University of Alberta

Developmental Correlates of Perfectionism in Sport: Task Value, Perceived

Competence and Athletic Identity

by

Allison Rasquinha

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Arts

Faculty of Physical Education and Recreation

©Allison Rasquinha
Fall, 2013
Edmonton, Alberta

Abstract

This study assessed the degree to which retrospective levels of task value in sport, perceived competence in sport, and athletic identity during early adolescence were associated with perfectionism levels in sport among a sample of 377 undergraduates (M age = 20.89 years). The study also assessed the extent to which perfectionism varied as a function of the level of competitive sport in which people participated. Correlation and regression analyses revealed that retrospective levels of task value, perceived competence, and athletic identity during early adolescence were positively associated with sport-perfectionism levels later in life. Results from a MANOVA indicated that sport-perfectionism levels were generally higher among people who participated in higher (as opposed to lower) levels of competitive sport. On the basis of these results, it is suggested that task value, perceived competence, athletic identity, and competitive sport level may all play a role in the development of perfectionism in sport.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

Perfectionism is a multidimensional achievement-oriented personality

disposition (Flett & Hewitt, 2002). At its most basic level, perfectionism can be

defined as "the striving for flawlessness" (Flett & Hewitt, 2002, p. 5), and for

some people reflects a core characteristic of their identity. Perfectionism research

has grown rapidly over the past 30 years (Bieling, Israeli, Smith, & Antony, 2003;

Flett & Hewitt, 2005; Gotwals, Stoeber, Dunn, & Stoll, 2012) and the construct

has been linked with a host of cognitive, affective, and behavioural correlates in a

variety of achievement settings. For example, heightened perfectionist tendencies

have been associated with heightened intrinsic motivation and effort among

musicians in the performing arts (Stoeber & Eismann, 2007), heightened

perceived competence and contingent self-worth among academically talented

youth in school (McArdle, 2010), and improved race performance among

competitive triatheletes in sport (Stoeber, Uphill, & Hotham, 2009).

Given the prevalent role that perfectionism plays in different domains of

peoples' lives (see Rheaume, Ladouceur & Freeston, 2000; Stoeber & Stoeber,

2009), perfectionism is frequently conceptualized and measured as a domain-

specific construct (see Stoeber, 2011). Domain-specific approaches to studying

perfectionism have shown that people often develop different levels of

perfectionism in different achievement settings. For example, Mitchelson and

Burns (1998) found that a sample of working mothers reported higher levels of

perfectionism at work than at home, Dunn, Gotwals, and Causgrove Dunn (2005)

found that a sample of intercollegiate student-athletes reported higher levels of perfectionism in sport than in school, and McArdle (2010) found that a sample of academically talented youth reported higher levels of perfectionism in school than in sport.

Despite the growing body of evidence supporting the conceptualization of perfectionism as a domain-specific construct (also see Dunn, Causgrove Dunn, & McDonald, 2012; Dunn, Craft, Causgrove Dunn, & Gotwals, 2011; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010; Stoeber & Stoeber, 2009), very little is known about antecedent factors that may influence the development of perfectionism in different achievement domains (Dunn et al., 2012). Consequently, questions surrounding the reasons why some people develop heightened perfectionist tendencies in sport, why others develop heightened perfectionist tendencies in school, and why others develop heightened perfectionist tendencies at work remain largely unanswered (cf. Stoeber & Stoeber, 2009). Understanding why people develop heightened perfectionist tendencies in different achievement domains is an important research endeavour because such knowledge may help practitioners create interventions that could enhance the development of healthy/adaptive aspects of perfectionism or mitigate the development of unhealthy/maladaptive aspects of perfectionism (see Gotwals et al., 2012; Hibbard & Walton, 2012).

Perfectionism theorists have long recognized the influential role that parents can have upon the development of perfectionist tendencies in children (see Flett, Hewitt, Oliver, & MacDonald, 2002; Hamachek, 1978; Hollender,

1965; Sapieja, Dunn, & Holt, 2011; Speirs Neumeister, 2004). However, much less research has been devoted to the study of individual-difference variables (i.e., personal factors) that may influence the development of perfectionism (Kobori, Yamagata, & Kijima, 2005). This seems somewhat surprising given that over a decade has passed since Flett et al. (2002) proposed their developmental model of perfectionism in which people were "not seen as being entirely reactive" (p. 110) to environmental factors with respect to the development of their perfectionist tendencies. In other words, according to Flett et al.'s transactional model, the development of perfectionist tendencies is not only influenced by environmental factors (e.g., parenting, culture, etc.) but is also influenced by person factors (e.g., temperament, ability/competence, etc.).

Given ongoing concerns expressed by researchers that "little seems to be known about how perfectionism develops" (Herman, Trotter, Reinke, & Ialongo, 2011, p.322)—particularly as it relates to person factors (Kobori et al., 2005)—the overarching purpose of this thesis was to consider three person characteristics (namely, perceived task value, perceived competence, and athletic identity), and determine if these characteristics may be associated with the development of perfectionist tendencies in the achievement domain of sport. Sport was selected as the achievement domain of interest in this study because research has repeatedly shown that perfectionism plays an important role in the cognitive, affective and behavioural functioning of athletes in sport settings (for reviews see Gotwals et al., 2012; Hall, 2006; Stoeber, 2011).

Perfectionism

As noted previously, perfectionism is a multidimensional personality disposition that reflects the tendency of individuals to set and strive for the flawless attainment of high performance standards (Stoeber, 2011). Although many facets of perfectionism have been identified in the literature (for overviews see Dunn, Causgrove Dunn, & Syrotuik, 2002: Enns & Cox, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Gotwals & Dunn, 2009; Hewitt & Flett, 1991; Stoeber & Otto, 2006)—and theorists often disagree over the centrality/validity of some of these facets with respect to the conceptualization of perfectionism (see Stoeber & Otto, 2006)—most facets of perfectionism can be classified into one of two overarching (i.e., hierarchical) dimensions: namely, *perfectionistic strivings* and *perfectionistic concerns* (Stoeber & Otto, 2006).

Perfectionistic strivings reflect the extent to which individuals set high performance standards, strive for excellence, and are organized and planned in their approach to achieving these high standards (Hill et al., 2004; Stoeber & Otto, 2006). In contrast, perfectionistic concerns reflect the extent to which individuals become concerned about failing to achieve the high performance standards that have been set by themselves or by others (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Stoeber & Otto, 2006).

Facets of perfectionism that are typically classified as reflecting perfectionistic strivings include the *personal standards* (PS) and *organization* (Org) subscales of Frost et al.'s (1990) Multidimensional Perfectionism Scale (Frost-MPS) and Gotwals and Dunn's (2009) Sport Multidimensional Perfectionism Scale-2 (Sport-MPS-2: also see Dunn et al., 2006), the *self-oriented perfectionism* (SOP) subscale of Hewitt and Flett's (1991) Multidimensional

Perfectionism Scale (Hewitt-MPS), the *high standards* subscale of Slaney, Rice,

Mobley, Trippi, and Ashby's (2001) revised Almost Perfect Scale (APS-R), and

the *striving for perfection* (SP) subscale of Stoeber, Otto, and Stoll's (2004)

Multidimensional Inventory of Perfectionism in Sport (MIPS). Research has

shown that heightened perfectionistic strivings are often associated with healthy

or adaptive functioning (Stoeber & Otto, 2006; Stoeber & Rambow, 2007),

particularly when overlap with perfectionistic concerns is controlled (see Gotwals

et al., 2012; Stoeber & Otto, 2006). For example, Stoeber and Rambow found

significant positive correlations between striving for perfection and hope of

success, motivations for school, and high grades among a sample of 121

adolescent students (*M* age = 14.6). Bieling et al. (2003) reported that

undergraduate psychology students with high perfectionistic strivings (combined

with low perfectionistic concerns) tended to have heightened positive affect prior

to exams. In another study that examined the role of perfectionistic strivings in an

academic setting, Stoeber, Hutchfield, and Wood (2008) found that striving for

perfection among a sample of undergraduate students was positively correlated

with self-efficacious thoughts prior to exams.

Facets of perfectionism that are typically categorized as reflecting

perfectionistic concerns include the *concern over mistakes* (COM) and *doubts*

about actions (DAA) subscales of the Frost-MPS and Sport-MPS-2, the *socially*

prescribed perfectionism (SPP) subscale of the Hewitt-MPS, the *discrepancy*

subscale of the APS-R, and the *negative reactions to imperfection* (NRI) subscale

of the MIPS. Research typically shows that heightened perfectionistic concerns

are associated with unhealthy/maladaptive functioning (Stoeber & Otto, 2006). For example, Stoeber and Rambow (2007) found significant positive correlations between perfectionistic concerns and fear of failure, somatic complaints, and depressive symptoms among adolescent students. Bieling et al. (2003) reported that high perfectionistic concerns were positively associated with negative affect prior to exams among undergraduate psychology students, and Stoeber et al. (2008) found that self-criticism—a facet of perfectionistic concerns—was negatively correlated with self-efficacy prior to test performance among undergraduate students.

Perfectionistic strivings and perfectionistic concerns have been shown to play an important role in the adaptive/healthy and maladaptive/unhealthy functioning of athletes. For example, heightened perfectionistic strivings (when combined with low perfectionistic concerns) have been associated with positive attitudinal body image among competitive female figure skaters (Dunn et al., 2011), gold medal success among U.S. Olympic athletes (Gould, Dieffenbach, & Moffett, 2002), and reduced feelings of burnout among intercollegiate varsity athletes (Gotwals, 2011). In contrast, heightened perfectionistic concerns have been associated with a wide variety of negative/dysfunctional/maladaptive correlates in sport including heightened anger among male youth hockey players (Vallance, Dunn, & Causgrove Dunn, 2006), heightened state anxiety among youth cross country runners (Hall, Kerr, & Matthews, 1998), and decreased self-esteem among intercollegiate athletes (Gotwals, Dunn, & Wayment, 2003). In light of this evidence, and following an extensive review of perfectionism

research in sport, Gotwals et al. (2012) concluded that measures of both perfectionistic strivings and perfectionistic concerns should be considered by researchers when attempting to discern the adaptive or maladaptive roles that heightened perfectionist tendencies can play in the domain of sport. Given the central role that both perfectionistic strivings and perfectionistic concerns appear to play in sport, the importance of understanding factors that potentially influence the development of these perfectionism dimensions among athletes becomes apparent.

Task Value and Perceived Competence

Subjective task value reflects the degree to which an individual values success in a specific task or specific achievement domain, whereas perceived competence reflects the extent to which a person feels that he/she has the ability to successfully accomplish a given task (Wigfield, 1994). According to Eccles et al.'s (1983) expectancy-value model of achievement behaviour (also see Eccles, Wigfield, & Schiefele, 1998), people who place higher value on succeeding in a particular achievement domain, and who have higher perceived competence in that achievement domain, will be more likely to strive for success (and put forth more effort) in that achievement domain (compared to people who have lower perceived competence and who place less value on success in that same domain).

Researchers have speculated that task value and perceived competence may be linked to the development of perfectionism in different achievement domains (see Dunn et al., 2005; McArdle, 2010). For example, following their study of domain-specific perfectionism levels among intercollegiate varsity

athletes, Dunn et al. (2005) speculated that varsity athletes may develop higher

perfectionist tendencies in sport (than school) because they place more value upon

success in sport (than school) and/or they feel more competent in their sport

ability. Unfortunately, Dunn et al. (2005) did not measure subjective task value or

perceived competence in their study, therefore, validity evidence supporting their

conclusions was lacking. However, a more recent study by McArdle (2010) did

provide some support for the validity of Dunn et al.'s (2005) speculative

hypotheses.

McArdle (2010) examined relationships between domain-specific task

value, domain-specific perceived competence, and domain-specific perfectionism

among a sample of 187 academically talented youth (*M* age = 14.68 years).

McArdle reported that (a) perceived competence in sport was positively correlated

with perfectionism in sport ($r = .47, p < .01$) but was uncorrelated with

perfectionism in school, (b) perceived competence in school was positively

correlated with perfectionism in school ($r = .17, p < .05$) but was uncorrelated

with perfectionism in sport, (c) the value placed upon success in sport was

positively correlated with perfectionism in sport ($r = .60, p < .01$) but was

uncorrelated with perfectionism in school, and (d) the value placed upon success

in school was positively correlated with perfectionism in school ($r = .25, p < .01$)

but was uncorrelated with perfectionism in sport. This pattern of results (i.e.,

positive correlations between domain-specific task value, perceived competence,

and perfectionism within the corresponding domain) indicates that relationships

between task value, perceived competence, and perfectionism are tied to the

domain-specific nature of these constructs.

Building upon the results of McArdle's (2010) study, Dunn et al. (2012) further examined links between perceived importance (i.e., task value), perceived competence, and perfectionism in the domains of sport and school among a sample of 255 intercollegiate varsity athletes. Following a series of regression analyses, Dunn et al. (2012) found that domain-specific task value (i.e., perceived importance) and domain-specific perceived competence were significant (positive) predictors of domain-specific self-oriented perfectionism (where self-oriented perfectionism represents a facet of perfectionistic strivings and reflects the degree to which individuals set and pursue extremely high standards of performance: Hewitt & Flett, 1991). More specifically, Dunn et al. noted that as the degree to which varsity athletes placed more value on success in sport (over school), and as the degree to which varsity athletes felt more competent in sport (over school), their levels of self-oriented perfectionism in sport (over school) also increased. Collectively, the results of the studies by McArdle (2010) and Dunn et al. (2012) indicate that domain-specific levels of perceived task value (i.e., perceived importance) and perceived competence may be linked to the development of domain-specific perfectionism.

The results of the aforementioned studies by McArdle (2010) and Dunn et al. (2012) are consistent with previous theoretical views that have been put forward in the literature with respect to how certain person factors may influence the development of domain-specific perfectionism. For example, Flett et al. (2002) argued that the "tendency to be a self-oriented perfectionist would be

especially irrational if a person has…no realistic possibility of attaining [perfection in a given achievement domain]" and that "perfectionists will be most likely to strive for personal goals of perfectionism in…[achievement domains] that involve feelings of competence and foster the sense that perfection is possible" (p. 111). With respect to the value that people place upon success in certain domains, Shafran, Cooper, and Fairburn (2002) suggested that people will only develop heightened perfectionist tendencies (i.e., high performance standards) in achievement domains "that have personal significance but not in domains of little or no personal relevance" (p. 779).

Although the recent studies by McArdle (2010) and Dunn et al. (2012) highlight important relationships between domain-specific perceived task value, perceived competence, and perfectionism in sport and school, these studies contain a number of limitations that restrict the ability of researchers to generate inferences about the roles that these person factors may play in the development of multidimensional domain-specific perfectionism. For example, both studies asked participants to report current levels of domain-specific task value, perceived competence, and perfectionism. Therefore it is impossible to determine if these relationships may have existed at earlier stages in the participants' lives. Developmental inferences would be facilitated if measures of these constructs were taken at different periods in the respondents' lives. McArdle also conceptualized perfectionism as a unidimensional construct; this approach could mask relationships that might exist between perceived task value, perceived competence, and different facets/dimensions of perfectionism. Finally, the varsity

athletes in Dunn et al.'s (2012) study were asked to rate their levels of perceived competence and perceived importance in sport and school in a comparative manner (exemplar items include, "*I have more ability as an athlete than I do as a student in school*" and "*It is more important for me to win games with my team than it is to receive high grades in my classes*"). Consequently, absolute levels of perceived competence and perceived importance in sport and school were not obtained by Dunn et al. (2012) which limits the ability of researchers to consider relationships between perceived competence, perceived importance, and perfectionism in sport that are independent of perceived competence, perceived importance, and perfectionism levels in school (and vice versa).

Athletic Identity

Although research indicates a clear link between domain-specific perceived task value, perceived competence, and perfectionism in sport, another person factor that might be associated with the development of perfectionism in sport is athletic identity. Athletic identity is defined as the degree to which a person identifies with being an athlete in an athletic role (Brewer, Van Raalte, & Linder, 1993). As athletic identity increases, so too does the extent to which people define their sense of self on the basis of athletic/sporting prowess and accomplishment (Callero, 1985). Athletic identity reflects the value or importance that people place upon being successful as an athlete or upon being publicly recognized 'as an athlete' (in order to build or validate their self-concept). Stated differently, athletic identity describes a person's "self-understanding, self-objectification, or integration of information about the self" (Anderson, 2004, p.

40) as an athlete. Athletic identity may therefore reflect a core characteristic of a person's identity in the same way that being perfect or being a perfectionist may represent a core aspect of a person's identity (see Flett & Hewitt, 2002, p.12).

Heightened levels of athletic identity have been shown to play an important role in the cognitive, affective, and behavioural functioning of athletes. For example, Murphy, Petitpas, and Brewer (1996) examined the role of athletic identity among a sample of 124 intercollegiate student-athletes. The researchers found that athletic identity was inversely related to career maturity, such that a stronger athletic identity kept student-athletes in sport longer and delayed their entry into the workplace compared to those with weaker athletic identity.

Visek, Watson, Hurst, Maxwell, and Harris (2010) reported that athletic identity was positively correlated with anger ($r = .28$) and aggressiveness ($r = .20$) in samples of male American ($n = 358$) and Hong Kong ($n = 192$) intercollegiate athletes. As personally meaningful goals in sport were blocked (where the accomplishment of these goals was important to enhancing one's self-concept), athletes with heightened athletic identity tended to become more angry and aggressive. Gapin and Petruzzello (2011) reported that athletic identity was positively correlated with disordered eating in a sample of adult runners ($N = 179$, M age = 36 years). As athletic identity increased, runners tended to report a higher incidence of attitudes and behaviours that were symptomatic of disordered eating, presumably because people with higher athletic identity had an "ideal" (i.e., lean) body image that they believed was expected of runners which would reinforce or endorse their own identity of "being a runner."

It is clear from the aforementioned research that endorsing, strengthening, or confirming one's athletic identity is important to the individual with high athletic identity, and such confirmation is largely contingent upon the person's ability to successfully demonstrate (to oneself or to others) that he/she possesses the attributes, skills, and characteristics that equate with 'being an athlete.' It may be argued that the process underlying this contingent form of identity validation in sport is very similar to the process by which many perfectionists evaluate their own self-worth and endorse their own perfectionistic identities (via the achievement of flawless performances and high performance standards: Flett et al., 2002; Greenspon, 2008).

