"There's No Good, It's Just Satisfactory": Perfectionistic Reactivity in NCAA Student-Athletes

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“THERE’S NO GOOD, IT’S JUST SATISFACTORY”: PERFECTIONISTIC REACTIVITY IN NCAA STUDENT-ATHLETES

by

Daniel J. M. Fleming

A dissertation submitted in partial fulfillment of the requirements for the degree of

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in

Human Development and Family Studies

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Perfectionistic reactivity is a characteristic style of responding to adversity that elicits a biopsychosocial response. Individuals high in perfectionistic reactivity are likely to experience anxiety, depression, frustration, and anger in situations where perfection is not attained. The present two-study, mixed-methods dissertation was designed to pursue a deeper understanding of the role of perfectionism on performance interpreted through the lens of reactivity, whilst also understanding athletes’ lived experiences of reactivity.

Study 1 adopted a quantitative longitudinal method, utilizing performance records for 46 student-athletes over an entire NCAA Spring golf season and cross-sectional measures of perfectionism to test for moderating effects of perfectionism on performance. Study 2 adopted a qualitative approach, utilizing semi-structured interviews with six athletes from the Study 1 sample who self-reported high levels of perfectionistic strivings and concerns. Multiple themes across the three broad categories of affect, behavior, and cognition were identified. In sum, findings suggest that perfectionism does not influence
the hole-to-hole performance of NCAA golf student-athletes, but that they experience perfectionistic reactivity through a multitude of dimensions related to affect, behavior, and cognition. We identify self-compassion as a potential intervention method for perfectionistic reactivity as initial evidence has been shown for its efficacy and athletes frequently cited it during their interviews.

(154 pages)
PUBLIC ABSTRACT

“There’s no good, it’s just satisfactory”: Perfectionistic Reactivity in NCAA Student-Athletes

Daniel J. M. Fleming

Perfectionistic reactivity is a style of responding to adversity that results in physical, psychological, and social components. Individuals who are high in perfectionistic tendencies are likely to experience anxiety, depression, frustration, and anger when perfection is not attained. The present dissertation utilized two complementary studies to examine perfectionistic reactivity in NCAA golf student-athletes. Results suggested that there is no relationship between perfectionism and performance at a hole-to-hole level. However, athletes highlighted that they experienced reactivity in their thoughts, feelings, and behaviors after both positive and negative performances. Student-athletes frequently cited self-compassion in their interviews, suggesting that the promotion of self-compassion may be a fruitful intervention method to aid athletes in their relationship with perfectionism and reactivity.
DEDICATION

To Mum and Dad, Grandma and Grandad, and Lauryn. I share your names, and so this degree is as much yours as it is my own. Thank you for everything.
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CHAPTER 1

General Introduction

Approximately 36 million youth take part in organized sport every year in the United States (Sports & Fitness Industry Association, 2020). Of these individuals, a relatively small number continue their participation at the intercollegiate level, competing for colleges and universities that are members of the National Collegiate Athletic Association (NCAA) or National Association of Intercollegiate Athletics (NAIA). In fact, of the 36 million youth sport participants, just 282,411 male and 221,212 female student-athletes participated at the intercollegiate level last year (NCAA, 2020). Importantly, it has been shown that NCAA student-athletes have a qualitatively different matriculation experience than their non-student-athlete peers.

Gayles and Hu (2009) suggested that student-athletes comprise a unique population and therefore experience their own challenges, requirements, and outcomes during their time on campus. In a study conducted by Foster and Lally (2021), student athletes were interviewed about the long-term impacts of competing in intercollegiate athletics. Three themes were highlighted: (1) thinking globally, (2) development and application of life skills, and (3) preparation for sport careers over non-sport careers. Competing as a student-athlete has the potential to improve mental health outcomes (Ghiami et al., 2015); however, challenges and difficulties are also part of the normative experience for student-athletes. These are manifest primarily through expectations to
perform well in the classroom while also spending twenty or more hours a week in athletic-related endeavors.

Huml and colleagues (2019) conducted a review in which they addressed various aspects of the student athlete experience such as admissions, time constraints, student-athlete burnout, and athletic identity. With regards to athletic identity, the authors noted that student-athletes who possessed a strong athletic identity were at a higher risk of neglecting their academic, personal, and social development (Huml et al., 2019). Furthermore, those student-athletes with aspirations or expectations to become professional athletes held more foreclosed athletic identities and struggled more when alternate career plans were presented.

Student-athletes also appear to have difficulty achieving expected graduation rates. Kamusoko and Pemberton (2013) found that 95% of freshmen student-athletes intended to graduate, even if it required pursuing academic classes once their athletic eligibility expired. Despite this, internal data suggest that student-athlete graduation rates do not meet this standard (NCAA, 2021). This achievement gap is largely due to the extreme time commitment that student-athletes maintain in their sport, as well as the complementary demands that come with being a full-time, matriculating student (Huml et al., 2019). These stressors have the potential to lead to diminished well-being, athlete burnout, and low performance (Huml et al., 2019). Importantly, student-athletes who experience these maladaptive outcomes are less likely to persist to graduation and are more likely to experience feelings of ‘entrapment’ in their sport. In sum, participation in NCAA sport offers student-athletes a unique college experience, with a range of opportunities for holistic positive development. That is not to say that there is not
capacity for poorer outcomes from that same context. Specifically, a personality characteristic that presents itself as a strong antecedent for maladaptive outcomes among elite athletes is perfectionism (Hill & Curran, 2016).

A History of Perfectionism Research and Measurement

Perfectionism began to receive academic attention in 1980 through the publication of Burns’ (1980) seminal work, “The Perfectionists’ Script for Self-defeat.” Burns was not the first to consider perfectionism as an important psychosocial construct, but his contribution did offer the first psychometric instrument to measure perfectionism empirically. The measure was constructed upon the premise that perfectionism applies only to those individuals who “strain compulsively and unremittingly toward impossible goals and who measure their own worth entirely in terms of productivity and accomplishment” (Burns, 1980, p. 34). By advancing this operational definition, Burns suggested that perfectionism should be considered a unidimensional personality characteristic with exclusively maladaptive and dysfunctional qualities. Burns argued that individuals high in perfectionistic tendencies are psychologically unprepared for imperfect outcomes. This antecedence is detrimental because it causes diminished self-respect and breeds a strong desire to remove oneself from circumstances in which they are unable to be perfect. Burns (1980) also suggested that individuals prone to extreme perfectionistic beliefs may be impatient, easily frustrated, preoccupied, and more likely to exhibit behavior that is highly competitive and excessively achievement-oriented.
Furthermore, he noted that perfectionists are often plagued by loneliness and unsteady personal relationships due to the anticipation of rejection.

Early conceptual thinking around perfectionism suggested that there is a tendency for perfectionists to fall victim to dichotomous thinking. Specifically, Burns proposed that perfectionists view all outcomes as binary: success or failure. This type of thinking is exemplified by the straight-A student who receives a single B and subsequently views themself as an abject failure. Burns suggests that this type of dualistic thinking can lead perfectionists to fear mistake-making and to overreact on the occasions where mistakes are made. Another debilitating aspect of perfectionism according to Burns is the tendency for perfectionists to make overgeneralizations and perceive errors as permanent. As a result, perfectionists perceive that there is no margin for error and feel the need to perform perfectly in all circumstances. When adopting this pattern of thought, mistakes lead to perfectionists being riddled by feelings of guilt, which may manifest as negative self-ruminations and a negative self-image, further reinforcing the need to be perfect in all future attempts (Burns, 1980).

In the subsequent decade, the field of perfectionism grew exponentially, and with this growth and attention came a paradigmatic shift in the conceptualization of perfectionism. It became generally accepted that perfectionism was a multidimensional construct (Frost et al. 1990; Hewitt & Flett, 1991). Hewitt and colleagues (2003) argued that adopting a unidimensional approach was counterproductive to advancing and understanding the field of perfectionism and made the case that perfectionism includes both intra- and inter-personal components, therefore qualifying the construct as multidimensional. Further, they claimed that perfectionism exists within humans, who
exist within a complex network of interactions, relations, and transactions. It stands to reason, then, that perfectionism must be comprised of multiple dimensions to account for the vast number of humanistic potentialities.

Operationalizing perfectionism as a multidimensional construct was directly contrary to Burns’ original theorizing; nevertheless, Frost and colleagues (1990) provided an alternate definition of perfectionism that appeared to better capture its multiple components. Specifically, they defined perfectionism as the desire to achieve high standards in performance, combined with overly critical evaluations of performance.

Additional dimensions — derived by reviewing the existing literature — were included in an effort to capture all aspects of the construct. These included: (a) the perception of high parental expectations and criticism, (b) the doubting of the quality of one’s actions, and (c) a preference for order and organization (Frost et al., 1990; Purdon et al., 1999). This work ultimately led to the creation of the Frost Multidimensional Perfectionism Scale (F-MPS) (1990). The measure consisted of subscales derived to measure six dimensions of perfectionism: personal standards, doubts about actions, parental expectations, organization, concern over mistakes, and parental criticism.

In the immediate aftermath of Frost and colleagues’ (1990) proposition, Hewitt and Flett (1991) provided further evidence for the multidimensional nature of perfectionism by highlighting both social and personal components. They forwarded three dimensions that addressed a critical theoretical gap: self-oriented perfectionism, other-oriented perfectionism, and socially-prescribed perfectionism. The difference between these dimensions is not the behavior of an individual per se, but instead the object to/upon whom the behavior is directed (see Hewitt & Flett, 1991). Self-oriented
perfectionism is perfectionistic tendencies directed towards oneself. This involves setting exceedingly high standards and being over-critical when evaluating performance. Other-oriented perfectionism involves expectations and beliefs that individuals hold for those around them (e.g., teammates, colleagues, or coaches). Individuals with high levels of other-oriented perfectionism are thought to hold unrealistic standards for ‘significant others’ and are overly critical in the evaluation of others’ performances. It is suggested that this dimension can manifest as lack of trust, feelings of hostility towards others and other-directed blame, along with interpersonal issues such as cynicism and feelings of being lonely. Last, socially-prescribed perfectionism captures the perceived need to be perfect and attain expectations set by significant others. Essentially, it is the perception that others impose their perfectionistic standards on an individual. Socially-prescribed perfectionism typically results in a range of negative consequences because these standards are perceived as being excessive and uncontrollable.

Considering these conceptual advances, Hewitt and Flett (1991) deemed it necessary to develop another measure of perfectionism that would build from the original F-MPS (Frost et al., 1990) by including the three social dimensions of perfectionism. The process of developing this new measure (the Hewitt and Flett Multidimensional Perfectionism Scale; HF-MPS) involved five separate studies, each designed to create and establish its validity. The sequential series of studies demonstrated that the HF-MPS produced valid and reliable scores across all three dimensions. The findings suggested that perfectionism is a relatively fixed personality trait that persists over time and across contexts, and supported the idea that a multidimensional approach was warranted when assessing perfectionism.
Considering conceptual and practical advances in the study of perfectionism, it became necessary for theoretically derived models to be introduced that could define and examine perfectionism as a multidimensional construct. This resulted in the proposal of the higher-order model of perfectionism, which considers the theoretical and statistical overlap between the F-MPS and HF-MPS developed during the initial conceptualization of perfectionism as a multidimensional construct (Hill, 2016; Frost et al., 1990; Hewitt & Flett, 1991). This model offered an organizing framework, wherein two broader dimensions of perfectionism were delineated: perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings were defined as “aspects of perfectionism associated with self-oriented striving for perfection and the setting of very high personal performance standards’ (Gotwals et al., 2012, p. 264). Perfectionistic concerns were defined as “aspects associated with concerns over making mistakes, fear of negative social evaluation, feelings of discrepancy between one’s expectations and performance, and negative reactions to imperfection” (Gotwals et al., 2012, p. 264).

The conceptualization of these higher-order dimensions of perfectionism have informed multiple organizational frameworks, including the tripartite model of perfectionism (Stoeber & Otto, 2006). The tripartite model extended the work of Parker (1997) by suggesting that perfectionistic strivings were associated with positive characteristics and outcomes and could therefore be labelled as healthy, whereas perfectionistic concerns were more often associated with negative characteristics and should instead be labelled as unhealthy. The model highlighted three potential combinations of perfectionistic tendencies: (a) individuals with high strivings and low concerns were classified as healthy perfectionists; (b) those with high strivings and high
concerns were classified as *unhealthy perfectionists*, and (c) those with low strivings — regardless of their levels of concern — were classified as *non-perfectionists* (Stoeber & Otto, 2006).

This dimensional approach situated perfectionistic strivings and concerns as orthogonal (i.e., independent). As a result, the tripartite approach resulted in a binary conceptualization of perfectionists as healthy or unhealthy. Although there has been empirical support for the tripartite model, it has not come without criticism. One point of contention is that it classified anyone with low strivings as a non-perfectionist, regardless of their level of perfectionistic concerns. Gaudreau and Thompson (2010) argued this point because the presence of high perfectionistic concerns in the absence of perfectionistic strivings may provide insight into the potential *costs* associated with perfectionism. Additionally, the labeling of perfectionism as either healthy or unhealthy has yielded criticism because no psychosocial construct is fully adaptive or maladaptive (Hill, 2016). Therefore, Gaudreau and Thompson (2010) suggested that the within-person combinations of perfectionistic strivings and concerns have the potential to be of more interest than the subtypes themselves. Their critique led to the conceptualization of the 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010), wherein four new subtypes of perfectionism (i.e., within-person combinations of perfectionistic strivings and concerns) were proposed.

To adequately understand the 2 × 2 model, these four subtypes must be fully explicated. The first subtype, *non-perfectionism*, captured individuals with simultaneously low levels of perfectionistic strivings and perfectionistic concerns. These individuals are not typically experiencing the potential effects of perfectionistic strivings...
or concerns. The second subtype, *pure personal standards perfectionism*, captured individuals with low levels of perfectionistic concerns but high levels of perfectionistic strivings. Gaudreau and Thompson (2010) acknowledged that this subtype was the crux of the debate over *healthy* and *unhealthy* perfectionism. The third subtype, *pure evaluative concerns perfectionism*, captured individuals with high levels of perfectionistic concerns and low perfectionistic strivings. It is this subtype that presented one of the largest differentiating characteristics between the $2 \times 2$ model and the tripartite model. The tripartite model (Stoeber & Otto, 2006) would classify these individuals as non-perfectionists because of their low strivings. However, in the $2 \times 2$ model, these individuals were thought to exhibit a non-internalized need to be perfect, mostly derived from the external environment and perceived pressure to be perfect from significant others (Gaudreau & Thompson, 2010). The final subtype, *mixed perfectionism*, captured individuals with high levels of perfectionistic strivings and perfectionistic concerns. Within this subtype, individuals perceive pressure from significant others to be perfect and maintain internal strivings to be perfect themselves. One of the primary strengths of the $2 \times 2$ model was the inclusion of *pure evaluative concerns perfectionism*. This allowed for the inclusion of individuals who did not show high perfectionistic strivings but did demonstrate high levels of perfectionistic concerns, which were categorized as ‘non-perfectionists’ in the Tripartite model.

In conjunction with the movement of the field towards the $2 \times 2$ model as the preferred conceptualization of perfectionism, there has also been some debate regarding whether perfectionism should be considered as a global or domain-specific personality characteristic (Hill, 2016). In exploring the contribution of multidimensional
perfectionism and achievement goal orientation to pre-competitive anxiety, Hall and colleagues (1998) highlighted a moderate correlation between perfectionism and athletes’ achievement goals. Specifically, ego orientation was significantly correlated with several perfectionism subscales, whereas task orientation showed a small but significant relationship with the personal standards subscale. These seminal findings illustrate how perfectionism may predict cognitive anxiety, and that concern over making mistakes has the potential to be a central contributor to athletes’ cognitive anxiety. In light of this, it can be assumed that perfectionistic tendencies likely underpin cognitive anxiety for performance and that the neurotic dimensions of perfectionism (concern over mistakes and doubts about actions) are the most salient predictors.

Building from this new understanding, Dunn and colleagues (2002) examined the relationship between perfectionism and goal orientations in sport. The authors began by acknowledging that existing multidimensional perfectionism scales (F-MPS, Frost et al., 1990; HF-MPS, Hewitt & Flett, 1991) were created for use in a clinical setting and that a context specific measure should be used to examine perfectionism in the sport domain. Therefore, they adapted the F-MPS specifically for use with athletes by excluding two subscales and by creating eight new items that related to the competitive sport environment. These were included in two new subscales: “coach expectations” and “coach criticism”, which replaced the original “doubts and actions” and “organization” subscales.

Initial validation of the *Sport Multidimensional Perfectionism Scale* (SMPS) (Dunn et al., 2002) provided evidence that perfectionism in sport is best viewed through a multidimensional lens. Further, results suggested that higher ego orientation is associated
with maladaptive aspects of perfectionism: those relating to the need to avoid failure, being overly critical when evaluating performance, and feeling inadequate in one’s performance. Conversely, higher task orientation was correlated with the adaptive aspects of perfectionism: setting high personal standards, and motivation to strive for the best one can possibly be. Beyond these conceptual and theoretical contributions, the primary legacy of the SMPS is as the first sport-specific measure of perfectionism.

The production of the SMPS furthered the debate regarding whether perfectionism is a global or domain-specific personality characteristic. To test these competing hypotheses, Dunn and colleagues (2002) conducted an exploratory study in which they gathered perfectionism data from intercollegiate student-athletes in Canada. They included scales tapping global perfectionism, sport-specific perfectionism, and academic perfectionism. Analyses highlighted significant differences between domain-specific perfectionism and global perfectionism and served as a catalyst for future research designed to consider the context and social values that reside in the environment within which perfectionism is being measured.

A comprehensive and contemporary review was recently conducted by Hill and colleagues (2020). Findings suggested that perfectionistic strivings are positively related to a range of motivation variables, including task and ego orientation, harmonious and obsessive passion, and all forms of motivation regulation other than amotivation (Hill et al., 2020). Whereas individuals’ perfectionistic strivings were found to have positive relationships with engagement and exercise dependence, perfectionistic concerns were positively related to anxiety, worry, and self-criticism. However, some interpretive difficulty exists, as perfectionistic concerns were also directly associated with enjoyment,
self-confidence, and positive affect. Perfectionistic strivings were positively related to performance outcomes, with effect sizes varying across criterion variables. Importantly, perfectionistic strivings and concerns are linked to social relationships in sport. Grugan et al (2020) found that the social dimensions of perfectionism may be related to antisocial behavior directed toward opponents and teammates. Additionally, Smith and colleagues (2018) examined perfectionism in relation to burnout and depressive symptomology in athletes, finding that socially prescribed perfectionism predicted burnout (specifically in the dimension of exhaustion) over time.

