4

Variable	Hypothesis 1			Hypothesis 2			Hypothesis 3			Hypothesis 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Model 1												
Y-Team	2.00	.74	2.47*	2.00	.74	2.47*	-.31	.45	-.70	-.59	.61	-.68
Y-Coach	-2.30	.83	-2.65*	-2.30	.83	-2.65*	.15	.51	.30	.62	.68	.67
T-Y-Spt	.04	.06	.15	.04	.06	.15	.00	.03	-.00	.03	.05	.12
Sport	.03	.05	.12	.03	.05	.12	-.04	.03	-.28	-.01	.04	-.04
Div-Spt	2.30	1.04	.93*	2.30	1.04	.93*	-.36	.63	-.26	2.62	.86	.99**
Team Size	-.06	.04	-.52	-.06	.04	-.52	-.01	.02	-.08	-.03	.04	-.30
Model 2												
Y-Team	1.50	.71	1.83*	1.70	.73	2.10*	-.17	.52	-.37	-1.44	.61	-1.67*
Y-Coach	-1.72	.80	-1.98*	-2.00	.82	-2.25*	-.02	.59	-.05	1.59	.69	1.72*
T-Y-Spt	.03	.05	.12	.01	.06	.04	.00	.03	.02	.02	.04	.06
Sport	.03	.04	.13	.03	.04	.13	-.04	.03	-.27	-.02	.03	-.09
Div-Spt	2.02	.96	.81*	2.57	1.01	1.04*	-.19	.71	-.14	1.64	.83	.62
Team Size	-.05	.04	-.44	-.06	.04	-.60	-.01	.03	-.15	-.01	.03	-.09
Indep. Var.	.58	.24	.38*	.50	.26	.30*	-.07	.13	-.13	.43	.15	.40*
Model 1 Summary	$R^2 = .372$ $p\text{-value} < .10$			$R^2 = .372$ $p\text{-value} < .10$			$R^2 = .248$ $p\text{-value} = .288$			$R^2 = .625$ $p\text{-value} < .001$		
Model 2 Summary (ΔR^2)	$\Delta R^2 = .126$ $p\text{-value} < .05$			$\Delta R^2 = .077$ $p\text{-value} < .05$			$\Delta R^2 = .011$ $p\text{-value} = .370$			$\Delta R^2 = .099$ $p\text{-value} < .001$		
Model 2 Summary (Overall Effect)	$R^2 = .499$ $p\text{-value} < .05$			$R^2 = .448$ $p\text{-value} < .05$			$R^2 = .259$ $p\text{-value} = .370$			$R^2 = .724$ $p\text{-value} < .001$		

Note. *B* = unstandardized coefficient beta; *SE B* = beta standard error; β = standardized coefficient beta. Model 1 reports control variables. Model 2 reports control variables and Intra-team rivalry. Y-Team = Years played on team; Y-Coach = Years with coach; T-Y-Spt = Total years including before college of playing the sport; Sport = Sport played; Div-Spt = Division of NCAA Competition. Indep. Var. = Independent Variable (listed first in Hypotheses). Hypothesis 1 = Social Comparison to Intra-Team Rivalry; Hypothesis 2 = Individual Cohesion to Intra-Team Rivalry; Hypothesis 3 = Intra-Team Rivalry to Individual Performance; Hypothesis 4 = Intra-Team Rivalry to Individual Deviance.
⁺ $p < .10$. * $p < .05$. ** $p < .01$.

Table 24 reports the regression results for Hypotheses H1 – H4. The same procedure from Study 1 and Survey 1 from Study 2 were used to evaluate each regression hypotheses. Hypothesis 1, social comparison is positively related to intra-team rivalry. Regression analysis with control variables (see Table 24, Model 1 for control variable data), revealed a statistically significant contribution of social comparison. In Model 2, social comparison ($\beta = .38, p < .05$) explained an additional 13% of the variance in intra-team rivalry ($\Delta R^2 = .126, p < .05, d = .79$), with a large effect size. As predicted, these results support my hypothesis that social comparison is positively related to intra-team rivalry.

Hypothesis 2, individual cohesion is positively related to intra-team rivalry. Regression analysis with control variables (see Table 24, Model 1 for control variable data), revealed a statistically insignificant contribution of individual cohesion. In Model 2, individual cohesion ($\beta = .30, p = .087$) explained an additional 8% of the variance in intra-team rivalry ($\Delta R^2 = .077, p < .05, d = 2.40$). These results do not support my hypothesis that individual cohesion is positively related to intra-team rivalry.

Hypothesis 3, intra-team rivalry is positively related to individual performance. Regression analysis with control variables (see Table 24, Model 1 for control variable data), revealed a statistically insignificant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = -.13, p = .563$) explained 1% of the variance in individual performance ($\Delta R^2 = .011, p = .370, d = 2.14$). These results do not support my hypothesis that intra-team rivalry is positively related to individual performance.

Hypothesis 4, intra-team rivalry is positively related to individual deviance. Regression analysis with control variables (see Table 24, Model 1 for control variable

data), revealed a statistically significant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .40, p < .05$) explained an additional 10% of the variance in individual deviance ($\Delta R^2 = .099, p < .001, d = 2.70$), with a large effect size. As predicted, these results support my hypothesis that intra-team rivalry is positively related to individual deviance.