Perfectionism researchers and theorists have long recognized that conditional (or contingent) self-worth is a defining characteristic of many perfectionists, whereby the self-worth or identity of the perfectionist is dependent upon the successful accomplishment of high performance standards (Di Bartolo, Frost, Chang, LaSota, & Grills, 2004) or upon receiving social approval (or avoiding disapproval) from significant others for the accomplishment of high performance standards (see Flett et al., 2002). Interestingly, research indicates that this association between contingent self-worth and perfectionism appears to be influenced by domain-specific aspects of the constructs.

In her study of domain-specific perfectionism among academically talented youth, McArdle (2010) found that contingent self-worth in sport was positively correlated with perfectionism in sport ($r = .60$) but was uncorrelated with perfectionism in school, and contingent self-worth in school was positively

correlated with perfectionism in school ($r = .54$) but was uncorrelated with perfectionism in sport. In other words, McArdle's findings indicate that as a person's levels of contingent self-worth in a particular achievement domain go up, there is a tendency for the person to have heightened perfectionist tendencies in that same achievement domain.

Although contingent self-worth in sport (as measured by McArdle, 2010) and athletic identity represent distinct constructs, there appear to be conceptual similarities in the underlying meaning of some items that are designed to measure the two constructs. For example, two items that were used by McArdle to measure contingent self-worth in sport were, "*My opinion about myself isn't tied to how well I do in sports* [reverse score]" and "*My self-worth is influenced by my performance in sports.*" These items appear to have very similar conceptual meanings to two items (i.e., "*I need to participate in sport to feel good about myself*" and "*I feel bad about myself when I do poorly in sport*") contained within Brewer, Van Raalte, and Linder's (1993) Athletic Identity Measurement Scale (AIMS).[1] Given the conceptual similarities that appear to exist among items measuring contingent self-worth in sport and athletic identity, and given the established link between domain-specific contingent self-worth and perfectionism (see McArdle, 2010), it seems reasonable to speculate that increases in athletic identity may be associated with increases in perfectionism in sport.

---

[1] Athletic identity is most commonly measured by the AIMS (Brewer et al., 1993) or the abbreviated version of this scale (see Brewer & Cornelius, 2001). The AIMS is a 10-item self-report scale that is used to assess the strength and exclusivity of a person's identity within the athletic role.

To date, only one study (i.e., Gapin & Petruzzello, 2011) has examined the link between athletic identity and perfectionism in sport. Gapin and Petruzzello examined athletic identity and perfectionism among a sample of 179 adult runners (*M* age = 35.88 years; *M* running distance = 32.6 miles per week). Athletic identity was measured by the AIMS (Brewer et al., 1993) and perfectionism was measured by the perfectionism subscale contained within Garner, Olmstead, and Polivy's (1983) Eating Disorder Inventory (EDI). Gapin and Petruzzello reported a significant positive correlation ($r = .24$, $p < .01$) between the two variables indicating that increased levels of athletic identity were associated with increased levels of perfectionism.

Although Gapin and Petruzzello's (2011) study provides initial evidence supporting a link between athletic identity and perfectionism, it is important to note that the perfectionism subscale of the EDI measures perfectionism as a unidimensional construct. As such, it fails to differentiate between perfectionistic strivings and perfectionistic concerns. Moreover, the EDI conceptualizes perfectionism as a global/generic personality disposition and thereby fails to tap into domain-specific aspects of the construct. Given that a greater understanding of perfectionism (and its correlates) is most likely to be obtained when perfectionism is conceptualized and measured as a multidimensional domain-specific construct (see Dunn et al., 2011, 2012; Gotwals et al., 2010; Stoeber, 2011; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007), this study sought to further explore the relationships between athletic identity and different facets of domain-specific perfectionism in sport.

Competitive Sport Involvement

In their proposed developmental model of perfectionism, Flett et al.
(2002) identified culture, peers, teachers, and occupation as environmental factors
that could potentially create pressures on people to be perfect. Flett et al.
suggested that if these environmental pressures to be perfect are brought to bear,
then people who are exposed to such pressures may become more likely to
develop heightened perfectionist tendencies within those environments. Although
Flett et al. did not specifically identify competitive sport within their model,
pressures to be perfect (or to attain high performance standards) are often brought
to bear upon athletes by coaches and parents (Dunn et al., 2002). These pressures
can become magnified at higher (i.e., more elite) levels of competitive sport in
comparison to lower levels of competitive sport (Anshel, 2003). In light of Flett et
al.'s concern that, "virtually no research has been conducted on the role of
environmental contexts in promoting [the development of] perfectionism" (p.
113)—a concern that is still relevant today—a secondary purpose of this research
was to investigate the possible link between the level of competitive sport in
which people participate and their perfectionist tendencies in sport.

Initial evidence indicating that competition level may play a role in the
development of perfectionism in sport was obtained in a study by Anshel,
Weatherby, Kang, and Watson (2009). Anshel et al. asked 323 undergraduate
students (*M* age = 22.28 years) to identify their highest level of sport-involvement
by selecting one of four response options: community, high school, state/regional,
and college/national level. Students also completed a (unidimensional) domain-

specific measure of perfectionism in sport. Results showed that people who competed at the state/regional or college/national levels of competition had significantly higher levels of perfectionism in sport than people who competed at the high school level or below. Anshel et al. speculated that people who compete at higher levels of competitive sport will likely be more highly skilled, will have a higher need to achieve, will place more importance on the need for a successful outcome, will have higher performance expectations, and will be more likely to fear the consequences of failure in the domain of sport than their less skilled counterparts who participate in lower (i.e., less competitive) levels of sport. Anshel et al. inferred that these physical, cognitive and motivational factors may have contributed to the development of heightened perfectionism among people who were involved in higher levels of competition. Unfortunately, given the unidimensional assessment of perfectionism that was employed by Anshel et al., the degree to which competitive sport level is associated with different dimensions of perfectionism in sport (e.g., perfectionistic strivings and perfectionistic concerns) remains unknown.

A more recent study by Shaunessy, Suldo, and Friedrich (2011) in the achievement domain of education also points to the potential role that environmental conditions may play in the development of perfectionist tendencies. Shaunessy et al. examined differences in perfectionism levels between high school students who were either enrolled in an International Baccalaureate (IB) program or a general education (GE) program (M age = 15.74 years). Academic entrance requirements for the IB program were extremely high, and the

workload and performance standards that were set for the IB students were considered to be more demanding/rigorous than those required for the GE students (see Shaunessy et al., 2011). These heightened workload and performance expectations for IB students can be considered synonymous with the heightened workload and performance expectations that typically exist for athletes who are involved in higher (as opposed to lower) levels of competitive sport (cf. Mallett & Hanrahan, 2004). Shaunessy et al. reported that students in the IB program had, on average, significantly higher perfectionist standards than students in the GE program. Given these results, and considering the aforementioned findings of Anshel et al. (2009) regarding differences in perfectionism levels across different competitive sport levels, it seems reasonable to speculate that people who are involved in higher levels of competitive sport may develop higher levels of domain-specific perfectionism in sport than people who are either involved in lower levels of competitive sport or who are not involved in any form of competitive sport.

Purposes and Hypotheses

The main purpose of this study was to consider person factors that, according to perfectionism theorists (see Dunn et al., 2012; Flett et al., 2002, Shafran et al., 2002), may be associated with the development of domain-specific perfectionism in sport. More specifically, the main purpose of this study was to determine if three person variables/constructs—namely, perceived task value in sport, perceived competence in sport, and athletic identity—could predict levels of perfectionistic strivings and perfectionistic concerns among undergraduate

students in the domain of sport. The secondary purpose of the study was to determine if the level of competitive sport in which undergraduates participate differentiates between the levels of perfectionistic strivings and perfectionistic concerns that students hold in the domain of competitive sport.

In an attempt to shed some light on the potential developmental links between perceived task value, perceived competence, and athletic identity with perfectionistic strivings and perfectionistic concerns in sport, participants (i.e., university undergraduate students) were asked to (a) reflect back upon their levels of perceived competence in sport, perceived task value in sport, and athletic identity during early adolescence (i.e., when they were in junior high aged approximately 12 – 14 years), and (b) report their current levels of perfectionism in sport while attending university. This retrospective approach may provide an opportunity to determine if perceived task value in sport, perceived competence in sport, and athletic identity during early adolescence are associated with perfectionist tendencies in sport later in life. Flett et al. (2002) suggest that adolescence is a key period in the development of perfectionism, and adolescence also reflects a key period for identity formation (Marcia, 1980).

Although the validity of inferences that are made from data obtained by retrospective measurement techniques will always be open to criticism—with the most notable criticism being aimed at respondents' (in)ability to accurately and reliably recall information from the past (see Cerin, 2003; Feldman Barrett, 1997; Halverson, 1988)—retrospective methodologies have been successfully employed in numerous studies in the field of sport psychology (e.g., Hardy, Hall, & Hardy,

2004; Leite & Sampaio, 2010; Pellizzari, Bertollo, & Robazza, 2011). Moreover, retrospective approaches have been used to good effect with young adults in the general psychology literature to assess environmental conditions during childhood that were believed to have influenced the development of their perfectionist tendencies later in life. For example, a number of studies have asked young adults to reflect upon their interactions with their parents during childhood in an attempt to identify environmental (i.e., family/parental) conditions that were believed to play a role in the development of perfectionist tendencies (e.g., Flett, Hewitt, & Singer, 1995; Kawamura, Frost, & Harmatz, 2002; Speirs Neumeister, 2004). Consequently, a retrospective approach to measuring perceived task value, perceived competence, and athletic identity during early adolescence was deemed appropriate for the purpose of this study.

In accordance with the theoretical expectations that have been outlined previously, four specific hypotheses were generated in this study:

1. Retrospective levels of perceived task value in sport (in early adolescence) will be positively correlated with (or positively predict) current levels of perfectionistic strivings and perfectionistic concerns in sport.

2. Retrospective levels of perceived competence in sport (in early adolescence) will be positively correlated with (or positively predict) current levels of perfectionistic strivings and perfectionistic concerns in sport.

3. Retrospective levels of athletic identity (in early adolescence) will be positively correlated with (or positively predict) current levels of

perfectionistic strivings and perfectionistic concerns in sport.

4. Individuals involved in higher levels of competitive sport will, on average, have higher perfectionistic strivings and perfectionistic concerns in sport than individuals who are involved in lower levels of competitive sport (or who are not involved in any type of competitive sport).

Chapter 2

Method

Participants

Participants were 377 (239 female, 136 male, 2 non-disclosed) undergraduate students (*M* age = 20.89 years, *SD* = 3.37) from a large Canadian university.[2] Participants were enrolled in a variety of faculties across the campus including (but not limited to) faculties of Physical Education (*n* = 221), Education (*n* = 73), Science (*n* = 23), Arts (*n* = 20), and Agriculture (*n* = 19).

All participants reported having had some involvement in organized competitive sport with the exception of eight individuals who reported that their only involvement in competitive sport was "during physical education classes" in either junior high or high school. In terms of current sport involvement, 37 participants indicated that they were not presently involved in any form of sport activity, 144 participants indicated that they were involved in "recreation level sport (i.e., for fun, fitness and/or social reasons)," 70 indicated involvement in "moderately competitive/serious sport," and 126 indicated current involvement in "highly competitive/serious sport." Of those participants who self-classified their involvement in highly competitive sport, 103 (54 female, 49 male) were student-athletes on intercollegiate varsity athletic teams at the university. Other

---

[2] The original sample actually contained 383 participants (242 female, 139 male: two failed to report gender). However, six participants (3 female, 3 male) were removed from the sample prior to any data analyses because they each missed an entire page of the questionnaire package and therefore provided unacceptably large amounts of missing data.

participants who indicated that they were involved in highly competitive sport reported engagement in provincial, national, and/or international level competition from a variety of sports. The ethnic/racial background of the sample consisted of 313 White, 32 Asian, 3 Middle-Eastern, 3 First Nations, 2 Black, 2 Hispanic, and 21 "other." One female participant did not indicate her ethnic background.

Instruments

Participants completed three self-report instruments: (1) a demographic questionnaire, (2) an instrument that assessed retrospective levels of task value in sport, perceived competence in sport, and athletic identity during early adolescence, and (3) an instrument that measured current levels of perfectionism in sport.

Demographic questionnaire. The demographic questionnaire (see Appendix A) asked participants to provide basic demographic information about their age, gender, ethnic background, and sport involvement.

Perceived task value in sport. Perceived task value in sport was assessed by a sport version of a scale that was originally designed by Eccles et al. (1989) to measure the extent to which children and adolescents place value upon math, English, sport, and social activities. The original instrument was designed to measure two different dimensions of perceived task value: namely, interest and importance. Interest reflects an individual's intrinsic motivation for, or enjoyment of, an activity. Importance reflects the degree to which an individual places importance on being good at or involved in an activity (Eccles, Wigfield, Harold,

& Blumenfeld, 1993; Fredricks & Eccles, 2002). Although the instrument was originally designed to measure interest and importance as distinct dimensions of task value, numerous researchers have since combined the items from the two subscales into a single composite measure of perceived task value (e.g., Fredricks & Eccles, 2005; McArdle, 2010; Rodriguez, Wigfield, & Eccles, 2003) because correlations between the two subscales have been very high in previous research (e.g., rs > .82; Fredricks & Eccles, 2002). Internal consistency for the unidimensional version of the scale has been strong (αs ≥ .81; Fredricks & Eccles, 2005). A detailed overview of the psychometric and validity characteristics of the task value scale (including face validity, convergent validity, discriminant validity, and factorial validity) is provided by Eccles et al. (1993).

Items in the current study (n = 7) were designed to assess participants' retrospective accounts of how much they valued sport during early adolescence between the ages of 12-14 years.[3] To assist respondents with recalling their levels of task value in sport during this period of their lives, participants were asked to reflect upon the extent to which they valued sport when they attended junior high school (i.e., grades 7-9). Providing a specific frame of reference (like "junior high") is synonymous with providing a "temporal reference system" (Berney & Blane, 1997, p.1520) that acts as a memory cue to facilitate participant recall (see Côté, Ericsson, & Law, 2005). Consequently, all items were preceded by the

---

[3] Early adolescence is loosely defined as the period in a person's life between the ages of 12-16 years (see Larsen, Vermult, Geenen, van Middendorp, English, Gross et al., 2012; Loukas & Pasch, 2012).

phrase, "While in junior high," and focussed on the domain of sport (e.g., *"While in junior high, compared to other activities you did [e.g., music, volunteer work, academic studies, etc], how important was it for you to be good at sport?"*). Participants were asked to respond to items using a variety of 7-point response scales (e.g., 1 = *not at all important*, 7 = *extremely important*; 1 = *extremely boring*, 7 = *extremely interesting*; 1 = *not at all useful*, 7 = *extremely useful*) such that higher composite scores reflected higher retrospective levels of task value in sport. The seven task-value items, along with their respective response scales, are contained in Appendix B.

Perceived competence in sport. Perceived competence in sport was also measured by a sport version of a scale developed by Eccles et al. (1989) to measure the extent to which children and adolescents feel competent in math, English, sport, and social activities. The original instrument contained five items that were designed to measure perceived competence in each of the four domains. The perceived competence subscale of Eccles et al.'s (1989) instrument has demonstrated adequate internal consistency (αs ≥ .76) in numerous studies (e.g., Fredricks & Eccles, 2002, 2005; McArdle, 2010; Rodriguez et al., 2003). A detailed overview of the psychometric and validity characteristics of the perceived competence scale (including face validity, convergent validity, discriminant validity, and factorial validity) is provided by Eccles et al. (1993).

Using the same approach that was described previously to measure perceived task value in sport, participants were asked to retrospectively consider the degree to which they felt competent in sport during early adolescence. All

items were again preceded with the phrase, "While in junior high," and focussed

on the domain of sport (e.g., *While in junior high, how good at sports were*

you?"). Participants responded to items using a variety of 7-point response scales

(i.e., 1 = *extremely poor*, 7 = *extremely good*; 1 = *extremely poor*, 7 = *extremely*

well; 1 = *one of the worst*, 7 = *one of the best*) such that higher composite scores

reflected higher retrospective levels of perceived competence in sport during early

adolescence. The five items, along with their various response scales, are

contained in Appendix C.

Athletic identity. Athletic identity was measured by items contained

within the abbreviated version of the Athletic Identity Measurement Scale (AIMS:

Brewer & Cornelius, 2001). The AIMS was developed by Brewer et al. (1993) to

assess the strength and exclusivity of athletes' identification with the athletic role

and contained ten items that were intended to measure three different facets of

athletic identity: namely, social identity, exclusivity, and negative affect.

However, following a factor analytic study of the original 10-item scale, Brewer

and Cornelius (2001) recommended that three items be removed and that a single

composite score for the seven remaining items be used for assessing athletic

identity (also see Perrier, Sweet, Strachan & Latimer-Cheung, 2012; Visek, Hurst,

Maxwell, & Watson, 2008; Visek et al., 2010). The unidimensional version of the

abbreviated AIMS has demonstrated adequate levels of internal consistency ($\alpha \geq$

.81) and factorial validity (see Brewer & Cornelius, 2001; Visek et al., 2008,

2010).

The seven items from the abbreviated AIMS were modified in the current study to measure participants' recollections of their athletic identity during early adolescence. To this end, each item was preceded with the phrase, "While in junior high," (e.g., *"While in junior high, I considered myself an athlete"*). Participants responded to all athletic identity items on a 7-point response scale (1 = *strongly disagree*, 7 = *strongly agree*) such that higher composite scores reflected higher levels of athletic identity in early adolescence (see Appendix D).

All items measuring task value ($n = 7$), perceived competence ($n = 5$) and athletic identity ($n = 7$) were incorporated into a single inventory that was labelled, the *Reflections on Past Sport Experiences* scale (RPSE). Items were randomly dispersed throughout the instrument to minimize any potential response-set biases. The following set of written instructions was provided at the start of the RPSE to ensure that participants had a clear frame of reference for the period of early adolescence that they were to consider when responding to the items.

> The following questions and statements ask you to reflect upon your attitudes and experiences in sport while in junior high school (i.e., Grades 7-9; age approximately 12-14 years). When considering each question and statement, please think back to how you felt about yourself and sport during the period of your life when you were attending junior high school. In other words, we want you to think about all of your attitudes and experiences towards sport both in and outside of school during this period of your life.