**An Emerging Construct: Perfectionistic Reactivity**

A recent development in the perfectionism literature is the proposal of perfectionistic reactivity, associated closely with stress reactivity (see Flett et al., 2016). In particular, Hewitt and Flett (2002) highlight two stress mechanisms of high importance: (1) stress perpetuation, and (2) stress enhancement. *Stress perpetuation* relates to the idea that some individuals have “a tendency to activate maladaptive tendencies (e.g., ruminative response orientation) that maintain and prolong stressful episodes” (p. 258). *Stress enhancement* refers to “the magnification of stress due to self-defeating styles of cognitive appraisal (e.g., interpreting minor mistakes and setbacks as personal failures of great importance, overgeneralizing negative outcomes to aspects of the self, and so forth) and maladaptive coping and problem-solving skills” (Hewitt & Flett, 2002, p. 258). Hewitt and Flett suggest that individuals who are high in
perfectionism will have a distinct tendency to experience stress through these two mechanisms.

Recent work in this area builds upon the comprehensive stress process framework introduced by Hewitt and Flett (2002), which highlighted how individuals with higher levels of perfectionism typically experience higher levels of stress reactivity, particularly when the stressor is related to their sense of personal failure. Flett and Hewitt (2016) defined perfectionistic reactivity as “a characteristic style of responding to adversity that includes both psychological and physiological reactivity” (p. 301). An assumption inherent in this definition is that individuals who are high in perfectionistic tendencies often perceive being under great pressure to perform perfectly and may therefore react intensely in situations where performance is not perfect, or where perfection is unattainable.

Perfectionistic reactivity is characterized by a heightened arousal level, intense thoughts and feelings about a performance, and an ego-involved rather than a task oriented motivational state (Flett & Hewitt, 2016). Thus, reactivity may manifest in the form of perfectionistic cognitions, which have been shown to be associated with burnout symptoms (Hill & Appleton, 2011). Individuals with high levels of perfectionistic reactivity demonstrate this through affective, behavioral, and cognitive responses. Affective responses may include anger, anxiety, depression, and frustration. Behavioral responses may result in athletes displaying avoidance activities, over-strivings, hypercompetitive behavior, and overcompensation. Finally, cognitive responses may focus on rumination, social comparison, and negative and/or perfectionistic automatic thoughts (Flett & Hewitt, 2016).
Flett and Hewitt (2016) offered insights into particular sport-related situations where perfectionistic reactivity may be of interest (e.g., failures, loses, being outperformed by a competitor, nonattainment of goals, having imperfections or inadequacies, making mistakes). These and other negative experiential situations were posited to be particularly relevant as they revolve around one’s sense of failure. Perfectionistic reactivity, then, may be a more salient experience for those who have a tendency to experience fear of failure rather than the attainment of success. Hewitt and Flett (2016) also highlighted the large amount of literature providing evidence for heightened mistake sensitivity in those with higher perfectionistic tendencies (Frost et al., 1997; Frost et al., 1995; and Hewitt et al., 2008). This has the potential to be of particular interest when considering athletic performance, as failure is inevitable over the course of an athletic season or career.

The Present Dissertation

NCAA student-athletes perform at the highest level of amateur sport in the United States. Individually and as members of their teams, NCAA student-athletes spend vast amounts of time involved in their sport and an effort to improve personal and collective performance (Ghiami et al., 2015). One major threat to athlete well-being, and an antecedent to experiences such as burnout, depression, and anxiety, is perfectionism. However, there has been little empirical attention paid to the concept of perfectionistic reactivity, with even less directed towards understanding how it relates to athletic performance among student-athletes.
The present dissertation was designed to address the concept of perfectionistic reactivity in relation to performance among NCAA golf student-athletes. As highlighted by Flett and Hewitt (2016), perfectionistic reactivity is of particular interest when imperfections/inadequacies are shown, or when personal goals are not attained. Golf is a particularly useful domain to examine this concept, as performance can be evaluated on a hole-by-hole, round-by-round, and tournament-by-tournament basis over the course of a competitive season. Because NCAA student-athletes spend up to (and in some cases more than) 20 hours per week participating in sport-related activities, while also managing their academic and social commitments, perfectionistic reactivity may serve as a source of stress, thus influencing student-athletes’ experiences of well-being, burnout, and performance (Ghiami et al., 2015).

Study 1 utilized perfectionistic reactivity as a framework to explore the potential moderating influence of perfectionism on the relationship between athletes’ hole-over-hole performances in NCAA golf. A relatively recent construct, perfectionistic reactivity (Flett & Hewitt, 2016) has received little consideration among scholars or NCAA stakeholders. Study 1 addressed this gap and has the potential to offer meaningful insights into the role of student-athletes’ perfectionistic reactivity in an ecologically valid, and measurable, competitive sport environment.

Study 2 was a qualitative investigation of NCAA golf student-athletes’ perceptions and experiences of perfectionism with regards to perfectionistic reactivity. It was specifically designed to understand 1) how NCAA golf student-athletes react in the aftermath of positive or negative performance outcomes while playing, and 2) how NCAA golf student-athletes experience and view perfectionism in sport. Data analysis
utilized thematic analysis, in line with the recommendations of Braun and Clarke (2012). A critical friend was employed to aid in the quality of the results and interpretation of the data. Study 2 therefore offers rich qualitative insight into the perceptions and experiences of NCAA golf student-athletes with regards to perfectionism, its origins, and outcomes.
CHAPTER 2

Study 1: Perfectionistic Reactivity and Competitive Performance Outcomes in NCAA Golf Student-Athletes

Introduction

Perfectionism is a multidimensional personality characteristic comprised of setting excessively high standards for performance and engaging in overly critical evaluations of behavior (Frost et al., 1990). Perfectionism has been conceptualized in numerous ways, beginning with a unidimensional approach (Burns, 1980). The field quickly moved toward multidimensional approaches, highlighting the potential for different perfectionistic orientations, as well as the social and personal components that shape it (Frost et al., 1990; Hewitt & Flett, 1991). A two-dimension, higher-order model has gained support in the contemporary literature (Stoeber & Otto, 2006) and suggests that athletes experience both perfectionistic strivings and perfectionistic concerns. *Perfectionistic strivings* are “aspects of perfectionism associated with self-oriented striving for perfection and the setting of very high personal performance standards” (Gotwals et al., 2012, p. 264). *Perfectionistic concerns* are “aspects associated with concerns over making mistakes, fear of negative social evaluation, feelings of discrepancy between one’s expectations and performance, and negative reactions to imperfection” (Gotwals et al., 2012, p. 264).

A sizable body of research has been designed to examine the correlates of perfectionism within the sport domain. Collectively, these studies suggest that perfectionistic strivings do not undermine competitive performance and that they are in
some cases associated with adaptive (e.g., task or mastery) goal orientations that foster an athlete’s ability to perform to their potential (Stoeber et al., 2009). Indeed, perfectionistic strivings have been shown to enhance athletic performance over repeated trials (Stoll et al., 2008). These findings, if interpreted narrowly, offer support for the notion that perfectionism has the potential to lead to positive performance outcomes over time. In contrast to perfectionistic strivings, perfectionistic concerns are associated with ego or performance goal orientations, less self-determined forms of motivation, and cognitive and somatic anxiety (Hill et al., 2018). However, perfectionistic strivings and concerns have consistently been shown to be highly correlated within individuals and therefore the adaptive or maladaptive nature of perfectionism as a whole must be considered in context (Waleriańczyk et al., 2022; Madigan et al., 2016; Madigan et al., 2017). Overall, these findings highlight the complex nature of perfectionism and underscore the need to better assess the implications of high perfectionistic strivings and concerns in athletes. It is plausible that while perfectionism has the potential to provide some performance-related benefits, it may not be an advantageous personality characteristic when considered over an entire career or lifetime, or when considered outside the sport domain.

A recent conceptual development in the field of perfectionism is the concept of perfectionistic reactivity. Introduced by Flett and Hewitt (2016), perfectionistic reactivity is “a characteristic style of responding to adversity that includes both psychological and physiological reactivity” (p. 301). This construct builds on the comprehensive stress process framework and highlights how individuals with higher levels of perfectionism typically experience higher levels of stress reactivity, particularly when the stressor is related to a personal sense of failure (Hewitt & Flett, 2002). Initial research in this area
suggests that perfectionistic reactivity may manifest in affective, behavioral, and cognitive responses (Flett & Hewitt, 2016). Affective responses may include anger, anxiety, and depression; behavioral responses may include avoidance activities, over-striving, and becoming hypercompetitive; and cognitive responses may include rumination and social comparison. An important practical extension of this work has been the forwarding of sport-related situations where perfectionistic reactivity may be of greatest interest. These include failures and losses wherein athletes experience being outperformed, not achieving their goals, having imperfections, and making mistakes. In light of this, scholars have described perfectionistic reactivity as particularly salient when individuals are higher in perfectionistic concerns or are motivated by fear of failure rather than the pursuit of success. This thesis is supported by the notion that athletes who are higher in perfectionistic reactivity possess heightened mistake sensitivity after subjective failures in sport (Frost et al., 1997; Frost et al., 1995; Hewitt et al., 2008).

Given the current empirical understanding of perfectionism, it stands to reason that competitive athletes who maintain high standards of performance and who compete in public settings, would be most likely to be affected by perfectionistic reactivity. One such group is NCAA student-athletes who frequently participate in 20 or more hours of training and competition per week throughout the academic calendar to maximize individual and team performance outcomes. In a high-performance setting such as intercollegiate athletics, it is possible and, in fact, probable, that multiple components of a perfectionistic climate would be internalized, and that student-athletes would subsequently exhibit elevated levels of perfectionistic tendencies (Hill & Grugan, 2020). One group that may exhibit perfectionistic reactivity in this context is NCAA golf
student-athletes. Golf offers a unique setting in relation to performance feedback. Specifically, with 18 discreet performance markers per round, athletes are afforded performance feedback more frequently when compared to longer, continuous events, such as soccer or basketball, or sports like gymnastics where athletes perform once in each event per competition. As a relatively new concept, perfectionistic reactivity is yet to be explored in a performance context in sport. Due to its feedback structure, golf offers a setting in which athletes can compare their performance to others and the predetermined, standardized value of par, providing ample opportunity for reactive situations or circumstances. Flett and Hewitt (2016) also highlight the influence reactivity may have on athletic performance and competitive behaviors. As a salient marker of success for most athletes, coaches, and athletic stakeholders, performance features at the center of the present study. In adopting a sport setting such as competitive golf, the present study extends the reactivity literature by providing the first examination of reactivity and performance in an ecologically valid setting. Prior work has examined these relationships in laboratory scenarios (Curran & Hill, 2018; Lizmore et al., 2019) and found significant relationships between perfectionism and subsequent performance. In conducting the present work, we offer unique and supplemental findings to those laboratory-based works.

To better understand perfectionistic reactivity in NCAA golf student-athletes, the present longitudinal study was designed to assess the effects of perfectionistic strivings and perfectionistic concerns on hole-to-hole performance over the course of a competitive golf season. While perfectionistic reactivity is not directly tested in the present study, it serves as a conceptual lens through which to interpret results. As such,
the present work offers initial insights into the reactive nature of the relationship between perfectionism and performance over multiple discreet performances in quick succession. We suppose that the relationship between scores on one hole and the next will vary as a function of an athlete’s levels of perfectionism, highlighting the potential for reactivity to influence performance outcomes in the time between the completion of two holes. Golf was identified as a suitable domain to test our hypotheses due to its unique scoring convention. Athletes can compare themselves to a standardized score, par, allowing for researchers to identify good, average, or poor performances relative to a static marker.

Method

Participants

One hundred and twenty-two participants were included in the initial sample. Of these participants, 53 (43.4%) identified as male, 59 (48.4%) identified as Female, and 10 (8.2%) did not provide their gender. Participants had a mean age of 20.08 years ($SD = 1.43$, range = 18-24), had played golf for 10.76 years ($SD = 4.29$, range = 1-25), and had competed at the NCAA level for 2.28 years on average ($SD = 1.29$ years, range = 0-5). Participants self-identified as White (81.2%), Asian (8.0%), Black or African American (2.7%), American Indian (0.9%), and Other (7.1%). Participants represented all three NCAA divisions, with 31 (25.6%) competing for a Division I institution, 12 (9.9%) competing for a Division II institution, and 78 (64.5%) competing for a Division III institution.

Procedure
Prior to participant recruitment, study approval was obtained through Utah State University’s Institutional Review Board (IRB) to ensure the protection of human participants. Subsequent to approval, initial contact was made with head coaches of all men’s and women’s (or combined) NCAA golf programs via email. This introductory email included details of the study, its purpose, potential outcomes, the requirements for participation, and an email script with a link to the survey to send to student-athletes. Head coaches who were interested in having their student-athletes participate in the study were asked to distribute the email script and accompanying survey link to their teams. Student-athletes who agreed to participate and provided informed consent completed the survey prior to the beginning of the NCAA’s spring 2022 competitive golf season. The survey instrument was designed to gather demographic information as well as student-athletes’ self-reports of perfectionistic strivings and perfectionistic concerns. Performance data were then collected for these athletes over the course of the competitive golf season by querying results online at www.golfstat.com. This method of performance data collection did not place any burden on student-athletes, coaches, or staff. Identifying information (e.g., student-athlete names and universities) remained in the dataset until performance data (i.e., hole, round, and tournament scores) had been collected for the entire season. These data were stored in an encrypted cloud folder on Box.com and were only accessible by the lead researcher on a password-protected computer.

**Measures**

**Demographics.** Basic student-athlete demographics were collected, including age, gender, race and ethnicity, nationality, NCAA member-institution, NCAA conference,
years playing golf, and years playing NCAA golf. All demographic data were collected at
the person (macro) level.

**Perfectionism.** The Multidimensional Inventory of Perfectionism in Sport (MIPS,
Stoeber et al., 2006; Stoeber et al., 2007) was used to measure perfectionistic strivings
and perfectionistic concerns. The MIPS includes two subscales: 1) *striving for perfection
during training/competition* and 2) *negative reactions to imperfection during
training/competition*. These subscales include five items each, such as “I strive to be as
perfect as possible” and “I get completely furious if I make mistakes”. In the present
study, participants were asked to read the item statements and indicate the degree to
which each statement characterizes their attitudes in sport, responding on a 5-point
Likert-scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Participants were informed
that there were no correct or incorrect answers and that the research team was interested
only in their personal perceptions and experiences. Past research has affirmed both
subscales as reliable and valid indicators of perfectionistic strivings and concerns
(Stoeber & Madigan, 2016; Madigan, 2016). In the present study, MacDonald’s Omegas
were calculated and offered adequate support for the subscales striving for perfection (Ω
= 0.89) and negative reactions to imperfection (Ω = 0.83).

**Performance.** Performance data were collected over the course of the competitive
season by examining posted results online and the collection of performance data did not
place any in-season burden on student-athletes, coaches, or staff. Data were collected by
trained undergraduate research assistants who documented hole scores for each
participating athlete. Data were coded analogous to conventions used in golf’s stroke
scoring system requiring the calculation from raw scores to to-par scores. Specifically,
albatrosses were coded as -3, eagles as -2, birdies as -1, pars as 0, bogeys as 1, double bogies as 2, triple bogies as 3, etc. Hole scores were then summed to create composite round and tournament scores. On occasion, hole scores were not available at www.golfstat.com, in these cases, only round scores were collected. Hole scores in the present study formed the micro-level, while round scores formed the meso-level, and individual participants comprised the macro-level units of analysis.

**Data Analysis**

Statistical analyses were conducted using R (R Core Team, 2021). Descriptive statistics were calculated and examined per the recommendations of Tabachnik and Fidell (2014), using the `psych` package (Revelle, 2021). Linear mixed-effects models were utilized to examine the potential moderation of perfectionistic dimensions on the relationship from one hole to the next while accounting for the clustered nature of the data. Adopting a multi-level approach was necessary in the present study due to the nested nature of the data (Hox et al., 2017). In ordinary least squares regression, scholars assume the independence and randomness of observations. These assumptions were not satisfied in this study, as multiple data points were generated from each participant (i.e., holes nested within rounds nested within athletes). This approach allowed for the inclusion of random effects which enabled the statistical control of nesting effects throughout the analyses. Due to hole level data not being available for particular events and some participants competing in too few tournaments to create a lagged variable, only individuals with complete hole and round data were included in the analyses, which dictated the three level nested structure of hole, round, and individual.
All mixed-effects models were conducted using the Lme4 package (Bates et al., 2015). Null models, which did not contain any predictors, were fit to examine intraclass correlations (ICCs) which allowed examination of the proportion of variance in performance explained at each level of clustering (individual, hole, and round). To address the research question, a new variable was constructed using raw participant scores on each hole and lagging them by one unit (i.e., hole). This calculated lag score was used as an independent variable throughout the analysis. It was entered into the model as a fixed-effect, fit with the restricted maximum likelihood estimator (REML), and used to test the relationship between the previous hole score and the subsequent hole score (Hox et al., 2017). At this step, random intercepts for athlete and round were included in the model. Next, grand mean-centered perfectionistic strivings and concerns were entered as moderators of this relationship to examine any influence they had on hole-to-hole performance. Statistical significance for all tests was set at $p < .05$.

Results

Descriptive Statistics

Scores were collected on 3474 holes, nested within 193 rounds, across 46 student-athletes. Only 46 of the 122 original participants were included in the final analysis because hole-level data were not available for 78 of the 122 original participants. These participants were excluded from the analyses. Mean scores and standard deviations, Pearson’s correlations, and MacDonald’s Omegas can be found in Table 1.
Table 1.

Pearson's Correlations, Observed Mean Scores and Standard Deviations, and MacDonald’s Omegas for Study Variables

<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>1. Score</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Striving for Perfection</td>
<td>-0.06**</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>3. Negative Reactions to Imperfection</td>
<td>-0.01</td>
<td>0.51***</td>
<td>–</td>
</tr>
<tr>
<td>Mean</td>
<td>0.51</td>
<td>3.80</td>
<td>3.17</td>
</tr>
<tr>
<td>SD</td>
<td>0.94</td>
<td>0.99</td>
<td>2.80</td>
</tr>
<tr>
<td>Omega</td>
<td>0.89</td>
<td>0.83</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** p < .01. *** p < .001

Intraclass Correlations

Prior to the formal inferential analyses, a null model containing only random intercepts for athlete and round was fit to calculate intraclass correlations (ICCs). This provided the proportion of variance in hole score explained at each level of the analysis. The proportion of variance accounted for at the round level was 1.3%, whereas between-person variance accounted for 18%, for a total explained variance of 19.3%.

Mixed-Effect Model

Scatterplots and Q-Q plots were fit to examine normality and homoscedasticity. Model residuals were approximately normally distributed. The first model fit included the lagged score variable to examine whether there was a significant relationship between the prior hole and the next hole. The estimates from this model provided support for a
relationship between the prior hole and the next, \( b = -0.04, t(3292) = -2.47, p = .014 \).

Although this represents a small effect and likely signifies mean regressive effect, perfectionism dimensions were subsequently included as moderators of this relationship to address the research question. The next model included two interaction terms between striving for perfection and the lagged hole score, and concern over mistakes and the lagged hole score. The main effects of both perfectionistic dimensions and the moderation terms were non-significant, suggesting that there is no effect of perfectionism on score, or the relationship between the prior hole and the next hole, after accounting for the effects of clustering. Full results are presented in Table 2.