Table 25 Study 2: Survey 2 Regression Analyses for Hypotheses H5-H8

Variable	Hypothesis 5			Hypothesis 6			Hypothesis 7			Hypothesis 8		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Model 1												
Y-Team	.60	.61	.99	-.61	.36	-1.50	-.61	.36	-1.50	-.61	.36	-1.50
Y-Coach	-.52	.69	-.80	.47	.40	1.06	.47	.40	1.06	.47	.40	1.06
T-Y-Spt	-.08	.05	-.40	.04	.03	.26	.04	.03	.26	.04	.03	.26
Sport	.05	.04	.23	-.05	.02	-.36*	-.05	.02	-.36*	-.05	.02	-.36*
Div-Spt	.32	.86	.17	-.85	.50	-.68	-.85	.50	-.68	-.85	.50	-.68
Team Size	.01	.04	.08	.02	.02	.30	.02	.02	.30	.02	.02	.30
Model 2												
Y-Team	.23	.70	.38	-.41	.21	-1.00	-.75	.34	-1.82*	-.79	.32	-1.93*
Y-Coach	-.10	.79	-.15	.37	.23	.85	.61	.38	1.38	.62	.35	1.41
T-Y-Spt	-.09	.05	-.43	.04	.02	.26*	.04	.03	.31	.06	.03	.43*
Sport	.04	.04	.21	-.02	.01	-.16	-.05	.02	-.38*	-.06	.02	-.46**
Div-Spt	-.10	.94	-.06	-.62	.30	-.49	-.27	.55	-.21	-.95	.44	-.75*
Team Size	.02	.04	.20	.02	.01	.36	.01	.02	.16	.01	.02	.27
Indep. Var.	.18	.17	.25	.64	.10	.71***	-.22	.11	-.47+	.29	.10	.43**
Model 1 Summary	$R^2 = .234$ $p\text{-value} = .331$			$R^2 = .437$ $p\text{-value} < .05$			$R^2 = .437$ $p\text{-value} < .05$			$R^2 = .437$ $p\text{-value} < .05$		
Model 2 Summary (ΔR^2)	$\Delta R^2 = .038$ $p\text{-value} = .329$			$\Delta R^2 = .376$ $p\text{-value} < .001$			$\Delta R^2 = .083$ $p\text{-value} \leq .01$			$\Delta R^2 = .144$ $p\text{-value} < .01$		
Model 2 Summary (Overall Effect)	$R^2 = .272$ $p\text{-value} = .329$			$R^2 = .813$ $p\text{-value} < .001$			$R^2 = .520$ $p\text{-value} \leq .01$			$R^2 = .581$ $p\text{-value} < .01$		

Note. *B* = unstandardized coefficient beta; *SE B* = beta standard error; β = standardized coefficient beta. Model 1 reports control variables. Model 2 reports control variables and ITR. Y-Team = Years played on team; Y-Coach = Years with coach; T-Y-Spt = Total years including before college of playing the sport; Sport = Sport played; Div-Spt = Division of NCAA Competition. InDep. Var. = Independent Variable (listed first in Hypotheses). Hypothesis 5 = Intra-Team Rivalry to Motivation; Hypothesis 6 = Individual Performance to Team Performance; Hypothesis 7 = Individual Deviance to Team Performance; Hypothesis 8 = Motivation to Team Performance.

+ $p < .10$. * $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 25 reports the regression results for Hypotheses H5 – H8. Hypothesis 5, intra-team rivalry is positively related to motivation. Regression analysis with control variables (see Table 25, Model 1 for control variable data), revealed a statistically insignificant contribution of intra-team rivalry. In Model 2, intra-team rivalry ($\beta = .25, p = .285$) explained an additional 4% of the variance in motivation ($\Delta R^2 = .038, p = .329, d = .90$). These results do not support my hypothesis that intra-team rivalry is positively related to motivation.

Hypothesis 6, individual performance is positively related to team performance. Regression analysis with control variables (see Table 25, Model 1 for control variable data), revealed a statistically significant contribution of individual performance. In Model 2, individual performance ($\beta = .71, p < .001$) explained an additional 38% of the variance in team performance ($\Delta R^2 = .376, p < .001, d = 2.22$), with a large effect size. As predicted, these results support my hypothesis that individual performance is positively related to team performance.

Hypothesis 7, individual deviance is negatively related to team performance. Regression analysis with control variables (see Table 25, Model 1 for control variable data), revealed a statistically significant contribution of individual deviance. In Model 2, individual deviance ($\beta = -.47, p \leq .05$) explained an additional 8% of the variance in team performance ($\Delta R^2 = .083, p < .01, d = 4.01$), with a large effect size. As predicted, these results support my hypothesis that individual deviance is negatively related to team performance.

Hypothesis 8, motivation is positively related to team performance. Regression analysis with control variables (see Table 25, Model 1 for control variable data), revealed

a statistically significant contribution of motivation. In Model 2, motivation ($\beta = .43, p < .01$) explained an additional 14% of the variance in team performance ($\Delta R^2 = .144, p < .01, d = .37$), with a small effect size. As predicted, these results support my hypothesis that motivation is positively related to team performance.