Although it is acknowledged that an inherent problem of any retrospective study relates to the accuracy of participant recall surrounding their experiences, thoughts, and attitudes at earlier stages of their life (Côté et al., 2005), retrospective methodologies are commonplace in social science research and have been used successfully in numerous quantitative (e.g., Hardy et al., 2004; Houle, Brewer, & Kluck, 2010; Lavallee, Gordon, & Grove, 1997) and qualitative research studies (Côté et al., 2005; Gould, Jackson, & Finch, 1993; Greenleaf, Gould, & Dieffenbach, 2001) in sport psychology. A copy of the RPSE is contained in Appendix E.

Perfectionism. Four subscales from two sport-perfectionism measures (i.e., the Sport Multidimensional Perfectionism Scale [Sport-MPS: Dunn et al., 2002] and the Multidimensional Inventory of Perfectionism in Sport [MIPS: Stoeber et al., 2004]) were used to assess participants' perfectionist tendencies in sport. The four subscales—*Personal Standards* (PS) and *Concern Over Mistakes* (COM) from the Sport-MPS, and *Striving for Perfection* (SP) and *Negative Reactions to Imperfection* (NRI) from the MIPS—were chosen because they are recognized as being key indicators of perfectionistic strivings (i.e., PS and SP) and perfectionistic concerns (i.e., COM and NRI) in sport (see Gotwals et al., 2012; Stoeber & Otto, 2006; Stoeber, Uphill, et al., 2009).

The PS subscale from the Sport-MPS (and its successor, the Sport-MPS-2: Gotwals & Dunn, 2009) contains seven items that measure the extent to which individuals set high standards of personal performance in sport (e.g., *"I have extremely high goals for myself in sport"*). The COM subscale contains eight

items that measure the extent to which individuals become concerned about making mistakes in pursuit of high performance standards in sport (e.g., *"Even if I fail slightly in sport, for me it is as bad as being a complete failure"*). Participants were asked to respond to PS and COM items on a 5-point response scale (1 = *strongly disagree*, 5 = *strongly agree*) with higher composite subscale scores reflecting higher personal standards and higher concern over mistakes in sport (see Appendix F). The two subscales have repeatedly demonstrated acceptable levels of internal reliability ($\alpha \geq .70$). Factorial validity and external validity evidence supporting the use of these subscales as measures of perfectionism in sport has also been established in previous research (see Dunn et al., 2006; Gotwals & Dunn, 2009; Gotwals et al., 2010).

The SP subscale from the MIPS contains five items that measure the extent to which an individual strives for perfect performance in sport (e.g., *"In sport, I strive to be as perfect as possible"*). The NRI subscale contains five items that measure the extent to which individuals react negatively when they fail to reach their performance goals in sport (e.g., *"In sport, I get frustrated if I do not fulfill my high expectations"*). Participants respond to the ten MIPS items on a 5-point response scale (1 = *strongly disagree*, 5 = *strongly agree*) whereby higher composite subscale scores reflect higher striving for perfection and higher negative reactions to imperfection in sport (see Appendix G). Previous studies have demonstrated that the two subscales of the MIPS have adequate internal reliability ($\alpha s \geq .82$: Stoll, Lau, & Stoeber, 2008).

Previous research has demonstrated that the SP and NRI subscales of the MIPS are closely associated with the PS and COM subscales of the Sport-MPS. For example, striving for perfection has been strongly correlated with personal standards ($r = .60, p < .001$), and negative reactions to imperfection has been strongly correlated with concern over mistakes ($r = .68, p < .001$: see Stoeber, Stoll, Salmi, & Tiikkaja, 2009).

The 25 items comprising the PS ($n = 7$), COM ($n = 8$), SP ($n = 5$), and NRI ($n = 5$) subscales were compiled into a single sport-perfectionism inventory. Items were randomly dispersed throughout the instrument to minimize the likelihood of any response set biases. A copy of the inventory is contained in Appendix H.

Procedure

Permission to conduct the study was obtained from the institutional Research Ethics Board. Upon receiving this clearance, varsity coaches and undergraduate course instructors were contacted via e-mail to seek permission to approach students from their respective teams and classes.[4] The e-mail explained the purpose of the study and the time commitments required for the study. A detailed letter explaining the relevant ethical and procedural issues relating to the

---

[4] Coaches from three varsity teams were contacted in an effort to ensure that the sample included a sufficiently large number of participants who were currently involved in "highly competitive/serious" sport. Coaches from the women's and men's swimming, golf, and hockey varsity teams were approached, resulting in the recruitment of 78 varsity student-athletes. An additional 25 varsity student-athletes were recruited from undergraduate classes (from the sports of track and field, wrestling, football, and basketball).

project was also provided to the coaches and course instructors (see Appendices I and J). Once approval to collect data had been provided by the varsity coaches and course instructors, an information letter outlining the key aspects of the study was given to prospective participants (see Appendices K and L). All data collection took place in classrooms either following practices (in the case of most varsity athletes) or at the start of regularly scheduled classes.

The primary researcher (Allison Rasquinha) administered all the questionnaires to participants. It was made clear to participants that their decision to participate (or not) was entirely voluntary and would have no bearing upon their status within their respective varsity teams or upon their academic standing within their respective courses. Participants were informed that their individual responses would remain confidential and at no time would they be asked to provide their name on any of the questionnaires. Prior to completing the test package, coaches and class instructors were required to leave the classrooms where testing took place.

The demographic questionnaire was always administered first, followed by the RPSE. The sport-perfectionism measure was always administered last. On average, participants took 15 minutes to complete the test package.

Chapter 3

Results

Data Analysis

Preliminary data analysis. As noted previously, six participants missed

an entire page of questions when they completed the test package. Given the large

proportion of missing data within their respective data sets, these six individuals

were removed from the sample prior to any data analyses. Of the data obtained

from the remaining 377 participants, only 16 missing data points (from a possible

16,588 responses) on the RPSE and sport-perfectionism measure were provided.

These missing data points were replaced with mean item scores that were

computed by averaging the remaining item scores on the corresponding subscale

associated with the missing data point for each individual (see Graham, Cumsille,

& Elek-Fisk, 2003). No systematic pattern of missing data was identified across

the 15 participants who provided missing data.

Pre-screening gender differences. To enhance the statistical power of the

data analyses, the goal of the researcher was to combine the responses from

female and male participants into a single data set. Prior to combining the data,

however, it was necessary to ensure that no meaningful gender differences existed

across the RPSE and sport-perfectionism subscales. Consequently, a one-way

MANOVA was conducted with gender (female, male) entered as the independent

variable and task value, perceived competence, athletic identity, personal

standards, concern over mistakes, striving for perfection, and negative reactions to

imperfection entered as the dependent variables. Table 1 contains the means,

standard deviations, and internal consistencies for the seven subscales according to gender.

A statistically significant multivariate test statistic was obtained following the MANOVA: Wilks' Λ = .911, F (7, 367) = 36.024, p < .001. Follow-up univariate F-tests (see Table 1) revealed statistically significant gender differences on five of the seven dependent variables (i.e., TV, PC, AI, PS, and SP). Across all five of these variables, male participants reported higher mean scores than female participants. However, the corresponding effect size indices (partial η^2) for four of these five variables (i.e., TV, PC, AI, and SP) were small (where partial η^2 = .01 is considered small [Cohen, 1977]) and only one effect size index (i.e., for PS) approached a value that would be considered moderate in size (where partial η^2 = .06 is considered moderate [Cohen, 1977]). Given that six of the seven effect sizes contained in Table 1 are small, and only one effect size approached a moderate value, data provided by female and male participants were combined into a single data set for all remaining analyses.

Table 1

Means, Standard Deviations, Internal Consistencies (α), and Univariate F-*tests Assessing Gender Difference Across All Subscales*

Subscale	Male (n = 136)			Female (n = 239)			Univariate test statistics		
	M	*SD*	α	*M*	*SD*	α	*F* (1, 373)	*p*	Partial η^2
TV [a]	6.04	0.91	.90	5.72	1.13	.94	8.05	<.01	.021
PC [a]	5.83	1.02	.92	5.49	1.13	.94	8.16	<.01	.021
AI [a]	5.47	1.15	.85	5.04	1.40	.90	9.26	<.005	.024
PS [b]	3.58	0.74	.85	3.17	0.84	.90	22.41	<.001	.057
COM [b]	2.81	0.81	.85	2.70	0.86	.90	1.43	.23	.004
SP [b]	3.51	0.85	.88	3.20	0.91	.90	10.91	<.005	.028
NRI [b]	2.96	0.79	.81	2.90	0.92	.88	0.47	.49	.001

Note. Subscale abbreviations: TV = Task Value; PC = Perceived Competence; AI = Athletic Identity; PS = Personal Standards; COM = Concern Over Mistakes; SP = Striving for Perfection; NRI = Negative Reactions to Imperfection.
[a] Subscales were measured on a 7-point response scale.
[b] Subscales were measured on a 5-point response scale.

Descriptive Statistics

Means, standard deviations, and internal consistencies were calculated across all subscales for the combined-gender data set (see Table 2). Internal consistencies (α) for all subscales were good, ranging from .86 to .93.

Relationships Between Task Value, Perceived Competence, Athletic Identity, and Perfectionism

Bivariate correlations (*r*) were calculated to examine the relationship between task value, perceived competence, athletic identity, and the four facets of perfectionism for the combined-gender data set. As seen in Table 2, task value, perceived competence, and athletic identity were positively correlated with all facets of perfectionism (all *p*s < .005). In other words, the results indicate that higher (retrospective) levels of task value, perceived competence, and athletic identity during early adolescence were generally associated with higher perfectionistic strivings (i.e., personal standards and striving for perfection) and higher perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection) in late adolescence and early adulthood.

Further examination of the correlations between task value, perceived competence, athletic identity and the four facets of perfectionism indicates that the relationship between task value, perceived competence, and athletic identity and the two facets of perfectionistic strivings (i.e., personal standards and striving for perfection) appear to be consistently larger (*r*s ranged from .41 to .58) than the relationships between task value, perceived competence, athletic identity, and the corresponding facets of perfectionistic concerns (i.e., concern over mistakes and

negative reactions to imperfection: rs ranged from .17 to .44). For example, the correlations between task value and the two facets of perfectionistic strivings ($r_{TV.PS}$ = .48; $r_{TV.SP}$ = .41) appear to be larger than the corresponding correlation between task value and the two facets of perfectionistic concerns (i.e. $r_{TV.COM}$ = .18; $r_{TV.NRI}$ = .29). Similar patterns of correlation differences appear to exist between perceived competence and facets of perfectionistic strivings/concerns, and between athletic identity and facets of perfectionistic strivings/concerns.

A statistical procedure described by Glass and Hopkins (1984, pp. 310-311) was employed to determine if the size of the relationships between task value, perceived competence, athletic identity, and the two facets of perfectionistic strivings (i.e., personal standards and striving for perfection) were significantly greater than the corresponding relationships between task value, perceived competence, athletic identity, and the two facets of perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). A total of 12 contrasts were conducted (see Table 3). For every paired contrast, the size of the correlations between task value, perceived competence, and athletic identity with a facet of perfectionistic strivings (i.e., personal standards and striving for perfection) was significantly greater (all ps < .01) than the size of the correlation between task value, perceived competence, and athletic identity with a facet of perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). These results indicate that task value, perceived competence, and athletic identity appear to be more strongly associated with perfectionistic strivings than perfectionistic concerns in sport.

Table 2

Means, Standard Deviations, Internal Consistencies (α), and Bivariate Correlations (r) Among all Subscales for the Combined

*Gender Data Set (*N = 377)

	RPSE subscales						Perfectionism subscales							
	TV		PC		AI		PS		COM		SP		NRI	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Subscale	5.83	(1.06)	5.61	(1.10)	5.20	(1.33)	3.32	(0.82)	2.75	(0.84)	3.31	(0.90)	2.92	(0.87)
TV	.93													
PC	.82**		.93											
AI	.85**		.79**		.89									
PS	.48**		.47**		.58**		.89							
COM	.18**		.17*		.34**		.56**		.89					
SP	.41**		.41**		.52**		.77**		.69**		.90			
NRI	.29**		.27**		.44**		.66**		.79**		.76**		.86	

Note. Correlations are displayed in the lower triangular matrix. Internal consistency coefficients (α) are displayed in the main diagonal. Subscale abbreviations: TV = Task Value; PC = Perceived Competence; AI = Athletic Identity; PS = Personal Standards; COM = Concern Over Mistakes; SP = Striving for Perfection; NRI = Negative Reactions to Imperfection.
* *p* < .005. ** *p* < .001

Table 3

Differences in the Magnitude of Dependent Correlations (r) between Person-Variables (i.e., Task Value, Perceived Competence, and Athletic Identity) and Facets of Perfectionistic strivings and Perfectionistic concerns

Paired comparison	Correlation values	Difference	t (374)	p
$r_{TV.PS} - r_{TV.COM}$	.48 - .18	.30	7.10	< .001
$r_{TV.PS} - r_{TV.NRI}$	.48 - .29	.19	5.08	< .001
$r_{TV.SP} - r_{TV.COM}$	.41 - .18	.23	6.27	< .001
$r_{TV.SP} - r_{TV.NRI}$	.41 - .29	.12	3.67	< .001
$r_{PC.PS} - r_{PC.COM}$	.47 - .17	.30	7.06	< .001
$r_{PC.PS} - r_{PC.NRI}$	.47 - .27	.20	5.32	< .001
$r_{PC.SP} - r_{PC.COM}$	.41 - .17	.24	6.46	< .001
$r_{PC.SP} - r_{PC.NRI}$	.41 - .27	.14	4.30	< .001
$r_{AI.PS} - r_{AI.COM}$	.58 - .34	.24	6.07	< .001
$r_{AI.PS} - r_{AI.NRI}$	.58 - .44	.14	4.05	< .001
$r_{AI.SP} - r_{AI.COM}$	.52 - .34	.18	3.33	< .001
$r_{AI.SP} - r_{AI.NRI}$	.52 - .44	.08	2.61	< .01

Note. Subscript abbreviations: TV = Task Value; PC = Perceived Competence; AI = Athletic Identity; PS = Personal Standards; COM = Concern Over Mistakes; SP = Striving for Perfection; NRI = Negative Reactions to Imperfection.

Predicting Perfectionist Tendencies in Sport

A series of regression analyses were planned to determine (a) if retrospective levels of task value in sport, perceived competence in sport, and athletic identity in early adolescence could predict current levels of perfectionism in sport, and (b) if the level of competitive sport in which people participated could predict levels of perfectionism in sport. The original intention of the researcher was to conduct four separate regression analyses in which TV, PC, AI, and competitive sport level were to be entered simultaneously as a set of predictor variables, and each facet of perfectionism (i.e., PS, COM, SP, and NRI) was to be separately entered as the criterion variable.[5] However, as seen in Table 2, three of the predictor variables (i.e., TV, PC, and AI) were highly correlated with each other (*r*s ranged from .79 to .85). This is problematic because statisticians have warned researchers to be very wary of including variables that have correlations greater than .70 in multivariate statistical analyses due to analytic problems associated with multicollinearity (see Tabachnick & Fidell, 1996).[6]

Problems of multicollinearity among TV, PC, and AI were confirmed statistically. Specifically, collinearity diagnostics produced a high condition index (27.84) for the three RPSE subscales (i.e., PC, TV, and AI) that were to have been

---

[5] In each analysis, competitive sport level was coded as follows: 1 = no sport involvement, 2 = recreational sport, 3 = moderately competitive/serious sport, 4 = highly competitive/serious sport.

[6] The bivariate correlations between competitive sport level and the three RPSE subscales were statistically significant (all *p*s < .001) and were moderate in size ranging from .41 (task value) to .46 (perceived competence).

included in the regression analyses. As noted by Mason (1987), "a condition index in excess of 20 is a clear indication of harmful collinearity" (p. 89).[7] One way to overcome multicollinearity problems is to create a single composite score from any predictor variables that are highly correlated (see Tabachnick & Fidell, 1996). Consequently, a decision was made to create a composite score from all 19 items that had been included in the RPSE to measure task value, perceived competence, and athletic identity.

To ensure that the creation of a single composite score was a legitimate data-management strategy, an exploratory principal axes factor analysis was conducted upon the correlation matrix of RPSE items. If the factor analysis indicated that it was appropriate to capture the latent structure of the 19 items with a single factor, then it would be deemed appropriate to create a single composite score from the RPSE items.

To determine the appropriate number of factors that best represented the

---

[7] Despite the evidence indicating that multicollinearity problems existed among the set of predictor variables, four regression analyses were conducted to determine if the multicollinearity had any obvious impact upon the results. In all four analyses, the sign of the regression coefficient (Beta) for perceived task value was negative (with two of these regression coefficients being statistically significant [$ps < .005$]). The negative association with each of these regression coefficients goes against all theoretical expectations and is contrary to the direction of the signs associated with the bivariate correlations between perceived task value and the four facets of perfectionism that were measured (see Table 4). This unexpected change in the direction of the signs of the regression coefficients is a clear indication that multicollinearity problems exist within the data (Tu, Kellett, Clerehugh, & Gilthorpe, 2005, p.459). The results from these regression analyses are contained in Appendix M.

latent structure of the RPSE, results from a parallel analysis (Lautenschlager,

1989) in conjunction with Cattell's (1978) scree test were examined (see Fabrigar,

Wegener, MacCallum, & Strahan, 1999; Preacher & MacCallum, 2003; Velicer,

Eaton, & Fava, 2000). As seen in the parallel analysis results (Table 4) and scree

plot results (Figure 1), both tests indicated that a single factor was most

appropriate for capturing the latent structure of the RPSE items.