Table 2.

Parameter Estimates of Linear Mixed Effects Model

<table>
<thead>
<tr>
<th></th>
<th>( b )</th>
<th>( SE )</th>
<th>( p )</th>
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</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous hole score</td>
<td>-0.04</td>
<td>0.02</td>
<td>.018</td>
</tr>
<tr>
<td>Striving for perfection</td>
<td>-0.09</td>
<td>0.08</td>
<td>.277</td>
</tr>
<tr>
<td>Concern over mistakes</td>
<td>0.06</td>
<td>0.08</td>
<td>.475</td>
</tr>
<tr>
<td>Previous hole score*Striving for perfection</td>
<td>0.00</td>
<td>0.02</td>
<td>.899</td>
</tr>
<tr>
<td>Previous hole score *Concern over mistakes</td>
<td>0.01</td>
<td>0.02</td>
<td>.591</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athlete</td>
<td>0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>0.74</td>
<td></td>
<td></td>
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</tbody>
</table>
Note. Hole score served as the dependent variable for modeling.

**Discussion**

The present study was designed to assess the effects of perfectionistic strivings and perfectionistic concerns on hole-to-hole performance over the course of a competitive golf season. In assessing the potential influence of perfectionism on hole-to-hole score, we sought to better understand the course and consequence of perfectionistic reactivity. We hypothesized that perfectionism would moderate the relationship between NCAA golf student-athletes’ prior hole score and next hole score once clustering effects had been accounted for. In testing this hypothesis, we found that no significant relationships exist between perfectionism, performance, and previous performance.

Perfectionistic reactivity is a recent construct in the study of perfectionism. Flett and Hewett (2016) proposed the term to capture the physiological and psychological reactivity that individuals experience following a performance outcome. Theory suggests that individuals who exhibit elevated levels of perfectionism also display higher levels of reactivity (Hewitt & Flett, 2002). This appears to function via stress reactivity in social evaluation settings, particularly when an undesirable outcome is experienced (Flett et al., 2016). Although perfectionistic reactivity has not yet been directly measured or assessed in sport, the present study was the first to test its potential role in shaping athletes’ competitive outcomes.

In the present study, perfectionistic reactivity was conceptualized and framed within the context of sport performance, utilizing a standard measure of sport performance (i.e., golf scores in relation to par) as the dependent variable. Despite this
framing, Flett and Hewitt (2016) posit that performance is just one way in which perfectionism may manifest, noting that individuals may also experience affective, behavioral, and cognitive outcomes. While perfectionism was found to have no relationship with performance in the present study, it is certainly plausible that reactivity manifested in ways that were not captured in athletes’ performance outcomes. Indeed, athletes’ experiences of reactivity may be better captured through cognitive and/or affective processes (e.g., stress) or by assessing non-immediate or non-sport-related behavioral outcomes.

Hewitt and Flett (2002) propose four stress mechanisms that are directly related to perfectionism: 1) stress generation, 2) stress anticipation, 3) stress perpetuation, and 4) stress enhancement. Highlighted as particularly salient to athletes (Flett & Hewitt, 2016), stress perpetuation and enhancement are of high interest in interpreting the present findings. Stress perpetuation relates to an individual’s tendency to prolong stressful episodes through tendencies such as rumination, whereas stress enhancement is concerned with the magnification of stress because of cognitive appraisals combined with maladaptive coping skills (Hewitt & Flett, 2002). Of particular importance, perfectionistic rumination has been associated with perfectionistic concerns (Hill et al., 2018; Lizmore et al., 2017), suggesting that those with elevated levels of perfectionistic concerns are more likely to experience rumination, perpetuating the stress response and any maladaptive behaviors that may accompany it (e.g., frustration, anger, hyper competitiveness, avoidance activities, social comparison, and the paucity of positive self-talk) (Flett and Hewitt, 2016). Importantly, individuals experience differing levels of stress as a function of the perceived centrality of the task at hand (Gruen et al., 1988).
Although not measured, it is relatively safe to assume that athletic identity was salient to participants in the present study (see Miller & Buttell, 2018). As a result, these athletes may have experienced elevated levels of stress during competition, as well as cognitive and/or affective reactivity.

As the field of perfectionism has developed, a fair amount of academic effort has been directed toward understanding how one comes to be perfectionistic. There is a significant amount of evidence, culminating in the social psychological approach, for the notion that perfectionism develops in part due to social agents and environments which reinforce perfectionistic tendencies (Flett et al., 2002; Appleton & Curran, 2016). However, there is a potential case to be made that these same forces exert their influence on the expression of those same perfectionistic tendencies, perhaps leading to non-immediate reactivity in some contexts. The work of Bandura (1978; 1999), specifically his model of triadic reciprocal determinism, would support this notion. Bandura proposes that bidirectional relationships exist between an individual’s behaviors, cognitions, and environment and that the expression of any given permutation of those is contingent on the others. If an individual has been taught, through observational learning, reinforcement, and/or punishment, to behave in a particular way in a specific environment, this will influence their behaviors and cognitions in that environment.

In the context of the present study, it may be that athletes have been socialized to not demonstrate reactive behaviors whilst in competition. Indeed, golf has long been linked to social capital and class, imbued by expectations for respect and etiquette (Ceron-Anaya, 2010). As participants in the present study have been participating in golf for an average of 10.76 years, it is perhaps likely that they have been socialized into the
sport with a value system that aligns with the broader culture of country club sports. Furthermore, the NCAA adopts the United States Golf Association’s rules and clarifications (USGA, 2022) as their guidelines for play. As a result, players are expected to avoid the use of unacceptable language, behavior not in line with the spirit of the game, and any abuse of their clubs or the course. Demonstrating compulsive over-reaching, a lack of restorative self-care, and compulsive self-reliance, are three behavioral responses associated with perfectionistic reactivity (Flett & Hewitt, 2016), yet all three could be considered a breach of golf etiquette; therefore, athletes are unlikely to demonstrate these during competition. This leaves open the possibility that athletes might exhibit reactive behaviors after-the-fact -- perhaps at practice the next week -- to avoid breaking these rules or being perceived in an unfavorable manner.

Limitations and Future Directions

The present study has several limitations. First, we designed the study with the concept of perfectionistic reactivity as a guiding philosophy but were not able to directly test its role in influencing athletes’ performance-related outcomes. To the author’s knowledge, there is no established measure of perfectionistic reactivity in the academic literature. Creating and validating a reliable measure, be that psychometric or observational, for this construct presents itself as a challenging but potentially fruitful line of work for future scholars. Furthermore, as a line of research in its infancy, qualitative exploration presents itself as a particularly useful tool to begin to understand athletes’ understanding and lived experiences of perfectionistic reactivity. In doing so,
foundational insights could be used to inform the creation of a valid and reliable measurement tool.

A second notable limitation is that the study was only designed to test one dependent measure – NCAA athletes’ golf scores in relation to par. While athletic performance is a salient concern for elite level athletes and coaches, there are an array of outcomes that may be of broad interest to those who experience perfectionistic tendencies, and specific interest to NCAA student-athletes. Flett and Hewitt (2016) highlight numerous potential indicators of perfectionistic reactivity, including anger, rumination, and compulsive over-striving. Given the null findings in the present study, we speculate that performance may be one step removed from reactivity. Future work may therefore be designed to test the indirect effects of potential mediating factors on the relationship between perfectionism, reactivity, and performance. Further, the MIPS (Stoeber et al., 2006; Stoeber et al., 2007) was utilized to capture perfectionism dimensions due to its subscale 'negative reactions to imperfection’ and its face validity for the reactivity component of the current study. However, other measures could have been adopted specific to performance such as the performance perfectionism scale for sport (PPS-S, Hill et al., 2016). Given that the dependent variable in the present study was performance-based, it may be beneficial to replicate the present study using the PPS-S.

A final limitation to consider is that the present study was only designed to test for potential moderating effects of perfectionism on performance at the hole-by-hole level of analysis. Not enough data were collected at the round-by-round or tournament-by-tournament levels to be able to create a lagged variable to test the relationships
between perfectionism and performance from one round to the next or from one
tournament to the next. This presents itself as a limitation as it may be that perfectionism
and perfectionistic reactivity are relatively stable across shorter periods of time (i.e.,
between holes in a single round of golf). This may change as a function of an individual’s
perceptions, expectations, or experiences (Stoeber, 2018) and future work should
therefore be designed to focus on performance outcomes with larger time increments
(tournament-to-tournament or even year-to-year). If scholars pursue this line of inquiry,
consideration should be given to the potential for natural improvement that can occur
over the course of weeks or seasons.

**Conclusion**

The present study was designed to explore the potential influence of
perfectionism on the relationship between prior and subsequent performance across a
round of golf. Findings offered no evidence for the influence of perfectionism on this
relationship at the hole-by-hole level. We recommend that future scholars test other
salient outcomes such as anxiety, anger, and over-striving, while also testing across larger
time increments. Doing so would enhance conceptual understanding of perfectionistic
reactivity while offering a developmental lens to scholars and practitioners who wish to
understand its nuanced etiology.
CHAPTER 3

Study 2: A Qualitative Investigation of Athletes’ Perceptions of Perfectionism and Perfectionistic Reactivity in relation to Performance.

Introduction

Perfectionism is a multidimensional personality characteristic comprised of setting excessively high standards for performance and engaging in overly critical evaluations of behavior (Frost et al., 1990). The concept has received increased empirical and popular attention over the past two decades, particularly in the sport domain. In large part, this attention rests on the assumptions that elite athletes strive to be perfect and believe perfection is attainable in their sport (Koivula et al., 2002). Sayings such as “practice makes perfect” are commonly used by coaches, parents, and athletes, and perpetuate the notion that athletes who dedicate themselves to high-volume training will achieve perfection (Koivula et al., 2002). Colloquial use of the word perfectionism is common among elite athletes (Flatman, 2015), and its pursuit is often viewed as noble.

Contemporary models of the construct offer an organizing framework within which two broad dimensions of perfectionism can be understood: perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings are the “aspects of perfectionism associated with self-oriented striving for perfection and the setting of very high personal performance standards” (Gotwals et al., 2012, p. 264). Perfectionistic concerns are the “aspects associated with concerns over making mistakes, fear of negative social evaluation, feelings of discrepancy between one’s expectations and performance, and negative reactions to imperfection” (Gotwals et al., 2012, p. 264).
Empirical studies in the sport literature have examined perfectionism and its association with a range of psychological outcomes. The most recent and comprehensive review of this literature was a meta-analysis of 63 studies and 1772 effect sizes, examined in the 2 × 2 perfectionism framework (Hill et al., 2020). Utilizing this framework allowed the authors to examine the higher order dimensions of perfectionism in relative isolation and in combination with respect to an assortment of criterion variables. In sum, pure perfectionistic strivings (high strivings, low concerns) were strongly associated with various forms of motivation, emotion, and performance-based variables. Pure perfectionistic concerns (high concerns, low strivings), on the other hand, were largely associated with more maladaptive outcomes such as amotivation, trait anxiety, and fear of failure. Those with mixed perfectionism (high levels of both strivings and concerns) were found to typically experience better outcomes when compared to pure perfectionistic concerns (70% of the time), and worse outcomes when compared to pure perfectionistic strivings (94% of the time) (Hill et al., 2020).

In the past five years, a relatively new line of inquiry related to perfectionism has emerged: the study of perfectionistic reactivity (Flett et. al. 2016). Built upon the comprehensive stress process framework (Hewitt & Flett, 2002), perfectionistic reactivity is defined as a “characteristic style of responding to adversity that includes both psychological and physiological reactivity” (Flett et al., 2016, p. 301). It is theorized that individuals who experience high levels of perfectionistic tendencies often perceive a need to perform perfectly and may therefore react disproportionately when perfection is not attained. Flett and colleagues (2016) suggested that perfectionistic reactivity may be most salient in situations where personal or team goals are not achieved, and wherein mistakes
are made. However, there is a dearth of research dedicated to understanding reactivity in the sport domain.

**The Present Study**

In examining the extant research on perfectionism in sport, an evident gap in the literature is the relatively few studies designed to examine athletes’ perceptions and lived experiences of perfectionism in sport through a qualitative lens (cf., Hill et al., 2015; Gotwals & Spencer-Cavaliere, 2014; Sellars et al., 2016; Mallinson-Howard et al., 2018). Indeed, just 7% of the published literature examining perfectionism in sport has been conducted using qualitative methodologies (Fleming et al., 2021). While this may not be a gap in and of itself, there is potential to add to the understanding of perfectionism by adopting a broad range of methodological approaches. The present study is designed to develop understanding by highlighting athletes’ perceptions and experiences of perfectionism, specifically with regards to reactivity and their performance outcomes. In honoring athletes’ perceptions and experiences, we sought to offer rich qualitative insight into the origins and outcomes of their perfectionistic strivings and concerns.

Intercollegiate golf was selected as a domain of inquiry because the structure of golf affords many opportunities for feedback on performance over the course of the NCAA’s competitive season (hole-by-hole, round-by-round, and tournament-by-tournament) and because golf has a structurally consistent feedback system (i.e., scores relative to par) against which players can immediately evaluate their performance.

The present study was designed to answer the following research questions: 1) How do NCAA Golf student-athletes react in light of positive or negative performance...
outcomes while playing? 2) How do NCAA Golf student-athletes view perfectionism in sport?
Method

Participants

Twenty-four individuals who took part in Study 1 were invited to participate in Study 2. Two inclusion criteria were used to identify the invited individuals. Specifically, student-athletes were invited to participate in Study 2 if they indicated at the conclusion of Study 1 that they would be interested in participating in a follow-up interview and if they scored above the sample mean for both striving for perfection and negative reactions to imperfection subscales from the multidimensional inventory of perfectionism in sport (MIPS, Stoeber et al., 2006; Stoeber et al., 2007). Of the 24 individuals who were invited, interviews were ultimately scheduled with six student-athletes. Participants ($M_{age} = 20.67$ years, $SD = 1.97$) identified as female ($n = 4$) or male ($n = 2$), White ($n = 4$) or Asian ($n = 2$) and participated at the NCAA Division I ($n = 2$) or Division III ($n = 4$) level.

Procedure

Approval for the present study was obtained from Utah State University’s Institutional Review Board (IRB) for the protection of human participants. After this approval, potential participants were contacted through the email addresses they voluntarily provided in the survey for Study 1. This allowed members of the research team to contact only individuals who met the inclusion criteria.

Student-athletes who agreed to participate engaged in individual, semi-structured Zoom interviews following the NCAA’s spring 2022 competitive golf season. Utilizing Zoom interviews provided many advantages to conducting traditional face-to-face interviews (Archibald et al., 2019). First, internet access and electronic devices are
common in homes, schools, and places of work, and are convenient and cost-effective for researchers and most participants. Second, research has shown that online methods of qualitative data collection can replicate, supplement, and potentially even improve on traditional face-to-face methods of researcher-participant interaction. This is more pronounced when comparing video calls to non-video calls such as telephone interviews or email exchanges (Archibald et al., 2019). Accounts of the usefulness of Zoom video conferencing as a method of qualitative data collection have been provided by Gray and colleagues (2020), who highlight the convenience, personal interface, accessibility, and time saved without researchers having to travel to participants or vice versa. Recent work also highlights that while there are differences in the time taken to conduct online or in-person interviews, the quality of data is unaffected by the mode of collection (Shapka et al., 2016).

Prior to the study, a pilot interview was conducted to test the interview protocol (see appendix B). Results of this pilot interview were used to refine the interview guide. Specifically, the inclusion of shot-to-shot reactivity questions were included, such as ‘after a bad shot, what types of thoughts, feelings, or behaviors do you experience.’ The six study interviews lasted an average of 35.04 minutes (range = 31.08 to 46.50 minutes; SD = 5.91). Participants were asked a battery of questions designed to elicit rich insight into their perceptions of the origins and outcomes of their perfectionistic tendencies. General and interview-specific probes were used to further explicate their experiences. While the present study was deemed to meet the university ethics board’s definition of minimal risk (i.e., no further risk than the day-to-day experiences posed to participants), participants were invited to self-disclose if they experienced harm because of the study
and we afforded them opportunities to withdraw at any point prior to data deidentification. Researchers also underwent required training to conduct research which includes modules on federal regulations, risk assessment, and privacy and confidentiality prior to data collection. Once data were collected, files were anonymized to protect participant identities.

**Researcher Positionality**

In the present study, the lead author was directly involved in the processes of study design, data collection, analysis, and interpretation. In shaping every aspect of the project, he acknowledges that he brought his own values to his interactions with participants and throughout the processes of data analysis and interpretation (Creswell, 2013; van der Walt, 2020). In light of this, it is important to acknowledge the experiences and perspectives of the author that may have influenced the outcomes of the study. The lead author spent two years competing as a Division I college student-athlete and over a decade competing at national championships in the shot put and discus in track and field. The lead author self-identifies as a perfectionist in his own athletic endeavors. This provides the author an experiential platform from which he could relate to participants’ experiences as college student-athletes with elevated levels of perfectionistic tendencies relative to a larger sample of individuals competing at a similar level. In the present study, the primary author adopted an interpretivist approach to research and data analysis (Levers, 2013).

As highlighted by van der Walt (2020), it is not enough for researchers to simply state their ontological and epistemological approaches. Rather, they must demonstrate
how they have utilized those beliefs in shaping their procedure. Interpretivism was identified, as the lead researcher believes that humans and human behavior is distinct from physical phenomena as meaning is constructed as a result of the individual, the time, and the context within the construction is being made (Alharahsheh & Pius, 2020; Levers et al., 2013). In line with the exploratory nature of the present study, an interpretivist paradigm emphasizes the richness in the insights collected in a particular time or context (Alharahsheh & Pius, 2020). Levers and colleagues (2013) propose that an interpretivist paradigm is the combination of a relativist ontology (capturing the notion that reality is a subjective experience capable of multiple interpretations, with the number of realities matching the number of individuals) and a subjectivist epistemology (understanding that knowledge is a product of our interpretation at the intersection of our language, gender, social class, race, and ethnicity) (Lincoln & Cannella, 2004). This approach has influenced the study design in the way of a conscious decision to elevate the voices of athletes and allowing them to describe their own realities. Further, in identifying this approach, as well as the authors prior experiences and backgrounds, we understand that those experiences are analyzed and filtered through the author’s biases which results in another new reality.