Table 26 Study 2: Survey 2 Mediation Model Coefficients for Hypothesis 9

		Consequent						
		M (Individual Performance)			Y (Team Performance)			
Antecedent		B	SE B	β		B	SE B	β
X (Rivalry)	<i>a</i>	-0.08	0.13	-.13	<i>c'</i>	-0.06	0.10	-.11
M (In Perf)	—	—	—	—	<i>b</i>	0.64	0.10	.71**
Constant	<i>i_M</i>	7.07**	1.24	—	<i>i_y</i>	2.09*	0.90	—
		Models						
		Non-Mediated Model			Mediated Model			
Predictor and Outcome		B	SE B	β	B	SE B	β	
Rivalry and Team Performance		-0.06	0.10	-.11	-0.01	0.06	-.02	
		Models						
		Non-Mediated Model			Mediated Model			
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)		<i>R</i> ²	<i>F</i> (df1, df2)		
Total Effect		0.44	(7, 23) = 2.63*		0.81	(8, 22) = 11.96**		

Note. *a* = the effect of intra-team rivalry on individual performance; *b* = the effect of individual performance on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry; In Perf = individual performance. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.
⁺*p* < .01. **p* < .05. ***p* < .001.

I tested for mediation via individual performance, individual deviance, and motivation (Hypotheses 9-11 respectively). The same procedure to test for mediation in

Study 1 and Survey 1 of Study 2 was used. All five steps need to be met for mediation to be supported. First, there must be a significant relationship between the independent variable and the dependent variables. Second, there must be a significant relationship between the mediator and the dependent variable. Third, the relationship between the predictor and outcome variable must be less significant once the mediator has been added. Fourth, the power for the model summary containing the mediator must be stronger when compared with the model that does not include the mediator. Finally, the bootstrap confidence interval must not contain zero.

Table 26 illustrates the results for Hypothesis 9. Significant control variable loadings: total years including before college of playing sport ($\beta = .04, p < .10$), years on team ($\beta = .04, p < .10$), sport played ($\beta = -.02, p < .01$), division of NCAA competition ($\beta = -.60, p < .10$), and team size ($\beta = .02, p \leq .05$). Step 1, the standardized beta coefficients between intra-team rivalry and individual performance ($\beta = -.13, p = .56$), and intra-team rivalry and team performance ($\beta = -.11, p < .58$) were both not significant, Step 1, no mediation support.

Step 2, the standardized beta coefficient between the mediator of individual performance and the dependent variable of team performance ($\beta = .71, p < .001$) was significant, mediation supported in Step 2.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = -.11, p = .58$) and for the mediated model ($\beta = -.02, p = .900$). The non-mediated model needed to be stronger, but since both models were not significant, Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .81$, $p < .001$), compared with the non-mediated model ($R^2 = .44$, $p < .05$). The mediated model had a greater explanatory power compared with the non-mediated model, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = -0.05$) based on 5,000 bootstrap samples included zero (-0.240 to 0.140). Thus, the indirect effect was not statistically significant, Step 5, no mediation support. All five steps need to support mediation, Hypothesis 9 did not meet the criteria. Individual performance does not mediate the positive relationship between intra-team rivalry and team performance.

Table 27 Study 2: Survey 2 Mediation Model Coefficients for Hypothesis 10

		Consequent						
		<i>M</i> (Individual Deviance)			<i>Y</i> (Team Performance)			
Antecedent		<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β
<i>X</i> (Rivalry)	<i>a</i>	0.43	0.15	.40**	<i>c'</i>	-0.06	0.10	-.11
<i>M</i> (Individual Deviance)		—	—	—	<i>b</i>	-0.22	0.11	-.47 ⁺
Constant	<i>i_M</i>	-3.56*	1.46	—	<i>i_y</i>	6.63***	0.98	—

		Models						
		Non-Mediated Model			Mediated Model			
Predictor and Outcome		<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	
Rivalry and Team Performance		-0.06	0.10	-.11	0.05	0.11	.11	

		Models						
		Non-Mediated Model			Mediated Model			
Model Summary		<i>R</i> ²	<i>F</i> (df1, df2)		<i>R</i> ²	<i>F</i> (df1, df2)		
Total Effect		0.67	(7, 23) = 2.63*		0.73	(8, 22) = 3.05*		

Note. *a* = the effect of intra-team rivalry on individual deviance; *b* = the effect of individual deviance on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

⁺ *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Table 27 illustrates the results for Hypothesis 10. Significant control variable loadings: years on team ($\beta = -.87, p < .10$), and sport played ($\beta = -.05, p < .05$). Step 1, the standardized beta coefficient between intra-team rivalry and individual deviance ($\beta = .40, p < .01$) was significant, however the standardized beta coefficient between intra-team rivalry and team performance ($\beta = -.11, p = .58$) was not significant. Step 1 does not support mediation.

Step 2, the standardized beta coefficient between the mediator of individual deviance and the dependent variable of team performance ($\beta = -.47, p < .10$) was significant. Step 2 supports mediation.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = -.11, p = .58$), and for the mediated model ($\beta = .11, p = .63$). The mediated model needed to be weaker than the non-mediated model, and since both models were insignificant, Step 3 did not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .73, p < .05$), compared with the non-mediated model ($R^2 = .67, p < .05$). The mediated model had greater explanatory power compared to the non-mediated model. Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = -0.094$) based on 5,000 bootstrap samples included zero (-0.240 to 0.030). Thus, the indirect effect was not statistically significant, Step 5, no mediation support. All five steps need to support mediation, Hypothesis 10 did not meet the criteria. Individual deviance does not mediate the positive relationship between intra-team rivalry and team performance.