Table 4

*Eigenvalues from Exploratory Factor Analysis (EFA) of RPSE Data and
Corresponding Parallel Analysis for the First Six Factors*

Factor	Eigenvalue from EFA	Eigenvalue from Parallel Analysis
1.	11.62	1.42
2.	1.26	1.34
3.	0.94	1.28
4.	0.89	1.23
5.	0.62	1.18
6.	0.50	1.14
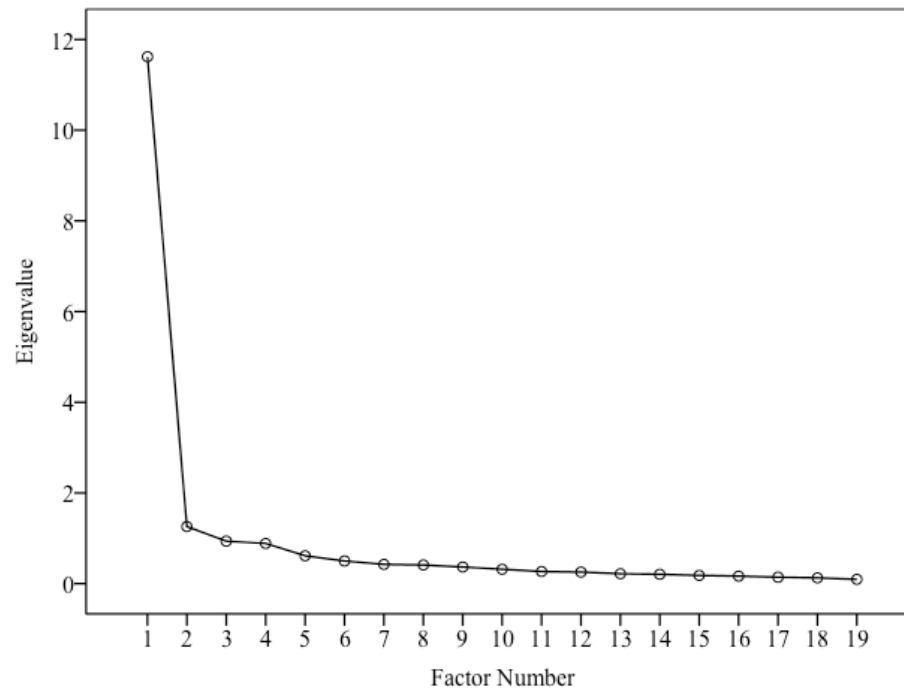
Figure 1. Scree plot of eigenvalues corresponding to factors following the principal

axes analysis of the 19 RPSE items.

Table 5 contains the resulting factor loadings for the single-factor solution.

All 19 items had meaningful factor loadings (> .30: see Gorsuch, 1983) on the

retained factor (*M* loading = .76). The factor explained 61.16% of the variance

among the 19 items. The internal consistency of the 19-item scale was very strong

(α = .96).

The factor analytic results combined with the strong level of internal

consistency indicate that the creation of a single composite score from the task

value, perceived competence, and athletic identity items was appropriate on

psychometric grounds. The 19-item composite score reflects the summation of task value, perceived competence, and athletic identity items. The factor/construct was therefore labelled to reflect participants' levels of *Competence, Value and Identity* (CVI) in sport.

Table 6

Simultaneous Multiple Regression Analyses of CVI and Competitive Sport Level on Sport Perfectionism Subscales

Perfectionism subscale	Predictor variable	Beta	t	p	Semipartial correlation
Personal standards: $F(2, 373) = 154.656, p < .0001, R^2 = .45$					
	CVI	.362	8.280	< .0001	.32
	Competitive sport level	.420	9.615	< .0001	.37
Concern over mistakes: $F(2, 373) = 25.902, p < .0001, R^2 = .12$					
	CVI	.131	2.373	< .05	.12
	Competitive sport level	.266	4.814	< .0001	.23
Striving for perfection: $F(2, 373) = 71.030, p < .0001, R^2 = .28$					
	CVI	.385	7.650	< .0001	.34
	Competitive sport level	.218	4.330	< .0001	.19
Negative reactions to imperfection: $F(2, 373) = 40.324, p < .0001, R^2 = .18$					
	CVI	.276	5.149	< .0001	.24
	Competitive sport level	.213	3.971	< .0001	.19

Note. CVI = Competence, Value, and Identity. Competitive sport level was coded as: 1 = no sport involvement, 2 = recreational sport, 3 = moderately competitive/serious sport, 4 = highly competitive/serious sport.

Table 5

Factor Loadings for Task Value, Perceived Competence and Athletic Identity Items

Item	Abbreviated item description	Intended construct	Factor loading
1.	Compared to most other activities you did (e.g., music, volunteer work, academic studies, etc.), how much did you like sport?	Task value	.79
2.	How good at sport were you?	Perceived competence	.84
3.	How useful were the things you learned in sport?	Task value	.69
4.	I considered myself an athlete.	Athletic identity	.87
5.	Compared to other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how useful were the things you learned in sport?	Task value	.66
6.	I had many goals related to sport.	Athletic identity	.81
7.	Compared to other activities you did (e.g., music, volunteer work, academic studies, etc.), how important was it for you to be good at sport?	Task value	.86
8.	Compared to most other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how good were you at sport?	Perceived competence	.87
9.	Most of my friends were athletes.	Athletic identity	.48

Table 5 continued

Item	Abbreviated item description	Intended construct	Factor loading
10.	How good were you at learning something new in sport?	Perceived competence	.73
11.	Sport was the most important part of my life.	Athletic identity	.84
12.	If you were to list all of your peers from the worst to the best performer in sport, where would you have rated yourself?	Perceived competence	.79
13.	How interesting did you find sport to be?	Task value	.83
14.	How much did you like sport?	Task value	.84
15.	How well did you do in sport?	Perceived competence	.80
16.	How important was being good at sport to you?	Task value	.86
17.	I felt badly about myself when I performed poorly in sport.	Athletic identity	.35
18.	I spent more time thinking about sport than anything else.	Athletic identity	.78
19.	I would have been very depressed if I were injured and could not compete in sport.	Athletic identity	.73

Note: All items were preceded with the statement, "While in junior high..."

Having negated the multicollinearity problems that existed among the TV, PC, and AI subscales (by creating a single composite score to capture the three subscales), CVI and competitive sport level were entered simultaneously in each regression analysis to predict the four facets of perfectionism (i.e., personal standards, striving for perfection, concern over mistakes, and negative reactions to imperfection). Mulicollinearity was not a problem between CVI and competitive sport level ($r = .47, p < .001$). Data were screened for the presence of influential data points (using Cook's distances) and multivariate outliers (using Mahalanobis distances) prior to conducting the analyses. All Cook's distances were < 1.0 (range: 0.0005 - 0.023) indicating that the removal of any data point would not produce any substantial change to any regression coefficient (see Stevens, 1992, pp. 108-109). However, one multivariate outlier was identified ($\chi^2 [2] = 14.64, p < .001$) and was therefore removed from the data set prior to conducting the regression analyses. Each regression analysis was therefore conducted upon the responses provided by 376 participants.

Table 6 contains the results from the four regression analyses. Irrespective of which perfectionism subscale was being predicted, both CVI and competitive sport level were statistically significant predictors of sport perfectionism levels. In each analysis, a statistically significant positive standardized Beta coefficient was obtained (all ps <.05) for CVI and competitive sport level. These results indicate that students who report higher CVI levels in early adolescence (when measured retrospectively) tend to have higher sport perfectionism levels in university, whereas students who report lower CVI levels in early adolescence levels tend to

have lower sport perfectionism levels in university. With respect to the level of competitive sport in which participants engaged, the regression results indicate that students who are involved in higher (or more serious) levels of competitive sport tend to have higher perfectionist tendencies in sport, whereas students who are involved in lower (i.e., recreational) levels of competitive sport (or who do not engage in any form of competitive sport) tend to have lower perfectionist tendencies in sport.

Competitive sport levels and sport-perfectionism. Having identified competitive sport level as a significant (positive) predictor of sport perfectionism levels, further statistical analyses were conducted to shed more light upon the potential link between the level of competitive sport in which people participated and their corresponding levels of perfectionism in sport. Participants were allocated into one of four groups according to their self-reported level of competitive sport involvement (i.e., no sport participation [$n = 37$], recreational sport [$n = 144$], moderately competitive sport [$n = 70$], and highly competitive sport [$n = 126$]). A one-way MANOVA was conducted with sport-participation level entered as the independent variable and the four sport-perfectionism subscales (i.e., PS, COM, SP, and NRI) entered as the dependent variables.

A significant multivariate test statistic was obtained: Wilks' $\Lambda = .608$, F (12, 979.219) = 16.881, $p < .0001$, partial $\eta^2 = .153$. As seen in Table 7, statistically significant univariate F-tests were obtained for each of the four sport-perfectionism subscales (all ps < .0001). A series of post-hoc contrasts were then conducted to determine where between-group (i.e., sport level) differences existed within each of the four sport-perfectionism subscales (see Table 8). Given that six post-hoc tests were conducted for each dependent variable, Bonferroni corrections were employed such that the level of statistical significance for each independent t-test was set at $p < .008$. Effect size (ES) indices using Cohen's d for independent means were computed in conjunction with each t-test. Using the criteria outlined by Cohen (1977), an $ES = .20$ was deemed to be small in magnitude, an $ES = .50$ was considered medium in size, and an ES $\geq .80$ was considered to be large.

As seen in Table 8, no significant differences existed between the recreational-sport group and the non-sport group across any of the four sport-perfectionism subscales. However, the highly competitive group and the moderately competitive group had significantly higher perfectionist tendencies than the recreational and non-sport groups across all four perfectionism subscales (all ps < .001). The highly competitive group also had significantly higher personal standards than the moderately competitive group (p < .001); however, these two groups did not differ significantly on any of the other three perfectionism subscales (i.e., COM, SP, and NRI). All effect sizes that corresponded with significant univariate t-tests were either moderate or large in magnitude. Collectively, the general pattern of results shown in Tables 7 and 8 indicates that undergraduate students who participate in moderate to highly competitive sport have, on average, higher perfectionistic strivings (e.g., PS and SP) and perfectionistic concerns (i.e., COM an SP) in sport than students who either participate in recreational sport or who do not participate in sport at all.

Table 7

Means, Standard Deviations and Univariate Test Statistics for Between-Group (Sport-Level) Comparisons Across the

Four Sport-Perfectionism Subscales

Subscale	No Sport ($n = 37$)		Recreational ($n = 144$)		Moderately Competitive ($n = 70$)		Highly Competitive ($n = 126$)		Univariate test statistics		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F(3, 373)$	*p*	Partial η^2
PS	2.57	0.77	2.90	0.75	3.53	0.56	3.90	0.57	70.00	<.0001	.36
COM	2.31	0.70	2.46	0.78	3.07	0.82	3.01	0.80	18.43	<.0001	.13
SP	2.71	0.99	3.00	0.92	3.59	0.74	3.70	0.68	25.61	<.0001	.17
NRI	2.53	0.85	2.62	0.84	3.13	0.76	3.27	0.82	18.52	<.0001	.13

Note. PS = Personal Standards; COM = Concern Over Mistakes; SP = Striving for Perfection; NRI = Negative

Reactions to Imperfection.

Table 8

Mean Differences and Effect Sizes for Univariate Between-Group (Sport-Level) Contrasts for the Four Perfectionism Subscales

Between-group mean comparisons	*M* difference	*t*	(*df*)	*p*	Cohen's *d*
Personal Standards					
M_{High} vs. $M_{Moderate}$	0.37	4.414	(194)	<.001	0.55
M_{High} vs. $M_{Recreational}$	1.00	12.268	(268)	<.001	1.49
M_{High} vs. $M_{Non-Sport}$	1.33	11.518	(161)	<.001	2.14
$M_{Moderate}$ vs. $M_{Recreational}$	0.63	6.239	(212)	<.001	0.91
$M_{Moderate}$ vs. $M_{Non-Sport}$	0.96	7.361	(105)	<.001	1.50
$M_{Recreational}$ vs. $M_{Non-Sport}$	0.33	2.381	(179)	*ns*	0.44
Concern Over Mistakes					
M_{High} vs. $M_{Moderate}$	-0.06	-0.412	(194)	*ns*	0.07
M_{High} vs. $M_{Recreational}$	0.55	5.709	(268)	<.001	0.70
M_{High} vs. $M_{Non-Sport}$	0.70	4.753	(161)	<.001	0.90
$M_{Moderate}$ vs. $M_{Recreational}$	0.61	5.191	(212)	<.001	0.77
$M_{Moderate}$ vs. $M_{Non-Sport}$	0.76	4.683	(105)	<.001	0.97
$M_{Recreational}$ vs. $M_{Non-Sport}$	0.15	1.013	(179)	*ns*	0.20

Table 8 continued

Between-group mean comparisons	*M* difference	*t*	(*df*)	*p*	Cohen's *d*
Striving for Perfection					
M High vs. *M* Moderate	0.11	1.107	(194)	*ns*	0.16
M High vs. *M* Recreational	0.70	7.054	(268)	<.001	0.86
M High vs. *M* Non-Sport	0.99	6.948	(161)	<.001	1.30
M Moderate vs. *M* Recreational	0.59	4.663	(212)	<.001	0.68
M Moderate vs. *M* Non-Sport	0.88	5.164	(105)	<.001	1.05
M Recreational vs. *M* Non-Sport	0.29	1.665	(179)	*ns*	0.31
Negative Reactions to Imperfection					
M High vs. *M* Moderate	0.14	1.220	(194)	*ns*	0.18
M High vs. *M* Recreational	0.65	6.450	(268)	<.001	0.79
M High vs. *M* Non-Sport	0.74	4.812	(161)	<.001	0.90
M Moderate vs. *M* Recreational	0.51	4.278	(212)	<.001	0.63
M Moderate vs. *M* Non-Sport	0.60	3.713	(105)	<.001	0.76
M Recreational vs. *M* Non-Sport	0.09	0.577	(179)	*ns*	0.11

Note. Subscript abbreviations: High = highly competitive/serious sport; Moderate = moderately competitive/serious sport; Recreational = recreational level sport; Non-Sport = not involved in any organized sport.

Discussion

The primary purpose of this thesis was to consider three person characteristics—namely, perceived task value, perceived competence, and athletic identity—and determine if these characteristics were associated with perfectionist tendencies in the achievement domain of sport. It was hypothesized that (retrospective) levels of task value, perceived competence, and athletic identity in sport during early adolescence would be positively correlated with (or positively predict) perfectionistic strivings and perfectionistic concerns in sport among a sample of university undergraduates. Results of the bivariate correlation analyses (see Table 2) and regression analyses (see Table 6) generally supported these hypotheses. Task value, perceived competence, and athletic identity during early adolescence were all positively correlated with facets of perfectionistic strivings (i.e., personal standards and striving for perfection) and perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). In other words, higher task value in sport, higher perceived competence in sport, and higher athletic identity during early adolescence appear to correspond with higher perfectionistic strivings and higher perfectionistic concerns in sport during late adolescence and into early adulthood. These results indicate that there may be a developmental link between these person characteristics (i.e., task value, perceived competence, and athletic identity) and perfectionist tendencies in sport.

Although a number of perfectionism researchers (e.g., Dunn et al., 2005, 2012; McArdle, 2010) and theorists (i.e., Flett et al., 2002; Shafran et al, 2002) have alluded to the potential existence of developmental relationships between

task value, perceived competence, and domain-specific perfectionism, only one

study has previously examined the link between athletic identity and

perfectionism in sport (i.e., Gapin & Petruzzello, 2011). Gapin and Petruzzello

obtained a small (significant) positive correlation ($r = .24$) between athletic

identity and perfectionism among a sample of 179 male and female runners (M

age = 36 years). The current results appear to support the findings of Gapin and

Petruzzello indicating that heightened athletic identity corresponds with

heightened perfectionist tendencies in sport. It is interesting to note, however, that

the size of the correlations (r) between athletic identity and facets of

perfectionism obtained in the present study (range = .34 to .58) appear to be

considerably larger than the correlation between athletic identity and

perfectionism in Gapin and Petruzzello's study ($r = .24$). Potential explanations

as to why the current correlations between athletic identity and perfectionism

were collectively larger than the correlation between these constructs in Gapin

and Petruzzello's study seems warranted.

Gapin and Petruzzello (2011) employed the perfectionism subscale of the

Eating Disorder Inventory (EDI: Garner et al., 1983) to measure perfectionism

among their sample of adult runners. The perfectionism subscale of the EDI

provides a unidimensional assessment of perfectionism and assesses

perfectionism as a global or generic personality disposition. As such, the

perfectionism subscale of the EDI does not capture the multidimensional nature of

perfectionism in sport that many contemporary perfectionism researchers

advocate (Dunn et al., 2011, 2012; Gotwals et al., 2010; Stoeber, 2011; Stoeber et

al., 2007) nor does it capture the domain-specific nature of perfectionism in sport

(see Anshel & Eom, 2003; Dunn et al., 2002; Stoeber et al., 2004). In other words,

the perfectionism subscale of the EDI fails to differentiate between perfectionistic

strivings and perfectionistic concerns, and it also fails to provide a situational

context (i.e., sport) within which test-takers can frame their perfectionism

responses.

Previous research has demonstrated that perfectionism is a domain-

specific construct (Dunn et al., 2012; McArdle, 2010, Stoeber & Stoeber, 2009),

and global/generic perfectionism levels often differ from domain-specific

perfectionism levels in different achievement domains (see Dunn et al., 2005).

The failure of generic/global perfectionism measures (such as the perfectionism

subscale of the EDI) to provide the test-taker with a situational context may create

uncertainty for respondents (in terms of how to rate their perfectionism levels)

and may introduce measurement error within perfectionism responses (see Dunn

et al., 2011, for a related discussion). The introduction of such measurement error

may attenuate the magnitude of correlations between perfectionism scores and

other constructs (e.g., athletic identity) that are being investigated (see Crocker &

Algina, 1986, for a related discussion).

In a study that compared the ability of a domain-specific perfectionism

measure and a global/generic perfectionism measure to predict attitudinal body

image in sport, Dunn et al. (2011) found that a domain-specific measure of

perfectionism (i.e., the Sport-MPS: Dunn et al., 2006) accounted for significantly

more unique variance in attitudinal body image than a global measure of

perfectionism (i.e., the Hewitt-MPS: Hewitt & Flett, 1991) among a sample of 119 competitive female figure skaters (*M* age = 14.6 years). Dunn et al. (2011) suggested that researchers who are interested in examining relationships between perfectionism in sport and various sport-specific constructs (e.g., athletic identity) may benefit from using domain-specific perfectionism measures as opposed to global perfectionism measures. It is possible that the higher correlations between athletic identity and perfectionism that were obtained in the current study (compared to the smaller correlation between these variables reported by Gapin and Petruzzello) is a function of the domain-specific approach that was adopted in this study. Before the validity of this speculative hypothesis can be supported, more research is clearly required "that compares the ability of domain-specific and global measures of perfectionism to predict different cognitive, affective, and behavioural variables in … sport settings" (Dunn et al., 2011, p. 43).