**Data Analysis**

Interviews were digitally recorded, transcribed verbatim utilizing Otter software (Otter, 2021), and cross-checked for accuracy by three trained undergraduate members of the research team. Cross-checking was done by listening to audio files while reading the transcriptions and making any necessary changes to ensure that the two match. Thematic
analysis was conducted in accordance with the recommendations of Braun and Clarke (2012). Specifically, transcribed data underwent a six-stage process of 1) familiarization, 2) initial coding, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) writing the report. Inductive and deductive coding processes were utilized in analyzing and interpreting study data. Inductive codes were generated from the raw data and subsequently grouped deductively into the three higher-order themes of behavioral, affective, and cognitive reactivity in line with conceptual proposals of Flett and Hewitt (2016). This allowed for the present work to be grounded in a priori theory while also providing space for the unique representation of participant experiences. Raw data, thematic meaning units, and higher-order themes were managed using NVivo13 version 1.7.1 software (Lumivero, 2022). To improve the rigor of this research, a critical friend who is an expert in thematic analysis and an ex-two-sport college athlete offered critical feedback on the first author’s interpretation of study data. The purpose of critical friendship is to stimulate reflexive and critical dialogue among a research team and to encourage reflection upon, and of, alternate interpretations of data and themes (Smith & McGannon, 2018). Engaging in critical friendship resulted in the production of a rational and conceptually driven argument for the depiction of the themes identified during data analysis. In the present study, eight changes were made as a result of engaging in this critical friendship process: four themes were given alternate names, one subcategory was given an alternate name, one theme was moved into a different subcategory, and the ordering of subcategories within two categories were changed.

**Results**
Participants Perceptions of Perfectionism

Throughout the interview process participants offered insight into the nature of perfectionism. During which, two subcategories were identified: pervasive perfectionism, and finding a balance. These two subcategories house themes pertaining to the all-encompassing nature of perfectionism, and positives and negatives coming together. Athletes discussed how perfectionism ‘leaks into [their] everyday existence’ and is a part of who they are. The pervasive nature of perfectionism is captured in this quotation from Participant 6:

And it's because that perfectionism leaks into my everyday existence. So, like I said, every rep is real, every putting stroke is real, every block practice is real every you know, and for me, that is the drive that makes me get up every morning and go do it. Like I run right now a pretty tight schedule, but I'm gonna find a way to get my lift in, I'm gonna find a way to get my practice in, even if that means going out at the hottest part of the day where the index is one time, because, you know, that's what it's gonna require. And that's what I kind of see happening is like, golf isn't a perfect sport, or a perfect game. It's very much imperfect. And that's part of the beauty of it.

Along with this, participants were asked for their perceptions of the positive or negative nature of perfectionism. Responses were mixed, with participants highlighting the duality of the characteristic and needing to find a balance between utilizing it to
enhance performance, but not finding themselves in the extreme where it serves as a
detriment, as depicted in this quotation from Participant 3:

I think it's, it's both honestly. Mostly bad sometimes. Because, you know, it just drives you crazy. Like, yeah, you want to be so good. But in golf, it's so hard to really, you know, to be perfect in the game. It's difficult, because it doesn't always go your way. And so, it is very difficult. But I think it's a good thing as in, you know, it allows you to drive and you want to be good, you want to be perfect. So, you have that work and work. But now you also have to understand that stuff isn't gonna go your way. And that's just how it is.

The Origins of Perfectionism

Discussions were engaged in with participants around the development of their perfectionistic tendencies. Specifically, where they perceived the origins were and whom in their surrounding systems had an influence on it, in any capacity or direction. Participants cited that perfectionism, and competitiveness, have been salient parts of their lives across multiple domains. For example, Participant 2 highlighted how pervasive perfectionism has been throughout their life:

I've been a perfectionist in all aspects of my life. straight A student all throughout high school. I was competing against people to be the smartest in the room the smartest in the group. I wanted teachers to notice
that I was the smartest. I mean, I'm majoring in chemistry and love when people are like, 'oh my gosh, isn't that so hard?' Yeah. Yeah, it is a little hard. But yeah

While Participant 3 noted that they are one of the most competitive people that they know, which led to them becoming a perfectionist:

I am probably one of the most competitive people that like even I know, like, my friends, my friends, hey, we're playing ping pong. We're doing whatever, like, oh, I want to win. I want to beat you. So, I think, yeah. I think that, you know, my competitive competitiveness really led into me trying to be just a perfectionist, because if I'm going to do something, I want to be the best at it. So, I'm going to put all my effort into it. And I think, you know, when you're super competitive, you know, especially at sports, it's gonna lead you to try to be the best you can and that for me is perfectionism. So, my competitiveness, I would say is one of the main reasons why I strive to be the best for I strive for perfection.

With regards to the individuals related or involved in the development of their perfectionistic tendencies, participants most frequently cited parental or coaching influences. Participant 5 stated that they had been raised with a sense of responsibility to do your best and serve as a positive role model for younger siblings by setting an example for performance standards:
I think, probably just how I was raised. Since I was I am like, the first child, I think I've always like, felt like I had this, like, sense of like responsibility to be, you know, like, you know, do what my parents tell me to do and, you know, do the best. Or if I don't do that, like, I know, I'll get like, an earful later, about whatever it was, or you know, have to spend the extra time doing like math problems, because I didn't do it like earlier. And since I have, like, younger, a younger sibling, I think I think I've grown to like have to be the role model in the family as the first child. So, I think that's kind of like where it comes from. Just because I want to, like, you know, make my parents proud. But also, like, set an example for my younger sibling.

Participant 6 also highlighted familial influences, addressing the contextual background of identifying as a Chinese American and the perceived cultural influence of that intersection on their experiences with perfectionism:

I'm Chinese American. And so, there's a very strong emphasis on boys carrying the family name. And so there was kind of favoritism towards my brother and I had come to know, vaguely, that, you know, um, my grandmother, in particular, the one that we are closer to in proximity, and that we would see more often. We like one, he looks just like my dad when he was a baby. So, there was that, but it was just like anything he
wanted, he got. And it was just this whole entire idea of like, 'oh, he's
gonna carry on the family name’ kind of thing. And so even though I was
performing better than he was, like, I was more well behaved, well
mannered, I performed well in school. And then like, I kind of did
everything right, quote, unquote, it was never really recognized in
comparison to his I don't want to say like, mediocre, but like his kind of
like average. And like, those were kind of like, very celebrated. And so, I
kind of figured out, on some level, culturally, that I got this notion that had
I been born a boy, things would have been way different. But because I
was born a girl, I had to do everything above and beyond. So, like, around
like elementary school, middle school, I was starting to develop some
really bad OCD tendencies. And so, my mom was getting like very
concerned, because it was like, impacting my well-being like drastically.
And so I kind of got out of that. But that's still underlying some, like kind
of subconscious foundational understanding. And habitualness is what
probably carried over a lot into my other things, Like, my ongoing slogan
for everything is like, if I'm going to do it, I'm going to do it well, like I'm
gonna give 100% to it no matter what. Even when it comes to like certain
jobs like, or even when it comes to my job. I'm like, ‘well, I don't want to
leave anyone high and dry, so, I'm never going to do something to
undercut like, even if it does kind of like, push me back a day, or
something like that’. Like, you know, I'm going to do this and I'm going to
do it well, because that's just kind of who I am. I like strive for excellence
in everything. So, um, that's where I think it like stemmed from, and that's how it's like manifested and it's done me really well. Like, I graduated summa cum laude, in high school and in college, I've only gotten two B's in my entire academic career, and that was in college. So, like, just, just things like that.

When discussing coaching influences, participants highlighted past coaches influences on the development of their perfectionism, and current coaches role in identifying it. Participant 3 noted that their football coaches in high school football reinforced the pursuit of perfection:

Like my coach, my offensive coordinator, my coach, I mean, the entire the entire staff, like, we were a really good program. And we had high standards. And high standards allow us to win football games. I mean, I was a freshman in high school, when we went to the state, we were one game away from the state championship, like, we won 11 games in a row, I'm pretty, 12 games in a row, like. So, it was just the ability of staff to hold the players to a higher standard. And, you know, we're from 14 to 18 years old, but they, they treated us like you're, you know, full on adults. And they held us to a higher standard. And they wanted the best out of us in the classroom. And as athletes. I really felt like being underneath that staff was the reason why.
In conjunction with this experience, they highlighted their experiences of offensive language from coaches when sufficient performance standards were not met:

Well, I can tell you that with a 100% assurance that I've never been cursed out in my life for missing green, I have definitely been cursed out for missing a pass. So, I can tell you there you know, you missed a wide-open receiver for a touchdown, you're gonna get an ear full of crap. You missed, you miss a green from you know, 150 yards. No one's gonna, no one's gonna really yell at you.

However, as mentioned, current coaches were cited as the individual that helped the athletes to identify that they are perfectionistic, as evidenced by Participant 1:

My coach and I have had a lot of conversations, especially like, within the past year, about how I'm a perfectionist, like he was the first one that kind of brought it to my attention. And he was like, like you, you know, when I would pull that shot 12 yards left, he's like, you gotta be okay with that, like, you gotta be okay being good. Um, like, my family side of it. You know, they just, they just support me, like my parents, they don't play golf. So, they don't really get it that deep. But when I tell them like, ‘hey, coach said, I'm a perfectionist,’ and they're like, ‘well, actually, yeah.’
Affect, Behavioral, and Cognitive Reactivity

Forty-one themes of athlete’s lived experiences with perfectionistic reactivity were identified throughout data analysis (see Table 3). Each theme was structured hierarchically into one of nine subcategories, representing grouping of similar themes. Finally, each subcategory situates itself within one of three broad categories: affect, behavioral, or cognitive. The hierarchical structure of these results is illustrated in Table 3 and are presented below. To compliment these findings, direct quotations from participants are shared to depict the meaning of particular themes.

Table 3.
Categories, Subcategories, and Themes of Affect, Behavioral, and Cognitive Perfectionistic Reactivity

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Theme</th>
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<tbody>
<tr>
<td>Affective</td>
<td>Negative Affect</td>
<td>Anger</td>
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<td></td>
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<td>Anxiety</td>
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<td>Embarrassment</td>
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<td>Frustration</td>
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<td>Hopelessness</td>
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<td>Worry</td>
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<td></td>
<td>Positive Experiences</td>
<td>Enjoyment</td>
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<td></td>
<td></td>
<td>Relaxing</td>
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<tr>
<td></td>
<td>Emotional Regulation</td>
<td>Even-tempered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staying positive</td>
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<tr>
<td></td>
<td></td>
<td>Remaining calm</td>
</tr>
</tbody>
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(continued)
Behavioral

Pre-performance
- Preparation
- Routine

During performance
- Adjusting play style
- Kinesthetic awareness
- Do what you know
- Stepping back
- Trying too hard

Post-performance
- Over Adjustment
- Management of Self-Image

Cognitive

Reflection
- Recovering mid-performance
- Reflecting on past performance
- Focus on the bad
- Rumination

Preflection
- Reframing
- Self-awareness
- Self-compassion
- Present moment
- Striving for Excellence
- Pragmatic Approach
- Strategies to help
- Focus on the next hole
- Context specific expectations
- Searching for consistency

Goals and Standards
- High performance standards
- Managing expectations
- Overcompensation
- Self-pressure
- Aesthetic vs functional
- Spiraling
Affect. Participants indicated that their perfectionistic tendencies and reactivity had influence on their emotional states when participating in golf. Within this category, themes of negative affect, positive experiences, and emotional regulation were identified through their underlying themes. Athletes discussed experiences that exemplified a negative affect, including anger, anxiety, and frustration. In some cases, athletes shared their experiences of frustration on a golf course when unexpected outcomes occur. This was exemplified in a quotation from Participant 3:

So, I try to hit it through the hole in the tree and it goes right behind me. And so, in that moment, your thoughts are all scrambled you're like “holy crap I don't know what to do.” You know, you're kind of mad at yourself, you're down because you're trying to kind of force your way and you know, you want to you want to make a cut.

In other cases, participants indicated that they felt upset. This appeared to be the case largely when their performance processes didn’t meet their expectations: “If I make a bad swing, I'll be upset because it didn't feel right, it didn't sound good, it didn't look pretty.” In a similar fashion, anger and hopelessness were themes identified in the data that related to athletes’ experiences when performance did not match their expectations or anticipated outcomes.

Conversely, athletes also regularly cited positive experiences that come with participating in NCAA golf. Participant 1 discussed how they felt when they broke a
course record during their career. Reflecting on this experience, they highlighted that they felt ‘relaxed’ and could enjoy the round:

Um, definitely positive. And definitely relaxed. Like it was just I've reflected on like, holes like that. And I'm like, “oh, it was so easy.” Like when I broke the records, and I shot 69 I was like, “oh my gosh, like, that was such a relaxing round.” I could just like enjoy myself it was positive.

Finally, emotional regulation was featured heavily in athlete’s discourse. Athletes emphasized the importance of maintaining a consistent temperament throughout a round. Athletes discuss utilizing self-talk to maintain a positive attitude and avoid experiencing peaks and troughs in emotion. This is exemplified in this quotation from Participant 3:

So, for me, it's, it comes back to that self-talk of hey, I have to stay as positive on the golf course as possible, doesn't matter you know, if I just made an eagle, or if I just made an eight, I have to be, you know, that remaining in that one level. Because up and down for me, it just doesn't work.

Behavioral. Participants also discussed behavioral reactions in depth throughout their interviews. These themes were split into three subcategories; pre-performance, during performance, and post-performance, indicating three distinct temporal periods where
reactivity influenced their behavior. These subcategories capture themes such as preparation, adjusting play style, and over adjustment.

Preparation was a salient theme in the pre-performance context. Along with this, athletes discussed their pre-competitive routines and how they often remain the same, or strive to maintain a consistent routine prior to a round or a shot. Cases of this involved their preparation, with Participant 1 highlighting that they meticulously prepare their clothes and clubs the night prior to competing:

Before every tournament the night before I'd cleaned my clubs, I'd iron my outfit, like my uniform, like I had to have everything ready to go. my teammates would say like, “why do you iron your outfit?” And I was like, “well, there's a saying like, if you feel if you feel like you look good, then you'll play good.” So then I would always just do that.

Multiple reactions during performance were discussed by athletes. These typically involved athlete’s reacting to their performance during their last shot. Specifically, it was noted that after a poor performance, athletes adjust their play style and/or begin trying too hard. Participant 3 stated how they go into ‘attack mode’ and began playing more aggressively in an attempt to make-up lost ground:

So, I went straight into attack mode, and I was playing risky shots, hit a bad drive into the trees and I'm like, “hey, well, bad drive ... [Unintelligible].” So, I'm looking for the tightest gap possible and try to
get the ball out of the trees trying to advance as far as possible. “Still make a number here.” Well, that didn't work out. I had a tree that went about 100 yards backwards ... [Unintelligible].

Participant 1 highlighted how they would find themselves ‘trying to force it’ and attempt to recreate the quality of play that they produced when performing in the best round of their career: “I, you know, kept replaying, like, ‘how I would play every hole when I shot 69?’ And I would try to replicate it. And I would like, force it so hard, and it wouldn't go right.”

This often resulted in poorer performance according to this participant, with the resulting play not representing the quality that they were searching for. Finally, athletes described themselves engaging in post-performance behaviors. One of which was over adjustment. Participants frequently cited that they would make changes to their swing in the hope of compensating for mistakes made in the prior shot. It appears that this often resulted in another mistake, as they did not make the same mistake, but have since adjusted as though they would replicate the error. This was exemplified in this quotation from Participant 1:

Um, so I'll reflect on like, if I hit it, like, let's say [out of bounds] right, then I'm like, “Okay, let's aim left and make that same swing and just play for it.” Well, then I'll end up probably hitting it left because I'll actually make a good swing. And then I'm in more trouble.
Cognitive. Finally, participants spoke broadly about cognitive themes that related to their reactivity, often thinking about past performances in reflection, future performances in preflection, or their perfectionistic goals and standards.

In reflection, participants frequently cited that they would focus on the bad. Of note is that participants seem to weigh poor outcomes more heavily than positive or desirable outcomes. This disparity in the relative weight of outcomes led to one athlete stating that “There’s no good, it’s just satisfactory”, highlighting a dichotomy of thought where the desired outcome is expected, so achieving it is believed to be the typical outcome, leaving no room for relative joy. Meanwhile, there is exponential potential for a poor performance to weigh on an athlete’s cognitions, leaving little room for experiencing positive affect. In full, Participant 6 states:

And so, that's probably the issue, more so than anything else is that I don't keep them at the same level. Like they're not weighted the same, because one is an expectation and one is like then worse than what you expected. Like, there's no good, it's just satisfactory. And stuff, if that makes sense. Like you've either achieved or not achieved. And then for the bad ones, it's then ranked on like a scale of like, oh, that was a really bad shot versus like kind of bad shot versus like, you know, a bad shot. So, like, the bad shots have like a thing of a ranking, almost. And then the good shots are just like you achieved or didn't achieve. And so, in terms of that thing of
like, how long it stays with you or not the reason why the good shots just kind of blow by is because it's a very easy pass or fail kind of thing.

In preflection, athletes utilized techniques to help recenter themselves before their next performance. Athletes discussed how their coaches aid them in reframing their cognitions in a way that puts them in a position to approach the next hole with a more positive frame of mind. Specifically, Participant 2 discusses how their coach encourages them to add a score to par, to help them accept a bogey as a reasonable performance if prior performance has gone awry:

And she'll tell us, “okay, this is a par four, it's a par five for you now.” So, five is a good score on this hole, if you get a 6, okay, you kind of, you kind of messed up somewhere else, too, you get a four, that's a bonus, because you put yourself in a bad position. So, I like to look at it that way. Another strategy that athletes used in preflection was self-compassion.

Participants discuss how an understanding and acceptance that not every performance can be perfect. This appeared to be a new revelation to some athletes, who seemed to have been unaware of this in the past:

So, that kind of opened my eyes like, “wow, like, you know, every shot isn't gonna be right at the pin.” So, I got to kind of let it go and be okay with it being just an okay shot. Not perfect.
In addition, participants noted that their perfectionistic tendencies and expectations are context specific, within the sports domain. Specifically, it is noted that participants have higher expectations in practice, where they are in low-pressure environments and working on their craft. It was mentioned that there are uncontrollable aspects that may influence performance outcomes when competing on a course as opposed to the relatively isolated setting of a driving range or putting green. This was directly seen in this quote from Participant 3:

Um, I would say it's definitely more in practice than in play because in play, I mean, you know, just stuff happens like you can't control everything that happens out on the golf course. Um, so in practice, I'm definitely, you know, trying to find that perfection, and, you know, trying to really hone into skills and make sure we're as good as possible. You know, when I'm out playing in tournaments and just play, you can't control what happens, you get a crappy bounce, you know, something goes wrong, like, that's a little different, but in practice, play more seeking that. That perfectionism and just trying to, like, lock it in in practice rather than in play.

Finally, participants frequently referenced their goals and standards in relation to their cognition. In these discussions, it was noted that participants adjust their expectations depending on context specific cues, but occasionally find themselves ‘spiraling’ after making a mistake. Participants noted that depending on how they are playing they will consider adopting different clubs for certain situations, but try to avoid
striving for perfection. In some senses, almost moving to a ‘good enough’ approach to the game, as shown in this quotation from Participant 2:

So, I tend to play a little bit more conservatively when things are going wrong taking irons when I probably should have been taking hybrids, and stuff like that. But if it's just a short haul, where it's driver iron, I'm usually not thinking of playing conservatively. I do stop going for pins, sometimes if I know that I'm not shooting well, just because it's more of just get on the green and two putt and walk off of there kind of thing. So, I just go for the biggest part of the green usually.