Table 28 Study 2: Survey 2 Mediation Model Coefficients for Hypothesis 11

Consequent								
M (Motivation)				Y (Team Performance)				
Antecedent	<i>B</i>	<i>SE B</i>	β		<i>B</i>	<i>SE B</i>	β	
X (Rivalry)	<i>a</i>	0.18	0.17	.25	<i>c'</i>	-0.06	0.10	-.11
M (Motivation)	---	---	---		<i>b</i>	0.29	0.10	.43 ⁺
Constant	<i>i_M</i>	4.64 [*]	1.66	---	<i>i_y</i>	6.63 ^{**}	0.98	---

Models						
Non-Mediated Model			Mediated Model			
Predictor and Outcome	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Rivalry and Team Performance	-0.06	0.10	-.11	-0.12	0.09	-.23

Models				
Non-Mediated Model		Mediated Model		
Model Summary	<i>R</i> ²	<i>F</i> (df1, df2)	<i>R</i> ²	<i>F</i> (df1, df2)
Total Effect	0.44	(7, 23) = 2.63 [*]	0.61	(8, 22) = 4.34 ^{**}

Note. *a* = the effect of intra-team rivalry on motivation; *b* = the effect of motivation on team performance; *c'* = direct effect of intra-team rivalry on team performance; *i_M* and *i_y* = regression intercepts; *X* = independent variable; *M* = Mediator; *Y* = dependent variable; Rivalry = intra-team rivalry. Model summaries are reported at the bottom of the table. Dashes indicate effects not estimated.

^{*}*p* < .05. ^{**}*p* < .001.

Table 28 illustrates the results for Hypothesis 11. The only significant control variable loading was sport played ($\beta = -.06, p \leq .01$). Step 1, the standardized beta coefficients between intra-team rivalry and motivation ($\beta = .25, p = .28$), and intra-team rivalry and team performance ($\beta = -.11, p = .58$) were not significant. Step 1 does not support mediation.

Step 2, the standardized beta coefficient between the mediator of motivation and the dependent variable of team performance ($\beta = .43, p < .10$) was significant, Step 2, supports mediation.

Step 3, the standardized beta coefficients between intra-team rivalry and team performance, for the non-mediated model ($\beta = -.11, p = .58$) and for the mediated model ($\beta = -.23, p = .20$). The non-mediated model needed to be stronger compared to the mediated model, however both were insignificant. Step 3 does not support mediation.

Step 4, the power of the model summary containing the mediator was ($R^2 = .61, p < .001$), compared with the non-mediated model ($R^2 = .44, p < .05$). The mediated model had greater explanatory power, Step 4 supports mediation.

Step 5, a bootstrap confidence interval for the indirect effect ($ab = 0.052$) based on 5,000 bootstrap samples included zero (-0.080 to 0.240). Thus, the indirect effect was not statistically significant, Step 5, no mediation support. All five steps need to support mediation, Hypothesis 11 did not meet the criteria. Motivation does not mediate the positive relationship between intra-team rivalry and team performance.

CHAPTER 5: GENERAL DISCUSSION

With the increased attention that rivalry has been receiving at the inter-team level, scholars are still just beginning to understand the construct at the intra-team level. Study 2 examined rivalry in an intra-team setting. Intra-team rivalry was my focal independent variable and I investigated the antecedents of social comparison and individual cohesion. Individual performance, individual deviance, and motivation were all explored as consequences of intra-team rivalry, as antecedents to team performance, and as mediators between the positive relationships of intra-team rivalry and team performance. I controlled for years played on team, years with the coach, total years playing the sport, sport played, gender (Survey 1 only), team size (Survey 2 only), and division of NCAA competition. Study 2 surveyed current collegiate student athletes with a minimum age of 18 and consisted of two surveys. In Survey 1 (individual level) respondents reported their individual view, while Survey 2 (team level) captured respondents view of what they observed from their teammates.

Theoretical Contributions

This research contributes to theory in several ways. First, Study 2 is among the early studies that investigate rivalry within a team (i.e., intra-team rivalry). Study 2 contributes to the literature on rivalry in several ways. Second, I examined two antecedents (social comparison and individual cohesion) of intra-team rivalry. I found a positive relationship between social comparison and intra-team rivalry in both Survey 1 and Survey 2. These findings are consistent with theoretical and empirical work that has suggested that social comparison increases inter-team rivalry (Garcia et al., 2013; Tesser, 1988). In addition, these findings extend the literature on rivalry by suggesting social

comparison increases intra-team rivalry. Furthermore, I examined the relationship between individual cohesion and intra-team rivalry. My results indicated a non-significant relationship between individual cohesion and intra-team rivalry in Survey 1 and Survey 2. These findings depart from prior literature that found positive relationships between individual cohesion, competition, and performance (Boardley & Jackson, 2012; Eisler & Spink, 1998; Mullen & Copper, 1994). Thus, my findings seem to indicate that individual cohesion within a team does not increase intra-team rivalry. Even if a team member is experiencing individual cohesion, they may refrain from viewing their teammates as rivals, because they potentially value acceptance and continued membership on the team more than being hyper competitive with teammates.