A second possible reason that may explain the apparent discrepancy in the magnitude of the correlations between athletic identity and perfectionism in this study compared to Gapin and Petruzzelo's (2011) study could be based upon the sample characteristics from the two studies—or more specifically, upon possible differences in the degree of homogeneity of sample characteristics in the two studies. As is well documented in the statistical literature (e.g., Gravetter & Wallnau, 2013), the magnitude of a bivariate correlation between two variables can be greatly influenced by the range (or variability) of scores that exist on the variables under investigation. Stated differently, if the range or variability of scores on one or both variables is restricted, then this restriction of range can

attenuate the magnitude of the correlation between the two variables. In contrast, if the range or variability of scores on both variables is larger, then the magnitude of the correlation between the same variables is less likely to be attenuated.[8] As such, data provided by a relatively homogeneous sample may lead to a restriction in the variability of scores on the variables of interest (which can attenuate the value of the correlation), whereas data provided by a more heterogeneous sample may enhance the variability of scores (and thereby reduce potential attenuation problems).

It is conceivable that Gapin and Petruzello (2011) may have obtained a more homogeneous sample of participants (in terms of their sport-involvement characteristics) relative to the sample of participants in the current study. Every participant in Gapin and Petruzzello's study was involved in some form of running activity (i.e., every participant reported running at least twice a week and ran at least 9 miles per week). In contrast, sport-involvement in the current sample ranged from those who did not participate in any type of sport (and who reported that their only involvement in sport had come from their physical education classes during high school) to those who were still actively involved in highly competitive/serious sport (e.g., varsity athletes). Given the apparent differences in the range of sporting-engagement characteristics underlying the samples in the two studies, and given that both studies examined perfectionism and athletic

---

[8]For a detailed explanation of how restriction in the range of scores can attenuate the value of a correlation coefficient between two variables, see Gravetter and Wallnau (2013, pp.522-523).

identity in a sport context, it is possible that the variability of perfectionism and athletic identity scores may have been more restricted in the Gapin and Petruzzello study; in turn, this restriction in range may have attenuated the magnitude of the correlation between athletic identity and perfectionism in that study (compared to the current study).

Interestingly, the logic of the aforementioned argument surrounding the variability of scores, the degree of sample/data heterogeneity, and their potential impact upon the size of bivariate correlations may also be evident in other research that has examined correlates of domain-specific perfectionism. Specifically, in her examination of the relationships between task value, perceived competence, contingent self-worth, and perfectionism in school and sport among academically talented youth, McArdle (2010) reported that the correlation (r) between task value in school and perfectionism in school was .25, whereas the correlation between task value in sport and perfectionism in sport was .60. McArdle also reported that the correlation between perceived competence in school and perfectionism in school was .17, whereas the correlation between perceived competence in sport and perfectionism in sport was .47. Lastly, McArdle reported that the correlation between contingent self-worth in school and perfectionism in school was .54, whereas the correlation between these same variables in sport was .60. It is clear from McArdle's results that the correlations between variables in the domain of school were consistently smaller than the correlations between the same variables in the domain of sport. It seems reasonable to speculate that there was less variability of scores (i.e., a greater

restriction in range) among the school-domain variables (compared to the sport-domain variables) in McArdle's study because the sample contained a relatively homogeneous range of academic abilities/experiences (i.e., all were academically talented youth) in comparison to a more heterogeneous range of sporting abilities/experiences (although it should be noted that McArdle did not specifically measure the sporting experiences or backgrounds of her participants). In light of these findings, it is recommended that perfectionism researchers give careful consideration to the underlying characteristics of their samples in the achievement domain of interest prior to examining relationships between selected variables (e.g., task value, perceived competence, contingent self-worth, athletic identity) and domain-specific perfectionism.

The correlation results in Table 2 clearly indicate that heightened (retrospective) levels of task value, perceived competence, and athletic identity during early adolescence were generally associated with heightened perfectionistic strivings and perfectionistic concerns later in life among the current sample of undergraduate students. However, as seen in Table 3, the magnitude of the correlations between task value, perceived competence, and athletic identity with the two facets of perfectionistic strivings (i.e., personal standards and strivings for perfection) were significantly larger (all rs ranged from .41 to .58) than the corresponding correlations (all rs ranged from .17 to .34) with the two facets of perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). In other words, it appears that task value, perceived competence, and athletic identity (during early adolescence) were more

strongly associated with perfectionistic strivings than perfectionistic concerns in sport. It is unclear why this pattern of results emerged. Nevertheless, it may be valuable for practitioners to be aware that task value, perceived competence, and athletic identity are more strongly related to perfectionistic strivings than perfectionistic concerns because heightened perfectionistic strivings in sport tend to be associated with a variety of adaptive/functional correlates in sport (e.g., heightened intrinsic motivation, heightened optimism, and improved performance) when corresponding levels of perfectionistic concerns are low (see Gotwals et al., 2012).

Although the idea of enhancing athletes' levels of task value, perceived competence, and athletic identity—with the goal of enhancing perfectionistic strivings—may be appealing to applied sport psychologists, it must nevertheless be acknowledged that task value, perceived competence, and athletic identity were also positively correlated (all ps < .005) with the two facets of perfectionistic concerns measured in this study. In other words, heightened task value, perceived competence, and athletic identity were also associated with heightened perfectionistic concerns—and research in sport psychology is very clear about the maladaptive consequences that heightened perfectionistic concerns can have for athletes in sport (see Flett & Hewitt, 2005; Hall, 2006; Stoeber, 2011).

It must also be acknowledged that the two facets of perfectionistic strivings (i.e., personal standards and striving for perfection) were positively correlated with the two facets of perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). Specifically, personal standards

was positively correlated with both concern over mistakes ($r = .56$) and negative

reactions to imperfections ($r = .66$), while striving for perfection was positively

correlated with both concern over mistakes ($r = .69$) and negative reactions to

imperfection ($r = .76$). In other words, the current results indicate that increased

perfectionistic strivings typically correspond with increased perfectionistic

concerns in sport. This positive relationship between perfectionistic strivings and

perfectionistic concerns has been recognized in the perfectionism literature (for

reviews see Gotwals et al., 2012; Stoeber & Otto, 2006; Stoeber, 2011), and

reinforces the practical difficulties that practitioners may face in their efforts to

enhance athletes' perfectionistic strivings while simultaneously attempting to

ensure that athletes' perfectionistic concerns do not increase.

As noted by Gotwals et al. (2012), perfectionistic strivings in sport tend to

be primarily adaptive when their overlap with perfectionistic concerns is

controlled (also see Stoeber, 2011). Gotwals et al. commented that this overlap

can be controlled quite easily with statistical techniques in research settings (e.g.,

by using partial correlations), but controlling for this overlap is much more

difficult in real-world applied settings where practitioners work with athletes.

Thus, even if researchers are able to identify (and influence) factors that may play

a role in the development of heightened perfectionistic strivings in sport (e.g., task

value, perceived competence, and athletic identity), the difficulty faced by

practitioners is to ensure that there are no corresponding increases to athletes'

perfectionistic concerns. Clearly, a worthwhile goal for future research would be

to identify variables, mechanisms, and processes that facilitate the development of

heightened perfectionistic strivings among athletes, which simultaneously have little or no effect upon the development of heightened perfectionistic concerns.

Further insight into the potential developmental link between task value, perceived competence, and athletic identity (during early adolescence) and multidimensional perfectionism in sport was obtained via the results of the regression analyses (see Table 6). Specifically, the regression results indicated that the composite *Competence, Value, and Identity* (CVI) variable was a significant positive predictor of all four facets of perfectionism (i.e., PS, SP, COM, and NRI), indicating that heightened (retrospective) levels of CVI during early adolescence were associated with heightened perfectionistic strivings (PS and SP) and perfectionistic concerns (COM and NRI) during late adolescence and early adulthood. These results reinforce previous findings in sport that highlight the potential role that task value, perceived competence, and athletic identity may play in the development of heightened perfectionist tendencies in the domain of sport (see Dunn et al., 2012; Gapin & Petruzzello, 2011; McArdle, 2010).

As noted in the Results section, CVI was a composite variable containing all 19 items that had been originally designed to measure task value, perceived competence, and athletic identity. The decision to create the composite CVI variable was made on the basis that (a) task value, perceived competence, and athletic identity were highly correlated with each other (see Table 2: rs ranged from .79 to .85, ps < .0001) which created multicollinearity problems, and (b) results of an exploratory factor analysis (see Figure 1 and Tables 4 and 5) indicated that a single factor provided the most appropriate representation of the

latent dimensionality underlying the items.

The fact that the task value, perceived competence, and athletic identity subscales were so highly correlated in this study is not overly surprising when considered in the context of previous research that has examined relationships between these variables. For example, McArdle (2010) found strong positive correlations between task value and perceived competence ($r = .78$), perceived competence and contingent self-worth ($r = .55$), and task value and contingent self-worth ($r = .75$) in the context of sport among academically talented youth. In a study of 92 school children (M age = 12.54 years, $SD = 4.4$), Lau, Fox, and Cheung (2004) obtained a strong positive correlation ($r = .79$) between a measure of perceived competence in sport and a sport-modified version of Brewer et al.'s (1993) Athletic Identity Measurement Scale. In a follow-up study, Lau, Cheung, and Randsall (2007) reported strong positive correlations between perceived competence in sport and sport/athletic identity within independent samples of 188 Chinese adolescents ($r = .57$) and 177 American adolescents ($r = .69$).

Anderson, Masse, and Hergenroeder (2007) provided further evidence of the strong associations between perceived competence in sport, perceived importance (task value) in sport, and athletic identity among two large samples of adolescents ($N_1 = 408$, $N_2 = 1586$) from public middle schools in the United States (M_1 age = 13.4 years, $SD_1 = 0.6$ years, M_2 age = 13.7 years, $SD_2 = 1.1$ years). Anderson et al. gave participants a newly constructed multidimensional measure of athletic identity that was labelled the *Athletic Identity Questionnaire* (AIQ). The AIQ was designed to measure four proposed dimensions of athletic identity

that reflected respondents' views about their athletic appearance, their views about the importance of sport/exercise in their lives, their perceived competence in sport/exercise, and their views about the social sources of encouragement that they received for participating in sport/exercise activities.

Following a series of confirmatory factor analyses that were conducted upon AIQ responses, Anderson et al. (2007) reported interfactor correlations between importance (i.e., task value) and perceived competence of .88 for Sample 1, and .93 for Sample 2. In a higher-order factor analysis that was subsequently conducted on the same data, factor loadings for perceived importance and perceived competence on a global athletic identity factor were 0.96 and 0.94 respectively for Sample 1, and 0.93 and 1.0 respectively for Sample 2. Anderson et al. concluded that athletic identity "among adolescents seemed to be defined primarily by the importance of physical activities [e.g., sport] to the self and how competent the self was in these activities" (p.67).

When taken in conjunction with the results of previous research that has shown strong positive correlations among task value, perceived competence, and athletic identity in sport (i.e., Anderson et al. 2007; Lau et al., 2005, 2007; McArdle, 2010) the decision to create the composite CVI variable in this study appears to be justified on both empirical and conceptual grounds. People who are competent in a specific domain typically value achievement in that same domain (Eccles & Harold, 1991; McArdle, 2010), and both task value and competence in sport appear to be integral parts of athletic identity (Anderson et al., 2007). Conceptually, it would not seem logical for people to develop heightened athletic

identity if they were neither competent in sport nor valued success in sport. In the same way, it would not seem logical for people to develop heightened perfectionist tendencies in an achievement domain in which success (or perfection) was unlikely (see Flett et al., 2002), or where success in the domain was not valued (see Shafran et al., 2002).

Given that the task value, perceived competence, and athletic identity subscales were highly correlated with each other (see Table 2), and given that the latent dimensionality of the 19 RPSE items was best captured by a single factor in this study, future research may wish to investigate the benefits of measuring athletic identity as a unidimensional construct (see Brewer & Cornelius, 2001) or as a multidimensional construct in which perceived competence and task value are treated as distinct (but related) dimensions of athletic identity (see Anderson et al., 2007). Assessing different conceptualizations of athletic identity may also be useful in shedding more light upon the relationship between athletic identity and perfectionistic strivings and perfectionistic concerns in sport.

The secondary purpose of this thesis was to investigate the potential link between the level of competitive sport in which people participate and their perfectionist tendencies in sport. It was hypothesized that individuals who were involved in higher (or more serious) levels of competitive sport would have higher perfectionistic strivings and perfectionistic concerns in sport than individuals who were involved in lower (or less serious) levels of competitive sport (or who were not involved in any type of competitive sport). Support for this hypothesis was obtained from the results of two separate analyses.

Regression results (see Table 6) revealed that the current level of competitive sport in which participants were engaged significantly predicted respondents' levels of perfectionistic strivings (i.e., PS and SP) and perfectionistic concerns (i.e., COM and NRI) in sport. More specifically, positive regression coefficients (βs) indicated that involvement in higher or more serious levels of competitive sport generally corresponded with higher perfectionistic strivings and higher perfectionistic concerns in sport (all ps < .0001). Results from the MANOVA (see Tables 7 and 8) that examined differences in perfectionism levels across four groups of participants who were classified according to the level of competitive sport in which they were involved (i.e., no sport involvement, involvement in recreational sport, involvement in moderately competitive/serious sport, and involvement in highly competitive/serious sport) indicated that students who were involved in moderate to highly competitive/serious sport had, on average, higher perfectionistic strivings (PS and SP) and perfectionistic concerns (COM and NRI) than students who were either involved in recreational level sport or who were not involved in any form of competitive sport. These findings appear to be consistent with the results obtained in a study by Anshel et al. (2009) in which levels of perfectionism in sport were compared across groups of undergraduate students ($N = 323$, M age = 22.28 years) who participated in one of four competitive sport-level classifications.

Anshel et al. (2009) reported that students who had competed at state/regional or college/national levels of competition had significantly higher levels of (unidimensional) perfectionism in sport than participants who had only

competed up to the high-school level of competitive sport ($ps < .05$). Surprisingly, no significant differences in perfectionism levels were found between individuals who had competed at the state/regional or college/national levels and those who had only competed at the community level.

It seems to make theoretical sense that people who are involved in higher (or more serious) levels of competitive sport would adopt higher perfectionistic strivings (i.e., personal standards and striving for perfection) and perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection) than people who participate in less serious recreational levels of sport (or people who do not participate in any form of sport). People who participate in high levels of competitive sport are generally characterized by having an intense commitment to their sport; they have a strong desire to achieve competitive success (e.g., beat opponents) and to reach their own high standards of performance (see Mallett & Hanrahan, 2004). In contrast, people who participate in recreational sport are less likely to be motivated by such competitive (or outcome-focused) goals, and are more likely to be motivated by intrinsic goals that revolve around fun, excitement, and the opportunity to learn new skills (see Fortier, Vallerand, Brière, & Provencher, 1995).

People who participate in higher (or more serious) levels of competitive sport are likely to set high personal performance standards and/or strive for perfection in sport because these goals are often viewed as necessary conditions for success in high level sport (see Gould et al., 2002). In contrast, people who participate in recreational levels of sport are less likely to adopt these high

perfectionistic strivings in sport because the accomplishment of their intrinsic motivational goals (e.g., fun, fitness, and excitement) are likely to be much less dependent upon achieving such extremely high standards of personal performance during competition.

Similarly, making performance errors or mistakes will likely be perceived by athletes in highly competitive sport as having consequences (in terms of reaching one's competitive goals—e.g., outperforming opponents) that are deemed to be more serious than athletes who compete in recreational sport where similar mistakes in competition will likely be perceived as having less impact upon the achievement of participation motives that revolve around intrinsic goals of fun and excitement (see Fortier et al., 1995). It therefore seems logical that participants who were involved in higher (or more serious) levels of competitive sport reported significantly higher perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection) than participants who were involved in recreational level sport (for fun, fitness, and/or social reasons). People who do not participate in sport at all would be expected to have the lowest levels of perfectionistic strivings and perfectionistic concerns in sport (as was generally the case in this study) because they will likely have few, if any, goals that relate to personal sport performance and (by virtue of their non-participation) will not commit any errors in sport (resulting in minimal concerns about making mistakes in sport).

Future research is required to examine the causal link between competitive sport level and perfectionism in sport. In other words, the non-experimental (i.e.,

cross-sectional) methodology adopted in this study prevents researchers from determining whether heightened perfectionist tendencies cause athletes to become involved in higher levels of competitive sport, or whether involvement in higher levels of competitive sport cause athletes to develop heightened perfectionist tendencies in sport. Despite this obvious limitation, the current results (when taken in conjunction with the results obtained by Anshel et al. [2009]) indicate that researchers should consider the level of competitive sport in which athletes participate in future research that assess perfectionism in sport.

The personal standards subscale of the Sport-MPS (Dunn et al., 2006) and the striving for perfection subscale of the MIPS (Stoeber et al., 2004) were selected in this study to measure perfectionistic strivings, and the concern over mistakes subscale of the Sport-MPS and negative reactions to imperfection subscale of the MIPS were selected to measure perfectionistic concerns (see Gotwals et al., 2012, for a more detailed rationale). Although the original intent of this thesis was not aimed at assessing the composition (or conceptualization) of perfectionistic strivings and perfectionistic concerns in sport (cf. Stoeber & Otto, 2006), it should be noted that empirical support for the conceptual classifications of these four subscales (as measures of perfectionistic strivings and perfectionistic concerns respectively) was obtained in this study.

A strong positive correlation ($r = .77$) was obtained between personal standards and striving for perfection, and a strong positive correlation ($r = .79$) was obtained between concern over mistakes and negative reactions to imperfection (see Table 2). Only one previous study has examined the

relationships between this group of subscales. Stoeber, Stoll, et al. (2009) found

strong positive relationships between personal standards and striving for

perfection ($r = .60$), and between concern over mistakes and negative reactions to

imperfection ($r = .68$) among a sample of elite male youth Finnish ice hockey

players. The present correlational results, when considered in conjunction with

those reported by Stoeber, Stoll, et al., support previously held views (see

Gotwals et al., 2012) that the personal standards subscale of the Sport-MPS and

the striving for perfection subscale of the MIPS appear to be are closely related

facets of perfectionistic strivings in sport, and the concern over mistakes subscale

of the Sport-MPS and the negative reactions to imperfection subscale of the MIPS

appear to be closely related facets of perfectionistic concerns in sport.