In addition, spiraling was a salient theme throughout the interview process. Participants noted that occasionally they will get ‘in [their] head’ and begin to play worse, occasionally finding themselves in a downward spiral. It was highlighted that these spirals can be unpredictable, sometimes the athlete is able to recover, but other times they cannot; often utilizing self-talk to get themselves to the end of the hole to reset and move on to the next performance:

But I'm like, kind of like mean to myself in my head. Kind of like if like, I don't know, sometimes I'll like think in my head, like, “come on [participant 5]” like “get your crap together. This is this is not what we want to do right now.” So yeah, I kind of like say stuff like that to myself. When I'm like having a really bad hole, if I'm like, spiraling then. Sometimes I can get out of it. Sometimes I can't. And I kind of just have to
like, I just tell myself, “okay, just get, just get to the next hole, and then get to the one after that.” And sometimes, like, I guess, yesterday, yesterday was probably a spiral, the first front nine, I was really struggling. And I really, I really wanted to like just like, not keep playing, but I was like, “just get to the next hole and just hit the next ball. Just keep hitting it.” And by the time, you know, you look up, it'll you'll be done with the round, and you can go home and go to bed and start over and reset.

**Discussion**

The present study was designed to answer the following research questions: 1) How do NCAA Golf student-athletes react in the light of positive or negative performance outcomes while playing? 2) How do NCAA Golf student-athletes view perfectionism in sport? To address these questions, in-depth, semi-structured interviews were conducted with six NCAA golf student-athletes. These interviews afforded a rich understanding of these athletes’ lived experiences of perfectionism and perfectionistic reactivity. In analyzing and interpreting interview transcripts, we grouped the data deductively into three broad categories of perfectionistic reactivity: affect, behavioral, and cognitive. This strategy aligns with conceptualizations of perfectionistic reactivity proposed by Flett and Hewitt (2016) and accounts for the nine subcategories and 41 themes derived from our inductive coding process.

Findings from the present study align broadly with existing literature on perfectionism and perfectionistic reactivity. While the work of Flett and Hewitt (2016)
served as a guide for our study design and more specifically for the deductive framework that shaped our coding strategy, previous empirical work offers support for many of our findings as well. Anger was identified as a salient aspect of participant affect. This buttresses the findings of Grugan and colleagues (2020), who identified significant relationships between perfectionism and angry reactions in team sport. Other themes relating to athlete affect included anxiety and hopelessness, both of which have received empirical attention in relation to perfectionism in and out of sport (Hall et al., 1998; O’Connor & O’Connor, 2003).

When considering the themes situated within the behavioral category, those in the pre-performance subcategory; preparation and routine, present similarly to the dimension identified by Frost and colleagues (1990) as a preference for order and organization. Overcompensation has also been identified empirically as a problem for perfectionistic athletes (Klockare et al., 2022). Overcompensation was identified by mental performance consultants as a behavior that perfectionistic athletes often engage in which typically resulted in maladaptive outcomes such as reduced recovery and subsequent performance (Klockare et al., 2022).

Finally, cognitive themes identified in the present study reinforce those identified in prior work, quantitative, qualitative, and conceptual in nature, examining perfectionism (Hall et al., 2012; Rees et al., 2016; and Gotwals & Spencer-Cavaliere, 2014). In identifying these themes, including rumination, performance standards, and the management of expectations, the present study offers additional evidence for the salient nature of cognitive dimensions of both perfectionism and reactivity. Gotwals and Tamminen (2022) also found that athletes often experienced rumination on mistakes
when their performances did not lead to forward momentum. They highlight how athletes noted that losses ‘stuck with me’ (Gotwals & Tamminen, 2022, pg. 37), in a similar manner to how athletes in the present study found themselves focusing on poor performances much longer than they did on positive outcomes.

A particularly telling finding from the present study is the notion that student-athletes that exhibit elevated perfectionistic tendencies appear to have different relative weights attached to successes and failures. This is a phenomenon long-examined in the field of behavioral economics. Housed within prospect theory (Kahneman & Tversky, 1979), loss aversion speaks to an individual’s risk tolerance relative to a reference point. The primary thesis of prospect theory is that people determine utility from ‘gains’ and ‘losses’ as relative to a reference point (Barberis, 2013). When applied to the context of the current study, golf, the reference point would take the form of par. With par as a reference, athletes may be more or less likely to play ‘risky’ shots depending on the relative position to gain or lose to par. Athletes routinely evaluate the potential outcome from courses of action to determine which has the most potential for improved performance, or gain.

Based on the findings of the present study, athletes with elevated perfectionistic tendencies appear to evaluate gains and losses differently. Perfect performance presents itself as the expected outcome. Athletes highlighted that good doesn’t exist, it is simply the expected outcome, and that despite knowing the odds of a hole in one, they consistently thought ‘why not’, when it was their turn to play. With this approach, of perfect being the reference point for evaluating performance, athletes leave themselves fighting an uphill battle as the only potential outcome is satisfactory or failure. This
approach inevitably ends in the perception of failure when the perfect performance is not achieved. Perhaps it is this evaluation point that leads athletes to perceive that losses loom larger than gains, as the potential for negative outcomes it almost exponential. This frame of mind may explain why perfectionistic athletes often experience concern over mistakes and doubt the quality of their actions (Frost et al., 1990; Gotwals et al., 2012). The thoughtful inclusion of prospect theory in future perfectionism research has the potential to better allow researchers to consider athletes’ relative reference points for performance evaluation with regard to perfectionistic reactivity (Kahneman & Tversky, 1979).

Athletes in the present study frequently cited instances of what was identified as self-compassion. Self-compassion is defined as the ability to recognize, and desire to alleviate, one’s own suffering in a particular situation (Neff, 2003). Importantly, Neff identifies that self-compassion involves the understanding of one’s pain, inadequacies, and failures in a non-judgmental way. As highlighted by Cormier and colleagues (2022), sport offers a domain in which pain, inadequacies, and failure are inevitable, therefore highlighting the potential for self-compassion practices to be a powerful tool for athletes. This notion is evidenced by the findings of empirical work examining the mediation effects of self-compassion between perfectionism and well-being (Stoeber et al., 2020), depression (Ferrari et al., 2018), and burnout (Turkal et al., 2018). Furthermore, self-compassion interventions have been shown to be effective in managing rumination, and concern over mistakes in female athletes (Mosewich et al., 2013).

In light of the present findings, it appears that athletes know that self-compassion and understanding is important in managing their perfectionistic tendencies and
reactivity, yet often struggle to do so. This is particularly evident in the immediate aftermath of a poor performance, where athletes cite that it is more difficult to be kind to themselves and avoid rumination on failures in this scenario when compared to a success. A particularly important progression in the adoption of self-compassion as a coping strategy is shifting to a new norm (Mosewich et al., 2019). If those proximal to athletes in their sport context (Dorsch et al., 2022) can enable the athlete to accept self-compassion as necessary and relevant to their performance and well-being, then they are more likely to reap the potential benefits.

Limitations and Future Directions

A primary limitation of the present study is the relatively small sample size. While there is no gold standard by which to determine sample size in qualitative research, a commonly used strategy is reaching a point of saturation (Islam & Aldaihani, 2022). Saturation is defined as the point at which the collection of additional data would produce similar conceptual findings or when the analysis provides a rich explanation of the phenomena under study (Faulkner & Trotter, 2017). While the present study offers a detailed, conceptually oriented, depiction of perfectionistic reactivity, it may have benefitted from additional data. During the data collection process the point of saturation was not reached. While participants were repeating a large amount of data, new pieces of information were still coming to light in the final interview. This was a limitation of the sampling procedure for Study 2, by only inviting individuals who expressed interest to participate in an interview and scored above the mean perfectionism scores in Study 1, the possible sample was limited to 26. Of those, all 26 were invited, but only six accepted
and arranged a time to interview. Future work may wish to replicate the present study with a larger sample size, perhaps simply utilizing the self-identification as a ‘perfectionist’ as the inclusion criteria as Hill and colleagues (2015) did.

Future work may also benefit from examining multiple contexts. The present study specifically examined the experiences of collegiate golfers. While this meaningfully contributes to a developing body of work, the field would continue to benefit from the examination of perfectionistic reactivity across a range of sports, participant demographics, skill levels, and locations. Dorsch and colleagues (2022) highlight the importance of context in examining any phenomena in sport. In relation to perfectionistic reactivity, the type of sport (closed loop vs. open loop/team vs individual), athlete skill level or age, or cultural differences (countries where college scholarships are coveted) may contribute to a different understanding of both the development, and experience, of perfectionistic reactivity. As a result, we recommend that scholars take these potential differences into account while examining these constructs across a broad range of contexts.

Finally, in a similar manner to Hill and colleagues’ (2015) work, all participants in the present study are current participants in sport despite exhibiting elevated levels of perfectionistic tendencies. Our recruitment strategy excluded individuals who had previously removed themselves from the athletic domain, potentially as a result of being unable, or perceiving themselves as unable to manage the burden of their perfectionistic tendencies (Hill et al., 2015). As a result, the experiences of those individuals were not captured in the present work. Future research should be designed to purposefully target this demographic in order to provide a more representative documentation of
perfectionistic experiences in sport, particularly with regard to reactivity and its potential link to sport discontinuation, withdrawal, or retirement.

**Conclusion**

In sum, the present study offered a novel qualitative investigation into the lived experiences of NCAA golf student-athletes with perfectionism and reactivity. Thematic analysis identified a range of inductive themes situated within three categories previously proposed by Flett and Hewitt (2016). We recommend that future scholars continue to examine the concept of perfectionistic reactivity in a range of sporting contexts. Doing so would allow for a narrower, more detailed, picture of athletes’ experiences with perfectionistic reactivity, allowing for future scholars to begin developing interventions to reduce the potential for maladaptive outcomes.
CHAPTER 4
General Discussion

Discussion

The present dissertation was designed to offer early insight into perfectionistic reactivity, its potential relationship to performance, and the role it plays in the lived experiences of NCAA golf student-athletes. Perfectionism has long been associated with an array of sport and athletic outcomes, including motivation orientations, passion, anxiety, self-confidence, and in some cases, performance (Hill et al., 2020). In a recent extension of the perfectionism literature, Flett and Hewitt (2016) introduced the concept of perfectionistic reactivity, “a characteristic style of responding to adversity that includes both psychological and physiological reactivity” (p. 301). Perfectionistic reactivity is thought to be a product of the perpetuation and enhancement of stress processes (Hewitt & Flett, 2002), the manifestation of which may take the form of affective, behavioral, or cognitive responses (Flett & Hewitt, 2016).

NCAA student-athletes frequently perform in high level competitive contexts and spend a considerable amount of time immersed in the sport domain to enhance their performance (Ghiami et al., 2015). This two-study dissertation was designed with the purpose of beginning to understand how perfectionism influences NCAA student-athletes’ performance and engagement experiences. Perfectionistic reactivity was not directly tested in the studies, but rather served as a guiding framework and philosophy throughout the design, execution, and interpretation of the studies.
Study 1 presented a longitudinal quantitative exploration into the potential effects of perfectionism on performance over the course of an NCAA competitive golf season. Early work in the perfectionism literature highlighted the potential for perfectionistic athletes to perform particularly poorly in the immediate aftermath of a mistake (Frost & Henderson, 1991). It is this notion that, over time, has developed into today’s conceptualization of perfectionistic reactivity. Recently, the reactive component has been expanded beyond mere performance outcomes to include affective, behavioral, and cognitive experiences (Flett & Hewitt, 2016). Of note, these experiences also have the potential to affect or be affected by an athlete’s performance. To assess the influence of perfectionism on performance, it was first established that a relationship existed between performance on one hole and the next. However, it was subsequently found that there was no moderation effect of perfectionism on this relationship. Although our original hypothesis was not supported, performance outcomes are just one way that perfectionistic reactivity may manifest in athletes. Indeed, it worth exploring the multitude of potential outlets, including athletes’ affective, behavioral, and cognitive responses to poor performances (Flett & Hewitt, 2016). It is also plausible that reactivity is expressed through non-immediate outlets, either as a result of sport socialization (Ceron-Anaya, 2010; Bandura, 1999) or individual differences.

Study 2 was designed to gain qualitative insight into athletes’ lived experiences and understanding of perfectionistic reactivity. Student-athletes who were identified as scoring above the sample mean for both perfectionistic strivings and concerns were invited to participate in semi-structured interviews at the close of their competitive golf season. The aim of these in-depth interviews was to discuss their experiences of reactivity
over the course of the year. Thematic analysis resulted in the identification of 42 distinct themes related to athletes’ experiences of reactivity, nested within nine subcategories which were situated deductively within the broader categories of affective, behavioral, and cognitive. Findings from Study 2 broadly align with existing literature, featuring themes such as anxiety, anger, overcompensation, and rumination (Hall et al., 1998; Grugan et al., 2020; Klockare et al., 2022; Hall et al., 2012). However, athletes also discussed novel concepts such as reference points and relative weighting to particular outcomes. Self-compassion was also identified as a strategy that athletes adopt to overcome their perfectionistic reactivity and continue performing to their best level.

New Insight

The present dissertation offers an innovative approach to the study of perfectionistic reactivity, and as such, novel insight into the concept in ecologically valid settings. A small amount of literature has been dedicated to understanding relationships between perfectionism and performance, but these have historically occurred in lab-based athletic tasks (Lizmore et al., 2019; Curran & Hill, 2018). Lizmore and colleagues (2019) used a golf-putting task to test the influence of perfectionistic strivings and concerns on performance. Intercollegiate athletes were recruited to compete against a member of the research team and were given false-failure feedback prior to their second performance. Similarly, Curran and Hill (2018) adopted a false-failure approach to their performance-based study. Collegiate athletes were recruited to perform multiple sprint trials on a cycle ergometer. Each athlete was informed that they had performed the worst (in comparison to a reference group) after each attempt. In this case, self-oriented and socially-prescribed
perfectionism were examined in relation to performance. In both cases, perfectionistic dimensions were associated with changes in performance, highlighting some level of vulnerability in those with elevated perfectionistic tendencies (Curran & Hill, 2018).

Both of these studies took place in contrived (i.e., laboratory) settings, leaving open the need to better understand perfectionism in “real-world” sport settings. Study 1, to the author’s best knowledge, is the first to examine the concept of perfectionistic reactivity in an ecologically valid athletic context and serves as an important step toward investigation perfectionism and reactivity in the field. The present dissertation therefore answers call from Lizmore and colleagues (2019) and Curran and Hill (2018), both of whom urged scholars to consider perfectionistic athletes’ responses to performance feedback in ecologically valid sport contexts. Of note, participants in the present study were competitive athletes competing across all three NCAA divisions and are therefore highly specialized in their sport (see Côté, 1999). This has the potential to influence how athletes approach their sport performance, especially when viewed in contrast to prior work, which featured participants who may not have a similar investment in the laboratory task as golf was not the primary sport for many (Lizmore et al., 2019).

Regarding performance, Study 1 suggests there may not be a relationship between perfectionism and hole-to-hole performance in competitive golf. When considering this finding in relation to the findings of Study 2, one of the most likely interpretations of the null finding seems to be that performance is one step removed from reactivity. When examining the themes identified in Study 2, none refer to performance improvements or decrements because of perfectionistic reactivity. However, athletes often discussed behaviors or cognitions that could serve as intermediary steps between reactivity and
performance, such as adjusting their play style (changing their behavior to approach the course more passively or aggressively), over-adjustment (aiming left after a shot that went right), or overcompensation (thinking about potential adjustments to make considering the prior outcome). To investigate these factors systematically, future longitudinal work could be designed to identify potential mediation pathways whereby affective, cognitive, and behavioral reactivity components may facilitate the relationship between perfectionism and performance. Furthermore, similar designs to Study 1 may be adopted to examine varying time intervals for the influence of perfectionism on performance. It is plausible that reactivity is more trait-like and therefore not visible in immediate performance, but rather takes effect between days, weeks, months, or even seasons of competition. For further examination into reactivity as a state-like construct, methods such as ecological momentary assessments could be utilized to collect data regarding athletes’ immediate thoughts, feelings, and behaviors whilst in competition. Another strategy to capture externalized reactivity could be to utilize lapel microphones to analyze athletes’ self-talk at moments during competition where performance was particularly strong or poor or between attempts. In addition, other fields of study have made use of accounting for daily stressors and their spill over into other domains and influence on stress reactivity and anxiety (Liu et al., 2022). When utilizing a person-centered approach, it would seem appropriate to examine general life stressors in relation to stress-reactivity as student-athletes encounter a large range of experiences both inside and outside of the sport domain on a daily basis (Lopes Dos Santos et al., 2020).

Importantly, the present dissertation yielded findings that allow for the inclusion of work across academic fields to be considered when situating findings within broader
literature. Prospect theory (Kahneman & Tversky, 1979) offers a unique perspective through which to view the present findings. Prospect theory offers insight into the processes which are undertaken when an individual is making a decision under risk, a situation that athletes frequently find themselves in (Vaughan et al., 2019). More specifically, prospect theory offers insight into the evaluation of different outcomes as an individual’s point of reference serves as a way through which to evaluate hypothetical outcomes as gains or losses (Kahneman & Tversky, 1979). As discussed in Study 2, student-athletes often described the nature of perfectionism and their expectations for performance. It was noted that student-athletes appeared to expect perfect performance, regardless of the odds.

Prospect theory identifies three principles that govern individual’s decision making in these situations: 1) Evaluation to a reference point, 2) Diminishing sensitivity; and 3) Loss aversion (Kahneman, 2013). In the context of the present dissertation and with specific regard to the findings from Study 2, perfection serves as the reference point for the evaluation of subsequent performance. For perfectionistic athletes, this leaves no room for positively valanced outcome evaluations, only exponential potential for dissatisfaction with the inevitably of imperfect performance. Diminishing sensitivity addresses the notion that there are subjective differences between outcomes. When applied to golf, the subjective difference between a par and a bogey is relatively large when compared to the difference of a score of an 8 or 9 on any given hole, despite the difference in score (+1) being identical. This often leads individuals to behave differently when the subjective psychological value of an outcome is perceived as more or less meaningful. Loss aversion describes an individual’s tendency to adopt a riskier or safer
approach when evaluating the potential gains or losses in a given situation (Kahneman, 2013). In golf, this may be the decision to take a more aggressive approach shot, whether to take a tighter line to the pin with the risk of playing the ball closer to the trees, or ‘laying-up’ out of the rough as opposed to attempting to play the ball toward the green. Loss aversion speaks to the idea that an individual’s response to losses (e.g., one shot dropped) is stronger than the response to the corresponding gains (e.g., one shot gained). This was a common theme amongst participants in Study 2 and therefore presents itself as being of potential interest to perfectionism researchers. Indeed, there appear to be stark similarities between these components of decision making and the higher order dimensions of perfectionism, perfectionistic concerns in particular. Some existing work has touched on the notion that athletes tend to focus on worries regarding potential losses rather than movement execution when in high pressure situations, resulting in reduced performance (Oudejans et al., 2011); however, more work designed within the prospect theory framework may offer clearer insights into how perfectionistic athletes make decisions during competition. As such, a potential inclusion for future work of this type may be to account for the slope rating, or difficulty, of holes. In the essence of prospect theory, individuals may expect, or tolerate, different performance outcomes as a function of the perceived difficulty of the task at hand. An athlete may be more accepting of a bogey on a known difficult par 4, than a bogey on an easy par 5. This may influence the way in which they approach different holes and their expected outcomes and could pose itself as an interesting line of inquiry.