Third, I examined the relationships between intra-team rivalry and the consequences of individual performance, individual deviance, and motivation. I found a non-significant relationship between intra-team rivalry and individual performance in Survey 1 and Survey 2. These findings depart from prior literature that found positive relationships between intra-team rivalry and individual performance (Kilduff, 2014; Kilduff et al., 2016; Neave & Wolfson, 2003). Thus, my findings seem to indicate that intra-team rivalry within a team does not increase individual performance. Even if a team member is experiencing intra-team rivalry, the feeling of rivalry toward a focal teammate will not be adequate to realize increases in individual performance. Next, I found a positive relationship between intra-team rivalry and individual deviance in both Survey 1 and Survey 2. These findings are consistent with theoretical and empirical work that has suggested that intra-team rivalry increases individual deviance (Kilduff et al., 2016; Leckelt et al., 2018; Newton et al., 2000). In addition, these findings extend the

literature on rivalry by suggesting intra-team rivalry increases individual deviance which contributes to the dark side of rivalry. Furthermore, I examined the relationship between intra-team rivalry and motivation. I found a positive relationship between intra-team rivalry and motivation in Survey 1. This finding is consistent with theoretical and empirical work that has suggested that intra-team rivalry increases motivation (Erev et al., 1993; Kilduff & Galinsky, 2017; Scott and Cherrington, 1974). In addition, this finding extends the literature on rivalry by suggesting intra-team rivalry increases motivation. However, I found a non-significant relationship between intra-team rivalry and motivation in Survey 2. This finding is a departure from prior literature. Thus, my Survey 2 finding seems to indicate that intra-team rivalry within a team does not increase motivation. Even if a team member is experiencing intra-team rivalry, my findings suggest that at the team level (Survey 2), the feeling of intra-team rivalry will not result in increased motivation.

Fourth, I examined relationships between antecedents (e.g., individual performance, individual deviance, and motivation) and my focal dependent variable of team performance. I found a positive relationship between individual performance and team performance in both Survey 1 and Survey 2. These findings are consistent with theoretical and empirical work that has suggested that individual performance increases team performance (Kilduff et al., 2016; Kilduff, 2014; Triplett, 1898). In addition, these findings extend the literature on performance by suggesting individual performance increases team performance. Next, I found a non-significant relationship between individual deviance and team performance in Survey 1. This finding departs from prior literature that found a negative relationship between individual deviance and team

performance (Dunlop & Lee, 2004). Thus, my findings seem to indicate that individual deviance within a team does not decrease team performance. Even if a team member is experiencing individual deviance, the feeling of individual deviance toward a focal teammate will not result in decreased team performance. However, I found a significant negative relationship between individual deviance and team performance in Survey 2. This finding is consistent with theoretical and empirical work that has suggested that individual deviance decreases team performance. In addition, this finding extends the literature on deviance by suggesting that individual deviance decreases team performance when measured at the team-level in Survey 2. Furthermore, I examined the relationship between motivation and team performance. I found a positive relationship between motivation and team performance in Survey 1 and Survey 2. These findings are consistent with theoretical and empirical work that has suggested that motivation increases team performance (Kilduff & Galinsky, 2017; Pike et al., 2018). In addition, these findings extend the literature on motivation by suggesting motivation increases team performance.

Fifth, I examined three mediators (individual performance, individual deviance, and motivation) of the positive relationship between intra-team rivalry and team performance. For the mediating effects of individual performance, individual deviance, and motivation, my results demonstrated that individual performance, individual deviance, and motivation did not significantly mediate the relationship between intra-team rivalry and team performance in Survey 1 and Survey 2. These findings indicate that individual performance, individual deviance, and motivation do not explain the effect of intra-team rivalry on team performance.

Practical Implications

Like Study 1, Study 2 findings are transferable to the business world via Crown's (2000) framework. My work suggests significant practical implications. First, individuals in teams spend a great amount of time together. For example, assuming a minimum 8-hour shift, individuals that work on teams spend 40-hours per work week, 160-hours per work month, and 2,080-hours per work year together. Over time these individuals compare themselves socially via daily interactions over several competitions in a business context for (e.g., top sales earner on the team, best presenter on the team, consecutive days worked, employee of the week/month/year, promotions, raises, etc.) or in a sporting context for (e.g., playing time, scholarship money, and notoriety). My findings indicate that individuals that social compare themselves with other teammates will likely generate rivalries with said teammates. Organizational leaders should encourage social comparisons by having results of intra-team competitions made public, possibly by posting them in the department if in business, or in the locker room if in athletics.

Second, Survey 1 of Study 2 found that once intra-team rivalry develops, there is an increase in motivation. Rivals use each other as motivators to measure performance (Pike et al., 2018). Organizational leaders can use the relationships between rivals to drive motivation of their team members. My findings also suggest that as rivalries develop on the team between team members, motivation levels increase resulting in increased team performance. Since managers in business and coaches in athletics are ultimately judged on how their team performs, and motivation increases team performance, managers and coaches should try to enhance motivation levels in teams to

realize the positive relationship between motivation and team performance at the inter-team level (Pike et al., 2018) as found in Survey 1 and Survey 2 of Study 2 at the intra-team level. While theory suggests that motivation results in performance increases at both the individual and team levels (Erev et al., 1993; Scott & Cherrington, 1974; Tauer & Harackiewicz, 1999, 2004; Triplett, 1898). To achieve enhanced rivalry and motivation levels, coaches and managers could generate more competitions for the individuals on the team, hence adding to the number of times team members compete with one another. Additionally, to increase rivalry and motivation, managers and coaches could introduce more occasions where team members are around each other outside of work hours, for example, team building activities, seminars, other social gatherings that are seasonal in nature.