Although a more parsimonious treatment of the data may have been

obtained in the current study if composite perfectionistic strivings and

perfectionistic concerns variables had been created (by respectively combining

scores from the PS and SP subscales into a perfectionistic strivings variable and

scores from the COM and NRI subscales into a perfectionistic concerns variable),

results in this study did indicate that there may be benefits to treating each facet of

perfectionism separately. For example, examination of the between-group

differences in perfectionism levels across the four sport-participation groups (see

Table 8) indicates that the highly competitive/serious group had significantly

higher personal standards than the moderately competitive/serious group ($ES = .55$), whereas there was no significant difference between these two groups on the

striving for perfectionism subscale ($ES = .16$). When considering the bivariate

correlations contained in Table 2, the amount of variance that was shared between task value and negative reactions to imperfection ($r^2 = .084$) was more than double the amount of variance that was shared between task value and concern over mistakes ($r^2 = .034$). These examples indicate that it may be beneficial to treat personal standards and striving for perfectionism as separate (yet related) facets of perfectionistic strivings in sport, and to treat concern over mistakes and negative reactions to imperfection as separate (yet related) facets of perfectionistic concerns in sport. More research is clearly needed to determine if there are empirical (or conceptual) benefits to treating the four facets of perfectionism that were measured in this study as separate constructs/subscales, or if these subscales should be combined into hierarchical constructs that reflect perfectionistic strivings and perfectionistic concerns in sport.

Although the current results shed light upon a number of personal- (i.e., task value, perceived competence, and athletic identity) and environmental-factors (i.e., competitive sport level) that may be associated with the development of perfectionistic strivings and perfectionistic concerns in sport, the thesis is not without limitations. The most obvious limitation relates to the retrospective methodology that was employed to assess participants' levels of task value, perceived competence, and athletic identity during early adolescence. Asking participants to reflect back to an earlier time in their lives is open to criticism because participants may simply have forgotten how they felt during this earlier period of their lives, or the life events that participants had experienced since early adolescence may have influenced or biased the way that they perceived (or

recalled) their previous feeling about sport (see Cerin, 2003; Feldman Barrett, 1997; Halverson, 1988). Such problems could obviously lead to response inaccuracies with respect to participants' actual levels of task value, perceived competence, and athletic identity during this earlier period of their lives. Such inaccuracies can undermine the validity, reliability, and trustworthiness of the data (Snelgrove & Havitz, 2010). However, steps were taken in an effort to minimize the likelihood of these potential problems from occurring in this study.

Items contained within the RPSE (i.e., the only questionnaire in the test package that used the retrospective approach) were preceded with the phrase, "*While in junior high.*" This approach provides respondents with a temporal frame of reference that is designed to act as a memory cue of an emotionally significant period of the respondents' lives (Berney & Blane, 1997; Côté et al., 2005). Such an approach is intended to assist respondents in their ability to accurately recall their attitudes, feelings, and beliefs about sport during this developmental period. Moreover, all of the *a priori* developmental hypotheses that were tested in this study (regarding the theorized links between task value, perceived competence, and athletic identity during early adolescence and current perfectionist tendencies in sport) were supported. This confirmation seems to indicate that no serious threats to validity occurred as a result of employing the retrospective approach. Lastly, high internal consistency values for the task value, perceived competence, and athletic identity subscales were obtained (all αs $\geq$ .81 for male and female participants: see Table 1). This latter finding indicates that no serious threat to the internal reliability of participants' RPSE responses were

present, waylaying potential arguments about a lack of reliability surrounding participants' retrospective responses.

The second major limitation of the current study relates to the cross-sectional methodology that was employed. As noted previously, cross-sectional designs limit the ability of researchers to generate inferences about the causal influence that one variable may have upon another. In other words, because all person-variables (i.e., task value, perceived competence, athletic identity, and perfectionism) were assessed in a single test session, researchers cannot definitively conclude that elevated task value, perceived competence, and athletic identity in sport during early adolescence "caused" participants to develop higher perfectionistic strivings and perfectionistic concerns later in life. Nevertheless, despite this limitation, the correlation and regression results obtained in this study do provide strong support for previous theoretical contentions that (a) people with low perceived competence in an achievement domain are unlikely to develop heightened perfectionist tendencies in that domain (Flett et al., 2002), and (b) people are unlikely to develop perfectionist standards in achievement domains in which they do not value success (Shafran et al., 2002).

A third potential limitation of this study surrounds the self-classification process that was employed by respondents to categorize the level of competitive sport in which they participated (i.e., no involvement in sport, recreational sport, moderately competitive sport, and highly competitive sport). Given that participants were asked to conduct this classification themselves, it is possible that respondents who participated in the same level of competition (or who were even

competing on the same team) may self-classify their current level of sport-participation differently. For example, a varsity golfer may classify his/her involvement on the varsity golf team as "highly competitive sport." However, another golfer from the same team may compare varsity golf to a much higher level of golf performance (e.g., the PGA tour) and classify his/her involvement in varsity golf as "moderately competitive sport." Alternatively, a student who plays intramural campus-recreation hockey may classify his/her involvement as "highly competitive sport" whereas another athlete on the same campus-recreation team may classify his/her involvement as recreational sport. In both scenarios, the athletes are participating at the same absolute level of competitive sport but they perceive (and classify) this level quite differently.

It is also possible that some participants may have classified themselves as having "no sport involvement" yet they may have been former high-level athletes who have since withdrawn from competitive sport for a variety of reasons (e.g., injury, loss of interest, focus on schooling, etc). In such cases, the respondents may have reported very low levels of current perfectionistic strivings and perfectionistic concerns in sport (because they are no longer involved in sport), yet they may have reported very high levels of task value in sport, perceived competence in sport, and athletic identity during early adolescence. It is hoped that the incidence of such cases was minimal and the potential impact on the results would be negligible given the large sample size (i.e., $N = 377$) and the statistical aggregation techniques (i.e., regression and MANOVA) that were employed in this study.

A final limitation of the current study relates to the choice of subscales that were used to measure perfectionistic strivings (i.e., personal standards and striving for perfection) and perfectionistic concerns (i.e., concern over mistakes and negative reactions to imperfection). Other facets of perfectionistic strivings and perfectionistic concerns in sport may exist. For example, the *Organization* subscale of the Sport-MPS-2 (Gotwals & Dunn, 2009) purportedly measures a facet of perfectionistic strivings in sport (Gotwals & Dunn, 2009), and the *Doubts About Actions, Perceived Coach Pressure*, and *Perceived Parental Pressure* subscales of the Sport-MPS-2 purportedly measures facets of perfectionistic concerns in sport (see Gotwals & Dunn, 2009). Consequently, it is not known if athletes who compete in higher or more serious levels of competitive sport also have higher levels of Organization, Doubts About Actions, Perceived Coach Pressure, and Perceived Parental Pressure in comparison to athletes who compete at lower (or less serious) levels of competitive sport.

Despite the presence of the aforementioned limitations, the overall results of this study indicate that heightened task value, perceived competence, and athletic identity during early adolescence appear to be strongly associated with heightened perfectionistic strivings and to a lesser degree, with heightened perfectionistic concerns during late adolescence and into early adulthood. It is hoped that the current results will stimulate future research that will investigate the extent to which person-factors (in addition to task value, perceived competence, and self-identity constructs) may be linked with, or influence, the development of heightened perfectionist tendencies in other achievement domains

(e.g., work, school, performing arts, etc.). By understanding more about how perfectionism develops in different achievement domains, researchers and practitioners will hopefully be in a better position to find ways that may enhance individuals' perfectionistic strivings, which will enable performers to experience the cognitive, affective and behavioural benefits that are often associated with heightened perfectionistic strivings (when perfectionistic concerns are controlled).

Chapter 5

References

Anderson, C. B. (2004). Athletic identity and its relation to exercise behavior: Scale development and initial validation. *Journal of Sport & Exercise Psychology, 26*, 39-56.

Anderson, C. B., Masse, L. C., & Hergenroeder, A. C. (2007). Factorial and construct validity of the athletic identity questionnaire for adolescents. *Medicine & Science in Sports & Exercise,39,* 59-69.

doi: 10.1249/01.mss.0000241640.97972.71

Anshel, M. H. (2003). *Sport psychology: From theory to practice* (4th ed.). San Francisco: Benjamin-Cummings.

Anshel, M. H., & Eom, H. J. (2003). Exploring the dimensionality of perfectionism in sport. *International Journal of Sport Psychology, 34*, 255–271.

Anshel, M. H., Weatherby, N. L., Kang, M., & Watson, T. (2009). Rasch calibration of a unidimensional perfectionism inventory for sport. *Psychology of Sport and Exercise, 10,* 210-216. doi: 10.1016/j.psychsport.2008.07.006

Berney L., & Blane D. B. (1997). Collecting retrospective data: Accuracy of recall after 50 years judged against historical records. *Social Science & Medicine, 45,* 1519-1525. doi: 10.1016/S0277-9536(97)00088-9

Bieling, P. J., Israeli, A., Smith, J., & Antony, M. M. (2003). Making the grade: The behavioural consequences of perfectionism in the classroom.

Personality and Individual Differences, 35, 163-178. doi: 10.1016/S0191-8869(02)00173-3

Brewer, B. W., & Cornelius, A. E. (2001). Norms and factorial invariance of the Athletic Identity Measurement Scale. *Academic Athletic Journal, 15*, 103–113.

Brewer, B. W., Van Raalte, J. L., & Linder, D. E. (1993). Athletic identity: Hercules' muscles or Achilles' heel*? International Journal of Sport Psychology, 24*, 237–254. doi:10.1080/10413209308411316

Callero, P. L. (1985). Role-identity salience. *Social Psychology Quarterly, 48*, 203–215. doi:10.2307/3033681

Cattell, R. B. (1978). *The scientific use of factor analysis in behavioral and life sciences*. New York: Plenum Press.

Cerin, E. (2003). Anxiety versus fundamental emotions as predictors of perceived functionality of pre-competitive emotional states, threat, and challenge in individual sports. *Journal of Applied Sport Psychology, 15*, 223-238. doi:10.1080/10413200305389

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.

Côté, J., Ericsson, K. A., & Law, M. P. (2005). Tracing the development of athletes using retrospective interview methods. *Journal of Applied Sport Psychology, 17*, 1-19. doi:10.1080/10413200590907531

Crocker, L., & Algina, J. (1986). *Introduction to classical & modern test theory*. Orlando, Florida: Holt, Rinehart and Winston.

Di Bartolo, P. M., Frost, R. O., Chang, P., LaSota, M., & Grills, A. E. (2004). Shedding light on the relationship between personal standards and psychopathology: The case for contingent self-worth. *Journal of Rational-Emotive & Cognitive Behavior Therapy, 22,* 241-254. doi:10.1023/B:JORE.0000047310.94044.ac

Dunn, J. G. H., Causgrove Dunn, J., Gotwals, J. K., Vallance, J. K. F., Craft, J. M., & Syrotuik, D. G. (2006). Establishing construct validity evidence for the Sport Multidimensional Perfectionism Scale. *Psychology of Sport and Exercise, 7,* 57-79. doi:10.1016/j.psychsport.2005.04.003

Dunn, J. G. H., Causgrove Dunn, J., & McDonald, K. (2012). Domain-specific perfectionism in intercollegiate athletes: Relationships with perceived competence and perceived importance in sport and school. *Psychology of Sport and Exercise, 13,* 747-755. doi:10.1016/j.psychsport.2012.05.002

Dunn, J. G. H., Causgrove Dunn, J., & Syrotuik, D. G. (2002). Relationship between multidimensional perfectionism and goal orientations in sport. *Journal of Sport & Exercise Psychology, 24,* 376-395.

Dunn, J. G. H., Craft, J. M., Causgrove Dunn, J., & Gotwals, J. K. (2011). Comparing a domain-specific and global measure of perfectionism in competitive female figure skaters. *Journal of Sport Behavior, 34,* 25-46.

Dunn, J. G. H., Gotwals, J. K., & Causgrove Dunn, J. (2005). An examination of the domain-specificity of perfectionism among intercollegiate student-athletes. *Personality and Individual Differences, 38,* 1439-1448. doi:10.1016/j.paid.2004.09.009

Eccles J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: Freeman.

Eccles, J. S., & Harold, R. D. (1991). Gender differences in sport involvement: Applying the Eccles' Expectancy-Value Model. *Journal of Applied Sport Psychology, 3,* 7-35. doi: 10.1037/0022-0663.92.1.144

Eccles, J. S., Wigfield, A., Flanagan, C. A., Miller, C., Reuman, D. A., & Yee, D. (1989). Self-concept, domain values, and self-esteem: Relations and changes at early adolescence. *Journal of Personality, 57*, 283–310. doi: org/10.1111/j.1467-6494.1989.tb00484.x

Eccles, J. S., Wigfield, A., Harold, R., & Blumenfeld, P. B. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development, 64*, 830-847. doi:10.1111/j.1467-8624.1993.tb02946.x

Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In W. Damon (Series Ed.) and N. Eisenberg (Vol. Ed.), *Handbook of child psychology* (5th ed., Vol. III, pp. 1017–1095). New York: Wiley.

Enns, M. W., & Cox, B. J. (2002). The nature and assessment of perfectionism: A critical analysis. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research and practice* (pp. 33-62). Washington, DC: American Psychological Association.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999).

Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4,* 272-299. doi:10.1037/1082-989X.4.3.272

Feldman Barrett, L. (1997). The relationships among momentary emotion experiences, personality descriptions, and retrospective ratings of emotion. *Personality & Social Psychology Bulletin, 23,* 1100-1110. doi:10.1177/01461672972310010

Flett, G. L., & Hewitt, P. L. (2002). Perfectionism and maladjustment: An overview of theoretical, definitional, and treatment issues. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research and practice* (pp. 5-31). Washington, DC: American Psychological Association.

Flett, G. L., & Hewitt, P. L. (2005). The perils of perfectionism in sports and exercise. *Current Directions in Psychological Science, 14,* 14-18. doi: 10.1111/j.0963-7214.2005.00326.x

Flett, G. L., Hewitt, P. L., Oliver, J. M., & Macdonald, S. (2002). Perfectionism in children and their parents: A developmental analysis. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research and practice* (pp. 89-132). Washington, DC: American Psychological Association.

Flett, G. L., Hewitt, P. L., & Singer, A. (1995). Perfectionism and parental authority styles. *Individual Psychology, 51,* 50-60.

Fortier, M. S., Vallerand, R. J., Brière, N. M., & Provencher, P. J. (1995). Competitive and recreational sport structure and gender: A test of their

relationship with sport motivation. *International Journal of Sport Psychology, 26,* 24-39.

Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two males sex-typed domains*. Developmental Psychology, 38*, 519–533. doi:10.1037//0012-1649.38.4.519

Fredricks, J. A., & Eccles, J. S. (2005). Family socialization, gender, and sport motivation and involvement. *Journal of Sport & Exercise Psychology, 27,* 3-31.

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences, 14,* 119-126. doi.org/10.1016/0191-8869%2893%2990181-2

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14,* 449-468. doi:10.1007/BF01172967

Gapin, J. I., & Petruzzello, S. J. (2011). Athletic identity and disordered eating in obligatory and non-obligatory runners. *Journal of Sport Sciences, 20,* 1001-1010. doi:10.1080/02640414.2011.571275

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2,* 15-34.

doi:10.1002/1098-108X(198321)2:2<15::AIDEAT2260020203>3.0.CO;2-6

Glass, G. V., & Hopkins, K. D. (1984). *Statistical methods in education and psychology* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.

Gotwals, J. K. (2011). Perfectionism and burnout within intercollegiate sport: A person-oriented approach. *The Sport Psychologist, 25,* 489-510.

Gotwals, J. K., & Dunn, J. G. H. (2009). A multi-method multi-analytic approach to establishing internal construct validity evidence: The Sport Multidimensional Perfectionism Scale 2. *Measurement in Physical Education and Exercise Science, 13*, 71-92. doi:10.1080/10913670902812663

Gotwals, J. K., Dunn, J. G. H., Causgrove Dunn, J., & Gamache, V. (2010). Establishing validity evidence for the Sport Multidimensional Perfectionism Scale-2 in intercollegiate sport. *Psychology of Sport and Exercise, 11*, 423-432. doi:10.1016/j.psychsport.2010.04.013

Gotwals, J. K., Dunn, J. G. H., & Wayment, H. A. (2003). An examination of perfectionism and self-esteem in intercollegiate athletes. *Journal of Sport Behavior, 26*, 17–38.

Gotwals, J. K., Stoeber, J., Dunn, J. G. H., & Stoll, O. (2012). Are perfectionist strivings in sport adaptive? A systematic review of confirmatory, contradictory and mixed evidence. *Canadian Psychology, 53,* 263-279. doi: 10.1037/a0030288

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology, 14,* 172-204. doi:10.1080/10413200290103482

Gould, G., Jackson, S. A., & Finch, L. M. (1993). Life at the top: The experiences of U.S. National Champion figure skaters. *The Sport Psychologist, 7*, 354-374.

Graham, J. W., Cumsille, P. E., & Elek-Fisk, E. (2003). Methods for handling missing data. In J. A. Schinka & W. F. Velicer (Eds*.*), *Handbook of psychology: Research methods in psychology* (Vol. 2, pp. 87-114). Hoboken, NJ: Wiley.

Gravetter, F. J., & Wallnau, L. B. (2013). *Statistics for the behavioral sciences* (9th ed.) Belmont, CA: Wadsworth.

Greenleaf, C., Gould, D., & Dieffenbach, K. (2001). Factors influencing Olympic performance: Interviews with Atlanta and Nagano US Olympians. *Journal of Applied Sport Psychology, 13,* 154-184. doi:10.1080/104132001753149874

Greenspon, T. S. (2008). Making sense of error: A view of the origins and treatment of perfectionism. *American Journal of Psychotherapy, 62*, 263-282

Hall, H. K. (2006). Perfectionism: A hallmark quality of world class performers, or a psychological impediment to athletic development? In D. Hackfort & G. Tenebaum (Eds.), *Essential processes for attaining peak performance* (Vol. 1, pp.178-211). Oxford, UK: Meyer & Meyer.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology. 20,* 194-217.