Along with prospect theory, utilizing rich theories from the field of human development may be beneficial in building a broader understanding of perfectionistic
reactivity. Bandura’s (1999) work offers insight into the learnt components of perfectionism (Appleton & Curran, 2016), and could be used to gain a deeper understanding into the expression, or lack thereof, of perfectionistic reactivity.

Furthermore, adopting a holistic systems approach has been proposed within the domain of sport in recent years. In keeping with this, Dorsch et al., (2022) proposed the integrated model of the youth sport system. In doing so, they offer insight into the multitude of influencing factors that an athlete experiences throughout their development. Using a holistic approach to development such as this may allow for additional insight to be garnered by considering broader level societal influences on perfectionism and reactivity rather than the immediately available social agents such as parents, peers, or coaches. By utilizing theories from this area, it may be possible to build a much broader understanding of these concepts before moving towards designing effective interventions to reduce the impacts of reactivity on athletes’ affect, behavior, and cognition.

The present dissertation presents two complimentary studies which were designed to seek answers to its research questions utilizing both quantitative and qualitative techniques. In considering the findings of the dissertation, the individual studies may be considered as a mixed-methods query into perfectionistic reactivity among intercollegiate student-athletes. As cited prior, 93% of research examining perfectionism in sport utilized quantitative approaches, with 4% and 3% respectively adopting qualitative, or mixed-methods techniques (Fleming et al., 2021). The term ‘mixed-methods’ has been defined in a multitude of was throughout the academic literature (Johnson et al., 2007); however, a common theme of these definitions is that scholars utilize multiple broad paradigms (e.g., quantitative and qualitative) to address a phenomenon or research
question of interest. In adopting such a design, the present dissertation contributes to a narrow body of literature examining dimensions of perfectionism in sport in this manner. Mixed-methods designs are most appropriate when they position researchers to examine a phenomenon in a dynamic way and when they offer a detailed approach to addressing multi-faceted research problems (Halcomb & Hickman, 2015; Doyle et al., 2009). Furthermore, it has been proposed that mixed-methods designs should not be viewed as distinct from monomethods, but rather as an intentional hybrid that adopts characteristics of both quantitative and qualitative approaches (Dahler-Larsen, 2022).

The effective use of mixed-methods work in the field of sport psychology has been highlighted in the reflections of Sparkes (2015). The present dissertation benefits from assist sampling, completeness, and triangulation from the proposed benefits (Sparkes, 2015). Specifically, assist sampling captures the notion of using quantitative survey methods to identify case selection for qualitative studies – the method used to recruit participants for Study 2 in this dissertation. Completeness refers to the use of multiple methods to provide a more complete picture of a phenomenon. Finally, triangulation refers to greater validity in the exploration of a concept by identifying similarities or differences between the findings of quantitative and qualitative exploration (Sparkes, 2015). The complimentary nature of the two studies in this dissertation offer practical insight into how perfectionistic reactivity may be experienced by athletes from both a quantitative and qualitative approach. This provides a platform for future actionable work to be built from, including, but not limited to, interventions.
Self-compassion was frequently cited by participants in Study 2. These student-athletes discussed the requirement for a sense of understanding and forgiving when they experienced bad luck or outcomes that were external to their control. Self-compassion is a relatively young field, being introduced to the general psychology literature around twenty years ago (Neff, 2003; Ferguson et al., in press). In sum, self-compassion is comprised of three components: mindfulness, self-kindness, and common humanity (Ferguson et al., in press). When these components are directed toward oneself in unity then an individual is thought to have a self-compassionate frame of mind.

As a salient theme in Study 2, it seems suitable to explore self-compassion as a potential buffer against the influence of perfectionism and/or reactivity in the context of sport. The protective effects of self-compassion have been documented by Ferguson and colleagues (in press). Specifically, the effects of self-compassion, positive affect, and behavioral level-headedness moderating the relationships between perfectionistic concerns and negative affect and cognitions (Mosewich, 2020; Tobin & Dunkley, 2020). There is also evidence that self-compassion has the potential to influence the stress processes in athletes (Ferguson et al., in press). This is particularly salient when considering the stress reactivity model, which includes stress perpetuation and enhancement. Stoeber and colleagues (2020) also noted that self-compassion fully mediated the relationship between perfectionism and subjective well-being in a sample of undergraduate students. It is with this in mind that self-compassion makes a strong candidate as a target for future interventions addressing perfectionistic reactivity in sport.
The relationships between self-compassion, perfectionistic concerns, and perfectionistic strivings are mixed in nature. In summarizing the literature, Ferguson and colleagues (in press) highlight the relatively clear nature of the relationship between perfectionistic concerns and self-compassion. There seems to be an overwhelming amount of support for the negative relationship between the two; the higher levels of perfectionistic concerns and individual has, the lower levels of self-compassion. This makes intuitive sense as an individual who is preoccupied with the mistakes they make and overly harsh self-evaluation is unlikely to be the most forgiving when acknowledging their own suffering or tempering their personal performance evaluations. However, perfectionistic strivings have a less clear relationship with self-compassion, with mixed evidence for the nature of this relationship (Ferguson et al., in press).

As far as the present dissertation, self-compassion seems to have potential as an intervention-guiding construct. Ferguson and colleagues (in press) highlight the interpersonal nature of self-compassion. Specifically, they posit that those around an athlete -- both in and out of sport -- have the potential to serve in roles to enable self-compassionate behaviors. In essence, individuals engaged in the youth sport system (i.e., coaches, parents, peers) can serve as models for self-compassion, be available to help athletes’ dealing with difficult experiences, or assist in meaning-making and perspective taking (Ferguson et al., in press). Existing interventions have included psychoeducation sessions (Mosewich et al., 2013; Voelker et al., 2019) and mindfulness practice (Cote et al., 2019). More recently, Ferguson and colleagues (in press) proposed important
considerations for the design of self-compassion interventions including design, delivery, and content.

In light of the present findings, it appears that the target of any intervention would require much consideration. Participants highlighted affective, behavioral, and cognitive components to perfectionistic reactivity throughout their interviews in Study 2. These results support the proposal of the same dimensions by Flett and Hewitt (2016). As such, it would be inappropriate to not include all three components in the design of an intervention. In taking inspiration from Bandura’s (1978; 1999) triadic reciprocal determinism, it seems appropriate that to be optimal in effectiveness, an intervention should target athletes’ affect, behavior, and cognition. Indeed, our analysis and interpretation of participant interviews highlighted multiple instances where athletes cited feelings, thoughts, and behaviors in the same interview response. This suggests that there may be an implied relationship between the three, with influences acting on each other in recursive ways. In reading the work of Bandura (1978) there are clear similarities between his model of triadic reciprocal determinism, and the relationships identified between affect, cognition, and behavior in Study 2. Bandura’s model includes three factors: behavior, cognition, and environment. In presenting the model, Bandura draws attention to the bidirectional influences between each component, highlighting that they rarely exert their influence independently. To fully understand reactivity, we must therefore understand the reciprocal relationships between each individual’s affect, behavior, and cognition. Based on this understanding, it will be important for scholars
and practitioners to design interventions based on factors such as self-compassion that address all three components of reactivity.

Aside from self-compassion, an emerging body of literature focuses on psychological skills training and perfectionism. Watson and colleagues (2022) offer support for the effectiveness of skill-based interventions, equipping athletes with the psychological tools to be able to cope with emotions and performance satisfaction. However, the intervention appeared to be less effective for athletes’ perfectionistic cognitions. In line with the recommendations of Watson and colleagues (2022) it may be appropriate to combine interventions as a function of the desired outcome and the individual. One challenge that researchers may face is the potential for perfectionism to influence how individuals perceive mental health support in athletic settings. Watson and colleagues (2021) highlight that athletes with high levels of perfectionistic concerns may be more closed and exhibit a larger stigma toward seeking mental health support and working with sport psychologists. This creates a catch-22 for athletes and practitioners, as those who most need support from experts may be the least likely to accept or seek it out. Perhaps, it may be beneficial for national governing bodies or sport administrators to integrate mental health and well-being practices into their youth participation efforts to be able to influence as many individuals as possible prior to dropping out of sport or actively avoiding support. Regardless of the intervention type and target, it is imperative for researchers to continue to develop a broader understanding of perfectionistic reactivity as a construct prior to intervening. Poland and colleagues (2009) highlight the importance of context specific interventions and the consideration of context uniqueness, stakeholders and interest, and power, influence, and social change. Understanding reactivity in a range
of sporting contexts, as well as the unique aspects that distinguish between those contexts, is integral to an effective intervention design. In order to do this, utilizing literature from broader fields as discussed earlier (Liu et al., 2022, Kahneman & Tversky, 1979), may be beneficial.

**Conclusion**

The present dissertation utilized two studies, adopting both quantitative and qualitative approaches, to examine perfectionistic reactivity in intercollegiate sport. In doing so, it represents the first examination of perfectionistic reactivity in an ecologically valid setting. It appears that perfectionistic reactivity exerts influences on an athlete’s affect, cognitions, and behaviors; however, performance does not appear to be directly impacted by its effects. Rather, athletes seem to experience a range of emotions, pre- and post-competitive routines, and perfectionistic cognitions. A key finding is that perfectionists view losses with greater magnitude than gains, likely a result of their reference point being perfect performance. Importantly, this rarely allows for positive appraisals of performance outcomes when judging them in relation to this expectation. One strategy that athletes identified as useful in overcoming their perfectionistic tendencies and reactivity was self-compassion. In furthering the field of perfectionistic reactivity, researchers may wish to adopt a range of techniques, utilizing experimental laboratory work in conjunction with ecologically valid competitive contexts. In light of these findings, future work building on this dissertation may wish to focus on the following:
1) The role of potential moderators and/or mediators of the relationship between perfectionism and performance. For example, self-compassion, overcompensation, or anger may be measured to better understand the nuanced influence of perfectionism on athletic performance. This may be best suited to laboratory studies, which are designed to manipulate environmental variables in order to test temporal mediation pathways. Such work has the potential to inform future research carried out in ecologically valid settings as well as purposefully designed interventions.

2) Athletes’ reference points for performance evaluation and the functions of those in relation to future performance, affect, and cognition. It appears that issues for individuals with perfectionistic tendencies begin when their reference point is set to perfect and poor performance outcomes are subjectively rated on a scale of bad-to-worse. Future research should be designed to examine how these levels of poor performance influence the reactions of athletes in sport contexts and how they relate to subsequent performance outcomes.

3) The protective influence of self-compassion on perfectionism and perfectionistic tendencies in a sport context. While this line of inquiry has begun, more work is required to understand the potential buffering effect of self-compassion, as well as its strengths, boundaries, and limitations.

4) Open-loop and team sports, other levels of performance, and broader periods of time. The present dissertation focused on golf at the micro hole-to-hole level. Week-to-week reactivity may be an important route to explore,
along with self-rated or perceived performance and how that differs to objective performance outcomes in sport.

5) **The development of an instrument to directly measure perfectionistic reactivity.** A limitation of the present dissertation was the inability to quantify perfectionistic reactivity. A tool, be that psychometric or observational in nature, to empirically measure reactivity would allow researchers to produce a range of studies examining antecedents, outcomes, mediators, and moderators of reactivity.

In sum, perfectionistic reactivity is a relatively young line of enquiry in the world of sport. The present dissertation brings to light initial work beginning to understand this phenomenon and build an understanding. In doing so, the five suggestions for future work present themselves as next steps in furthering this developing field.
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APPENDICIES
Appendix A
Utah State University IRB Approval Letter

Institutional Review Board
Exemption #2
Certificate of Exemption

From: Melanie Domenech Rodriguez, IRB Chair
Nicole Yovvalis, IRB Director

To: Travis Dorsch

Date: January 7, 2022

Protocol #: 12359

Title: PERFECTIONISTIC REACTIVITY IN NCAA STUDENT-ATHLETES: UTILIZING MIXED-METHODS RESEARCH TO DESIGN AN INTERVENTION

The Institutional Review Board has determined that the above-referenced study is exempt from review under federal guidelines 45 CFR Part 46.104(d) category #2:

Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subject; (ii) Any disclosure of the responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, educational advancement, or reputation; or (iii) the information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and the IRB conducts a limited IRB review to make required determinations.

This exemption is valid for five years from the date of this correspondence, after which the study will be closed. If the research will extend beyond five years, it is your responsibility as the Principal Investigator to notify the IRB before the study’s expiration date and submit a new application to continue the research. Research activities that continue beyond the expiration date without new certification of exempt status will be in violation of those federal guidelines which permit the exempt status.

If this project involves Non-USU personnel, they may not begin work on it (regardless of the approval status at USU) until a Reliance Agreement, External Research Agreement, or separate protocol review has been completed with the appropriate external entity. Many schools will not engage in a Reliance Agreement for Exempt protocols, so the research team must determine what the appropriate approval mechanism is for their Non-USU colleagues. As part of the IRB’s quality assurance procedures, this research may be randomly selected for audit during the five-year period of exemption. If so, you will receive a request for completion of an Audit Report form during the month of the anniversary date of this certification.

In all cases, it is your responsibility to notify the IRB prior to making any changes to the study by submitting an Amendment request. This will document whether or not the study still meets the requirements for exempt status under federal regulations.

Upon receipt of this memo, you may begin your research. If you have questions, please call the IRB office at (435) 797-1821 or email to irb@usu.edu.

The IRB wishes you success with your research.
Appendix B

Approved Informed Consent Document

Perfectionistic Reactivity in NCAA Golf Student-Athletes

Introduction
You are invited to participate in a research study by Dr. Travis Dorsch, an associate professor in the department of Human Development and Family Studies at Utah State University.

The purpose of this research is to examine perfectionism in college golfers. Specifically, we are interested in learning about how perfectionism influences reactions to performance errors. You are being asked to participate in this research because you play golf for an NCAA member institution.

This form includes detailed information on the research to help you decide whether to participate. Please read it carefully and ask any questions you have before you agree to participate.

Procedures
Your participation will involve completing a short questionnaire before the start of your competitive season. The questionnaire includes statements about yourself (e.g., I am tough on myself when I do not perform perfectly). You will be asked to rate how much you agree or disagree with each statement. This should take about 10 minutes. Some people that participate in the questionnaire may also be asked to participate in short interviews over zoom at the end of your season. This will last approximately 30 minutes at a time that is convenient to you, if you are invited to do so. If you agree to participate, the researchers will also collect your golf competition hole, round, and tournament scores across the Spring season from online sources. We anticipate that 250 people will participate in this research study questionnaire, and approximately 20 will participate in the interviews. Those that do participate in the interview portion of the study will be offered compensation in the form of a $20 Amazon gift card.

Risks
This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. The foreseeable risks or discomforts include potential loss of confidentiality. However, we do not consider there to be any probable disadvantages or risks of participating. In order to minimize those risks and discomforts, the researchers will This survey data will be securely stored in a restricted-access folder on Box.com on a password protected computer in a restricted-access office. Identifiers (such as names) will be removed from the data 3 months after data collection. We may invite you to participate in short interviews over zoom at a later date. These data will be transcribed and stored in a restricted-access folder on Box.com on a password protected computer in a restricted access office.

Benefits
Although you will not directly benefit from this study, it has been designed to learn more about how golfers react to performance errors during competition.

Confidentiality
The researchers will make every effort to ensure that the information you provide as part of this study remains confidential. Your identity will not be revealed in any publications, presentations, or reports resulting from this research study.

We will collect your information through online survey software ‘Qualtrics’. Interview data will be collected online using videoconferencing software ‘Zoom’. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. This information will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system on a password protected computer in a
### Appendix C
#### Study 1 Quantitative Survey

<table>
<thead>
<tr>
<th>Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>School</td>
</tr>
<tr>
<td>NCAA Conference</td>
</tr>
<tr>
<td>Academic Year</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Race</td>
</tr>
<tr>
<td>Nationality</td>
</tr>
<tr>
<td>Years Playing Golf</td>
</tr>
<tr>
<td>Years Playing NCAA Golf</td>
</tr>
<tr>
<td>Number of Siblings</td>
</tr>
<tr>
<td>Parent's Level of Education</td>
</tr>
<tr>
<td>Cumulative College GPA</td>
</tr>
</tbody>
</table>

For each of the following statements, please select the response that best represents your feelings in sport. There are no right or wrong answers.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I strive to be as perfect as possible</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It is important to me to be perfect in everything I attempt</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel the need to be perfect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am a perfectionist as far as my targets are concerned</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have the wish to do everything perfectly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel extremely stressed if everything does not go perfectly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel depressed if I have not been perfect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I get complete furious if I make mistakes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I get frustrated if I do not fulfill my high expectations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>If something does not go perfectly, I am dissatisfied with the whole competition</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix D
Study 2 Qualitative Interview Guide

1) To get us going, could you tell me about how you became involved with golf and began playing at XXX university?

2) What have been the highlights of your time competing as an NCAA athlete so far?

3) Would you say that you see yourself as a perfectionist? – in golf…
   a. What is it that makes you say that?

4) How do you think being a perfectionist impacts your performance when playing golf?
   a. Are there any negative impacts?
   b. Are there any positives?
   c. How do you normally deal with that?

5) Do you think that perfectionism is overall a good trait to have as a golfer?

6) How do you normally react when you play a hole well?
   a. Does this impact how you approach the next hole?
   b. Does this change between shots – good shot, how does next shot go?

7) How do you normally react when you make a mistake on the course?
   a. How do you approach the next hole?
   b. If you score a bogey or worse, what things do you think about on the way to the next tee?
   c. Does this change between shots – bad shot, how does next shot go?
8) How do you think you came to be a perfectionist?

9) Do you think anyone around you in your golf world, coaches, teammates, peers, parents, influence your perfectionism?
   a. How so?