Third, managers and coaches need to be mindful of deviance that is a consequence of intra-team rivalry and was supported in Survey 1 and Survey 2 of Study 2. Indeed, caution should be used when managers and coaches challenge their teams, that strains the relationship between leaders and followers (Mayer, Thau, Workman, Van Dijke, & De Cremer, 2012). According to Survey 2 of Study 2, individual deviance leads to a decrease in team performance that demonstrates the “dark side of rivalry” (Kilduff et al., 2010, p. 962). Organizational leaders need to monitor this phenomenon to ensure a professional work environment is maintained and the performance level of the team remains optimal.

To mitigate deviance, organizational leaders should be cautious when designing compensation systems. For example, research on salespeople regardless of industry with commission-based income greater-than eighty percent resulted in workplace deviance

(e.g., not accurately reporting metrics for sales quotas or expense accounts, and charging less for services) (Chonko, Wotruba, & Loe, 2002; Eddleston, Kidder, & Litzky, 2002; Honeycutt Jr., Glassman, Zugelder, & Karande, 2001). Organizational leaders should focus on group-based commission incentives and decrease the percentage of individual commission-based sales much lower-than eighty percent. Also, organizational leaders need to be vigilant of pressures to conform within the team. For instance, if deviant behavior exists on the team, new team members are more likely to adopt these deviant behaviors (Mac Lean, 2001). Managers and coaches need to address such conformity on their teams when present. Furthermore, organizational leaders need to be mindful of how they treat their employees. Employees that believe they are the victims of unfair treatment by management (i.e., being harshly disciplined in front of peers and clients) engage in deviant behavior (Litzky, Eddleston, & Kidder, 2006). Organizational leaders need to strive to treat their employees consistently and in accordance with organizational policies.

Fourth, while using individual-based goals for developing subordinate performance levels is an important function of the manager or coach, it is more effective to use team-based goals as the primary driver of team performance. There is abundant literature support for managers to focus on team-based goals versus individual-based goals to drive helping behaviors and team performance. For instance, in a study of Chinese department stores, Chan, Li, and Pierce (2014) found that star workers improve team member output in the presence of team-based compensation goals, while star workers decreased team member output in the presence of individual-based compensation goals. Similarly, team-based compensation goals increased helping behaviors among

team members (Che & Yoo 2001; Itoh 1991; 1992; 1993; Kandel & Lazear 1992;) in the pursuit of team goals and resulted in increased team performance (Bonner, Ruckert, & Walker Jr., 2002; Friedkin & Slater, 1994; Levi, Torrance, & Pletts, 1954; O’Leary-Kelly, Martocchio, & Frink, 1994). Aside from setting team-level goals for number of wins, coaches in athletics should consider setting additional team-level goals. For instance, set team-level goals for disciplined play, for example, goals to minimize the number of fouls (e.g., basketball) penalties (e.g., American Football and Ice Hockey) or errors (e.g., Softball and Baseball). Or, set team-level goals that incentivize collaboration during competition such as assists (assists are when a player passes the ball or puck to a teammate, and the teammate that received the pass scores). In business contexts managers could utilize team-based goals to enhance performance of sales teams via metrics such as increasing the amount sold over last year’s month compared to the month of the current year. Or for a new product launch, incentive the team to have the highest sales of the company district, region, etc., or to achieve a sales total greater than the industry average for previous product launches. Theory suggests that having team-based goals will increase team member helping behaviors and team performance.

Future Directions

There are many future directions for this research. First, since Study 1 consisted entirely of self-report data, as well as most of Study 2 except for the measure of team performance that was indexed with archival data and self-report data, design a study that includes combinations of data (e.g., self-report and archival). With multiple data sources measuring study variables there is a better chance of increased internal validity and external validity.

Second, comparing the level of intra-team rivalry in team settings between sports and business, with additional analyses on performance and deviance in each setting would make for an interesting study. It would also be an ideal setting to further apply the framework from Crown (2000) who argues that findings from athletic data can be generalized to business settings. If found to be statistically different, explaining why could provide significant implications for coaches and managers respectively. Hence, managers and coaches would be better informed on how to tailor their approach and manage the team, in each setting, sports or business. Conducting a study in an applicable team in the business world may include but is not limited to sales teams of any variety, engineering design teams, product development teams, marketing teams, etc., where something needs to be created or generated. These competitive environments should prove to be abundant with intra-team rivalry since rivalry is directed from one actor at being better than a focal actor at a specific task (Mead, 1937), or obtaining a reward over the focal actor (Boardley & Jackson, 2012).