Halverson, C. F. (1988). Remembering your parents: Reflections on the retrospective method. *Journal of Personality, 56,* 435-444. doi:10.1111/j.1467-6494.1988.tb00895.x

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology, 15,* 27-33.

Hardy, J., Hall, C. R., & Hardy, L. (2004). A note on athletes' use of self-talk. *Journal of Applied Sport Psychology, 16,* 251-257. doi:10.1080/10413200490498357

Herman, K. C., Trotter, R., Reinke, W. M., & Ialongo, N. (2011). Developmental origins of perfectionism among African American youth. *Journal of Counseling Psychology, 58,* 231-334. doi: 10.1037/a0023108

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60,* 456-470. doi:10.1037//0022-3514.60.3.456

Hibbard, D. R., & Walton, G. E. (2012). Where does perfectionism come from? A qualitative investigation of perfectionists and non-perfectionists. *Social Behavior and Personality, 40,* 1121-1122. doi:10.2224/sbp.2012.40.7.1121

Hill, R. W., Huuelsman, T. J., Furr, R. M., Kibler, J., Vicente, B. B., & Kennedy,

    C. (2004). A new measure of perfectionism: The Perfectionism Inventory.

    Journal of Personality Assessment, 82, 80-91.

    doi:10.1207/s15327752jpa8201_13

Hollender, M. H. (1965). Perfectionism. *Comprehensive Psychology, 6,* 94-103.

    doi: 10.1016/S0010-440X(65)80016-5

Houle, J. L. W., Brewer, B. W., & Kluck, A. S. (2010). Developmental trends in

    athletic identity: A two-part retrospective study. *Journal of Sport*

    Behavior, 33, 146-159.

Kawamura, K. Y., Frost, R. O., & Harmatz, M. G. (2002). The relationship of

    perceived parenting styles to perfectionism. *Personality and Individual*

    Differences, 32, 317-327. doi:10.1016/S0191-8869(01)00026-5

Kobori, O., Yamagata, S., & Kijima, N. (2005). The relationship of temperament

    to multidimensional perfectionism trait. *Personality and Individual*

    Differences, 38, 203-211. doi: 10.1016/j.paid.2004.04.003

Larsen, J. K., Vermult, A. A., Geenen, R., van Middendorp, H., English, T.,

    Gross, J. J., … Engels, R. C. M. E. (2012). Emotion regulation in

    adolescence: A prospective study of expressive suppression and

    depressive symptoms. *The Journal of Early Adolescence, 33,* 184-200.

    doi:10.1177/0272431611432712

Lautenschlager, G. J. (1989). A comparison of alternatives to conducting Monte

    Carlo analyses for determining parallel analysis criteria. *Multivariate*

    Behavioral Research, 24, 365–395. doi:10.1207/s15327906mbr2403_6

Lau, P. W. C., Cheung, M. W. L., & Randsall, L. (2007). Sport identity and sport participation: A cultural comparison between Collective and Individualistic Societies. *International Journal of Sport and Exercise Psychology, 5,* 66-81. doi: 10.1080/1612197X.2008.9671813

Lau, P. W. C., Fox, K. R., & Cheung, M. W. L. (2005). Psychosocial and socio-environmental correlates of sport identity and sport participation in secondary school-age children. *European Journal of Sport Science, 4,* 1-21. doi: 10.1080/17461390400074301

Lavallee, D., Gordon, S., & Grove, J. R. (1997). Retirement from sport and the loss of athletic identity. *Journal of Personal and Interpersonal Loss, 2*, 129-147. doi:10.1080/10811449708414411

Leite, N., & Sampaio, J. (2010). Early sport involvement in young Portuguese basketball players. *Perceptual and Motor Skills, 111,* 669-680. doi:10.2466/05.10.PMS.111.6.669-680

Loukas, A., & Pasch, K. E. (2012). Does school connectedness buffer the impact of peer victimization on early adolescents' subsequent adjustment problems? *The Journal of Early Adolescence, 33*, 245-266. doi:10.1177/0272431611435117

Mallett, C. J., & Hanrahan, S. J. (2004). Elite athletes: Why does the fire burn so brightly? *Psychology of Sport & Exercise, 5*, 183-200. doi:10.1016/S1469-0292(02)00043-2

Marcia, J. E. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 159-187). New York: Wiley.

Mason, G. (1987). Coping with collinearity. *Canadian Journal of Program Evaluation, 2*, 87–93.

McArdle, S. (2010). Exploring domain-specific perfectionism. *Journal of Personality, 78*, 494-508. doi:10.1111/j.1467-6494.2010.00624.x

Mitchelson, J. K., & Burns L. R. (1998). Career mothers and perfectionism: stress at work and home. *Personality and Individual Differences, 25*, 477-485. doi:10.1016/S0191-8869(98)00069-5

Murphy, G. M., Petitpas, A. J., & Brewer, B. W. (1996). Identity foreclosure, athletic identity, and career maturity in intercollegiate athletes. *The Sport Psychologist, 10,* 239-246.

Pellizzari, M., Bertollo, M., & Robazza, C. (2011). Pre- and post-performance emotions in gymnastics competitions. *International Journal of Sport Psychology, 42,* 278-302.

Perrier, M-J., Sweet, S. N., Strachan, S. M., & Latimer-Cheung, A. E. (2012). I act, therefore I am: Athletic identity and the health action process approach predict sport participation among individuals with acquired physical disabilities. *Psychology of Sport and Exercise, 6,* 713-720. doi:10.1016/j.psychsport.2012.04.011

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics, 2*, 13-43. doi:10.1207/S15328031US0201_02

Rhéaume, J., Ladouceur, R., & Freeston, M. H. (2000). The prediction of

> obsessive compulsive tendencies: Does perfectionism play a significant

> role? *Personality and Individual Differences, 28*, 583–592.

> doi:10.1016/S0191-8869(99)00121-X

Rodriguez, D., Wigfield, A., & Eccles, J. S. (2003). Changing competence

> perceptions, changing values: Implications for youth sport. *Journal of

> Applied Sport Psychology, 15*, 67-81. doi:10.1080/10413200305403

Sapieja, K. M., Dunn, J. G. H., & Holt, N. L. (2011). Perfectionism and

> perceptions of parenting styles in male youth soccer. *Journal of Sport &

> Exercise Psychology, 33*, 20-39.

Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: a

> cognitive behavioural analysis. *Behaviour Research and Therapy*, *40*, 773-

> 791. doi:10.1016/S0005- 7967(01)00059-6

Shaunessy, E., Suldo, S. M., & Friedrich, A. (2011). Mean levels and correlates of

> perfectionism in International Baccalaureate and general education

> students. *High Ability Studies, 22,* 61-77.

> doi:10.1080/13598139.2011.576088

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The

> revised Almost Perfect Scale. *Measurement and Evaluation in Counseling

> and Development, 34*, 130-145.

Snelgrove, R., & Havitz, M. E. (2010). Looking back in time: The pitfalls and

> potential of retrospective methods in leisure studies. *Leisure Sciences, 32,*

> 337-351. doi: 10.1080/01490400.2010.488199

Speirs Neumeister, K. L. (2004). Factors influencing the development of perfectionism in gifted college students. *Gifted Child Quarterly, 48,* 259-274. doi:10.1177/001698620404800402

Stevens, J. (1992). Applied multivariate statistics for the social sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Stoeber, J. (2011). The dual nature of perfectionism in sports: Relationships with emotion, motivation, and performance. *International Review of Sport and Exercise Psychology, 4,* 128-145. doi:10.1080/1750984X.2011.604789

Stoeber, J., & Eismann, U. (2007). Perfectionism in young musicians: relations with motivation, effort, achievement and distress. *Personality and Individual Differences, 43,* 2182-2192. doi: 10.1016/j.paid.2007.06.036

Stoeber, J., Hutchfield, J., & Wood, K. V. (2008). Perfectionism, self-efficacy and aspiration level: Differential effects of perfectionistic striving and self-criticism after success and failure. *Personality and Individual Differences, 45,* 323-327. doi:10.1016/j.paid.2008.04.021

Stoll, O., Lau, A., & Stoeber, J. (2008). Perfectionism and performance in a new basketball training task: Does striving for perfection enhance or undermine performance? *Psychology of Sport and Exercise, 9,* 620-629. doi:10.1016/j.paid.2006.09.006

Stoeber. J., & Otto, K. (2006). Positive conceptions of perfectionism: approaches, evidence and challenges. *Personality and Social Psychology Review, 10,* 295-319. doi:10.1207/s15327957pspr1004_2

Stoeber, J., Otto, K., Pescheck, E., Becker, C., & Stoll, O. (2007). Perfectionism

and competitive anxiety in athletes: Differentiating striving for perfection

and negative reactions to imperfection. *Personality and Individual*

Differences, 42, 959-969. doi:10.1016/j.paid.2006.09.006

Stoeber, J., Otto, K., & Stoll, O. (2004). Mehrdimensionales Inventar zu

Perfektionismus im Sport (MIPS) [Multidimensional Inventory of

Perfectionism in Sport (MIPS)]. In J. Stoeber, K. Otto, E. Pescheck, & O.

Stoll (Eds.), *Skalendokumentation ''Perfektionismus im Sport''. Hallesche*

Berichte zur Padagogischen Psychologie (Vol. 7, pp. 4–13). Halle, Saale,

Germany: University of Halle-Wittenberg.

Stoeber, J., & Rambow, A. (2007). Perfectionism in adolescent school students:

Relations with motivation, achievement, and well-being. *Personality and*

Individual Differences, 42, 1379-1389. doi:10.1016/j.paid.2006.10.015

Stoeber, J., & Stoeber, F. S. (2009). Domains of perfectionism: prevalence and

relationships with perfectionism, gender, age, and satisfaction with life.

Personality and Individual Differences, 46, 530-535.

doi:10.1016/j.paid.2008.12.006

Stoeber, J., Stoll, O., Salmi, O., & Tiikkaja, J. (2009). Perfectionism and

achievement goals in young Finnish ice-hockey players aspiring to make

the Under-16 national team. *Journal of Sport Sciences, 27,* 85-94.

doi:10.1080/02640410802448749.

Stoeber, J., Uphill, M. A., & Hotham, S. (2009). Predicting race performance in

    triathalon: The role of perfectionism, achievement goals, and personal

    goal setting. *Journal of Sport & Exercise Psychology, 31,* 211-245.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.).

    New York: Harper Collins.

Tu, Y-K., Kellett, M., Clerehugh, V., & Gilthorpe, M. S. (2005). Problems of

    correlations between explanatory factors in multiple regression analyses in

    the dental literature. *British Dental Journal, 199,* 457-461.

Vallance, J. K. F., Dunn, J. G. H., & Causgrove Dunn, J. (2006). Perfectionism,

    anger, and situation criticality in competitive youth ice hockey. *Journal of*

    Sport & Exercise Psychology, 28, 383-406.

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through

    factor or component analysis: A review and evaluation of alternative

    procedures for determining the number of factors or components. In R. D.

    Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment:*

    Honoring Douglas N. Jackson at seventy (pp. 41-71). Boston, MA:

    Kluwer. doi:10.1007/978-1-4615-4397-8_3

Visek, A. J., Hurst, J. R., Maxwell, J. P., & Watson, J. C. (2008). A cross-cultural

    psychometric evaluation of the Athletic Identity Measurement Scale.

    Journal of Applied Sport Psychology, 20, 473-480.

    doi:10.1080/10413200802415048

Visek, A. J., Watson, J. C., Hurst, J. R., Maxwell, J. P., & Harris, B. S. (2010).

    Athletic identity and aggressiveness: a cross-cultural analysis of the

athletic identity maintenance model. *International Journal of Sport and Exercise Psychology, 8,* 99-116. doi:10.1080/1612197X.2010.9671936

Wigfield, A. (1994). Expectancy-value model of achievement motivation: A developmental perspective. *Educational Psychology Review, 6*, 49-78. doi:10.1007/BF02209024

Appendix A

Demographic Questionnaire

Please provide the following background information.

1. Age: _____ years

2. Gender (circle one option):   Male   Female

3. In the space provided below, please describe the highest competitive level of
sport in which you have participated. This may range from having no formal
competitive sport experiences (e.g., participation in physical education class) up
to Olympic/professional sport. Please be as specific as possible in your
description (e.g., "I have never competed in organized sport," "My only
involvement in competitive sport was in Phys. Ed. class", "Community league
basketball as a 12-year old," "Under-16 provincial swimming team," "High
school cross-country team", "Current member of the U of A Pandas hockey team"
etc.).

_____

_____

_____

4. Please identify (circle) the option below that best represents your current level
   of involvement in sport.

   a. I am not involved in any organized sport.

   b. I participate in recreational level sport (i.e., for fun, fitness, and/or
   social reasons).

   c. I participate in moderately competitive/serious sport.

   d. I participate in highly competitive/serious sport.

5. What Faculty are you enrolled in at the U of A? _____

6. Please identify (circle) the option that best captures your ethnic background:

      a. White

      b. Black

      c. Hispanic

      d. Asian

      e. First Nations

      f. Middle Eastern

      f. Other: (please specify) _____

7. Have you previously participated in this study? (circle one option):

      Yes   No

Appendix B

Task Value Items and Response Scales

---

1. While in junior high, how useful were the things you learned in sport?

Not at all useful			Neither useful nor irrelevant			Extremely useful
1	2	3	4	5	6	7

---

2. While in junior high, how important was being good at sport to you?

Not at all important			Neither important nor unimportant			Extremely important
1	2	3	4	5	6	7

---

3. While in junior high, compared to other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how useful were the things you learned in sport?

Not at all useful			Neither useful nor irrelevant			Extremely useful
1	2	3	4	5	6	7

4. While in junior high, compared to other activities you did (e.g., music, volunteer work, academic studies, etc.), how important was it for you to be good at sport?

Not at all important			Neither important nor unimportant			Extremely important
1	2	3	4	5	6	7

5. While in junior high, how interesting did you find sport to be?

Extremely boring			Neither interesting nor boring			Extremely interesting
1	2	3	4	5	6	7

6. While in junior high, how much did you like sport?

Disliked it a lot			Neither liked nor disliked			Liked it a lot
1	2	3	4	5	6	7

7. While in junior high, compared to most other activities you did (e.g., music, volunteer work, academic studies, etc.), how much did you like sport?

Likes it a lot less			Neither more nor less			Liked it a lot more
1	2	3	4	5	6	7

Appendix C

Perceived Competence Items and Response Scales

---

1. While in junior high, how good at sport were you?

Extremely poor			Average			Extremely good
1	2	3	4	5	6	7

---

2. While in junior high, if you were to list all of your peers from the worst to the best performer in sport, where would you have rated yourself?

One of the worst			Average			One of the best
1	2	3	4	5	6	7

---

3. While in junior high, compared to most other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how good were you at sport?

Extremely poor			Average			Extremely good
1	2	3	4	5	6	7

4. While in junior high, how well did you do in sport?

Extremely poor			Average			Extremely well
1	2	3	4	5	6	7

5. While in junior high, how good were you at learning something new in sport?

Extremely poor			Average			Extremely good
1	2	3	4	5	6	7

Appendix D

Athletic Identity Measurement Scale (AIMS)

---

1. **While in junior high, I considered myself an athlete.**

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

---

2. **While in junior high, I had many goals related to sport.**

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

---

3. **While in junior high, most of my friends were athletes.**

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

4. While in junior high, sport was the most important part of my life.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

5. While in junior high, I felt badly about myself when I performed poorly in sport.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

6. While in junior high, I spent more time thinking about sport than anything else.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

7. While in junior high, I would have been very depressed if I were injured and could not compete in sport.

Strongly disagree		Neither agree nor disagree				Strongly agree
1	2	3	4	5	6	7

Appendix E

Reflections on Past Sport Experiences (R.P.S.E.)

INSTRUCTIONS: **The following questions and statements ask you to reflect upon your attitudes and experiences in sport while you were in junior high school (i.e., Grades 7-9;** age approximately 12-14 years**). When considering each question and statement, please think back to** how you felt about yourself and sport <u>during the period of your life when you were attending junior high school</u>**. In other words,** we want you to think about all of your attitudes and experiences towards sport both in and outside of school during this period of your life. **There are no right or wrong answers, so please don't spend too much time on any one question. Simply choose the answer (by circling one response option below each question and statement) that best describes how you** felt about yourself and sport when you attended junior high.

---

1. **While in junior high, compared to most other activities you did (e.g., music, volunteer work, academic studies, etc.), how much did you like sport?**

Disliked it a lot		Neither liked nor disliked				Liked it a lot
1	2	3	4	5	6	7

---

2. **While in junior high, how good at sport were you?**

Extremely good		Average				Extremely good
1	2	3	4	5	6	7

3. While in junior high, how useful were the things you learned in sport?

Not at all useful		Neither useful nor irrelevant				Extremely useful
1	2	3	4	5	6	7

4. While in junior high, I considered myself an athlete.

Strongly disagree		Neither agree nor disagree				Strongly agree
1	2	3	4	5	6	7

5. While in junior high, compared to other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how useful were the things you learned in sport?

Not at all useful		Neither useful nor irrelevant				Extremely useful
1	2	3	4	5	6	7

6. While in junior high, I had many goals related to sport.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

7. While in junior high, compared to other activities you did (e.g., music, volunteer work, academic studies, etc.), how important was it for you to be good at sport?

Not at all important			Neither important nor unimportant			Extremely important
1	2	3	4	5	6	7

8. While in junior high, compared to most other activities you participated in (e.g., music, volunteer work, academic studies, etc.), how good were you at sport?

Extremely poor			Average			Extremely good
1	2	3	4	5	6	7

9. While in junior high, most of my friends were athletes.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

10. While in junior high, how good were you at learning something new in sport?

Not at all good			Neither good nor poor			Extremely good
1	2	3	4	5	6	7

11. While in junior high, sport was the most important part of my life.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

12. While in junior high, if you were to list all of your peers from the worst to the best performer in sport, where would you have rated yourself?