10) Is there anything else you would like to add that we haven’t already discussed?
Appendix E
Study 1 R Markdown – Code and Output for Main Linear Mixed Model Analyses

Main Linear Mixed Effect Models - Dissertation Study 1
Dan J. M. Fleming
2023-02-16
Preparation
Load Libraries
library(tidyverse)
library(readxl)
library(haven)
library(furniture)

Load Datasets
load("data_preped_gold.RData")

Lag Hole Scores
df_athlete_hole_lag <- df_athlete_hole %>%
  dplyr::group_by(athlete_id, round_id) %>%
  dplyr::mutate(score_lag1 = dplyr::lag(score, n = 1)) %>%
  dplyr::ungroup() %>%
  dplyr::filter(!is.na(score_lag1))

df_athlete_hole_lag %>%
  dplyr::filter(score_lag1 > 4) %>%
  dplyr::select(athlete_id, round_id, hole, score, score_lag1)

## # A tibble: 7 × 5
##   athlete_id round_id                   hole score score_lag1
##        <dbl> <fct>                     <dbl> <dbl>      <dbl>
## 1          6 6_savannahinvitational_1      6     1          5
## 2          8 8_theruckus_2                 4     1          5
## 3         13 13_theruckus_1               10     0          6
## 4         38 38_sjuwinterclassic_1        12    -1          5
## 5         39 39_pfeifferinvitational_1     4     0         10
## 6         39 39_pfeifferinvitational_2     6     1          5
## 7         40 40_menmbainv_1               14     1          7

Visualizations
Round Scores
df_athlete_round %>%
  dplyr::filter(!is.na(round_score)) %>%
  ggplot(aes(round_score)) +
  geom_histogram(binwidth = 3,
                 color = "black",
                 alpha = .3) +
  theme_bw()
df_athlete_round %>%
  dplyr::filter(round_score > 50) %>%
  dplyr::select(athlete_id, round_id, round_score)
## # A tibble: 8 × 3
##   athlete_id round_id                        round_score
##        <dbl> <fct>                                 <dbl>
## 1         89 89_wartburgspringinvitational_1          70
## 2         89 89_wartburgspringinvitational_2          70
## 3         93 93_ECWomensInvintational_1               84
## 4         93 93_ECWomensInvintational_2               79
## 5         94 94_kathyniepagenspringfling_1            90
## 6         94 94_kathyniepagenspringfling_2            86
## 7        125 125_diiishowcase_1                       70
## 8        125 125_diiishowcase_2                       70

Hole Scores
df_athlete_hole %>%
  dplyr::filter(!is.na(score)) %>%
  ggplot(aes(score)) +
  geom_histogram(binwidth = 1,
Perfectionism and Score

df_athlete_hole %>%
  ggplot() +
  aes(x = mips_sfp, y = score) +
  geom_count() +
  geom_smooth(method = "lm") +
  theme_bw() +
  geom_abline(yintercept = 0, slope = 1, linetype = "longdash")

## Warning in geom_abline(yintercept = 0, slope = 1, linetype = "longdash"): ## Ignoring unknown parameters: `yintercept`

## Warning: Removed 1746 rows containing non-finite values (`stat_sum()`).

## `geom_smooth()` using formula = `y ~ x`

## Warning: Removed 1746 rows containing non-finite values (`stat_smooth()`).
```
df_athlete_hole %>%
ggplot() +
aes(x = mips_con,                 # x-axis variable
    y = score) +                  # y-axis variable
geom_count() +                  # POINTS w/ SIZE = COUNT
geom_smooth(method = "lm") +    # linear regression line
theme_bw() +
geom_abline(yintercept = 0, slope = 1, linetype = "longdash")
```

## Warning in geom_abline(yintercept = 0, slope = 1, linetype = "longdash"):
## Ignoring unknown parameters: `yintercept`

## Warning: Removed 1746 rows containing non-finite values (`stat_sum()`).

## `geom_smooth()` using formula = 'y ~ x'

## Warning: Removed 1746 rows containing non-finite values (`stat_smooth()`).
df_athlete_hole_lag %>%
ggplot(aes(x = score_lag1,
        y = score)) +
  geom_count() +
  theme_bw() +
  geom_abline(yintercept = 0, slope = 1, linetype = "longdash") +
  geom_smooth(method = "lm")

## Warning in geom_abline(yintercept = 0, slope = 1, linetype = "longdash"):
## Ignoring unknown parameters: `yintercept`

## `geom_smooth()` using formula = 'y ~ x'
MLM: Hole Scores
Null Model & ICC

```r
fit_lmer_0_hole_re <- lmerTest::lmer(score ~ 1 + (1 | athlete_id/round_id),
    data = df_athlete_hole,
    REML = TRUE)
```

```
summary(fit_lmer_0_hole_re)
```
## athlete_id (Intercept) 0.16757 0.4093
## Residual 0.75197 0.8672
## Number of obs: 3474, groups: round_id:athlete_id, 181; athlete_id, 46
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 0.57935 0.06351 40.6177 9.123 2.21e-11 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

performance::icc(fit_lmer_0_hole_re)
## # Intraclass Correlation Coefficient
## ## Adjusted ICC: 0.193
## # Unadjusted ICC: 0.193

Lag Effect
fit_lmer_0_hole_lag_ml <- lmerTest::lmer(score ~ 1 + (1 |athlete_id/round_id),
data = df_athlete_hole_lag,
REML = FALSE)

fit_lmer_1_hole_lag_ml <- lmerTest::lmer(score ~ score_lag1 + (1 |athlete_id/round_id),
data = df_athlete_hole_lag,
REML = FALSE)

summary(fit_lmer_1_hole_lag_ml)
## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: score ~ score_lag1 + (1 | athlete_id/round_id)
## Data: df_athlete_hole_lag
## ## AIC  BIC  logLik deviance df.resid
## 8534.9 8565.4 -4262.5 8524.9 3288
## ## Scaled residuals:
## Min 1Q Median 3Q Max
## -5.2866 -0.5728 -0.1814 0.6044 10.0476
## ## Random effects:
## ## Groups   Name    Variance Std.Dev.
## round_id:athlete_id (Intercept) 0.01864 0.1365
## athlete_id       (Intercept) 0.17476 0.4180
## Residual         0.73873 0.8595
## Number of obs: 3293, groups: round_id:athlete_id, 181; athlete_id, 46
##
## Fixed effects:
##               Estimate Std. Error df  t value Pr(>|t|)
## (Intercept)   0.59380    0.06594 42.26622  9.005 2.2e-11 ***
## score_lag1   -0.04292    0.01745 3292.28616 -2.459 0.014 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##    (Intr)
## score_lag1 -0.152

Likelihood Ratio Tests

anova(fit_lmer_1_hole_lag_ml)

## Type III Analysis of Variance Table with Satterthwaite's method
##             Sum Sq Mean Sq NumDF DenDF  F value Pr(>F)
## score_lag1  4.4675  4.4675     1 3292.3  6.0475 0.01398 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

anova(fit_lmer_0_hole_lag_ml, fit_lmer_1_hole_lag_ml)

## Data: df_athlete_hole_lag
## Models:
## fit_lmer_0_hole_lag_ml: score ~ 1 + (1 | athlete_id/round_id)
## fit_lmer_1_hole_lag_ml: score ~ score_lag1 + (1 | athlete_id/round_id)
##               npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## fit_lmer_0_hole_lag_ml    4 8538.3 8562.7 -4265.2   8530.3
## fit_lmer_1_hole_lag_ml    5 8534.9 8565.4 -4262.5   8524.9 5.389  1    0.02026
## ---
## fit_lmer_0_hole_lag_ml
## fit_lmer_1_hole_lag_ml *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Plot Model

effects::Effect(mod = fit_lmer_1_hole_lag_ml, focal.predictors = c("score_lag1")) %>%
data.frame() %>%
ggplot(aes(x = score_lag1, y = fit, group = 1)) + geom_line() + geom_ribbon(aes(ymin = fit - se, ymax = fit + se), alpha = .3) + theme_bw() +
labs(x = "Previous Hole's Score",
y = "Estimated Marginal Mean (Predicted Average)\nHole Schore")

Center Perfectionism

df_athlete_hole_lag$sCmips_sfp <- df_athlete_hole_lag$mips_sfp - (mean(df_athlete_hole_lag$mips_sfp))

psych::describe(df_athlete_hole_lag$sCmips_sfp)

##    vars    n mean   sd median trimmed mad   min  max range  skew kurtosis   se
## X1    1 3293    0 0.95   0.39    0.08 0.59 -2.01 1.19   3.2 -0.69    -0.84 0.02

df_athlete_hole_lag$sCmips_con <- df_athlete_hole_lag$mips_con - (mean(df_athlete_hole_lag$mips_con))

psych::describe(df_athlete_hole_lag$sCmips_con)

##    vars    n mean   sd median trimmed mad   min  max range  skew kurtosis   se
## X1    1 3293    0 1.01 -0.41  -0.01 1.19 1.59   3.2 0.17    -1.24 0.02

Perfectionism Main Effects

fit_lmer_2_hole_lag_ml <- lmerTest::lmer(score ~ score_lag1 + mips_sfp + mips_con + (1 |athlete_id/round_id),

---
data = df_athlete_hole_lag,
REML = FALSE)

summary(fit_lmer_2_hole_lag_ml)

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: score ~ score_lag1 + mips_sfp + mips_con + (1 | athlete_id/round_id)
## Data: df_athlete_hole_lag
##
## AIC    BIC   logLik deviance df.resid
## 8537.7 8580.4  -4261.8   8523.7     3286
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -5.2872 -0.5692 -0.1831  0.6048 10.0389
##
## Random effects:
##  Groups              Name        Variance Std.Dev.
##  round_id:athlete_id (Intercept) 0.01869  0.1367
##  athlete_id          (Intercept) 0.16914  0.4113
##  Residual                        0.73873  0.8595
## Number of obs: 3293, groups:  round_id:athlete_id, 181; athlete_id, 46
##
## Fixed effects:
##               Estimate Std. Error         df t value Pr(>|t|)
## (Intercept)    0.71583    0.28798   39.21585   2.486   0.0173 *
## score_lag1    -0.04301    0.01745 3292.19060  -2.464   0.0138 *
## mips_sfp      -0.08422    0.07795   39.25532  -1.080   0.2865
## mips_con       0.06404    0.07937   39.23968   0.807   0.4246
##
## Correlation of Fixed Effects:
##            (Intr) scr_l1 mps_sf
## score_lag1 -0.044
## mips_sfp   -0.617  0.023
## mips_con   -0.356 -0.016 -0.489
##
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Perfectionism interactions

options(scipen=999)

fit_lmer_3_hole_lag_ml <- lmerTest::lmer(score ~ score_lag1*Cmips_sfp + score_lag1*Cmips_con + (1 | athlete_id/round_id),
                                        data = df_athlete_hole_lag,
                                        REML = FALSE)
summary(fit_lmer_3_hole_lag_ml)

## Linear mixed model fit by maximum likelihood . t-tests use Satterthwaite's
## method [lmerModLmerTest]
## Formula: score ~ score_lag1 * Cmips_sfp + score_lag1 * Cmips_con + (1 |
## athlete_id/round_id)
## Data: df_athlete_hole_lag
##
## AIC      BIC   logLik deviance df.resid
##   8541.2   8596.1  -4261.6   8523.2     3284
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -5.2609 -0.5624 -0.1812  0.6079 10.0464
##
## Random effects:
##  Groups              Name        Variance Std.Dev.
##  round_id:athlete_id (Intercept) 0.01841  0.1357
##  athlete_id          (Intercept) 0.16971  0.4120
##  Residual                        0.73873  0.8595
## Number of obs: 3293, groups:  round_id:athlete_id, 181; athlete_id, 46
##
## Fixed effects:
##                         Estimate  Std. Error          df t value       Pr(>|t|)
## (Intercept)             0.600906    0.065516   42.282478   9.172 0.000000000013
## score_lag1             -0.043126    0.017479 3292.065219  -2.467         0.0137
## Cmips_sfp              -0.087046    0.078952   41.151243  -1.103         0.2766
## Cmips_con               0.058946    0.079988   40.358482   0.737         0.4654
## score_lag1:Cmips_sfp    0.002713    0.021373 3290.615968   0.127         0.8990
## score_lag1:Cmips_con    0.011156    0.020749 3276.477362   0.538         0.5908
##
## Correlation of Fixed Effects:
##                (Intr) scr_l1 Cmps_s Cmps_c scr_lg1:Cmps_s
## score_lag1     -0.155
## Cmips_sfp      -0.083  0.109
## Cmips_con      0.016 -0.011 -0.485
Table

texreg::knitreg(list(fit_lmer_3_hole_lag_ml),
    custom.model.names = c("Final Model"),
    caption = "Perfectionism Main Effects and Interaction on Score",
    caption.above = TRUE,
    single.row = TRUE)

<table>
<thead>
<tr>
<th>Final Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
</tr>
<tr>
<td>score_lag1</td>
</tr>
<tr>
<td>Cmips_sfp</td>
</tr>
<tr>
<td>Cmips_con</td>
</tr>
<tr>
<td>score_lag1:Cmips_sfp</td>
</tr>
<tr>
<td>score_lag1:Cmips_con</td>
</tr>
<tr>
<td>AIC</td>
</tr>
<tr>
<td>BIC</td>
</tr>
<tr>
<td>Log Likelihood</td>
</tr>
<tr>
<td>Num. obs.</td>
</tr>
<tr>
<td>Num. groups: round_id:athlete_id</td>
</tr>
<tr>
<td>Num. groups: athlete_id</td>
</tr>
<tr>
<td>Var: round_id:athlete_id (Intercept)</td>
</tr>
<tr>
<td>Var: athlete_id (Intercept)</td>
</tr>
<tr>
<td>Var: Residual</td>
</tr>
</tbody>
</table>

Plots

interactions::interact_plot(fit_lmer_3_hole_lag_ml, pred = score_lag1, modx = Cmips_sfp)
interactions::interact_plot(fit_lmer_3_hole_lag_ml, pred = score_lag1, modx = Cmips_con)
Appendix F
Qualitative Coding Structure and Quotations
<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Themes</th>
<th>Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect</td>
<td>Negative Affect</td>
<td>Anger</td>
<td>And I would like throw a tantrum, you know, I'd be like, Oh my gosh, like, why? And he's like, Why are you mad at that, I'm like, well, it went left and he's like, you can still play like with that like, that still hit the green bad shot, I usually get pretty anxious and walk a little bit quicker, just because I don't know, like, what's up there, or like, what I'm actually facing, and I want to figure that out as quickly as I can.</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td></td>
<td>Yo, bro, you better make that putt. Because growing up I didn't really play with a whole lot of female junior golfers I played with a lot of men golfers and every single time like they just doggin each other be like, bro, you better make that putt that's embarassing</td>
</tr>
<tr>
<td></td>
<td>Embarassment</td>
<td></td>
<td>So I try to hit it through the hole in the tree and it goes right behind me. And so in that moment, your thoughts are all scrambled you're like holy crap I don't know what to do you know you're kind of mad at yourself, you're down because you're trying to kind of force your way and you know, you want to you want to make a cut.</td>
</tr>
<tr>
<td></td>
<td>Frustration</td>
<td></td>
<td>Well, when it doesn't, when it doesn't work, it's the feeling of like hopeless like, ugh, like sucks like that. You're trying to force it back, you're trying to force back, you're trying so hard, you know, you're you're mentally grinding on the golf course</td>
</tr>
<tr>
<td></td>
<td>Hopelessness</td>
<td></td>
<td>If I make a bad swing, I'll be upset because it didn't feel right, it didn't sound good, it didn't look pretty. And especially like having that high expectation for myself and worrying about, like, what everyone was thinking rather than just doing it again, and like letting it happen, then it like, definitely, I crumbled, and it wasn't a good outcome</td>
</tr>
<tr>
<td></td>
<td>Upset</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Experiences</td>
<td>Enjoyment</td>
<td>Like when I broke the records, and I shot 69 I was like, Oh my gosh, like, that was such a relaxing round. I could just like enjoy myself it was positive. Um, definitely positive. And definitely relaxed. Like it was just I've reflected on like, holes like that. And I'm like, Oh, it was so easy. Like when I broke the records, and I shot 69 I was like, Oh my gosh, like, that was such a relaxing round. I could just like enjoy myself it was positive.</td>
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<td>Relaxing</td>
<td>umo definitely positive. And definitely relaxed. Like it was just I've reflected on like, holes like that. And I'm like, Oh, it was so easy. Like when I broke the records, and I shot 69 I was like, Oh my gosh, like, that was such a relaxing round. I could just like enjoy myself it was positive.</td>
<td></td>
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<tr>
<td>Emotional Regulation</td>
<td>Even-tempered</td>
<td>So for me, it's, it comes back to that self talk of hey, I have to stay as positive on the golf course as possible, doesn't matter you know, if I just made an eagle, or if I just made an eight, I have to be, you know, that remaining in that one level. Because up and down for me, it just doesn't work. I'm trying to be as motivating, self talk trying to be as motivating as possible. You know, I'm very pleased with what I just accomplished on the last hole. So trying to keep it going and just trying to stay up, you know, we're on a positive vibe, we just got to start filling the scorecard. So we're trying to stay up</td>
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<td></td>
<td>Staying Positive</td>
<td>I'm trying to keep it calm. You know, I'm going to look around at the trees, the birds, whatever. I don't want to be constantly locked in for the the 200 yard walk or 300 yard walk up.</td>
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<td></td>
<td>Remaining calm</td>
<td>Before every tournament the night before I'd cleaned my clubs, I'd iron my outfit, like my uniform, like I had to have everything ready to go. my teammates would say like, why do you iron your outfit? And I was like, well, there's a saying like, if you feel if you feel like you look good, then you'll play good. So then I would always just do that,</td>
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<tr>
<td>Behavioral</td>
<td>Pre-Performance Preparation</td>
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<tr>
<td>47 codes of 9 themes</td>
<td>Routine</td>
<td>During Performance</td>
<td>Adjusting play style</td>
</tr>
<tr>
<td>Cognitive Reflection</td>
<td>Management of Self-Image</td>
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<tr>
<td>Recovering mid-performance</td>
<td>Um, I mean, in all aspects of my life, not just golf, like I've wanted everything to be the best that it can be like, I'm very organized, you know, and stuff like that. And I think over time through high school leading into college, it kind of just built up and I was in this new environment, new people when I got to college. And then I just wanted like everyone to have this good reflection of like, the person that I was. So like, the ironing the clothes, you know, PARTICIPANT, like always looks pin and proper, you know,</td>
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<tr>
<td>Reflecting on past performance</td>
<td>It's focus on getting out of that hole, just try to get the ball on the green and in the hole and walk off and start a new hole. That's the mentality. Whereas if it was like if I bogeyed the hole, or worse, then I reflect on what did I do wrong? Golf swing wise, like, did I pull it was I, you know, stuck, you know, was my tempo too quick? What did I do there? To get me into trouble rather than focusing on the golf management or course management of it? Right. And then that'll carry to like the next tee like, what do I need to do this hole? So I don't do down the last hole. And so that's probably the issue, more so than anything else is that I don't keep them at the same level. Like they're not weighted the same, because one is an expectation and one is like then worse than what you expected. Like, there's no good, it's just satisfactory. And stuff, if that makes sense. Like you've either achieved or not achieved. And then for the bad ones, it's then ranked on like a scale of like, oh, that was a really bad shot versus like kind of bad shot versus like, you know, a bad shot. So like, the bad shots have like a thing of a ranking, almost. And then the good shots are just like you achieved or didn't achieve. And so in terms of that thing of like,</td>
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<tr>
<td>Focus on the bad</td>
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102 codes of 20 themes
| Rumination | how long it stays with you or not the reason why the good shots just kind of blow by is because it's a very easy pass or fail kind of thing. 
Yeah, it's definitely hard for me to shake it off mentally. Because I think of that, perfectionist thing. Like my coach is like, you know, it's done and over with, you can't change it, but in the back of my mind, like, oh, like, what did I do to do that? You know, I don't want to do it again. So I gotta fix it now, when I just kind of keep moving forward and stay relaxed and stay calm, stay in the moment |
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<tbody>
<tr>
<td>Preflection</td>
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<td>Reframing</td>
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do everything right. And like the next stretch, like trying just to focus on where I'm at, like in that moment and do the best that I can through, you know, the next shot or the next two shots.