Third, I recommend expanding this study into the emerging business disciplines of E-Commerce, Fintech, Insurtech, etc., since most research to this point has been focused in collegiate and professional sports, and simulations of business scenarios (Kilduff et al., 2016). Findings in these emerging business disciplines would provide a cutting-edge application of intra-team rivalry and its effect on revenue and the overall health of organizations. Additionally, investigating how artificial intelligence (AI) configures into the intra-team rivalry equation where individuals are no longer competing with other individuals on their team, they also compete with technology. AI is replacing workers across multiple disciplines (Brynjolfsson & McAfee, 2014; Wladawsky-Berger,

2017) and executives ranked AI the top source of disruption in business for the foreseeable future (New Vantage Partners, 2017). How would worker behavior and performance at the individual and team levels be affected by AI? Would workers compete harder with each other to appear less replaceable? Or, would workers engage in deviance via circumventing AI technology by dismantling it, or would workers underutilize AI to make it appear less beneficial.

Fourth, conduct a longitudinal study of intra-team rivalry. An example would be to collect data from one or more organizations (i.e., athletic or business) during peak and off-peak times and compare the levels of intra-team rivalry and performance. Once the findings are compared, trends should be identified such as differences from the beginning of quarter to the end of the quarter, and the difference between quarter 1 and quarter 4 (e.g., when everyone is trying to make their bonuses) in a business context. Or in an athletic context, compare trends in pre-season with trends throughout the competitive season (e.g., beginning, middle, and end). Findings could yield significant implications for coaches and managers on how to lead their teams and structure rewards.

Fifth, examine the potential direct effect that intra-team rivalry has on goals, or examine goals as a mediator between intra-team rivalry and team performance. Most teams (i.e., business or athletic), assuming rational behavior, have goals to achieve for performance. For example, a goal could be to improve sales (i.e., business) or wins (i.e., athletic) each year. According to Lock, Shaw, Saari, and Latham (1981), goals serve as a catalyst for motivation, in that ubiquitous and difficult goals motivate performance. Indeed, recent research also provides support that goals are a form of reflection and comparison with others; thus, reflecting on a rival generates the consequences of rivalry

(Kilduff & Galinsky, 2017). This would be achieved by constructing an experiment that would compare the findings between the intra-team rivalry group and a control group. For instance, examining the number of goals and the degree of goal difficulty achieved for each group (intra-team rivalry group and the control group) and examine the effect on team performance.

Sixth, according to goal perspective theory if actors differ in how they evaluate achievements, their conduct and emotions change (Balaguer, Duda, Atienza, & Mayo, 2002). Using goal perspective theory as a framework, a study investigating the effect on team performance and team member behavior if the coach's or manager's goals did not align with the goals of the individuals they were managing, or coaching would be an exciting topic to explore in an intra-team rivalry setting. Coaches and managers play a significant role in creating the culture for their subordinates (Nicholls, 1989). If the goals of the coach or manager for the team are more consistent with a task-involving climate, the focus is more engagement and development driven (Nicholls, 1989). Or, if the goals of the coach or manager for the team are more consistent with an ego-involving climate, the focus is on being difficult on subordinates when they make mistakes and catering to elite team members (Balaguer et al., 2002). The literature is developing, initial work has found that both ego-involving and task-involving climates increase team performance, however, the coach was only viewed positively in the task-involving climate (Balaguer et al., 2002). Aside from investigating team member performance and behavior, being able to explain what mechanisms (e.g., personality, employment incentives, etc.) of the coach or manager drives the selection of a task-involving or ego-involving goal system to bestow on the team.

Seventh, an experiment examining which setting, inter-team rivalry or intra-team rivalry has the greatest effect on performance. In a business setting, respondents on a sales team, financial services team, or a technology-based team would be surveyed to track levels intra-team rivalry. Then, performance could be measured as follows: sales team = revenue, financial services team = total funds managed, and technology-based team = patent filings. Next, the respondents would be asked to rate their feelings of inter-team rivalry toward their counterparts at a competing external firm. Performance would be measured between the competing firms. Results would be compared to determine which setting, inter or intra, team rivalry has the higher levels of rivalry and performance. Finally, continue data collection for Survey 2 of Study 2. Although I met the minimum number of teams required for teams' research, more data would increase study sample size and the generalizability of study findings.

Limitations

Like all research studies, Study 2 had several delimitations and limitations.

Delimitations. First, like Study 1, Study 2 used cross-sectional data. Although cross-sectional data measures what is naturally happening without manipulation, it only captures what is going on at one point in time (Field, 2018). If a longitudinal data collection method was used, it would be considered more rigorous since there would be multiple data collections and analyses to execute. The contribution would be of greater significance since the changes in variables would be tracked over time.

Second, the sample for Study 1 was collegiate students recalling a high school athletic team experience while the sample in Study 2 consisted of current collegiate student athletes reporting on their athletic team experiences. I have addressed recall bias

in the “Limitations” section of Study 1, that was reduced in Study 2. However, both studies utilized athletic data for hypothesis testing. There is support in the literature to generalize athletic data to business according to the framework from Crown (2000). However, stronger support for the generalizability of my findings could be made if I had been able to obtain approval to test my hypotheses with a business organization.

Third, the ICC computation in SPSS produced an agreement of .58 for my team level data in Survey 2 of Study 2. Although this level of reliability was moderate and supported data aggregation, levels $\geq .70$ are preferred since they provide greater degrees of reliability according to Portney and Watkins (2000). This moderate level of reliability may explain why Hypotheses 2, 3, 5, 9, 10 and 11 were not supported in Survey 2 of Study 2.