One of the worst			Average			One of the best
1	2	3	4	5	6	7

13. While in junior high, how interesting did you find sport to be?

Not at all interesting		Neither boring nor interesting			Extremely interesting	
1	2	3	4	5	6	7

14. While in junior high, how much did you like sport?

Disliked it a lot		Neither liked nor disliked			Liked it a lot	
1	2	3	4	5	6	7

15. While in junior high, how well did you do in sport?

Extremely poorly		Average			Extremely well	
1	2	3	4	5	6	7

16. While in junior high, how important was being good at sport to you?

Not at all important		Neither important nor unimportant			Extremely important	
1	2	3	4	5	6	7

17. While in junior high, I felt badly about myself when I performed poorly in sport.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

18. While in junior high, I spent more time thinking about sport than anything else.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

19. While in junior high, I would have been very depressed if I were injured and could not compete in sport.

Strongly disagree			Neither agree nor disagree			Strongly agree
1	2	3	4	5	6	7

Appendix F

Sport Multidimensional Perfectionism Scale (Sport-MPS) Items

Personal Standards (PS)

1) If I do not set the highest standards for myself in sport, I am likely to end up as a second rate athlete.

2) I hate being less than the best at things in sport.

3) It is important to me that I be thoroughly competent in everything I do in sport.

4) I think I expect higher performance and greater results in my daily sport training than most athletes.

5) I feel other athletes generally accept lower standards for themselves in sport than I do.

6) I have extremely high goals for myself in sport.

7) I set higher achievement goals than most athletes who compete in my sport.

Concern Over Mistakes (COM)

1) Even if I fail slightly in sport, for me, it is as bad as being a complete failure.

2) If I fail in sport, I feel like a failure as a person.

3) The fewer mistakes I make in sport, the more people will like me.

4) I should be upset if I make a mistake in sport.

5) If a team-mate or opponent (who plays a similar position to me) performs better than me during competition, then I feel like I failed to some degree.

6) If I do not do well all the time in sport, I feel that people will not respect me as an athlete.

7) People will probably think less of me if I make mistakes in competition.

8) If I perform well but only make one obvious mistake in the entire competition, I still feel disappointed with my performance.

Note. All PS and COM items are answered on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Appendix G

Multidimensional Inventory of Perfectionism in Sport (MIPS) Items

Striving for Perfection (SP)

  1) In sport, I strive to be as perfect as possible.

  2) In sport, it is important for me to be perfect in everything I attempt.

  3) In sport, I feel the need to be perfect.

  4) In sport, I am a perfectionist as far as my targets are concerned.

  5) In sport, I want to do everything perfectly.

Negative Reactions to Imperfection (NRI)

  1) In sport, I feel extremely stressed if everything does not go perfectly.

  2) In sport, I become furious if I make mistakes.

  3) In sport, I get frustrated if I do not fulfill my high expectations.

  4) In sport, I feel depressed if I have not been perfect.

  5) In sport, if something does not go perfectly, I am dissatisfied with the whole performance.

Note. All SP and NRI items are answered on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Appendix H

Sport Perfectionism Inventory

INSTRUCTIONS: **The purpose of this questionnaire is to examine your** current attitudes and experiences in sport. **Please indicate the extent to which you** agree or disagree **with each one of the following statements. (Circle one response option to the right of each statement). There are no right or wrong answers so please don't spend too much time on any one statement; simply choose the answer that best describes your** current attitudes and experiences in sport.

To what extent do you disagree or agree with the following statements?	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1) If I do not set the highest standards for myself in sport, I am likely to end up as a second rate athlete.	1	2	3	4	5
2) In sport, I feel extremely stressed if everything does not go perfectly.	1	2	3	4	5
3) It is important to me that I be thoroughly competent in everything I do in sport.	1	2	3	4	5
4) I think I expect higher performance and greater results in my daily sport training than most athletes.	1	2	3	4	5
5) I feel other athletes generally accept lower standards for themselves in sport than I do.	1	2	3	4	5
6) In sport, I become furious if I make mistakes.	1	2	3	4	5
7) I set higher achievement goals than most athletes who compete in my sport.	1	2	3	4	5
8) People will probably think less of me if I make mistakes in competition.	1	2	3	4	5

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
9) If I fail in competition, I feel like a failure as a person.	1	2	3	4	5
10) The fewer mistakes I make in sport, the more people will like me.	1	2	3	4	5
11) I should be upset if I make a mistake in sport.	1	2	3	4	5
12) In sport, I am a perfectionist as far as my targets are concerned.	1	2	3	4	5
13) If I do not do well all the time in sport, I feel that people will not respect me as an athlete.	1	2	3	4	5
14) In sport, I want to do everything perfectly.	1	2	3	4	5
15) If I perform well but only make one obvious mistake in the entire competition, I still feel disappointed with my performance.	1	2	3	4	5
16) I hate being less than the best at things in sport.	1	2	3	4	5
17) In sport, I strive to be as perfect as possible.	1	2	3	4	5
18) Even if I fail slightly in sport, for me, it is as bad as being a complete failure.	1	2	3	4	5
19) In sport, it is important for me to be perfect in everything I attempt.	1	2	3	4	5
20) I have extremely high goals for myself in sport.	1	2	3	4	5
21) In sport, I get frustrated if I do not fulfill my high expectations.	1	2	3	4	5
22) In sport, I feel the need to be perfect.	1	2	3	4	5

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
23) In sport, I feel depressed if I have not been perfect	1	2	3	4	5
24) In sport, if something does not go perfectly, I am dissatisfied with the whole performance.	1	2	3	4	5
25) If a team-mate or opponent (who plays a similar position to me) performs better than me during competition, then I feel like I failed to some degree.	1	2	3	4	5

Appendix I

Information Letter for Coaches

Faculty of Physical Education and Recreation

E488 Van Vliet Centre

Edmonton, Alberta, Canada T6G 2H9

September, 2012

Dear Coach,

We are currently doing a study looking at variables that may influence the development of perfectionism in the sport. The purpose of this letter is to ask for your permission to approach the athletes on your team. The research will be conducted by Allison Rasquinha (under the supervision of Dr. John Dunn) as part of Allison Rasquinha's Master's thesis. In the present study we are trying to identify factors that contribute to the development of perfectionism in sport. Specifically, we are identifying factors that might tell us why some individuals develop higher perfectionist tendencies in sport while others do not develop these same perfectionist tendencies in sport.

We ask for your permission to approach athletes in your team. We would ask for your assistance with scheduling a one-time-only 20-minute time slot during a practice when athletes would be informed about the nature of the study and asked to complete three short questionnaires.

Procedures

The following is a summary of the procedures that we would employ during a practice:

(1) Before or after a regularly scheduled practice on a non-competition day during the season, athletes would complete three brief self-report questionnaires to measure demographic characteristics, perfectionism, perceived task value, perceptions of competence, and athletic identity (copies of the questionnaires have been attached).

(2) Together, the three questionnaires will take no more than 20 minutes to complete.

(3) The questionnaires will be administered in a dressing room at the team's practice facility or, preferably, in a classroom environment near the team's practice facility.

(4) All questionnaires will be administered by Allison Rasquinha. Allison is a second year Master's student working at the University of Alberta in the area of sport psychology (supervised by Dr. John Dunn).

Ethical Issues

(1) It will be made clear to all athletes that their participation in the study is entirely voluntary. It will also be made clear that their decision to participate (or not) will have no impact upon their playing status.

(2) All information supplied by the players will be kept strictly confidential. The identity of individual players will be kept anonymous at all times. Only the research team will have access to individual results. Teammates, parents, and coaches will not be given access to individual results.

(3) There are no known risks associated with the protocol.

(4) The study has been approved by the Research Ethics Board at the University of Alberta. A copy of the ethics clearance is available upon request.

(5) Copies of the information letters that we would present to players have been attached.

Data and Information

(1) All data will be coded and stored in a locked office to which only the researchers (i.e., Allison Rasquinha and Dr. John Dunn) will have access.

(2) All data will be destroyed five years post publication.

(3) A report of the study's findings will be provided to coaches.

(4) We will be happy to discuss, on the telephone or over e-mail, any aspect of the study with you.

(5) Participants (i.e., the athletes) can ask for a free copy of the report from the researchers when the report has been completed in August of 2013.

We hope that the information above is clear. Please feel free to contact Allison Rasquinha (e-mail: arasquin@ualberta.ca) or Dr. John Dunn (780-492-2831; e-mail: john.dunn@ualberta.ca) with any questions or concerns. If you wish to speak to someone about the ethical issues of the study, please contact the University of Alberta Research Ethics Office, at 780-492-2615.

We hope that you will consider our request to allow us to conduct the study. In the event that you wish to know more about our current research program before making any decision about participation, a summary of Dr. John Dunn's research and applied sport psychology consulting work can be found at the following website: http://www.ualberta.ca/~jdunn/

Thank you.

Sincerely,

Allison Rasquinha, B.A.   John G. H. Dunn, PhD

Appendix J

Information Letter for Instructors

UNIVERSITY OF
ALBERTA

Faculty of Physical Education and Recreation

E488 Van Vliet Centre

Edmonton, Alberta, Canada T6G 2H9

September, 2012

Dear Instructor,

We are currently doing a study looking at variables that may influence the development of perfectionism in the sport. The purpose of this letter is to ask for your permission to approach the students in your class. The research will be conducted by Allison Rasquinha (under the supervision of Dr. John Dunn) as part of Allison Rasquinha's Master's thesis. In the present study we are trying to identify factors that contribute to the development of perfectionism in sport. Specifically, we are identifying factors that might tell us why some individuals develop higher perfectionist tendencies in sport while others do not develop these same perfectionist tendencies in sport.

We ask for your permission to approach students in your class. We would ask for your assistance with scheduling a one-time-only 20-minute time slot during a class when students would be informed about the nature of the study and asked to complete three short questionnaires.

Procedures

The following is a summary of the procedures that we would employ during a class:

(1) During your regularly scheduled class, students would complete three short self-report questionnaires to measure demographic characteristics, perfectionism, perceived task value, perceptions of competence, and athletic identity (copies of the questionnaires have been attached).

(2) Together, the three questionnaires will take no more than 20 minutes to complete.

(3) The questionnaires will be administered in your regular classroom.

(4) All questionnaires will be administered by Allison Rasquinha. Allison is a second year Master's student working at the University of Alberta in the area of sport psychology (supervised by Dr. John Dunn).

Ethical Issues

(1) It will be made clear to all students that their participation in the study is entirely voluntary. It will also be clear that their decision to participate (or not) will have no impact upon their grade in class.

(2) All information supplied by the students will be kept strictly confidential. The identity of individual students will be kept anonymous at all times. Only the research team will have access to individual results. Instructors and classmates will not be given access to individual results.

(3) There are no known risks associated with the protocol. Instructors will be asked to leave the room during the time the questionnaires are being completed so students do not feel pressure to participate.

(4) The study has been approved by the Research Ethics Board at the University of Alberta. A copy of the ethics clearance is available upon request.

(5) Copies of the information letters that we would present to students have been attached.

Data and Information

(1) All data will be coded and stored in a locked office to which only the researchers (i.e., Allison Rasquinha and Dr. John Dunn) will have access.

(2) All data will be destroyed five years post publication.

(3) A report of the study's findings will be provided to coaches.

(4) We will be happy to discuss, on the telephone or over e-mail, any aspect of the study with you.

(5) Participants (i.e., the students) can ask for a free copy of the report from the researchers when the report has been completed in August of 2013.

We hope that the information above is clear. Please feel free to contact Allison Rasquinha (e-mail: arasquin@ualberta.ca) or Dr. John Dunn (780-492-2831; e-mail: john.dunn@ualberta.ca) with any questions or concerns. If you wish to speak to someone about the ethical issues of the study, please contact the University of Alberta Research Ethics Office, at 780-492-2615.

We hope that you will consider our request to allow us to conduct the study. In the event that you wish to know more about our current research program before making any decision about participation, a summary of Dr. John Dunn's research and applied sport psychology consulting work can be found at the following website: http://www.ualberta.ca/~jdunn/

Thank you.

Sincerely,

Allison Rasquinha, B.A.   John G. H. Dunn, PhD

Appendix K

Information Letter for Varsity Athletes

UNIVERSITY OF
ALBERTA

Faculty of Physical Education and Recreation

E488 Van Vliet Centre

Edmonton, Alberta, Canada T6G 2H9

September, 2012

Dear Athlete,

The purpose of this letter is to ask you to consider participating in a research project. The project is titled The Development of Perfectionism in Sport. The research is part of Allison Rasquinha's Master's thesis (supervised by Dr. John Dunn).

The main purpose of this study is to identify factors that may contribute to the development of perfectionism. The results of this study will have no direct benefits for you at this time. It is hoped that the information you provide will eventually lead to a greater understanding of factors that influence the development of perfectionism in sport.

We would ask that you fill out the attached package. The package consists of a demographic survey and two questionnaires. This package should only take about 20 minutes to complete. The questionnaires would ask you to provide information about your sport experiences, and about your motives, goals and attitudes towards achievement in sport. You will not be asked to put your name on anything. No individual information will be shared with anyone other than the researchers at any time. All data will be coded and stored in a locked office at the University of Alberta. There are no known risks involved with the research.

Please understand that your participation in the study is voluntary. Completion and return of the package indicates your consent to participate in this study. Not returning the package will indicate a decision not to participate. You are free to ignore any questions that you do not wish to answer. You may decline to participate or withdraw at any time. This decision will not impact your status on the team. A decision to withdraw or not participate can be done either in writing or verbally at any time.

The study has been approved by the Human Research Ethics Board at the University of Alberta. You are not required to participate. The information that you provide will only be accessed by the researchers (i.e., Allison Rasquinha and Dr. John Dunn). Information is kept for a period of five years following any publication of the group information. After 5 years all individual information will be destroyed. You can obtain a free copy of the final report by contacting Allison Rasquinha or Dr. John Dunn when the report has been completed in August 2013.

We hope that the information above is clear. Please feel free to contact Allison Rasquinha (e-mail: arasquin@ualberta.ca) or Dr. John Dunn (780-492-2831; e-mail: john.dunn@ualberta.ca) with any questions or concerns. If you wish to speak to someone about the ethical issues of the study, please contact the University of Alberta Research Ethics Office, at 780-492-2615.

We hope that you will consider this request to participate. We want to reinforce that we only need you for one 20-minute session. We would also like to remind you that completion and return of the package indicates your consent to participate in this study. Not returning the package will indicate a decision not to participate. If you wish to know more about our current research program before deciding about participation, a summary of Dr. John Dunn's research interests and applied sport psychology work can be found at the following website: http://www.ualberta.ca/~jdunn/

Thank you.

Sincerely,

Allison Rasquinha, BA   John G.H. Dunn, PhD

Appendix L

Information Letter for Students

Faculty of Physical Education and Recreation

E488 Van Vliet Centre

Edmonton, Alberta, Canada T6G 2H9

September, 2012

Dear Student,

The purpose of this letter is to ask you to consider participating in a research project. The project is titled The Development of Perfectionism in Sport. The research is part of Allison Rasquinha's Master's thesis (supervised by Dr. John Dunn).

The main purpose of this study is to identify factors that may contribute to the development of perfectionism. The results of this study will have no direct benefits for you at this time. It is hoped that the information you provide will eventually lead to a greater understanding of factors that influence the development of perfectionism in sport.

We would ask that you fill out the attached package. The package consists of a demographic survey and two questionnaires. This package should only take about 20 minutes to complete. The questionnaires would ask you to provide information about your sport experiences, and about your motives, goals and attitudes towards achievement in sport. You will not be asked to put your name on anything. No individual information will be shared with anyone other than the researchers at any time. All data will be coded and stored in a locked office at the University of Alberta. There are no known risks involved with the research.

Please understand that your participation in the study is voluntary. Completion and return of the package indicates your consent to participate in this study. Not returning the package will indicate a decision not to participate. You are free to ignore any questions that you do not wish to answer. You may decline to participate or withdraw at any time. This decision will not impact your grade in this class. A decision to withdraw or not participate can be done either in writing or verbally at any time.

The study has been approved by the Human Research Ethics Board at the University of Alberta. You are not required to participate. The information that you provide will only be accessed by the

researchers (i.e., Allison Rasquinha and Dr. John Dunn). Information is kept for a period of five years following any publication of the group information. After 5 years all individual information will be destroyed. You can obtain a free copy of the final report by contacting Allison Rasquinha or Dr. John Dunn when the report has been completed in August 2013.

We hope that the information above is clear. Please feel free to contact Allison Rasquinha (e-mail: arasquin@ualberta.ca) or Dr. John Dunn (780-492-2831; e-mail: john.dunn@ualberta.ca) with any questions or concerns. If you wish to speak to someone about the ethical issues of the study, please contact the University of Alberta Research Ethics Office, at 780-492-2615.

We hope that you will consider this request to participate. We want to reinforce that we only need you for one 20-minute session. We would also like to remind you that completion and return of the package indicates your consent to participate in this study. Not returning the package will indicate a decision not to participate. If you wish to know more about our current research program before deciding about participation, a summary of Dr. John Dunn's research interests and applied sport psychology work can be found at the following website:
http://www.ualberta.ca/~jdunn/

Thank you.

Sincerely,

Allison Rasquinha, BA   John G.H. Dunn, PhD

Appendix M

Separate Regression Analyses of Task Value, Perceived Competence and Athletic

Identity Scores on Perfectionism Subscales

Perfectionism Subscale	Beta	*t*	*p*
Personal standards, $F(3, 373) = 62.896, p < .0001, R^2 = .33$			
Task value	-.11	-1.25	.212
Perceived competence	.09	1.23	.220
Athletic identity	.60	7.09	< .0001
Concern over mistakes, $F(3, 373) = 23.957, p < .0001, R^2 = .16$			
Task value	-.34	-3.27	< .005
Perceived competence	-.11	-1.27	.204
Athletic identity	.71	7.49	< .0001
Striving for perfection, $F(3, 373) = 47.619, p < .0001, R^2 = .27$			
Task value	-.15	-1.61	.109
Perceived competence	.07	0.82	.414
Athletic identity	.60	6.80	< .0001
Negative reactions to imperfection, $F(3, 373) = 36.484, p < .0001, R^2 = .22$			
Task value	-.27	-2.79	< .01
Perceived competence	-.09	-1.13	.260
Athletic identity	.75	8.21	< .0001