Perfection is unattainable. So I've moved away from that word, in particular, which is like why I've found the study a little bit interesting, to be honest, I'm like oh, this is gonna be fascinating. I wonder how I wonder what's gonna happen or what results we'll find. But I have personally switched from perfectionism to excellence, because excellence is subjective. Perfection isn't real, and technically, it's subjective as well. But there's, there's certain things called like a perfect game or perfect ground and stuff like that, and even then I'm just like, is it really perfect or was it just really, really, really, really good?

And if that's the case, then that seems more like excellence, not perfectionism. So yeah.

Striving for Excellence

Yeah, you just gotta understand that, you know, sometimes stuff goes wrong. And if I can control what I can control, what would be my swing, my tempo, my thoughts, or if I can stay as calm there. As level there, then, you know, I feel like I can play the best golf. I wouldn't say it'd be perfect goal, but the best golf that I can.

Pragmatic Approach

I had my high school coach is still kind of like that little voice in my head, you know, playing in college tournaments, where, you know, things he'd say to me when I was, you know, kind of a hothead high schooler that didn't know like, really out of control his emotions, like I still kind of of things that he'd say to me during high school tournaments. Like, I still kind of use that.
| Focus on the next hole | And it's like, personally, for me, it's a lot easier to stay kind of centered and like present after a good hole than it would be like a bad hole.
Um, I would say it's definitely more in practice than in play because in play, I mean, you know, just stuff happens like you can't control everything that happens out on the golf course. Um, so in practice, I'm definitely, you know, trying to find that perfection, and, you know, trying to really hone into skills and make sure we're as good as possible. You know, when I'm out playing in tournaments and just play, you can't control what happens, you gotta you gotta copy bounds, you know, something goes wrong, like, that's a little different, but in practice, play more seeking that. That perfectionism and just trying to, like, lock it in in practice rather than in play.
And I probably hit like 160 balls trying to figure out why I was hitting the ball straight. I want to see the ball go left like, it's, it's, it sounds a little crazy now. But you know, I mean, I'm a draw player I want it to go left. So I would 100% say I am a perfectionist when it comes to golf. |
| Context specific expectations | Searching for consistency |
| Goals and Standards | High performance standards |
| Managing expectations | And it's just that relationship to each other, and then just honestly, never being satisfied. Never satisfied with anything. Like if I stuck it to a foot, it's like, why couldn't I have made it? You know, it's just like, like, again, the odds of making a hole in one are like, one in 100,000, like, like, what are your chances, but it's like, nah, man, like, why shouldn't that have that gone in, you know. So I tend to play a little bit more conservatively when things are going wrong taking irons when I probably should have been taking hybrids, and stuff like that. But if it's just a short haul, where it's driver iron, I'm usually not thinking of playing conservatively. I do stop going for pins, sometimes if I know that I'm not shooting well, just |
| Overcompensation | because it's more of just get on the green and two putt and walk off of there kind of thing. So I just go for the biggest part of the green usually. And so then, the back of my mind, I'm like, Okay, for the next shot, I pulled that one a little little left, you know, let's either fix my aim, or subconsciously fix something in my swing. And then it just, it's like a train wreck down the road. Like, it'll just get worse and worse and worse, because then I started thinking golf swing techniques, rather than than just making a swing and, you know, having course management to play. So that's how I think it's kind of just like a, like a wrecking ball effect. You know, it just mentally in the back of my mind, I'll start thinking in the wrong direction. |
| Self pressure | Um, I all the pressure is definitely self-inflicted, like I don't have pressure really from my teammates or from my coach or parents. Like it's all just on myself. I set a high expectation and I want to meet it, you know, and I don't feel the pressure of my coach, like you have to post a score. Like he's even told me you don't have to post a score. You just gotta go play every shot, do the best you can see what happens at the end. But for me, I'm like, Oh my gosh, like I gotta play well, I have to play well. You know, so that people you know, think of me as a high level golfer, but then it doesn't go well. And then I'm even more mad at myself. So, yeah, the pressures definitely just what I put on myself. |
| Aesthetic vs functional | And so, you know, instead of just playing the game of golf, I always wanted my swing to look perfect, you know, and I I would rather have it be functional than look pretty, you know what I mean? But I'm like, kind of like mean to myself in my head. |
| Spiraling | Kind of like if like, I don't know, sometimes I'll like think |
in my head, like, come on PARTICIPANT like get get your crap together. This is this is not what we want to do right now. So yeah, I kind of like say stuff like that to myself. When I'm like having a really bad hole, if I'm like, spiraling then. Sometimes Sometimes I can get out of it. Sometimes I can't. And I kind of just have to like, I just tell myself, okay, just get, just get to the next hole, and then get to the one after that. And sometimes, like, I guess, yesterday, yesterday was probably a spiral, the first front nine, I was really struggling. And I really, I really wanted to like just like, not keep playing, but I was like, just just get to the next hole and just hit the next ball. Just keep hitting it. And by the time, you know, you look up, it'll you'll be done with with the round, and you can go home and go to bed and start over and reset. So yeah.

And it's because that perfectionism leaks into my everyday existence. So like I said, every rep is real, every putting stroke is real, every block practice is real every you know, and for me, that is the drive that makes me get up every morning and go do it. Like I run right now a pretty tight schedule, but I'm gonna find a way to get my lift in, I'm gonna find a way to get my practice in, even if that means going out at the hottest part of the day where the index is one time, because, you know, that's what it's gonna require. And that's what I kind of see happening is like, golf isn't a perfect sport, or a perfect game. It's very much imperfect. And that's part of the beauty of it.

<table>
<thead>
<tr>
<th>The Nature of Perfectionism</th>
<th>Pervasive perfectionism</th>
<th>All Emcompassing Perfectionism</th>
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</table>

I think it's, it's both honestly. Mostly bad sometimes. Because, you know, it just drives you crazy. Like, yeah, you want to be so good. But in golf, it's so hard to really, you know, to be perfect in the game. It's difficult, because it doesn't always go your way. And so it is very difficult. But I think it's a good thing as in, you know, it allows you
to drive and you want to be good, you want to be perfect. So you have that work and work. But now you also have to understand that stuff isn't gonna go your way. And that's just how it is.
Appendix G
Record of Changes Made During Critical Friendship

Subcategory name change: ‘Management of feeling was changed’ to ‘Emotional Regulation.’

‘Staying Positive’ was moved to the ‘Emotional Regulation’ subcategory.

The order of subcategories within ‘Affect’ were adjusted to ‘negative affect’, ‘positive experiences’, and ‘emotional regulation.’

The order of subcategories within ‘Cognitive’ were adjusted to ‘reflection’, ‘preflection’, and ‘goals and standards.’

‘Level headedness’ theme was renamed to ‘even-tempered.’

“Performance standards” subcategory was renamed to ‘goals and standards,’

Theme ‘pragmatism’ was adjusted to ‘pragmatic approach.’

Theme ‘next hole approach’ was renamed to ‘focus on the next hole.’
CURRICULUM VITAE

Daniel J. M. Fleming
February 2023

BACKGROUND

Contact Information

Daniel J. M. Fleming, MSc
Ph.D. Student
Utah State University
2905 Old Main Hill
Logan, Utah 84322
Phone: 435-232-7535
Email: dan.fleming@usu.edu
Twitter: @danjmfleming

Educational History
<table>
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<th>Year Range</th>
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<tr>
<td>2019-Present</td>
<td>Doctor of Philosophy</td>
<td>Utah State University, Human Development and Family Studies</td>
<td>Travis E. Dorsch, Ph.D.</td>
<td>Post Baccalaureate Certificate in Quantitative Research Methods</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Completed a specified program of advanced quantitative methods</td>
</tr>
<tr>
<td>2018-2019</td>
<td>Master of Science (December 2019)</td>
<td>York St. John University, Research in Sport</td>
<td>Sarah Mallinson-Howard, Ph.D.</td>
<td></td>
</tr>
<tr>
<td>2015-2018</td>
<td>Bachelor of Science (November 2018)</td>
<td>York St. John University, Sport Science &amp; Injury Rehabilitation, First Class (Honors)</td>
<td>Sarah Mallinson-Howard, Ph.D.</td>
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**Research Appointments**

2020-2021  
Graduate Research Assistant  
Human Development and Family Studies  
Utah State University

2016-2017  
Undergraduate Research Assistant  
Motivation, Perfectionism and Well-Being Research Group  
York St. John University, UK

**Professional Memberships**

2022-Present  
British Association of Sport and Exercise Scientists (BASES)

2020-Present  
North American Society for the Psychology of Sport and Physical Activity (NASPSPA)

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**Research**

**Manuscripts Published**

**Fleming, D. J. M.,** Madigan, D., Mallinson-Howard, S., Hill, A. P. (2023). The 2 x 2 model of pressure to be perfect and the development of perfectionism in youth sport. *Psychology of Sport and Exercise, 66,*  
https://doi.org/10.1016/j.psychsport.2023.102391

https://doi.org/10.1016/j.psychsport.2022.102348

https://doi.org/10.1080/1612197X.2022.2058584


**Manuscripts Under Review**

Honda, A., Liu, Y., Fauth, E. B., **Fleming, D. J. M.**, Zarat, S. H., Maeta, S., Tsukigi, T., Honda, S (under review) Predictive factors of negative spillover from caregiving to employment among Japanese family caregivers with older relatives in a care facility, *Journal of Nursing Scholarship*


**Peer-Reviewed Symposia**


**Peer-Reviewed Presentations**


Fleming, D. J. M., Madigan, D., Mallinson-Howard, S. (2020, June). The 2 x2 model of pressure to be perfect and the development of perfectionism in youth sport, North American Society for the Psychology of Sport and Physical Activity Annual Conference, Vancouver, British Columbia (Conference moved to online format).


Other Scholarly Publications

Technical Reports

Dorsch, T. E., Adams, K. V., Fleming, D. J. M., Alexander, K. N. (2023) Youth sport landscape analysis, Daniels Fund


Research Assistantships

Spring 2023  Research assistant with Mimi Recker working on a National Science Foundation (NSF) funded project examining STEM education in school. Data cleaning, analysis, and visualization.
Summer 2022  Research Assistant with Travis Dorsch working on a funded project aimed to examine the who, what, why, where, and when, individuals participate in youth sport in a 4-state area. Data collection, analysis, and writing.

Fall 2021  Research Assistant with Travis Dorsch working on a NASPSPA Student Grant proposal.

Summer 2021  Research Assistant with Travis Dorsch and Jordan Blazo in Human Development and Family Studies. Duties involved data analysis on a private research contract examining trends in youth sport during the COVID-19 pandemic.

Spring 2021  Research Assistant with Elizabeth Fauth and Yin Liu in Human Development and Family Studies, specific focus on gerontology and aging. Main responsibilities include project conceptualization, data analysis, tables, writing, review.

Fall 2020  Research Assistant with Elizabeth Fauth and Yin Liu in Human Development and Family Studies, specific focus on gerontology and aging. Main responsibilities include project conceptualization, data analysis, tables, writing, review.

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**GRANTS AND RESEARCH CONTRACTS**

**Awarded**


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**TEACHING**

**Instructor of Record**

HDFS 1500 Human Development across the Lifespan  Fall 21 (187 Students), Spring 22 (92 Students)  Fall 22 (110 Students)
KIN 4000/PSY 4000 Mental Aspects of Sports Performance  Fall 22 (62 Students)  Spring 23 (60 Students)

**Graduate Teaching Assistant**

**Classroom Instruction**

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<td>HDFS 3570 Youth &amp; Adolescence</td>
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<td>HDFS 2660 Parenting and Child Guidance</td>
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<td>HDFS 1500 Human Development Across the Lifespan</td>
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**Online Instruction**

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<td>Fall 2020</td>
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<td>HDFS 3570 Youth &amp; Adolescence</td>
<td>Summer 2020</td>
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<td>HDFS 4220 Family Crisis and Intervention</td>
<td>Fall 2019</td>
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**Guest Lectures**

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<th>Term</th>
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| Spring 2022 | HDFS 1500 Human Development Across the Lifespan  
*Physical and Cognitive development in Infancy*
| Fall 2021 | HDFS 1500 Human Development Across the Lifespan  
*The Development of Perfectionism – The Role of Social Agents*
| Fall 2021 | KIN 5200 Human Motivation in Physical Activity Contexts  
*Perfectionism in Sport – Origins, History, and Current Concepts*
| Fall 2020 | KIN 6050 Psychological Aspects of Sports Performance  
*Perfectionism in Sport - Origins, History, and Current Concepts*
| Fall 2020 | HDFS 1500 Human Development Across the Lifespan  
*Physical Development in Adolescence*
| Fall 2020 | HDFS 1500 Human Development Across the Lifespan  
*Socioemotional Development in Adolescence*
| Spring 2020 | HDFS 2660 Parenting and Child Guidance  
*Parenting Styles and Family Theories*
| Fall 2019 | HDFS 1500 Human Development Across the Lifespan  
*Physical Development in Early Adulthood*

**Invited Professional Lectures**

<table>
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<th>Term</th>
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| Spring 2021 | York St. John University Alumni Webinar Series  
*Alumni Journeys: Creativity, Careers, and Community*
Spring 2021  Utah State Track & Field Team – Workshop III  
*Perfectionism in Sport*

Spring 2021  Utah State Track & Field Team – Workshop II  
*Precompetitive Anxiety – What it is, and how to deal with it*

Fall 2021  Utah State Track & Field Team – Workshop I  
*Motivation & Achievement Goal Theory*

**Professional Development Workshops Attended**

Spring 2022  North American Society for the Psychology of Sport and Physical Activity - Pre-Conference Workshop: Teaching Network – “Making your teaching and mentoring more inclusive: Equity and diversity considerations and suggestions”

Spring 2022  Utah State University Human Development and Family Studies Graduate Instructors Forum, Bi-Weekly Seminars

August 2021  Attended the Utah State University ‘Empowering Teaching Excellence’ Virtual Conference

Fall 2021  Utah State University Human Development and Family Studies Graduate Instructors Forum, Bi-Weekly Seminars

Spring 2021  Utah State University Human Development and Family Studies Graduate Instructors Forum, Bi-Weekly Seminars

Fall 2020  Utah State University Human Development and Family Studies Graduate Instructors Forum, Bi-Weekly Seminars

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**MENTORING**

**Mentoring**

Fall 2021 – Summer 2022  Lead the Utah State Families in Sport Lab Undergraduate Research Assistant Recruitment, Development, and Assignments

**Undergraduate Research Assistants and Student Outputs**

Daniel Barclay, Kinesiology and Health Sciences (2023 – Present)  
- Undergraduate Teaching Fellow – KIN 4000

Andy Stubbs, Human Development & Family Studies (2022 – Present)  
- CITI Training  
- Data collection – Dissertation - Quantitative
Claire McCallum, Human Development & Family Studies (2022 – Present)
- CITI Training
- Data collection – Dissertation - Qualitative

Dakota Cobler, Human Development & Family Studies (2022 – Present)
- CITI Training
- Data collection – Dissertation - Quantitative

John Coleman, Human Development & Family Studies (2021-Present)
- CITI Training
- Data collection – Dissertation - Quantitative

Justin Hodges, Human Development & Family Studies (2021-Present)
- CITI Training

Helen Sullivan, Human Development & Family Studies (2019-Present)
- CITI Training
- Sullivan, H., Fleming, D. J. M. (2021, April) A Citation Network Analysis on Perfectionism in Sport, Utah State University Student Research Symposium, Poster Presentation, Logan, Utah
- Undergraduate Teaching Assistant – Fall 2021 HDFS 1500
- Data collection - Dissertation – Quantitative

SERVICE

Elected Positions
May 2021-May 2022
- Utah State University International Student Council Vice President
- Recreation, Technology, and Service

Campus Service
April 2021
- Utah State University Student Research Symposium Presentation
- Judge

Peer Reviewer
Summer 2022
- BMC Health Services Research
Fall 2021
- Psychology of Sport and Exercise
Summer 2021
- Journal of Sport Science and Medicine
Fall 2020
- Journal of Personality and Individual Differences

Advising and Consulting
January 2021-Present
- Statistical & Academic Consultant - Spotivity
August 2021-Present
- Utah State Track and Field Volunteer Assistant Coach

Updated: Jan 2023
March 2021  Utah State University Human Development and Family Studies Board of Agents Review

April 2018 - April 2020 United Kingdom Anti-Doping Agency Accredited Advisor

**Professional Service**

Summer 2022 Assistant Volunteer to Executive Director – NASPSPA

**Research Translation**

**Families in Sport Publication Infographics**

Dorsch et al. (2016) Parent Involvement in Young Adults’ Intercollegiate Athletic Careers: Developmental Considerations and Applied Recommendations

Dorsch et al., (2021) Developing an organizational mission statement in youth sport: Utilizing mad libs as a novel, shared leadership approach

Dorsch et al. (2018) Parent Education in Youth Sport: A Community Case Study of Parents, Coaches, and Administrators

Osai et al. (2020) "To Be, or Not to Be, That is the Question": Modeling and Differentiation Among Siblings Participating in Organized Youth Sport


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**AWARDS AND RECOGNITION**

January 2023 Utah State University HDFS Graduate Teacher of the Year

April 2022 CEHS HDFS William H. and Stella Young Griffiths Graduate Scholarship

January 2022 CEHS Graduate Student Research Award

July 2021 Academic All Mountain West

July 2021 Mountain West Scholar-Athlete

April 2021 Utah State International Student Council Executive Council Scholarship

April 2021 Utah State Male Student-Athlete of the Month

Updated: Jan 2023
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<td>April 2021</td>
<td>Utah State Athletics Whiteside Scholar (awarded to USU student athletes with a 3.2 GPA or higher)</td>
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<td>CEHS HDFS Harriet Ann Richards Rasmussen Scholarship</td>
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<td>July 2020</td>
<td>Academic All Mountain West</td>
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<td>July 2021</td>
<td>Mountain West Scholar-Athlete</td>
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<tr>
<td>April 2020</td>
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<td>CEHS HDFS William H. and Stella Young Griffiths Scholarship</td>
</tr>
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<td>August 2018</td>
<td>Nestle Scholarship for MSc by Research in Sport</td>
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