Fourth, I investigated social comparison as a mediator between intra-team rivalry and performance (individual and team) and individual deviance in Study 1, and as an antecedent of intra-team rivalry in Study 2. See “Antecedents: Social Comparison and Individual Cohesion” for modification justifications. From the definitional perspective, there is some overlap between social comparison and intra-team rivalry. Festinger (1954) defined social comparison as “when people evaluate their ability or performance through comparison with other people.” While rivalry is defined as two actors having repeated competition with each other resulting in closely decided contests, enhanced psychological engagement, and value of competitive outcomes for the actor (Kilduff et al., 2010). The key area of overlap is in the comparison of competitions between actors. However, rivalry is more specific in that competitions must be close, and the actor values beating his or her rival as the primary outcome and views additional outcomes (e.g., public

recognition, bonuses, pay raise, promotion, etc.) as secondary. Next, measurement of intra-team rivalry and social comparison used diverse items specific to each construct's definitional component, refer to Table 12 and Table 13 for a complete list. An example item for intra-team rivalry, "I feel rivalry toward my teammates." An example item for social comparison, "I am the type of person who often compares myself with my teammates." Based on the correlations between social comparison and intra-team rivalry, weak in Study 1 ($r = .27, p < .001$), and moderate in both Survey 1 of Study 2 ($r = .50, p < .001$), and Survey 2 of Study 2 ($r = .51, p < .010$), both intra-team rivalry and social comparison were distinct enough to warrant investigation.

Limitations. First, the scales for individual performance and team performance loaded together on the confirmatory factor analysis on Survey 2 of Study 2. As discussed earlier in Study 2, this was due to adapting the items of Survey 2 to reflect a team level setting. Specifically, adapting the individual performance scale to measure how participants view other team member's performance was the likely cause for the individual performance scale to load with the team performance scale. Nonetheless, this co-loading was an unforeseen consequence beyond the scope of my control, hence a limitation of survey measures in Study 2.

Second, with exception for the measure of team performance where the ratio of wins and losses were indexed with self-report data, the remaining variables in Study 2 were measured with self-report data. During preliminary phases of contact with the collegiate coaches in Study 2, I had asked if they would be willing to rate each player on an individual basis. If they agreed, I could have indexed the coaches rating of each player along with the player's self-report data for a more comprehensive measure of

individual performance. The coaches declined this request. The possibility of accessing additional data that could have been used to measure the remaining study variables was either not made available by the Universities, or it did not exist. Hence, the study was limited by an overreliance on self-report data.

Third, both studies had sampling challenges due to access limitations. Study 1 was predominately male at 60%, which limited the representation of females. In Study 2, there was even more disparity between gender as males accounted for 70% of the total sample, further limiting the representation of females. Also, in Study 2, the representation between NCAA Division II and III athletes was close, 104 and 136 respectively. However, I was unable to gain access to NCAA Division I universities, hence Division I athletes were not sampled. Ideally, having equal representation between NCAA Divisions of competition and gender would allow for meaningful comparative analyses.

Fourth, although I analyzed (i.e., 31 teams), more than the minimum number of 30 teams recommended for teams' research (Kreft, & De Leeuw, 1998; Maas, & Hox, 2004; Maas, & Hox, 2005), my study sample size is small. Given that there should be three to ten cases per variable, and my study has three cases per variable, a higher sample size would make this study stronger and more consistent with typical sample sizes in teams research, $n = 65$ teams (Kraut, & Streeter, 1995); $n = 66$ teams (Guinan, Coopriider, & Faraj, 1998); and $n = 69$ teams (Faraj, & Sproull, 2000). Also, with a higher sample size grouping teams by athlete position, and class standing, would not be necessary.

Fifth, I split the data in Survey 2 of Study 2 by the demographic variable of class standing which provided a higher sample size for teams. However, the data split was

conducted after data collection, which meant that respondents had filled out the surveys with their focus on the entire team. Respondents should have been instructed to comment on teammates of their same class standing before data collection took place. It is reasonable that in some cases respondents were commenting on those of the same class standing. However, since respondents did not receive this important direction, and the items on the survey explicitly stated, "I observed my teammates," it is reasonable to assume that most of the data I collected was capturing respondents reflecting on their entire team.

Conclusion

Intra-team rivalry is prevalent among individuals in both college athletics and the professional world of business. While individuals are competing, they must decide how they are going to compete, how their performance will be judged at an individual level, how their performance will affect the team and how they will treat their teammates before, during, and after competitions. My work suggests those who feel rivalry towards their teammates will have increased individual and team performances, and are likely to exhibit deviant behavior, or observe deviant behavior on the team. The following antecedents of team performance were discovered: individual performance, individual deviance, and motivation. Mediation analyses revealed that social comparison mediated the positive relationship between intra-team rivalry and individual performance. My work also suggests that intra-team rivalry results from individuals that socially compare themselves with teammates. Results from Survey 1 and Survey 2 of Study 2 demonstrate that intra-team rivalry has a dark side, manifesting itself as individual deviance.

Furthermore, in Survey 2 of Study 2 individual deviance decreased team performance.
Coaches and managers must be mindful of intra-team rivalry, a catch-22 phenomenon.

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